



WASHINGTON STATE
 UNIVERSITY

World Class. Face to Face.

2013 Catalog

How to Use this Catalog

Your Washington State University Catalog provides you with information on a wide variety of important topics. This page shows how you can use the catalog easily.

General Information

The general information section provides you with information about admissions, student services, and choosing a major.

University Common Requirements and Courses

It is important to understand WSU's University Common Requirements (UCOREs), since you must fulfill them in order to graduate. The section of this catalog on the University Common Requirements describes the requirements and lists the courses which fulfill particular UCOREs.

Note: Students pursuing degrees in the College of Arts and Sciences have additional credit hour requirements chosen from UCORE courses as well as foreign language course requirements. Honors College students also have different requirements.

Departments, Requirements, and Courses

The information in this section includes the following:

- A listing of faculty, descriptions of the academic fields, and details about departmental requirements for majors and options, in alphabetical order by department name.
- A complete listing of all requirements needed for each degree is shown in a semester-by-semester schedule of studies to help you plan your course of studies. Note that departmental requirements are set at the time you certify in your major.
- A description of the courses offered by each department. Undergraduate courses are numbered from 100 through 499. 100- and 200-level courses are suggested for first- and second-year students, while 300- and 400-level courses are most appropriate for third- and fourth-year students. Graduate and professional courses are numbered from 500 through 800.

Understanding the Schedule of Studies

Here is an example and explanation of what you will see when you look at a schedule of studies:

First Year

	<i>First Semester</i>	<i>Hours</i>
(1)	Humanities [HUM]	3
(2)	Degree Program Course ¹	3
	Foreign Language, if necessary, or Elective	4
(3)	Quantitative Reasoning [QUAN]	3 or 4
	Social Sciences [SSCI]	3

(1) You are required to take a certain number of University Common Requirement courses (UCOREs) from different areas. In this case, you need to choose a Humanities course. These courses are designated with the [HUM] indicator and both the browse catalog in zsis and the schedule of studies allow you to search by the UCORE course attributes. See the section on the University Common Requirements for more information and a list of the courses.

(2) Footnotes are frequently used to give you more detailed information to help you plan. In this case, the footnote will list the courses from which to choose, given your specific major.

(3) The College of Arts and Sciences requires you to take one year of a foreign language at the university level, if two years were not completed at the high school level.

Many departments allow you to take the required courses in a different order. Your advisor can tell you how much flexibility you have in rearranging the courses that are required for your degree.

Understanding Course Descriptions

Below are examples of course descriptions with definitions for each part. **Important!** Prerequisites will be listed if there are courses you need to take before you enroll in any particular class. Course prerequisites are checked by zsis at the point of registration.

In the first example, the course subject, "BIOLOGY", is followed by the course number, and then by "[BSCI]", which indicates that this course meets the UCORE biological science requirement. The credit hours are shown next. This is a 4-credit course, with three hours in lecture and three hours in lab each week. Next are the course prerequisites required for enrolling in the course. If you haven't already taken a CHEM course, you may fulfill the course prerequisite by enrolling in chemistry at the same time that you enroll in BIOLOGY 107.

BIOLOGY

107 [BSCI] Introductory Biology: Cell Biology and Genetics 4 (3-3) Course Prerequisite: Minimum 2 credits 100 level CHEM or concurrent enrollment. First or second semester of a one-year sequence (BIOLOGY 106/107 or BIOLOGY 107/106) for science majors and pre-professional students. Cell biology and genetics of prokaryotes and eukaryotes.

In the second example, this "Topics" course indicates that the subject matter for the class will change each term and that the class may be repeated for additional credit. The course is also a variable credit class, indicated by the 'V' and 3 - 6 credits may be offered or taken each term. Up to 6 total credit hours may be taken. Also, note that the department is recommending that you have Junior standing before taking the course. This is not a course prerequisite -- but it is good advice that you will want to consider.

ANTH

395 Topics in Anthropology V 3-6 May be repeated for credit; cumulative maximum 6 hours. Examination of selected topics in contemporary anthropological theory and practice. Recommended preparation: Junior standing.

Academic Calendar

	2013- 2014	2014- 2015	2015- 2016	2016- 2017	2017- 2018
First Semester (Fall)					
Classes begin, Monday	Aug 19	Aug 25	Aug 24	Aug 22	Aug 21
Labor Day holiday	Sept 2	Sept 1	Sept 7	Sept 5	Sept 4
Midterm grades due, 5:00 p.m.	Oct 9	Oct 15	Oct 14	Oct 12	Oct 11
Veterans Day holiday	Nov 11	Nov 11	Nov 11	Nov 11	Nov 10*
Thanksgiving Vacation	Nov 25-29	Nov 24-28	Nov 23-27	Nov 21-25	Nov 20-24
Commencement	Dec 7	Dec 13	Dec 12	Dec 10	Dec 9
Final Examinations, Monday through Friday	Dec 9-13	Dec 15-19	Dec 14-18	Dec 12-16	Dec 11-15
Final grades due, 5:00 p.m.	Dec 17	Dec 23	Dec 22	Dec 20	Dec 19
Second Semester (Spring)					
Classes begin	Jan 13	Jan 12	Jan 11	Jan 9	Jan 8
Martin Luther King, Jr. Day holiday	Jan 20	Jan 19	Jan 18	Jan 16	Jan 15
Presidents Day holiday	Feb 17	Feb 16	Feb 15	Feb 20	Feb 19
Midterm grades due, 5:00 p.m.	Mar 5	Mar 4	Mar 2	Mar 1	Feb 28
Spring Vacation, (10th week)	Mar 17-21	Mar 16-20	Mar 14-18	Mar 13-17	Mar 12-16
Final Examinations, Monday through Friday	May 5-9	May 4-8	May 2-6	May 1-5	Apr 30-May 4
Commencement	May 10	May 9	May 7	May 6	May 5
Final grades due, 5:00 p.m.	May 13	May 12	May 10	May 9	May 8
Summer Session					
Early Session begins	May 12	May 11	May 9	May 8	May 7
Memorial Day holiday	May 26	May 25	May 30	May 29	May 28
Eight-Week Session begins	June 9	June 8	June 6	June 5	June 4
Late Six-Week Session begins	June 23	June 22	June 20	June 19	June 18
Independence Day holiday	July 4	July 3*	July 4	July 4	July 4
Summer Session ends, Friday	Aug 1	July 31	July 29	July 28	July 27
Final grades due, 4:00 p.m.	Aug 5	Aug 4	Aug 2	Aug 1	July 31

* Observed

Please note: Faculty advising and registration for continuing students will be held prior to the end of the previous term.

WSU Accreditation

Washington State University is accredited by the Northwest Commission on Colleges and Universities. Accreditation of an institution of higher education by the Northwest Commission on Colleges and Universities indicates that it meets or exceeds criteria for the assessment of institutional quality evaluated through a peer review process. An accredited college or university is one which has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by the Northwest Commission on Colleges and Universities is not partial but applies to the institution as a whole. As such, it is not a guarantee of every course or program offered, or the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the institution.

Inquiries regarding an institution's accredited status by the Northwest Commission on Colleges and Universities should be directed to the administrative staff of the institution. Individuals may also contact:

Northwest Commission on Colleges and Universities
8060 165th Avenue N.E., Suite 100
Redmond, WA 98052
(425) 558-4224
www.nwccu.org

Specialized Accreditations

Many programs, 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 programs, departments and colleges, and an abbreviated list is provided below.

Accreditation Board for Engineering and Technology
Accreditation Council for Education in Nutrition and Dietetics
Accrediting Commission on Education for Health Services Administration
American Animal Hospital Association
AACSB International – The Association to Advance Collegiate Schools of Business
American Association for Assessment and Accreditation of Laboratory Animal Care
American Association of Colleges of Nursing
American Association of Colleges of Pharmacy
American Association of Veterinary Laboratory Diagnosticians
American Chemical Society
American Council for Construction Education
American Council on Pharmaceutical Education
American College of Sports Medicine
American Dietetic Association
American Psychological Association Commission on Accreditation
American Society of Landscape Architects
American Speech-Language-Hearing Association Commission on Accreditation
American Veterinary Medicine Association Council on Education
Association to Advance Collegiate Schools of Business
Commission on Accreditation for Dietetics Education
Commission on Accreditation of Athletic Training Education
Commission on English Language Program Accreditation
Commission on Accreditation of Healthcare Management Education
Commission on Collegiate Nursing Education
Computing Accreditation Commission of ABET
Council for Interior Design Accreditation
Landscape Architecture Accrediting Board
National Accreditation Commission for Early Care and Education Programs
National Architectural Accrediting Board
National Association of Schools of Music
Washington Professional Educator Standards Board
Washington State Department of Health, Nursing Care Quality Assurance Commission
Washington State Professional Educator Standards Board



Washington State University

www.wsu.edu

Washington State University conducts transformational research and provides world-class education to a diverse population of nearly 25,000 students. Founded in 1890 in Pullman as a land-grant institution, the University's statewide system now includes campuses in Spokane, the Tri-Cities, and Vancouver, as well as a Global Campus, a nationally recognized online learning environment that serves students worldwide.

In addition, University Extension offices in each of Washington's 39 counties provide research-based educational programs and services to businesses, communities, and individual citizens. WSU also manages agricultural research stations in Puyallup, Mt. Vernon, Wenatchee, Othello, Prosser, and Lind.

The University earns national recognition as a top-tier research institution. U.S. News and World Report consistently ranks WSU among America's top 60 public universities. The Carnegie Foundation for the Advancement of Teaching classifies the University as one of 96 in the nation with very high research activity. It also places WSU among 119 national universities and colleges that earn the Community Engagement Classification. This honor recognizes curricular engagement and outreach, as well as partnerships with larger communities for the exchange of knowledge and resources.

The University strives to deepen students' understanding of and connectiveness to the global community. Students can select from more than 1,200 study-abroad opportunities. Some 1,700 students from around the world enroll at the main campus in Pullman, adding a rich layer of cultural diversity. The Honors College curriculum immerses students in the study of international issues.

The University encourages civic engagement. Each year student volunteers typically provide more than 70,000 hours of community service.

An institutional commitment to enroll a more ethnically diverse student body continues to deliver dividends. Minority students comprise more than 20 percent of the student body—the highest percentage in WSU history—and the number is expected to grow in future years.

The University's commitment to sustainability drives a wide range of initiatives. Programs on one end of the spectrum include the launch of a bike-sharing program and expanded recycling activities. On the other end of the scale, WSU designs and builds new campus facilities to achieve the highest ratings from the U.S. Green Building Council. Recently constructed buildings have been awarded Silver and Gold LEED (Leadership in Energy and Environmental Design) certification.

Faculty research addresses problems in areas such as health, food, and sustainability. WSU has won acclaim for its research strengths in many fields, among them tree fruit science, wood technology, clean energy, and global animal health. Ten WSU faculty members have achieved the country's highest honor for scientists and engineers with their election to membership in the National Academies in the sciences or engineering. Grant dollars awarded to the University totaled some \$223 million during the 2012 fiscal year.

An award-winning Student Recreation Center featuring cardio and weight equipment, courts for basketball, volleyball, and badminton, and a swimming pool and spa inspires students to maintain their physical and mental health. A newly renovated student union building, a classroom building featuring the latest teaching technology, and a major expansion of the football stadium are recent examples of WSU's commitment to providing resources and amenities that enrich the collegiate experience.

Among the other notable achievements that distinguish WSU:

- WSU is ranked among the top 20 best colleges nationwide for its university-wide writing program, according to U.S. News and World Report (2013). The 25-year-old program helps students from all majors to develop their writing skills using a peer-tutoring model.
- The College of Business' online Masters of Business Administration and Executive MBA programs are the best online graduate business programs in the nation, according to the U.S. News & World Report 2013 Top Online Education rankings.
- The Organic Farming Research Foundation named WSU among the top six schools in the U.S. for educational and research programs in organic agriculture.
- WSU's educational leadership program certifies 70 percent of the state's school district superintendents, so it plays a significant role in shaping management of the state's public schools.

The location of WSU's flagship campus in Pullman, a small town in southeastern Washington, creates the quintessential college town environment—meaning that Cougar spirit permeates life on and off campus. Women's and men's intercollegiate athletic teams are members of Pac-12 Conference. Loyal fans, including students, faculty, staff, and alumni, join together to cheer on the Cougars.

Degrees Granted

Accounting, MAcc
Agricultural Economics, PhD
Agricultural and Food Systems, BS
Agriculture, MS
American Studies, MA, PhD
Animal Sciences, BS, MS, PhD
Anthropology, BA, MA, PhD
Apparel, Merchandising, and Textiles, BA, MA
Applied Economics, MS
Architectural Studies, BS
Architecture, MArch
Asian Studies, BA
Athletic Training, BS
Biochemistry, BS
Bioengineering, BS
Biological and Agricultural Engineering, MS, PhD
Biology, BS, MS
Botany, MS, PhD
Business Administration, BA, MBA, PhD
Chemical Engineering, BS, MS, PhD
Chemistry, BS, MS, PhD
Civil Engineering, BS, MS, PhD
Communication, BA, MA, PhD
Comparative Ethnic Studies, BA
Computer Engineering, BS, MS
Computer Science, BA, BS, MS, PhD
Construction Management, BS
Coordinated Program in Dietetics, Nutrition, and Exercise Physiology, MS
Criminal Justice, BA, MA, PhD
Crop Science, MS, PhD
Digital Technology and Culture, BA
Earth and Environmental Science, BA
Economics, PhD
Economic Sciences, BS
Education, BA, EdM, MA, MIT, EdD, PhD
Electrical and Computer Engineering, PhD
Electrical Engineering, BS, MS
Engineering, MS
Engineering and Technology Management, METM
Engineering Science, PhD
English, BA, MA, PhD
Entomology, MS, PhD
Environmental Engineering, MS
Environmental and Natural Resource Sciences, PhD
Environmental Science, MS
Fine Arts, BA, BFA, MFA
Food Science, BS, MS, PhD
Foreign Languages and Cultures, BA, MA
Genetics and Cell Biology, BS
Geology, MS, PhD
Health Policy and Administration, MHPA
History, BA, MA, PhD
Horticulture, MS, PhD
Hospitality Business Management, BA
Human Development, BA
Humanities, BA
Individual Interdisciplinary, PhD
Integrated Plant Sciences, BS
Interior Design, BA, MA
Kinesiology, BS
Landscape Architecture, BLA, MS
Materials Science and Engineering, BS, MS, PhD
Mathematics, BS, MS, PhD
Mechanical Engineering, BS, MS, PhD
Microbiology, BS
Molecular Biosciences, MS, PhD
Molecular Plant Sciences, MS, PhD
Music, BA, BMus, MA
Natural Resource Sciences, MS
Neuroscience, BS, MS, PhD
Nursing, BS, MNurs, DNP, PhD
Nutrition and Exercise Physiology, BS, MS, PhD
Pharmaceutical Sciences, MS, PhD
Pharmacy, PharmD
Philosophy, BA, MA
Physics, BS, MS, PhD
Plant Pathology, MS, PhD
Political Science, BA, MA, PhD
Prevention Science, MA, PhD
Psychology, BS, MS, PhD
Public Affairs, BA, MPA
Science, Bachelor of
Social Sciences, BA
Social Studies, BA
Sociology, BA, MA, PhD
Soil Science, MS, PhD
Speech and Hearing Sciences, BA, MA
Sport Management, BA
Statistics, MS
Strategic Communication, MA
Veterinary Medicine, DVM
Veterinary Science, BS, MS, PhD
Women's Studies, BA
Zoology, BS, MS, PhD

Washington State University Strategic Plan

Vision

Washington State University will be recognized as one of the nation's leading land-grant research universities.

Mission

Washington State University is a public research university committed to its land-grant heritage and tradition of service to society. Our mission is three-fold:

- To **advance** knowledge through creative research and scholarship across a wide range of academic disciplines.
- To **extend** knowledge through innovative educational programs in which emerging scholars are mentored to realize their highest potential and assume roles of leadership, responsibility, and service to society.
- To **apply** knowledge through local and global engagement that will improve quality of life and enhance the economy of the state, nation, and world.

Values

- Quality and Excellence:** We are committed to maintaining quality and excellence in all our endeavors.
- Integrity, Trust, and Respect:** We are committed to being an institution that demonstrates trust and respect for all persons and cultivates individual and institutional integrity in all that we do.
- Discovery, Innovation, and Creativity:** We are committed to the pursuit of inquiry and discovery and to the creation and dissemination of knowledge.
- Land-grant Ideals:** We are committed to the land-grant ideals of access, engagement, leadership, and service to bring the practical benefits of education to the state, nation, and global community.
- Diversity and Global Citizenship:** We embrace a worldview that values diversity and cultural differences and recognizes the importance of global interdependence and sustainability.
- Freedom of Expression:** We are committed to being a community that protects the free exchange of ideas while encouraging dialog that is constructive and civil.
- Stewardship and Accountability:** We are committed to being ethical and responsible stewards of University resources and to being accountable for upholding the full scope of these values.

Goals

Goal 1

Achieve national and international preeminence in innovation, discovery, and creativity.

Goal 2

Provide a premier education and transformative experience that prepares students to excel in a global society.

Goal 3

Lead in relevant local, national, and global outreach and engagement.

Goal 4

Embrace an environment of diversity, integrity, and transparency.

Washington State University Foundation

WSU Foundation, 800-448-2978

Town Centre, Suite 301

PO Box 641925, Pullman, WA 99164-1925

<http://campaign.wsu.edu>

Currently raising support for the \$1 billion Campaign for Washington State University: Because the World Needs Big Ideas, the mission of the Washington State University Foundation is to promote, accept, and maximize private support for programs, initiatives, and properties of Washington State University and its regional campuses. The WSU Foundation also prudently manages, invests, and stewards the assets entrusted to it by WSU and its alumni, friends, and donors. Since its creation in 1979, the WSU Foundation has raised \$1.24 billion in support of WSU's world-class educational experience, research, and community outreach. Private contributions to the WSU Foundation fund scholarships for deserving undergraduate and graduate students, attract and retain top faculty, build state-of-the-art facilities, and enable cutting-edge research and educational programs to flourish at Washington State University. For more information, visit the WSU Foundation's web site or e-mail: campaign@wsu.edu. Mail inquiries may be addressed to WSU Foundation, PO Box 641925, Pullman, WA 99164-1925.

Student Services and Facilities

The Access Center

Disability Resource Services
Washington Building, Room 217
509-335-3417
<http://accesscenter.wsu.edu>

Center for Advising and Career Development (CACD)

Lighty Building, Room 180
509-335-6000, or 888-978-7252
<http://cacd.wsu.edu>

Center for Civic Engagement

Compton Union Building, Room L 48
509-335-7708
<http://cce.wsu.edu>

Cougar Card Center

CUB Room 60
509-335-CARD (2273)
<http://cougarcad.wsu.edu>

WSU Children's Center

509-335-8847
<http://childrenscenter.wsu.edu>

Compton Union Building

509-335-9444
<http://cub.wsu.edu>

Counseling and Testing Services

Lighty Building Room 280
Counseling: 509-335-4511
Testing: 509-335-1744
After hours crisis: 509-335-2159
<http://counsel.wsu.edu>

Office of the Dean of Students

Student Assistance Programs
French Administration Building, Room 134
509-335-5757
<http://deanofstudents.wsu.edu>

Dining Services

509-335-5498
<http://dining.wsu.edu>

Financial Aid

Lighty Building, Room 380
509-335-9711
<http://finaid.wsu.edu>

Gender Identity/Expression and Sexual Orientation Resource Center

Compton Union Building, Room 401
509-335-6388
<http://thecenter.wsu.edu>

Health and Wellness Services

Washington Building
1125 NE Washington Ave.
Clinic 509-335-3575; Pharmacy 509-335-5742
student.insurance@wsu.edu
<http://hws.wsu.edu>

Housing and Residential Life Services

Streit-Perham Administrative Office
509-335-7732
<http://housing.wsu.edu>

Information Technology Services (ITS)

ITS Services & Accounts Desk
CUE 302
509 335-4357; 1-800-608-3839
helpdesk@wsu.edu
<http://infotech.wsu.edu>

International Programs

Bryan Hall, Room 206
509-335-2541
<http://ip.wsu.edu>
ip.admin@wsu.edu

Intensive American Language Center (IALC)

McAllister Hall, Room 116
509-335-6675
<http://ip.wsu.edu/ialc>

The Libraries

509-335-9671
<http://www.wsulibs.wsu.edu>

The Office of Equal Opportunity

French Administration Building, Room 225
509-335-8288
<http://oeo.wsu.edu>

The Office of Multicultural Student Services

509-335-7852
Compton Union Building, Fourth Floor
<http://mss.wsu.edu>

The Ombudsman Office

Wilson-Short Hall, Room 2
509-335-1195
<http://ombudsman.wsu.edu>
ombudsman@wsu.edu

Registrar's Office

French Administration Building, Room 346
509-335-5346
registrar@wsu.edu
<http://registrar.wsu.edu>

Scholarship Services

Lighty Building, Room 380
509-335-1059
scholarships@wsu.edu
<http://finaid.wsu.edu/scholarships.html>

Women's Resource Center

Wilson Hall, Room 8
509-335-6849
<http://women.wsu.edu>

Student Accounts (Tuition and Fees)

French Administration Building, Room 342
509-335-9651
<http://www.wsu.edu/studacct/>

Student Government

Undergraduate Students - ASWSU:
509-335-9591
<http://studentinvolvement.orgsync.com/org/aswsu>
Graduate and Professional Students - GPSA:
509-335-9545
<http://studentinvolvement.orgsync.com/org/gpsa>

Student Involvement

CUB 320
509-335-9667
<http://studentinvolvement.wsu.edu>

Student Recreation Center

Student Recreation Center, Room 250
509-335-8732 (UREC)
<http://www.urec.wsu.edu>

Student Support Services TRiO Program

Lighty Building, Room 260
509-335-7324
<http://sssp.wsu.edu>

Summer Session

Pullman:
509-335-2238
<http://summer.wsu.edu>
Spokane:
509-358-7978
http://spokane.wsu.edu/students/summer_session/
Tri-Cities:
509-372-7250
<http://summer.tricity.wsu.edu/>
Vancouver:
360-546-9565
<http://studentaffairs.vancouver.wsu.edu/registrars-office>

Transfer Center

Lighty Building, Room 180
509-335-6000, or 888-978-7252
<http://advising.wsu.edu/the-transfer-center/>
transfer@wsu.edu

University Writing Center

Center for Undergraduate Education, Room 403
509-335-7959
<http://universitycollege.wsu.edu/units/writingprogram>

Office of Veterans Affairs

Federal Veterans Benefits
French Administration Building, Room 346
509-335-1234;
<http://va.wsu.edu>

Admission

Lighty Building, Room 370
888-468-6978 or 509-335-5586
<http://admission.wsu.edu>

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 based on space availability, prior to registration but not after census day 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 practice of Washington State University to admit all applicants if the total evidence 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 and resources can be made available.

Applications are available at apply.wsu.edu or from the Office of Admissions, PO Box 641067, Pullman, WA 99164-1067.

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

The University reserves a limited number of spaces in the incoming class for students with exceptional talent or potential, as determined by the departmental/college representative making the recommendation.

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

Retention of Students

The grade point average for first-year students entering from high school in the fall semester 2012 was 3.26. Of the 4,388 first-year students who entered in the fall 2012, 3,981 were enrolled in the spring of 2013.

Freshman Admission Requirements

<http://admission.wsu.edu>

Freshman applicants will be considered for admission on the basis of their academic records and other supporting documents, which include transcripts that show coursework through at least grade 11, completion of the following College Academic Distribution Requirements (CADRs), test scores (ACT or SAT), a personal statement, and other relevant materials as requested.

English:	Four credits (three of which must be composition and literature).
Mathematics:	Three credits of college preparatory mathematics (one year of geometry and two years of algebra). One full credit in a math-based quantitative course during the senior year must be earned. This can be met in a variety of ways. Contact us for details.
Science:	Two credits of laboratory science, including one credit of algebra-based science (typically chemistry or physics).
Social Science:	Three credits.
World Languages:	Two credits of the same world language, Native American language, or American Sign Language.
Fine Arts:	One credit of fine, visual, or performing arts, or one additional credit of academic elective.

(1 credit = 1year)

It is strongly recommended for students planning to major in science or science-related fields to complete at least three years of 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, higher credential such as an Associate of Arts or Associate of Science degree, or

completion of the GED prior to enrollment. WSU reserves the right to withdraw an offer of admission if there is a significant drop in the applicant's academic performance following the offer of admission or if a student does not complete the CADRs as outlined above.

Applicants must apply with a full and complete application packet by January 31 for priority consideration for the fall semester, as space is limited. Applicants for spring semester should apply by November 15 for priority consideration.

A complete application includes the freshman application form, the official high school transcript provided directly from the high school, the ACT or SAT score report from the testing agency, the personal statement, and the nonrefundable application fee. Students are encouraged to apply online at apply.wsu.edu.

Factors considered in freshman admission include grade point average, standardized test scores, the strength of the high school course work (including senior year course work), grades the student has earned and any improvements they have made in their academic performance, and their personal statement. Although letters of recommendation are not required, they are taken into consideration if they are helpful in speaking to the student's academic potential and abilities. Refer to the website for additional information.

Students interested in the Honors College should email honors@wsu.edu or call 509-335-4505.

Advanced Placement (AP), College Level Examination Program (CLEP), International Baccalaureate (IB)

<http://admission.wsu.edu/requirements/credit.html>

In consultation with academic departments, credit may be granted to entering or enrolled undergraduate students via external examinations. Credit by examination shall yield no grade points. Such credits may partially fulfill University Common Requirements (UCORE) for graduation. External examinations include but are not limited to: Advanced Placement (AP) examinations; general and subject College Level Examination Program (CLEP); and International Baccalaureate (IB). Acceptable scores for receiving credit may be found at wsu.edu/advancedcredit.

The maximum combined lower-division transfer credit allowed from regionally accredited institutions, AP, CLEP, and IB shall be 73 semester hours toward a baccalaureate degree irrespective of when those hours were earned.

Transfer Admission Requirements

<http://admission.wsu.edu/transfer/>

Transfer applicants who have successfully completed a Direct Transfer Agreement (DTA) associate degree from a regionally accredited post-secondary institution in Washington at the time of application will be admitted as space allows.

Transfer applicants without a DTA but with at least one full year of college-level transferable academic work from a regionally accredited post-secondary institution will be considered for admission on the basis of their academic records and other supporting documents, which include post-secondary institution transcripts and grade trends. Applicants with less than one full year of college-level academic work will be considered for admission if they also meet the freshman admission requirements. The personal statement is also helpful although not required.

The priority date for fall semester is January 31, and the priority date for spring semester is November 15. Interested applicants should complete their admission applications by these dates for priority consideration.

A complete application includes the transfer application form, an official transcript sent directly from each college or university attended showing work completed at the time of application, and the nonrefundable application fee.

Applicants with less than a full year of college-level transferable academic work at the time of application may also be asked to provide freshman credentials including high school transcripts and test scores for consideration.

Transfer Credit Policy

Washington State University awards transfer credit for college-level academic work completed at institutions that are regionally accredited. Military credit is awarded lower-division elective credit.

The maximum allowable credit toward a four-year degree shall be 90 semester (135 quarter) hours of credit, of which no more than 73 semester credits may be lower division hours of credit. For a five-year degree program the maximum credit allowed for transfer shall be 120 semester (180 quarter) hours of credit, of which no more than 73 semester credits may be lower division hours of credit.

Completion of lower-division University Common Requirements (UCORE) will be granted to students who have completed all of the lower-division University Common Requirements at another regionally accredited Washington baccalaureate institution, provided the sending institution so certifies.

Associate Degree Transfer

Students who have completed a Direct Transfer Agreement (DTA) associate degree at a Washington community college, including a course pattern which approximates the UCORE 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 UCORE for graduation and will generally be given junior standing. The Associate of Arts-Oregon transfer degree from an Oregon community college is generally considered to have met the lower-division UCORE, but does not guarantee junior standing. Certain approved Associate's degrees from Arizona, California, Hawaii, Idaho and New Mexico may also be considered to have fulfilled the lower division UCORE for graduation, but do not guarantee junior standing (60 semester credits). For details on specific degrees visit transfer.wsu.edu. In all cases, students will also be required to meet the upper-division UCORE as well as any departmental and college graduation requirements.

Students who have completed the Associate of Science Transfer degree (AS-T) from a Washington community college will receive the same priority consideration for admission to the baccalaureate institution as they would for completing the direct transfer agreement associate degree and will generally be given junior standing. Additional UCORE and college graduation requirements, as required by Washington State University, must be met prior to the completion of a baccalaureate degree. Students are responsible for checking specific major requirements in the year prior to transferring.

Washington State University recognizes academic credits earned at other regionally accredited 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 Student Achievement Council. The policy deals with the rights and responsibilities of students and the review and appeal process in transfer credit disputes.

Students who have completed at least 70 quarter credit hours toward completion of an approved A.A. degree may complete the Direct Transfer Agreement (DTA) associate degree from a Washington or Oregon two-year college after their initial enrollment at WSU.

Transfer students are encouraged to contact the Office of Admissions at 888-468-6978 with any questions regarding the transfer of credit or to access transfer articulation information at transfercredit.wsu.edu.

Adult Student Admission

<http://admission.wsu.edu>

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 25 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 of Students with Extraordinary Talents

Washington State University wishes to make educational opportunities available to students whose extraordinary talents have the potential to enrich our

intellectual, cultural, and social environments, but whose overall academic credentials may not qualify them for regular admission.

WSU departments, colleges, or programs may request special consideration for students who possess such extraordinary talents provided the talent is of a nature that would not normally be reflected or assessed during the regular admission process. The current admission process considers the curriculum, grades, and standardized scores of the applicant. Examples of evidence of extraordinary talents that might not be apparent in the applicant's file include: exceptional music, athletic accomplishment, awards in science, math, or artistic competitions or similar measures of talent.

There are two tracks for admission under this policy. The first admits students who are minimally qualified with an AIN of 28 or above, but whose index scores do not meet the criteria set by the University for admission that year. Such students may be admitted upon the written recommendation of the chair/director of the relevant academic department, school, or program or the head coach of the relevant athletic team and the approval of the Vice President for Student Affairs and Enrollment or designees. In the case of student athletes, the concurrence of the Faculty Athletic Representative is also required. Letters of recommendation must detail how the student's skills will contribute to the University.

A three-person panel consisting of the Chair of the Faculty Senate, Chair of the Academic Affairs Committee of the Faculty Senate, and the Vice President for Student Affairs and Enrollment, or designees will further review students identified as having extraordinary talent but whose AIN scores are below a 28. A written recommendation of the relevant chair/director or head coach will be required to support the student's admission. In the case of student athletes, the students who are assessed to have potential to contribute to the University through their special skills and advance themselves through the university experience will be considered for admission. Students who fail to meet the university's minimum core requirements or in the case of student athletes who fail to meet NCAA requirements will not be admitted to the university under this policy.

The University will carefully monitor the number and progress of students admitted under rules 1-c and 1-e. Every fall, the Vice President for Student Affairs and Enrollment will provide a written report to the Provost, Chair of the Faculty Senate, and the President on the number of students admitted, their academic qualifications, extraordinary talents, or the basis for their admission. The report will also assess the academic progress of students previously admitted under these rules to insure that the program is functioning to the advantage of the students and the university community as a whole.

Admission to WSU Spokane, WSU Tri-Cities, and WSU Vancouver

The WSU Spokane, Tri-Cities, and Vancouver campuses offer a variety of undergraduate and graduate degree programs. All three campuses have graduate education; WSU Tri-Cities and WSU Vancouver also offer baccalaureate degrees.

Academic programs offered by each campus are listed separately in this catalog. Applications may be obtained from each campus or at its Web site. Applications will not be considered or processed after the tenth day of classes for any semester. Final and complete transcripts to date 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 (FSR) Not Enrolled the Previous Academic Semester

<http://admission.wsu.edu>

If you previously enrolled at any Washington State University campus and you were absent for more than one semester (excluding summer), you are considered a former student and you need to reapply for admission.

Preference will be given to applications received by January 31 for fall semester and November 15 for spring semester. Applications submitted after census day of classes will not be considered.

FSR applicants will be granted admission if they are in good academic standing. FSR applicants whose previous academic record at Washington State University is unsatisfactory will be required to follow established academic reinstatement procedures (see students.cacd.wsu.edu) prior to admission.

FSR applicants who have attended other institutions since their last enrollment at Washington State University are required to submit an official transcript directly from each institution attended. Applicants will be considered for admission on the basis of their academic records and other supporting documents which include post-secondary transcripts, grade trends, strength of curriculum and academic preparation.

Apply at <http://apply.wsu.edu> or contact the Office of Admissions for a FSR application.

International Student Admission Requirements

<http://ip.wsu.edu/apply/admission-requirements.html>

Please refer to website for details.

Non-Degree Admission

<http://admission.wsu.edu>

Individuals may enroll at Washington State University as non-degree students for personal enrichment, professional development, or other reasons. Enrollment in courses for non-degree students is limited to space availability, and non-degree students register for courses after degree-seeking students. Students who are interested in applying as a non-degree-seeking student may apply at <http://apply.wsu.edu>.

International Student Non-Degree Admission Requirements

<http://ip.wsu.edu/apply/admission-requirements.html>

Running Start at the Pullman campus

For fall and spring semesters, eligible Whitman County high school students may enroll through Running Start. For more information on the Running Start program, please contact the Registrar's Office at 509-335-1693.

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 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. Details for certification and acceptance into programs vary and students applying for admission to selective programs should contact the program or check its website or catalog section for more information.

Advance Payment on Tuition and Fees

<https://wsu.edu/advancepay>

All new admitted undergraduate students, except former students returning and non-degree students are required to submit a nonrefundable advance payment on tuition and fees in the amount of \$200 to confirm their space at the University. Students must submit this fee by the due date in their admission letter otherwise their space may be given to another student.

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.

Colleges, Academic Areas, and the Graduate School

COLLEGE OF AGRICULTURAL, HUMAN, AND NATURAL RESOURCE SCIENCES

Daniel J. Bernardo, Dean
Hulbert Hall, Room 421
509-335-4561
<http://cahnrs.wsu.edu>

Recognizing its unique land-grant research and educational mission to serve Washington State and the global community, the College of Agricultural, Human, and Natural Resource Sciences is discovering and sharing knowledge through excellence in research, instruction, and statewide Extension programs. Students, scientists, and educators contribute to securing a safe, abundant food and fiber supply; promoting the well-being of individuals, families, and communities; enhancing the sustainability of agricultural and economic practices and the environment; and promoting stewardship of natural resources and ecological systems.

The college offers approximately 20 majors to prepare professionals for careers through departments including Animal Sciences; Apparel, Merchandising, Design, and Textiles; Crop and Soil Sciences; Economic Sciences; Entomology; Environment; Food Science; Horticulture; Human Development; Interior Design; and Plant Pathology. Students receive a solid foundation in the sciences with a technological grounding that enables them to explore and stay up-to-date with the relevant, dynamic fields of agricultural, human, economic, and natural resource sciences. All degree programs provide students with opportunities for hands-on interactions in their field, whether it's working with researchers in classrooms/labs or through internships and international study abroad programs.

Overall, the agricultural industry remains Washington's number one thriving economic industry and supports a vibrant job market. Programs in agriculture prepare students for a wide variety of careers in science; education; agriculture and food security; fruit and vegetable management; agricultural technology and production management; biotechnology; field crop management; turfgrass management; organic agriculture; landscape, nursery, and greenhouse management; viticulture and enology; business and finance; economics; food processing; and sales and distribution of food products.

In addition, programs offered through the college's newly formed School of the Environment prepare students for careers in earth sciences, environmental and ecosystem sciences, and wildlife ecology and conservation sciences. Graduates enter their profession as agricultural producers, land managers, agriculture teachers, landscape architects, food scientists, winemakers, or industry representatives for agriculture, natural resources, and retail operations. Students who earn graduate degrees follow scientific careers in research; teaching university classes; Extension education; and highly technical pursuits within industry and government organizations.

The College of Agricultural, Human, and Natural Resource Sciences also offers unique opportunities for students pursuing careers in veterinary medicine. Animal Sciences and Natural Resource Sciences both allow students to build a foundation for veterinary school and earn a baccalaureate degree simultaneously.

Programs in the human sciences prepare students for positions as teachers of family and consumer sciences, human science and community agency managers, and directors of aging programs. Other careers include apparel design and merchandising, interior design, consumer services, or commercial food service. Students who graduate are prepared to teach in public schools, to work in adult education, and to administer and supervise preschool and child care centers. Those who earn advanced degrees fill positions in research, Extension, governmental agencies, foreign services, college teaching, and businesses around the world.

Admission

The requirements for admission to the College of Agricultural, Human, and Natural Resource Sciences are the same as those for Washington State University. 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

Most 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 enrolled in other colleges or universities but planning to transfer to the College of Agricultural, Human, and Natural Resource Sciences should concentrate as much as possible on general education, science, and other departmental requirements normally scheduled during the first and second years, with particular attention to those subjects required for the intended majors. In addition, students should also contact a College of Agricultural, Human, and Natural Resource Sciences academic advisor in their area of interest.

Students at community colleges in the state should check to see whether there is an articulation agreement between their institution and the WSU program of interest in order to simplify the transition to WSU.

Requirements for Graduation

Requirements for graduation in the College of Agricultural, Human, and Natural Resource Sciences vary according to the major and the degree to be granted, as described in the departmental sections of this catalog. The student and the advisor 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.

Agricultural, Human and Natural Resource Sciences Degrees

Degree	Department
Bachelor of Science	
Agricultural and Food Systems	CAHNRS Academic Programs <i>(including Agricultural and Food Business Economics, Agricultural Education, Agricultural Technology and Production Management, Agriculture and Food Security, and Organic Agriculture Systems)</i>
Animal Sciences	Animal Sciences <i>(including Animal Management, and Science/Pre-Veterinary Medicine)</i>
Economic Sciences	Economic Sciences <i>(including Agricultural Economics; Business Economics; Economics, Policy and Law; Economic Development; Environmental and Resource Economics; Financial Markets; and Quantitative Economics)</i>
Food Science	Food Science
Integrated Plant Sciences	Crop and Soil Sciences Horticulture <i>(including Agricultural Biotechnology; Field Crop Management; Fruit and Vegetable Management; Landscape, Nursery and Greenhouse Management; Landscape Design and Implementation; Turfgrass Management; and Viticulture and Enology)</i>

Bachelor of Arts

Apparel, Merchandising, and Textiles <i>(including Apparel Design; and Merchandising)</i>	Apparel, Merchandising, Design, and Textiles
Human Development <i>(including Adolescence, Gerontology, Early Childhood Development and Care, and Family Studies Certificates; and teacher certification in Family and Consumer Sciences Education)</i>	Human Development

Master of Science

Agriculture	Crop and Soil Sciences
Animal Sciences	Animal Sciences
Applied Economics	Economic Sciences
Biological and Agricultural Engineering	Biological Systems Engineering
Crop Science	Crop and Soil Sciences
Entomology	Entomology
Food Science	Food Science
Horticulture	Horticulture
Molecular Plant Sciences	Molecular Plant Sciences
Plant Pathology	Plant Pathology
Soil Science	Crop and Soil Sciences

Master of Arts

Apparel, Merchandising, and Textiles	Apparel, Merchandising, Design, and Textiles
Human Development	Human Development

Doctor of Philosophy

Agricultural Economics	Economic Sciences
Animal Sciences	Animal Sciences
Biological and Agricultural Engineering	Biological Systems Engineering
Crop Science	Crop and Soil Sciences
Economics	School of Economic Sciences
Entomology	Entomology
Food Science	Food Science
Horticulture	Horticulture
Molecular Plant Sciences	Molecular Plant Sciences
Plant Pathology	Plant Pathology
Prevention Science <i>(Interdisciplinary Degree)</i>	Human Development
Soil Science	Crop and Soil Sciences

COLLEGE OF ARTS AND SCIENCES

Daryll B. DeWald, Dean
Thompson Hall, Room 309
509-335-4581
<http://cas.wsu.edu>

As of July 1, 2012, the College of Liberal Arts and the College of Sciences were integrated into one college, the College of Arts and Sciences, which fosters an open and diverse environment where faculty and students engage in wide-ranging research. Within the arts, humanities, and social sciences, students engage in artistic creativity, humanistic inquiry, global learning, and community involvement. Undergraduate academic programs in these areas provide students in all disciplines with both a broad and deep understanding of culture, society, and human behavior. Faculty and curricula within the sciences provide a sound and challenging education for students in disciplines covering the life sciences, physical sciences, environmental science, and mathematics. Students in the college are inspired to become critical thinkers and life-long learners, prepared for a rich and rewarding life in a wide range of careers or for further graduate and professional education.

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 diverse technological and global society. In addition, one of the major functions of the college is to provide foundational course work 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 American Association for the Advancement of Science Fellowships, American

Chemical Society Fellowships, American Physical Society Fellowships state and national teaching awards, Guggenheim Fellowships, Fulbright Scholarships, National Endowment for the Humanities Fellowships, American Council of Learned Societies Fellowships, 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 research and creative projects under supervision of a faculty member. These hands on opportunities are facilitated by the high quality of the teaching and research laboratories, computer facilities, music and arts studios, museums, and other infrastructure within the college. The Franceschi Microscopy and Imaging Center, Nuclear Magnetic Resonance Center, Geoanalytical Laboratory, Ownbey Herbarium, Conner Zoological Museum, Museum of Anthropology, 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, and graphics.

Major natural science research areas in the college include shock physics, molecular and atomic interactions on surfaces, continuum mechanics, avian environmental physiology, regulation of cellular growth and differentiation, 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, chemotaxis, coevolution of plants and animals, and reproductive biology.

Well-recognized scholars in the social sciences and humanities are making significant contributions in the fields of environmental studies and peace and security. Researchers and students in the humanities and social sciences are identifying the personal and sociopolitical factors that influence chronic diseases and other threats to health, including substance abuse, accidents, and high-risk behaviors. The research and creative activity of humanities scholars, musicians, artists, and social scientists throughout the college fosters mutual understanding and cooperation across cultures and nations, building partnerships with diverse communities—from the cultures of the Pacific Rim to Native American and Latino cultures closer to home.

Many programs within the college offer graduate degrees that further prepare students for successful professional and academic careers. Undergraduate students planning to pursue advanced work in graduate or professional schools are advised to plan curricula to meet admission requirements for advanced study. A number of programs in the college are externally accredited. The doctoral program in clinical psychology is accredited by the American Psychological Association and the Music Program is a full member of the National Association of Schools of Music, for example.

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 complete the course work in their chosen subject-matter field within the College of Arts and Sciences. The specific requirements for certification and teaching majors and minors for K-12 teachers are listed under the Department of Teaching and Learning.

The Pre-law Advising Center is located in the Department of Political Science. Other pre-law curricula are offered through such departments and programs as comparative ethnic studies, English, history, philosophy, and sociology.

Admission

The general requirements for admission to the College of Arts and Sciences are the same as those for Washington State University. Some departments have selective admissions criteria requiring demonstration of artistic achievement and/or completion of specific courses with specific grades prior to certification of the respective major.

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, and speech.

Requirements for Graduation

Graduation requirements for a bachelor's degree include the University General Education Requirements plus additional College of Arts and Sciences requirements in arts and humanities, social sciences, and sciences. Each academic department or program has additional graduation requirements which are included in the departmental descriptions in this catalog.

Degrees

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

Degree Department or Area

Bachelor of Arts

Anthropology
Asian Studies
Comparative Ethnic Studies
Criminal Justice
Digital Technology and Culture
English
Fine Arts
Foreign Languages and Cultures (Chinese, French, Spanish)
History
Humanities (General Studies)
Music
Philosophy
Political Science
Public Affairs (Vancouver)
Social Sciences (General Studies)
Social Studies
Sociology
Women's Studies

Bachelor of Fine Arts

Fine Arts

Bachelor of Music

Music

Master of Arts

American Studies
Anthropology
Criminal Justice
English
Foreign Languages and Cultures (Spanish)
History
Music
Philosophy
Political Science
Sociology

Master of Fine Arts

Fine Arts

Master of Public Affairs

Public Affairs (Vancouver)

Bachelor of Science

Biology
Chemistry
Earth and Environmental Science
Mathematics
Physics
Psychology
Sciences—General Studies
(includes Basic Medical Science; Biological Sciences; Mathematics; and Physical Sciences)
Zoology

Master of Science

Biology (non-thesis option)
Botany
Chemistry
Environmental Science
Geology
Mathematics
Molecular Plant Sciences
Natural Resource Sciences
Physics
Plant Physiology

Psychology (Clinical and Experimental)
Statistics
Zoology

Doctor of Philosophy

American Studies
Anthropology
Botany
Chemistry
English
Environmental and Natural Resource Sciences
Geology
History
Materials Science
Mathematics
Molecular Plant Sciences
Physics
Plant Physiology
Political Science
Psychology (Clinical and Experimental)
Sociology
Zoology

Some of the graduate degree programs are jointly supported by the College of Agricultural, Human, and Natural Resource Sciences and the College of Engineering and Architecture.

COLLEGE OF BUSINESS

Eric R. Spangenberg, Dean and Maughmer Freedom Philosophy Chair
Todd Hall, Room 570
509-335-3596

<http://business.wsu.edu>

The College of Business (CB) is dedicated to, world-class research, global learning, professional development, innovative teaching and learning, and the pursuit of excellence in all levels of business education. The college spans campuses across WSU with the largest campus in Pullman, a thriving online campus, and urban campuses located in Vancouver, and the Tri-Cities area, an emerging campus in Everett, and global partnerships in China, Switzerland, Thailand, Tanzania, and Greece. The college conducts scholarly and applied research, and offers degree programs in a variety of business disciplines, and in hospitality business management, supplementing face-to-face offerings through innovative online learning and international programs.

The undergraduate business program continues to climb in the national rankings, ranking 72nd overall and 45th among public national universities in 2013, by *U.S. News & World Reports*. The international business program has been ranked in the top 25 nationally since 2005, and most recently ranked 13th in the nation among public institutions, by *U.S. News & World Reports*.

The College of Business at Washington State University is a world-class business school with a global focus. The college is committed to providing its students with the opportunity to experience education abroad. In addition to learning about another culture and interact with students from around the world, study abroad provides students with a lifetime of memories and experiences that will shape their future careers.

The CB is among the top two percent of business schools worldwide to be accredited by the Association to Advance Collegiate Schools of Business International (AACSB) at the baccalaureate, masters, and doctoral levels.

Innovation and business creation are essential for global competitiveness in the 21st century. Through the College's annual business plan competition and national venture forums, students drive the execution and delivery of transformational innovations. The college has designed a business plan competition that provides undergraduate and graduate students an opportunity to develop ideas in an interdisciplinary team setting, with experiences entrepreneurs, executives, and venture capitalist as mentors and judges.

The College of Business has offered a Masters of Business Administration (MBA) for more than 50 years, with graduates occupying leadership positions in all fields of business. The Executive MBA began in 2007, and the Online MBA began in 2009. The College opened the Online Executive MBA for enrollment in 2011. The College of Business online graduate business programs were ranked number one in the nation by U.S. News & Word Report's 2013 Best Online Graduate Business Program evaluation that included both the online MBA

and online Executive MHBA programs. Graduate program offerings include the MBA, Master's of Accounting and Ph.D. in Business Administration. The MBA is offered as an Executive MBA program, Online MBA, Full-time MBA, and 1Year Professional MBA program. The Master's of Accounting prepares students for work as Certified Public Accountants with a taxation specialization being offered in Vancouver. The doctor of philosophy in business prepares its graduates for careers in teaching and research positions and places students at prestigious research institutions.

Additionally, the WSU College of Business Carson Center for Student Success supports the academic, professional, and personal success of the students it serves. Building on the existing Scott and Linda Carson Center for Professional Development, the Carson Center for Student Success integrates academic advising, student involvement, professional development, scholarships, and study abroad in a single location. The college also offers the Freshman Admit Program, which provides an opportunity for any incoming first-year student to be automatically accepted into the college after completing program and certification requirements.

Areas of Study

The college departments—Accounting; Management, Information Systems, and Entrepreneurship; Finance and Management Science; Marketing and International Business—offer the following majors for the Bachelor of Arts in Business Administration degree:

- Accounting
- Business Administration (Vancouver and Tri-Cities campuses only)
- Entrepreneurship
- Finance
- International Business
- Management Information Systems
- Management and Operations
- Marketing

Within the college the School of Hospitality Business Management offers a specialized Bachelor of Arts degree with majors in:

- Hospitality Business Management
- Wine Business Management

In addition to the MBA, the college offers graduate work leading to the Doctor of Philosophy degree in business administration (all areas) and to Master of Accounting.

The Doctor of Philosophy program in Business Administration at Washington State University is an intensive program of coursework, research and intellectual interaction with faculty and other students that prepares graduates for careers as academic teachers and researchers. Students work closely with individual faculty members and are actively involved in joint research and publication projects throughout the program.

Minors

The College of Business offers two minors, one in business administration and a second in hospitality business management. For specific information regarding minor requirements, see the Business Administration and Hospitality Business Management sections of this catalog.

Admission

Admission on the Pullman Campus is competitive and based on capacity. Students should certify into hospitality business management or a particular business major upon completion of 60 hours of credits and specific course and gpa requirements (see the certification requirements in the Business Administration section of this catalog). To be eligible to enroll in 300-400-level business or HBM courses, business and hospitality business management students must have certified in their respective majors upon completion of 60 hours of course work and meeting gpa and other certification requirements.

The Freshman Admit program provides an opportunity for any incoming first-year student who maintains a 3.0 and continues with the program requirements to be automatically accepted into the College of Business upon completion of all certification requirements.

For specific information regarding the acceptability of college courses taken at other institutions in areas of study offered by the departments of the College of Business, prospective students should communicate with the appropriate department chair or with a CB Advisor in the Carson Center for Student Success.

Diversity, Recruitment, and Retention

The College of Business is strongly committed to diversifying its student body as well as to improving its retention and graduation rates of underrepresented students. The College strives to create an environment that is supportive and inclusive and where all students can succeed academically and professionally.

Business Degrees

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

Pullman Campus Degrees

- Bachelor of Arts, Business Administration
- Bachelor of Arts, Hospitality Business Management
- Master of Accounting
- Doctor of Philosophy, Business Administration

Tri-Cities Campus Degrees

- Bachelor of Arts, Business Administration
- Master of Business Administration

WSU Online Degrees

- Bachelor of Arts, Business Administration
- Master of Business Administration
- Executive MBA

Vancouver Campus Degrees

- Bachelor of Arts, Business Administration
- Master of Accounting (with an available taxation emphasis)
- Master of Business Administration

THE EDWARD R MURROW COLLEGE OF COMMUNICATION

Lawrence Pintak, Founding Dean
Communication Addition, Room 101
509-335-7333

<http://communication.wsu.edu>

Communication is central both to a democratic society and to membership in the global community. The faculty of The Edward R. Murrow College of Communication is dedicated to creating knowledge and facilitating learning about the production and interpretation of messages.

Combining programs that integrate fundamental communication domains, we are uniquely positioned to disseminate knowledge in a world where interpersonal and mediated communication converge.

We are dedicated to educating professional, ethical, and socially responsible citizens. Such an education shall provide students with an understanding of the social, political and ethical implications of communication. We are committed to developing in students a dedication to lifelong learning, communication skills, analytical and critical thinking skills, appreciation of diversity, and professional excellence. Our students learn through traditional teaching methods, innovative approaches to learning and application of professional skills and knowledge. In addition to undergraduate instruction, graduate education is an important component of our mission. Thus, we are also dedicated to guiding exceptional students' development as teachers, researchers, and leading professionals.

Research is necessary to fully serve our constituencies including students, industry, policy makers, and the communication discipline. As active members of a Research I institution, we are dedicated to the pursuit of knowledge regarding the complex and multifaceted nature of communication. We pursue quality research that respects and is informed by diverse disciplines, perspectives, and methods and strive to contribute knowledge with both theoretical and practical implications. Because research enhances teaching, we aim to develop and maintain a mutually beneficial relationship between research and instruction.

As citizens, we endeavor to share our expertise and abilities with the broader community. We are committed to the advancement of the University and local, national, and international communities through service activities beyond research and instruction. Such activities are exemplified by faculty outreach to various community and industry groups, and by faculty participation in decision making at all levels of the University.

Named for its most illustrious alumnus, The Edward R. Murrow College of Communication is highly regarded nationwide by educators and professionals. It has won national and regional Emmys for student television productions,

is ranked 4th nationally in television news and first in the Northwest for its public relations sequence, and has a faculty and student body with good gender and racial diversity.

Study in the College provides students exposure to state-of-the-art computer-based technologies. The Edward R. Murrow College of Communication has writing labs, advanced video and graphics labs, data analysis lab, broadcast news lab; two television production studios, several video editing suites, radio/audio labs, and student-run radio and cable television stations.

The Edward R. Murrow College of Communication offers major programs in Journalism and Media Production (Broadcasting and Journalism), Communication and Society (Communication Technology and Science Communication), and Strategic Communication (Advertising and Public Relations). The Murrow College offers the only comprehensive broadcast program in the state of Washington. The College is noted for cutting edge professional skill-building and theory, and is one of only a few programs in the nation that airs a daily, student-produced television newscast.

Admission

To certify a major plan in communication, a student must meet the following minimum requirements: (1) Complete COM 101, 105 and 138; (2) Sophomore standing (transfer students should have at least 15 graded units from courses in residence at WSU); (3) Complete the Edward R. Murrow College of Communication Grammar and Writing exam administered by the College of Communication.

Certification is based on the number of available seats, applicant's cumulative WSU GPA, number of credits completed at the time of application, and applicant's performance on the Grammar and Writing Exam. Transfer course grades will not be used in the calculation of the cumulative WSU GPA. Students transferring into the College with 55 or more hours should complete the certification requirements within two semesters. All students should certify before earning 90 credit hours.

Requirements for Graduation

Requirements for graduation in the College of Communication vary according to the major and the degree to be granted, as described in the departmental sections of this catalog. The student and the advisor jointly have the responsibility of selecting courses to fit the student's native ability and professional interests, consistent with departmental and University Common Requirements (UCORE).

Degrees

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

Degree	Emphasis
Bachelor of Arts, Communication	Communication and Society (Communication Technology and Science communication); Journalism and Media Production (Broadcasting and Journalism); Strategic Communication (Advertising and Public Relations)
Master of Arts	Communication
Master of Arts	Strategic Communication
Doctor of Philosophy	Communication

COLLEGE OF EDUCATION

Michael S. Trevisan, Dean
Cleveland Hall
509-335-1738
<http://education.wsu.edu>

The College of Education consists of the Department of Educational Leadership and Counseling Psychology and the Department of Teaching and Learning. The college has both degree and certification programs. The College of Education offers degree programs which prepare teachers for elementary school, secondary school, and college instruction; specialists and researchers in a variety of educational fields; administrators for schools, colleges, and universities; and sport-related specialists for private and community agencies. The college also provides professional training in sport science, athletic training, counseling, and counseling psychology. It offers a variety of educational services to local school systems.

At the baccalaureate level, the University Common Requirements (UCORE) 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. Certification in administration is available at the graduate level. Doctoral programs focus on preparation of school administrators and counseling psychologists as well as teacher educators and educational researchers. Graduate programs stress scholarship as a basis for all professional endeavors.

The College of Education is a member of the American Association of Colleges for Teacher Education and the University Council on Educational Administration. The doctoral program in counseling psychology is accredited by the American Psychological Association. The athletic training program is accredited by the Commission on Accreditation of Athletic Training 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

Degrees offered in the College of Education are as follows:

Degree	Department/Emphasis
Bachelor of Arts Education	Teaching and Learning
Bachelor of Science, Athletic Training	Educational Leadership, Sport Studies, and Educational / Counseling Psychology
Bachelor of Arts, Sport Management	Educational Leadership, Sport Studies, and Educational / Counseling Psychology
Bachelor of Science, Kinesiology	Educational Leadership, Sport Studies, and Educational / Counseling Psychology
Master of Education	Curriculum and Instruction Educational Leadership (K-12) Educational Psychology English Language Learners (ELL) Higher Education Administration Literacy Education Special Education Sport Management
Master of Arts	Counseling Curriculum and Instruction Educational Leadership (K-12) Educational Psychology English Language Learners (ELL) Literacy Education Special Education Sport Management
Master in Teaching	Elementary Education Secondary Education
Doctor of Education	Educational Leadership (K-12) Higher Education Administration Teacher Leadership
Doctor of Philosophy	Educational Leadership (K-12) Counseling Psychology Cultural Studies and Social Thought in Education Educational Psychology Language and Literacy Education Special Education

COLLEGE OF ENGINEERING AND ARCHITECTURE

Candis Claiborn, Dean
Dana Hall, Room 146
509-335-5593
<http://www.cea.wsu.edu>

The College of Engineering and Architecture provides instruction, research, and public service in engineering, architecture, construction management, computer science, and materials science. Academic units in the college offering engineering degree programs are chemical engineering and bioengineering, civil and environmental engineering, electrical engineering and computer science, mechanical and materials engineering, and mechanical engineering and computer science in Vancouver. The School Design and Construction offers degrees in architecture, interior design, landscape architecture, and construction management. The PhD in Materials Science is offered through an interdisciplinary program through the College of Engineering and Architecture and the College of Arts and Sciences.

The college's undergraduate degree programs prepare graduates for both professional careers and advanced study and are known for their practical, hands-on components coupled with a strong foundation of basic principles. The college's programs use formal classroom instruction, coupled with individual and group projects, seminars, and individually directed studies to prepare students to develop solutions that are technically, socially, and economically 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 specialties within their general fields. Opportunities for specialization are made available to qualified students through graduate programs in the various schools and departments.

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 integrate general education requirements with needs of the major. Students are encouraged to take general education courses concurrently with courses in the major to facilitate effective integration of 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.

Additional information on the College of Engineering and Architecture is available on-line.

Degrees

Degrees offered in the College of Engineering and Architecture at the Pullman campus are listed below (exceptions are listed in parentheses):

Degree	Department or Area
Bachelor of Arts	Computer Science (also Tri-Cities) Interior Design
Bachelor of Landscape Architecture	Landscape Architecture

Bachelor of Science

Architectural Studies
 Bioengineering
 Chemical Engineering
 Civil Engineering
 Computer Engineering
 Computer Science
 (also Tri-Cities and Vancouver)
 Construction Management
 Electrical Engineering
 Materials Science and Engineering
 Mechanical Engineering
 (also Tri-Cities and Vancouver)

Master of Architecture Master of Engineering and Technology Management

Architecture
 Engineering and Technology
 Management (Spokane, Tri-Cities,
 and Vancouver only)

Master of Science

Biological and Agricultural
 Engineering
 Chemical Engineering
 Civil Engineering
 Computer Science (also Tri-Cities
 and Vancouver)
 Electrical Engineering (also Tri-Cities)
 Engineering
 Environmental Engineering
 (also Tri-Cities)
 Materials Science and Engineering
 Mechanical Engineering
 (also Tri-Cities and Vancouver)
 Biological and Agricultural
 Engineering
 Chemical Engineering
 Civil Engineering
 Computer Science (also Tri-Cities)
 Electrical and Computer Engineering
 (also Tri-Cities)
 Engineering Science
 Materials Science
 (*Interdisciplinary Program*)
 Mechanical Engineering
 (also Tri-Cities)

Doctor of Philosophy

Engineering

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.

The established undergraduate engineering programs offered by the college are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, 410-347-7700.

Registration as a professional engineer, which is granted by each individual state, is required for many types of positions. The professional curricula in engineering at Washington State University are designed to prepare students to pursue a professional engineering license, starting with the Fundamentals of Engineering (FE) Examination.

Seniors in accredited curricula of the College of Engineering are encouraged to take the Fundamentals of Engineering Examination toward professional registration during their final academic year.

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 needs and interests. 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 or school director.

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, Electron Microscopy Center, Food Engineering Pilot Plant, National Science Foundation Center for Design of Analog/Digital Integrated Circuits, Power Systems Engineering Research Center, Center for Multiphase Environmental Research, Center for Integrated Biotechnology, Bioengineering Research Center, Center for Materials Research, Center for Intelligent and Networked Systems, Center for Asphalt Technology, Washington State Transportation Research Center, and Engineering Education Research Center.

Computer Science

Computer science is the scientific foundation for computing, with roots in mathematics, the sciences, and engineering. Computer science encompasses the theory and techniques by which information is represented, processed, stored, and communicated. It deals particularly with the theory of algorithm and the step-by-step procedures for creating software to solve a problem or accomplish some goal. Students study computer software and hardware systems for efficient solution of practical problems. The Bachelor of Science program in computer science, offered through the School of Electrical Engineering and Computer Science, is accredited by the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, 410-347-7700. Curricular specializations available include computer engineering, databases, distributed computing, networks, network security, operating systems, and software engineering. Students use a variety of scientific workstations, graphic workstations, and microcomputer laboratories, all of which are networked to each other and to national networks.

The Bachelor of Arts in Computer Science emphasizes breadth by requiring expertise in computer science and another area. The latter is accomplished through the requirements of a formal minor. The areas of specialization within computer science are the same as those listed for the Bachelor of Science degree. The degree is accredited by the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, 410-347-7700.

Design and Construction

The School of Design and Construction offers programs of study in architecture, interior design, landscape 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 with the breadth and depth of knowledge necessary to respond to the environmental and cultural forces that continually shape the decision-making processes associated with each field.

Programs of study in the school lead to the following degrees: a Bachelor of Science in Architectural Studies (a four-year degree) followed by a 1.5, 2.5, or 3.5 year Master of Architecture degree that is accredited by the National Architectural Accreditation Board (NAAB), a Bachelor of Science in Construction Management (a four-year degree) that is accredited by the American Council for Construction Education (ACCE), a Bachelor of Arts in Interior Design accredited by the Council for Interior Design Accreditation (CIDA), and a Bachelor of Landscape Architecture accredited by the American Society of Landscape Architects (ASLA). The school also offers a Master of Arts in Interior Design and a Master of Science in Landscape Architecture.

Admission

Students must apply and be accepted (certified) into the undergraduate programs in the college or School of Design and Construction before they may enroll in 300-400-level courses in the major. When admitted to Washington State University, students are assigned advisors in their indicated major for the period prior to their being certified in a major. Students may certify into a major after they have completed at least 24 semester credit hours and a prerequisite set of courses for the specific major.

Prospective students in engineering or computer science may apply for certification into the major of their choice upon completion of the applicable program requirements. Prospective students should contact the department or school 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 Dean of the College of Engineering and Architecture for a review to ensure that departmental procedures were followed.

HONORS COLLEGE

M. Grant Norton, Dean
Honors Hall, Room 130
509-335-4505

<http://honors.wsu.edu>

The Honors College at Washington State University is one of the oldest and most well respected honors colleges in the nation. The mission of the Honors College is to offer students an enriched, four-year core curriculum that satisfies University graduation requirements for general education. Students in the University Honors College are not required to complete University Common Requirements (UCORE) because the Honors curriculum fulfills the graduation requirements. However, students who transfer to UCORE before graduation will be held to all University Common Requirements.

The Honors curriculum is designed to be compatible with any major. Through small classes taught by experienced and enthusiastic faculty dedicated to scholarship and learning, the Honors College helps students develop a lifelong love of learning, as well as skills in critical thinking, writing, public presentation, information literacy, and cultural competency. By completing an enriched series of small classes, and a thesis, students admitted into the Honors College acquire the broad foundations of liberal learning in the natural and social sciences, the arts and humanities, and cultures of the world. In addition, the Honors College emphasizes study of foreign languages and education abroad as premier vehicles for gaining key competencies for an increasingly globalized society and economy. The Honors College offers a number of advantageous opportunities for education abroad and requires demonstration of proficiency in a second spoken language before graduation.

Admission to the Honors College

High school students who have shown outstanding scholastic ability, intellectual achievement, motivation, and extracurricular and community involvement may be invited to join the Honors College. The Honors College welcomes students from diverse cultural and academic backgrounds who are willing to take risks and want to engage in this special academic opportunity. Students who are interested in Honors but have not been invited within three weeks of their acceptance to WSU should contact Honors. Students who are currently first-year students (by credits) at Washington State University, and achieve a grade point average of at least 3.5 their first semester, transfer, and international students should contact Honors if they are interested in the program. We recommend talking with an Honors advisor to see whether the Honors curriculum is a good fit with the student's program. For more information on the Honors College, please refer to the departmental section of this catalog and our website.

COLLEGE OF NURSING

Patricia Butterfield, Dean
P.O. Box 1495
Spokane, WA 99210-1495
509-324-7360

<http://nursing.wsu.edu>

Instructional programs are conducted at the baccalaureate, master's, DNP, and PhD degree levels to develop responsible citizens and to provide the professional knowledge, skills, and values essential to the practice of nursing. 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, specialized nursing practice, leadership, and research.

Undergraduate Program

WSU College of Nursing's undergraduate program is approved by the Washington State Nursing Care Quality Assurance Commission, is accredited by the Commission on Collegiate Nursing Education, and is approved by the American Association of Colleges of Nursing. Approximately 800 generic and registered nurse students are enrolled in the baccalaureate nursing program at Spokane, Yakima, Tri-Cities, Vancouver, and throughout Eastern Washington.

The program is open to students beginning a nursing career and to registered nurses who wish to obtain a baccalaureate degree in nursing. Graduates practice in a variety of settings, including hospitals, community health agencies, schools, long-term care facilities, occupational health programs, home health care, and community mental health centers.

The curriculum for students initiating the study of nursing consists of lower- and 300-400-level components and is four academic years in length. The first two years of the curriculum (lower-division component) are completed on the Pullman campus or at any institution offering courses equivalent to those taught at Washington State University.

The last two years of the professional curriculum (300-400-level component) are provided at the College of Nursing building in Spokane, Yakima, and the WSU 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 nursing major are obtained from the Nursing Website through Nursing CAS for prelicensure applicants. Application deadlines are posted at <http://nursing.wsu.edu>.

All registered nurses planning to apply to the nursing major at WSU Tri-Cities or WSU Vancouver must do so through the Admissions Office at the respective sites. Applications are available throughout the year. Students are encouraged to contact an advisor at their 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 300-400-level nursing major is based upon evaluation of the student's entire application. Applicants for admission to the college 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 WSU College of Nursing may exceed the number that can be admitted, there is no assurance that all persons meeting the admission criteria will be selected.

Graduate Program

The Master of Nursing (MN) in Advanced Population Health (APH) has four curricular options leading to a master's degree: advanced population health, nursing leadership, nursing education, and the individualized program of study. The MN-APH program also offers two post-masters certificate options either in nursing leadership or nursing education. The DNP programs offer three areas of emphasis: DNP Family Nurse Practitioner (FNP), DNP Psychiatric Mental Health Nurse Practitioner (PMHNP), or DNP Advanced Population Health (APH). The PhD program in Nursing has a core of nursing science courses, analytical courses, and education courses, guiding the student to conduct qualitative or quantitative inquiry. The PhD program prepares students as nurse scientists, able to carry out independent research; and to serve as leaders in nursing education. Full or part-time study is available and all graduate tracks, and courses are offered in hybrid delivery (some in class and others via videoconference and web). Admission deadlines can be found at <http://nursing.wsu.edu/Academic-Programs/index.html>.

Professional Development

The Office of Professional Development at the WSU College of Nursing focuses on specific learning needs of registered nurses in the community, state and throughout the country. Cost effective programs are made available to promote professional certification, licensure and re-licensure. The Office of Professional Development is an approved provider of continuing education by the Washington State Nurses Association (an accredited approver by the American Nurses Credentialing Center Commission on Accreditation) and by

the Office of the Superintendent of Public Instruction in Washington. For more detailed information on programs offered visit www.nursing.wsu.edu.

Degrees

The degrees offered through the WSU College of Nursing are as follows:

Degree	Area
Bachelor of Science in Nursing	Generalized practice of professional nursing
Master of Nursing	Advanced Population Health
Doctor of Nursing Practice	Advanced Population Health Family Nurse Practitioner Psychiatric Mental Health Nurse Practitioner
Doctor of Philosophy	Nursing Nursing

COLLEGE OF PHARMACY

Gary Pollack, Dean
Wegner Hall, Room 105
509-335-5901
www.pharmacy.wsu.edu

Doctor of Pharmacy

The College of Pharmacy offers a course of study leading to a Doctor of Pharmacy (PharmD) degree. The PharmD schedule of studies involves four professional years. The first three professional years of the PharmD curriculum are delivered on the WSU Spokane campus. The fourth professional year of the PharmD curriculum consists of advanced experiential training, in which students will be assigned to one of the following geographic locations: Spokane, Yakima, Vancouver, Tri-Cities, Wenatchee, Tacoma, or Pullman. Students are expected to complete the majority of their rotations in their assigned geographic locations. Students will gain experience in a variety of health care environments, including community, institutional, and long-term care settings. One hundred and twenty five students are enrolled annually in the fall in the first professional year of the PharmD program.

The application period each academic year is from June 1st to December 1st. Although a bachelor's degree is not required for admission, pre-requisites for admission require three years of pre-pharmacy education. 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 pre-pharmacy requirements will be admitted to the Doctor of Pharmacy program. For additional information regarding the Doctor of Pharmacy curriculum, please see the College of Pharmacy home page at <http://www.pharmacy.wsu.edu>, or contact the Office of Student Services at 509-335-1256.

Nutrition and Exercise Physiology Program

The Program in Nutrition and Exercise Physiology (NEP) offers an undergraduate BS degree that integrates coursework in nutrition and exercise physiology with the goal of preparing students for professional accreditation in the areas of dietetics and/or clinical exercise physiology. To this end, NEP offers an MS Coordinated Program in Dietetics, Nutrition, and Exercise Physiology that provides students with the coursework and practice hours required to sit for the exam for Registered Dietitian (RD). This program is accredited by the Commission on Accreditation for Dietetics Education. NEP also offers an MS in Nutrition and Exercise Physiology that is designed to provide additional professional training in exercise physiology. The non-thesis MS degree program includes integrated coursework in nutrition and exercise, providing a spectrum of opportunities for professional credentialing as well as for training in basic, community, and clinical research. Complete information on admission and program requirements may be found in this catalog under departmental listings and on our web site.

Graduate Programs

The research-oriented programs in Nutrition and Exercise Physiology and Pharmaceutical Sciences offer students training in a broad range of disciplines that prepares them to be successful professionals in academia, industry,

healthcare, and private institutions dedicated to the promotion of human health and wellness. Course requirements are flexible and can be tailored to students' individual needs and career goals. The Ph.D. in Nutrition and Exercise Physiology, with its dual emphasis on nutrition and exercise, is unique among other doctoral programs in the Northwest because it offers students the opportunity to pursue research interests from a molecular, clinical or behavioral approach in nutrition and/or exercise physiology. Students in the program will have opportunities to learn from faculty in various health sciences disciplines, such as medicine, pharmacy and nursing, as well as collaborate with students pursuing these areas.

The curriculum supporting the Ph.D. in Pharmaceutical Sciences provides students with exposure to virtually all areas of current research in molecular and cellular biochemistry and biology, immunology, pharmaceuticals, pharmacology, and toxicology. Active areas of research include genomics, pharmacogenomics, proteomics, gene therapy, novel drug design and delivery, drug metabolism, pharmacokinetics, immunotoxicology, immunotherapy, diabetes and novel approaches to its clinical management, reproductive biology and neuropharmacology.

The application period each academic year is October 1st through January 7th. Applications must include official GRE scores, official transcripts for all college-level work, three letters of recommendation, and a letter discussing career goals and research interests. For students whose native language is not English, TOEFL scores above 100 (internet based) is required.

Degrees

The College of Pharmacy offers the following degree programs:

Degree	Area
Bachelor of Science	Nutrition and Exercise Physiology
Master of Science	Coordinated Program in Dietetics, Nutrition, and Exercise Physiology
	Nutrition and Exercise Physiology
	Pharmaceutical Sciences
Doctor of Pharmacy	Pharmacy
Doctor of Philosophy	Nutrition and Exercise Physiology
	Pharmaceutical Sciences

UNIVERSITY COLLEGE

Mary F. Wack, Dean
French Administration, Room 436
509-335-8044
<http://universitycollege.wsu.edu>

The University College is a non-degree-granting college that supports all undergraduates at WSU. There are no admission requirements; any student can access the various programs and courses offered by the college. The University College recognizes the importance of partnership with parents and families to ensure student success, and offers programming to assist parents and families to support their students' degree completion. Faculty and staff of the University College engage in more than 225,000 student and parent contacts each year, and 2,300 students enroll in University College courses annually. The University College creates an atmosphere that minimizes anxiety, promotes student action and lifelong learning, and prepares students to succeed.

The University College offers a welcoming home for new students particularly those who are deciding among several options for their degree programs. It provides a dynamic and engaging first-year experience through orientation programs, Convocation, the Common Reading program, and learning communities such as First-Year Focus and the Pathways to Academic Success Seminar. It promotes student achievement through both general and targeted programs, including general academic advising and career development, specialized advising for pre-medical and pre-health sciences students, writing assistance, and general tutoring. Special programs and opportunities are offered to transfer students, to students wishing to compete for distinguished national and international scholarships, and to students desiring to engage in research, scholarship, or creativity activity.

The College's curriculum is open to all students. One- and two-credit courses are designed to fit student schedules and can be paired with other University College courses or courses in the major for high-impact learning. Overall, the curriculum assists students in gaining the skills for effective decision-making to

manage key transitions of the college years: from high school or a community college to a research university, transition into a major, and transition from college into a career. Active and collaborative learning environments develop teamwork and leadership skills while also fostering positive relationships with a diverse community of peers, faculty, and advising staff. Students' progress in their degree programs is supported by these courses' focus on developing critical thinking, analytical, and information skills, as well as their strong written and oral communications components. Frequent reflective assignments assist students in integrating their college experiences with their developing sense of personal and social responsibility and self-direction.

COLLEGE OF VETERINARY MEDICINE

Bryan Slinker, Dean
Bustad Hall, Room 110
509-335-9515
<http://www.vetmed.wsu.edu>

Faculty and curricula within the College of Veterinary Medicine provide a challenging, hands-on education for students in the life and biomedical sciences. Both undergraduate and graduate degree programs within the college include classroom instruction, seminars, special projects, and research, which together provide the education needed to meet society's needs.

The Undergraduate students planning to pursue advanced work in graduate or professional schools are advised to plan curricula to meet admission requirements for advanced study. Many undergraduate majors conduct research projects under the supervision of a faculty member. In fact, this hands-on introduction to scientific discovery is a hallmark of these programs. Creative programs (such as the STARS program) are designed to facilitate the transition from undergraduate to graduate programs.

Graduate students are prepared for many exciting careers in life and health sciences by engaging in cutting-edge research in many areas, including regulation of cellular growth and differentiation, genetic engineering, chromosome biology, protein synthesis and export, repair of DNA, cancer cell biology, biochemical mechanism of muscle contraction, chemotaxis, coevolution of plants and animals, reproductive biology, immunology, infectious diseases of humans and animals, cellular and systems neurosciences, and global health.

The Doctor of Veterinary Medicine (DVM) curriculum of the College of Veterinary Medicine prepares students for positions in many areas of veterinary medicine, e.g., private practice, federal and state disease regulatory programs such as the USDA and CDC, industry, teaching, research, and military services. DVM students may also engage in research as part of their education. The DVM degree is recognized by all state and territorial licensing boards, as well as those in foreign countries, and is fully accredited. Complete information on DVM admission and program requirements may be found in this catalog under departmental listings and on our website.

Many of the college's faculty have attained national and international reputations and have received numerous honors and awards. These include election to the IOM and as fellows of the AAAS, state and national teaching awards, national career development awards, and National Institutes of Health Merit Awards. Faculty frequently serve on national review panels of granting agencies for instructional and research support, as well as on editorial boards of international journals.

Degrees

The College of Veterinary Medicine offers courses of study leading to the following degrees:

Doctor of Veterinary Medicine	Veterinary Medicine
Bachelor of Science	Biochemistry
	Genetics and Cell Biology
	Microbiology
	Neuroscience
Master of Science	Molecular Biosciences
	Neuroscience
	Veterinary Science
Doctor of Philosophy	Molecular Biosciences
	Neuroscience
	Veterinary Science

Regional Program in Veterinary Medical Education

Washington State University's DVM education program is offered in a regional partnership with the University of Idaho and Utah State University. This regional program involves instruction on the WSU campus, at Utah State University (Logan, UT), and at the Caine Center in Caldwell, ID (UI). Specific quotas of students to be admitted from Idaho and Utah have been established under the terms of these agreements. In addition, the College of Veterinary Medicine at Washington State University is a partner in the Western Interstate Commission for Higher Education (WICHE) with the states of Arizona, Hawaii, Montana, New Mexico, Nevada, North Dakota, and Wyoming. Under the terms of this compact, a student certified and admitted as a resident from one of these states is sponsored financially by their home state and is thus subject only to the same fees as Washington resident students. Students must apply to their home state for WICHE certification in addition to applying to the College of Veterinary Medicine at Washington State University. Additional information regarding WICHE regional veterinary education may be obtained from the Executive Director, Western Interstate Commission for Higher Education, 3035 Center Green Dr., Suite 200, Boulder, CO 80301-2204, 303-541-0214, <http://wiche.edu>.

DIVISION OF HEALTH SCIENCES

Gary Pollack, Vice Provost
509-368-6670

The Riverpoint Campus in Spokane is the home of the Division of Health Sciences. Under the direction of Vice Provost for Health Sciences, Dr. Gary Pollack, WSU is building a new health sciences campus and systemwide enterprise that will foster interdisciplinary teaching, research, outreach, and clinical services.

Degrees

The Division of Health Sciences offers the following degree programs:

Degree	Area
Bachelor of Arts	Speech and Hearing Sciences
Master of Arts	Speech and Hearing Sciences
Master of Health Policy and Administration	Health Policy and Administration

THE GRADUATE SCHOOL

William Andrefsky, Dean
French Administration Building, Room 324
509-335-6424
<http://www.gradschool.wsu.edu>

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, in order to 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. The period of study for the Doctor of Education degree is at least three years (six semesters) beyond the baccalaureate 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 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 with members of the 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 faculty involved in graduate education 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 faculty involved in graduate education have the responsibility of offering courses limited to graduate students, guiding graduate seminars, serving as thesis advisors 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 these faculty members who have been selected because of their special competence and interest.

The overview below outlines the basic policies and procedures for the Graduate School at Washington State University; however it is not meant as a comprehensive discussion. Detailed policies and procedures may be found at <http://www.gradsch.wsu.edu>.

Degrees and Certificates Granted

Doctor of Philosophy

Programs leading to this degree are available in the following fields of study: agricultural economics, American studies, animal sciences, anthropology, biological and agricultural engineering, botany, business administration, chemical engineering, chemistry, civil engineering, communication, computer science, counseling psychology, criminal justice, crop science, economics, educational leadership, educational psychology, electrical and computer engineering, engineering science, English, entomology, environmental and natural resource sciences, food science, geology, history, horticulture, individual interdisciplinary studies, materials science and engineering, mathematics, mechanical engineering, molecular biosciences, molecular plant sciences, neuroscience, nursing, nutrition and exercise physiology, pharmaceutical sciences, physics, plant pathology, political science, prevention science, psychology, sociology, soil science, teaching and learning, veterinary science, and zoology.

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.)

Additional 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 Doctor of Nursing Practice, Master of Accounting, Master of Architecture, Master of Business Administration, Master of Engineering and Technology Management, Master of Fine Arts, Master of Health Policy and Administration, Master of Nursing, Master of Public Affairs, Master in Teaching, or Professional Science Masters.

Graduate Certificates

Formal graduate certificates convey that students have developed mastery of course material. Requirements for the Graduate Certificate vary with department or program. They typically consist of 9 to 12 credits of graded coursework. Certificate programs offered at WSU include Graduate Certificate in Bioethics, Graduate Certificate in Biotechnology Management, Graduate Certificate in Constraints Management, Graduate Certificate in Business Analytics, Graduate Certificate in Construction Project Management, Graduate Certificate in

Contextualized Foreign Language Instruction, Graduate Certificate in Early Childhood Leadership and Administration, Graduate Certificate in Engineering Nanotechnology, Graduate Certificate in Family Nurse Practitioner, Graduate Certificate in Finance, Graduate Certificate in Global Justice and Security Studies, Graduate Certificate in Health - Assistive Smart Environment Design, Graduate Certificate in International Business, Graduate Certificate in Manufacturing Leadership, Graduate Certificate in Marketing, Graduate Certificate in Molecular Biosciences, Graduate Certificate in Nuclear Engineering, Graduate Certificate in Nurse Educator, Graduate Certificate in Nursing Leadership, Graduate Certificate in Project Management, Graduate Certificate in Protein Biotechnology, Graduate Certificate in Psychiatric Mental Nurse Practitioner, Graduate Certificate in Reproductive Biology, Graduate Certificate in Six Sigma Quality Management, Graduate Certificate in Stakeholder Leadership, Graduate Certificate in Supply Chain Management, Graduate Certificate in Sustainable Agriculture, Graduate Certificate in Systems Engineering Management, Graduate Certificate in Teaching English as a Second Language (TESL), and Graduate Certificate in Technology Management.

Admission

Graduates of Washington State University and other colleges and universities whose degrees are recognized by this institution and who meet the requirements for graduate admission 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 apply online from the Graduate School web-site at www.gradschool.wsu.edu. For admission to the Graduate School, Washington State University requires official transcripts from each of the following: (1) colleges or universities attended for any undergraduate course work; (2) colleges or universities from which any degrees have been granted or are expected; (3) 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 or from a credential evaluation service as identified on The Graduate School's APPLY website. 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) cumulative grade point average for 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.

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. Applicants who attended school outside the United States or Canada may be required to submit a course-by-course evaluation report of their foreign credentials from the WSU-approved credential evaluation service (see the WSU Apply website for complete information). International students who have undertaken graduate study in other institutions will be accepted only after evaluation of their undergraduate records, and their performance in graduate study. 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. The complete policies and procedures regarding admissions can be found at www.gradschool.wsu.edu.

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. The number of such hours is limited to no more than half the total graded course credits required by the program that is listed on the Program of Study. Individual departments/programs may choose to limit transfer credits to an amount less than what is specified above. 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 Session

Credit earned during summer session at 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 WSU Online

Credit earned in graduate-level courses taken through WSU Global Campus 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 must obtain approval of the major advisor and the chair of the department or program in which the course is offered.

Select Graduate Admission Program

The SGA Program is to encourage outstanding undergraduate students with top academic records to remain at WSU for a graduate degree by (1) extending an early offer of admission and support to outstanding candidates, (2) removing financial and other costs associated with regular application, and (3) potentially reducing the total number of combined semesters required to complete the undergraduate/graduate degree (without reducing the credit requirements for either).

Registration

All degree-seeking graduate students must maintain continuous enrollment in the Graduate School, and register for each semester, excluding summer session, from the time of first enrollment until all requirements for the degree are completed. Continuous enrollment may be maintained through: 1) full-time enrollment, 2) part-time enrollment, 3) continuous doctoral status, or 4) approved leave of absence.

Degree-seeking students who fail to maintain continuous enrollment or official leave status for up to two consecutive semesters (excluding summer) must complete a re-enrollment form to re-enroll and will be assessed a fee. Re-enrollment requires departmental approval and is not guaranteed. Degree-seeking students who fail to reenroll after two consecutive semesters (excluding summer) will be dropped from the University. Students who want to be readmitted to the program will be required to reapply and pay an application fee. Readmission is not guaranteed.

Non-degree-seeking students who are not enrolled for up to four consecutive semesters (excluding summer) must complete a re-enrollment form and pay a reenrollment fee. Re-enrollment requires departmental approval and is not guaranteed. After four consecutive semesters (excluding summer) of non-enrollment, students will be dropped from the university. Students who want to be readmitted to the program will be required to reapply and pay an application fee. Readmission is not guaranteed.

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 a minimum of two 700, 702, or 800 credits 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 B- 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.

An I grade for incomplete work for a course will be changed to an F grade if the work is not completed within one academic year following the semester in which the I grade was assigned, unless a shorter time is specified by the instructor. All outstanding incomplete work (including grades of I, X, and blank/no grade) must be completed and posted to the official transcript prior to the conferral of the degree.

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 Graduate School's graduation requirements for the completion of a graduate degree are those 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. Departmental requirements for graduation are those in effect at the time the student files a program of study.

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, the department chair, and 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 graduate certificate and master's degree is six years from the beginning date of the earliest course applied toward the degree.

Work for the doctoral degree should be completed within three years of the date of the satisfactory completion of the preliminary examination, and within ten years of the earliest course applied toward the degree. 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 Catalog 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 full-time 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 and

who reside in the state of Washington while attending WSU may qualify for some form of tuition waiver. Forms for assistantship or fellowship applications are included as part of the general application for admission to the Graduate School. Most appointments are made by April 15 for the following academic year. 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.

Online Education and Regional Campuses

GLOBAL CAMPUS

Dave Cillay, Executive Director
106 Van Doren Hall, Pullman, WA 99164-5210
<http://online.wsu.edu>

The Global Campus officially launched July, 2012. It replaced the former Center for Distance and Professional Education.

The Global Campus offers online degree and certificate programs, virtual and face-to-face activities and events for students and alumni, continuing education programs for professionals, faculty training in the use of technology in online and on-campus courses, and has a conference management division that facilitates educational programs nationwide.

The Global Campus extends the land grant mission of the University and serves residents of Washington and citizens of the world who increasingly require more flexibility in pursuing their education. The Global Campus is the solution for reaching students – both adult learners and traditional learners (those 24 and younger)—who cannot or choose not to attend classes on a physical WSU campus.

A degree earned on the WSU Global Campus is the same as a degree earned on a WSU physical campus. WSU faculty teach online courses and staff provide advising and student support services.

The Global Campus works in partnership with WSU academic departments and colleges to deliver WSU quality undergraduate and graduate degrees and certificates online to students around the globe. Washington residents have the additional opportunity to attend face-to-face degree programs around the state. Degree programs include bachelor's degrees in social sciences, criminal justice, humanities, human development, and three different majors in business administration: accounting, management and operations, and management information systems. Graduate degrees include agriculture, engineering and technology management, sport management and criminal justice, and professional science master's in molecular biosciences and electrical power engineering (pending approval). A variety of online certificate programs are also available at both the undergraduate and graduate level. Non-credit online professional development programs also offer students a connection with real world audiences and issues of importance to society.

More than that, students attending WSU's Global Campus can engage in activities and events that on-campus students enjoy, including e-career fairs, academic showcase, art exhibitions, musical performances, common reading programs, and webinars featuring content experts from WSU and other reputable universities. The Global Campus student government also hosts face-to-face events around the state and graduation celebrations in Pullman and the Seattle area connecting students and alumni.

The Global Campus is committed to helping faculty utilize technology in their on-campus and online courses to engage students, be more effective and efficient, and improve learning outcomes. The Global Campus eLearning professionals have developed a comprehensive Website, <http://teach.wsu.edu>, that offers online tutorials, face-to-face and online training in a variety of tools and technology, online teaching certification, a showcase of interactive learning experiences, and additional resources to assist faculty.

The Global Campus also includes a Conference Management unit that provides educational programs for professionals in the workplace nationally and internationally. Customized programs are created by WSU faculty and outside content experts, in partnership with Conference Management staff, to provide up-to-date knowledge and skills to professionals in business, industry, education, government, non-profit organizations, and trade associations. WSU students are often frequently offered opportunities to attend and participate in these educational programs for working professionals, providing connections to real world experiences to enhance the students' learning environment. More information can be found at conferences.wsu.edu.

SPOKANE CAMPUS

Lisa Brown, Chancellor
WSU Spokane Admissions
PO Box 1495
Spokane, WA 99210-1495
Physical address: Academic Center, Suite 130,
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509-358-7978
<http://spokane.wsu.edu>

As Washington State University's urban health sciences campus, WSU Spokane prepares the state's future generation of doctors, nurses, pharmacists, and other health professionals, and houses world-class research that leads to healthier people and communities.

Degree Programs

WSU Spokane offers graduate and baccalaureate completion programs and advanced professional studies in a variety of disciplines, with a strong focus on the health sciences and professions.

The campus is home to the WSU College of Nursing, which educates more than 1,000 upper-division undergraduate and graduate-level nursing students each year. Since 2008, WSU Spokane has also hosted a cohort of 20 first-year medical students who are part of the WWAMI program, a partnership between universities and governments of the five participating states (Washington, Wyoming, Alaska, Montana, and Idaho) to make medical education accessible to Northwest students. As of this fall, WSU Spokane also offers second-year medical education, enabling medical students to complete all four years of undergraduate medical education in Spokane.

As of fall 2013, the WSU College of Pharmacy has consolidated its faculty and programs in Spokane—previously, when the college was based in Pullman, doctor of pharmacy students spent the first two years of the program there before finishing their professional education at WSU Spokane. Students can now complete the entire program in Spokane.

Other health-related programs offered at WSU Spokane include undergraduate degree completion programs and graduate programs in nutrition and exercise physiology, and speech and hearing sciences, as well as the master of health policy and administration.

WSU Spokane also offers degrees in education with a focus on educational leadership. They include master's, doctoral, and certificate programs for aspiring principals, program administrators, and superintendents, as well as a Master of Teaching program. WSU education faculty play a leading role in the preparation of high school students for biomedical careers. Through an affiliation with Project Lead the Way (PLTW), they help area middle and high schools to implement PLTW's hands-on biomedical curriculum.

Master's and PhD programs in criminal justice are also available.

Learning Opportunities

Health sciences students at WSU Spokane are encouraged to adopt a team approach to health care. They are given opportunities to learn side by side with students from other health disciplines. This includes health screenings and other community service opportunities, as well as the annual interprofessional Health Care Team Challenge, an event in which teams of aspiring health professionals compete to develop the best care plan for a patient volunteer.

Students can take advantage of a wide variety of clinical placements and internship options through campus partnerships with the Spokane area medical community. Spokane is a hub for world-class health care for residents of four states and parts of Canada.

Students also enjoy opportunities to participate in the world-class research being conducted at WSU Spokane in the areas of sleep and neuroscience, molecular biology, and substance abuse, among others.

Campus Resources

WSU Spokane combines the resources of a nationally ranked public research university with the opportunities provided by its urban setting to create an ideal learning atmosphere. WSU Spokane's 50-acre Riverpoint Campus in the University District is close to the downtown core and bordered by the scenic Spokane River and Centennial Trail.

The growing campus features modern buildings that house state-of-the-art classrooms, labs, and clinics. The addition of second-year medical education and the consolidation of the College of Pharmacy are made possible by the newest campus building, the \$78.6 million Biomedical and Health Sciences Building. The construction on this medical research and teaching facility is being completed this fall, and the building will be open for use starting with the spring 2014 semester.

Student Life

Students at WSU Spokane range from full-time, traditional students to working adults balancing family responsibilities and community involvement with their studies. More than 1,420 students from across the nation and around the world choose WSU Spokane as their destination. An active student government and a number of student clubs provide leadership and service opportunities.

TRI-CITIES CAMPUS

Keith Moo-Young, Chancellor
WSU Tri-Cities
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Richland, WA 99354-1671
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<http://www.tricity.wsu.edu>

Washington State University Tri-Cities delivers undergraduate and graduate education to about 1,500 students in the Mid-Columbia and surrounding region.

Partnerships are key to Washington State University Tri-Cities and its development — from research collaborations with the Pacific Northwest National Laboratory, industry and agencies to the Bridges transfer students program with Columbia Basin College to community partners who donate their time, energy and resources to improve the campus.

Since becoming a four-year institution in 2007, the WSU Tri-Cities campus in Richland has grown in many ways. The fall 2012 headcount of 1,438 students is only part of the story — students of color make up 26.5 percent of enrollment, and 8 percent of our students are veterans. WSU Tri-Cities is proud to be the most culturally diverse campus within the WSU system and to be a state-designated Veteran Supportive Campus. In addition to a Diversity Council that promotes the understanding and inclusion of different cultures, we celebrate education professor Eric Johnson receiving the WSU-wide 2013 Faculty Diversity Award and the Martin Luther King Jr. Distinguished Service Award for his outreach efforts. WSU Tri-Cities also aspires to become a Hispanic-Serving Institution (HSI). As the only public four-year HSI in the state, this will open doors that eventually will benefit all students on our campus.

WSU Tri-Cities faculty and staff are serious about the promise to provide a world-class WSU education. Our small class sizes provide students with highly personalized education and high faculty/student interaction. With diverse programs in arts and sciences, business, education, engineering and nursing — plus the viticulture and enology program — we offer 18 bachelor's, 10 master's and six doctoral degree programs. We recently added a civil engineering program with support from partners at Washington River Protection Solutions and CH2M HILL Plateau Remediation Co. We continue to collaborate with the WSU Food and Environmental Quality Laboratory and with WSU Prosser's Irrigated Agriculture Research and Extension Center.

We expect to break ground in late 2013 on the Wine Science Center. Through a development authority managed by the city of Richland, wine producers, grape growers and the Port of Benton, this public/private effort will build a state-of-the-art education and research center. We are only \$4 million away from reaching the \$23.5 million needed to build and equip this research facility, which will create opportunities for the Northwest wine industry.

In August 2012, we opened the EnergySolutions Engineering Laboratory on WSU land adjacent to the Tri-Cities Research District. This \$3 million engineering testing facility is being gifted to WSU Tri-Cities for future academic program expansion and continued research partnerships.

Regional health care advocates have united to support our nursing program and its move to central Richland. We look forward to unveiling the new space at the end of 2013 with support from Prosser Memorial Hospital Foundation, Kennewick General Hospital, Lourdes Health Network, Lampson International, Group Health Cooperative, Kadlec Regional Medical Center and other community donors. Classes are scheduled to start in the new space in January 2014.

Since 2008, the Bioproducts, Sciences, and Engineering Laboratory — a partnership with PNNL — has grown to a team of 60, with 20 research projects and nearly \$4 million in grant funding. The standout is the BioChemCat project, with \$1.5 million from the U.S. Department of Energy and in partnership with the Port of Benton, PNNL and Clean Vantage. BioChemCat is exploring ways to make liquid fuel out of regionally available biomass like woody material, feedlot manure and agricultural residue.

While capital investments like these are key to our campus growth, scholarships remain the easiest and the most direct way to help our students. This academic year, donors provided 217 scholarships worth a total of \$450,000. Scholarships of all sizes make a big difference to students, spurring them on to complete their studies and helping to pay tuition or buy textbooks.

WSU Tri-Cities also is a partner with several WSU entities, including:

- The Food and Environmental Quality Laboratory (FEQL) and the Washington State Pest Management Resource Service are also located on the campus. FEQL assists farmers, orchardists, and other pesticide users with residue analyses and risk-benefit assessments.

- The administrative offices for the United States Transuranium and Uranium Registries are tied to campus, with additional facilities in the nearby Richland Airport.

- The WSU Tri-Cities library and the Pacific Northwest National Laboratory Library are co-located on campus in the Consolidated Information Center, providing greater access to library materials for WSU students, faculty, Hanford Site personnel, and the public.

- Public radio and television serve the Mid-Columbia Basin region via KFAE-FM and KTNW-TV.

- The Yakima Valley/Tri-Cities Mathematics, Engineering, Science Achievement (MESA) program prepares youth in underrepresented groups to pursue education and careers in math, engineering, and science.

- Three GEAR UP programs (Gaining Early Awareness and Readiness for Undergraduate Program) help prospective students from first-generation and low-income understand the importance of higher education and how to prepare for college.

WSU Tri-Cities offers an affordable quality education in a supportive atmosphere, personalized instruction and a close-knit campus community where faculty, staff, and students know your name. Partnerships with inter-national corporations and locally owned businesses offer internships and other hands-on learning opportunities, so you can build your knowledge and establish your career. Our professors bring the real world into the classroom, as many also are working professionals in fields such as education, law, and nursing, or work for the Pacific Northwest National Laboratory or other agencies that specialize in engineering, science, and technology.

The campus is set along the scenic Columbia River in Richland, Washington. The arid desert region is known for its sunny, dry weather with only 7 inches of rain annually. The hot summers and brisk winters allow for outdoor adventures year round, from water recreation to biking along the 22-mile Sacagawea Heritage Trail that connects to campus.

Degree Offerings at WSU Tri-Cities

Business Administration, B.A., M.B.A.

(Majors: Accounting, Business Administration, and Management and Operations)

Civil Engineering, B.S.

Computer Science, B.A., B.S., M.S., Ph.D.*

Digital Technology and Culture, B.A.

Education

Elementary Education, B.A.

Educational Leadership, Ed.M., Ed.D.*

Master of Education with a specialization in Literacy

Master of Education with a specialization in ELL/Bilingual Education

Master of Education with a specialization in Curriculum and Instruction

Teacher Leadership, Ed.D.*

Educational Certification Programs
Principal and Program Administrator Certification
Teacher Professional Certificate Program
Add-on Endorsements
Electrical Engineering, B.S., M.S., Ph.D.*
English, B.A.

(Options: Literature and Professional Writing)

Environmental Science, B.S., M.S., Ph.D.*

History, B.A.

Humanities, B.A.

(Options: English and History)

Integrated Plant Sciences, B.S.

(Major: Viticulture and Enology)

Mechanical Engineering, B.S., M.S., Ph.D.*

Nursing, B.S.N., R.N. to B.S.N., M.N.

Psychology, B.S.

Science, B.S.

(Options: General Biological Sciences, General Mathematics, and General Physical Sciences)

Social Sciences, B.A.

(Options: Anthropology, History, Psychology, and Sociology)

*These doctoral programs are officially offered through the Pullman campus; however, faculty at WSU Tri-Cities participate in the graduate program, offer classes, and supervise graduate student research. Students interested in these doctoral programs must apply to WSU Pullman to be accepted. Prospective doctoral students are encouraged to contact the program director about the availability of coursework, research, and faculty advisors at WSU Tri-Cities.

VANCOUVER CAMPUS

Emile “Mel” Netzhammer, Chancellor

14204 NE Salmon Creek Avenue

Vancouver, WA 98686

360-546-WSUV (9788)

<http://vancouver.wsu.edu>

Located on 351 scenic acres just 10 miles north of Portland, Oregon, Washington State University Vancouver provides quality education to the residents of Southwest Washington, the Portland metropolitan area, and beyond. With a student population of nearly 3,000, WSU Vancouver offers a small-college atmosphere with public-university access. Since its establishment in 1989, WSU Vancouver has graduated more than 9,500 alumni, 75 percent of whom currently live and work in the region.

Degree Programs

Students may choose to pursue one of 20 bachelor's, nine master's, or two doctorate degrees through undergraduate and graduate-level courses in more than 37 fields of study. Bachelor's degrees include anthropology, biology, business administration, computer science, digital technology and culture, education, electrical engineering, English, environmental science, history, hospitality business management, human development, humanities, mechanical engineering, neuroscience, nursing, psychology, public affairs, social sciences, and sociology. Within these degree programs, students may concentrate their studies in a variety of areas, from anthropology to women's studies.

Master's degrees include accounting (MAcc), business administration (MBA), computer science (MS), education (EdM), environmental science (MS), mechanical engineering (MS), nursing (MN), public affairs (MPA), and teaching (MIT).

WSU Vancouver also offers a doctorate degree in education (Ed.D.) and one in nursing practice (DNP).

The WSU Vancouver University Scholars Honors Program offers highly motivated and high-achieving students alternative coursework to meet General Education Requirements (GERs) through seminars, lecture series, and a senior project. It offers the opportunity for small classes and personalized attention to research projects on campus and in the community.

Campus and Student Life

The WSU Vancouver campus features eight academic buildings, a bookstore, cafeteria, student commons and student services center, study hall areas, outdoor athletics court, fitness center, art galleries, and a system of biking and pedestrian

trails, all framed in a beautiful campus setting between scenic views of Mount Hood and Mount St. Helens. Facilities also include computer, engineering, multimedia, nursing, psychology, and science laboratories, as well as a library stocked with more than 30,000 books, access to more than 100 databases, 9,000 full-text online journals, and extensive Web connections that make the library a personal gateway to worldwide research materials.

Student life centers around a variety of activities, including an active student government and nearly 50 recognized student organizations that make it easy for students to connect with others who share their passion. A student paper and student-run radio station are only the beginning. Weekend snowboarding, skiing and rock climbing trips, and intramural sports are also popular with students.

A child development program and kindergarten on campus provides onsite childcare and learning opportunities for students, faculty, and community members with young children.

Faculty and Research

More than 140 Ph.D. faculty provide WSU Vancouver with academic expertise spanning a variety of subjects. Quality instruction and an emphasis on individual attention are hallmarks of the WSU Vancouver student experience. The student/faculty ratio is approximately 15 to 1. Diverse topics such as artificial intelligence, marine ecology, environmental regulation, workplace behaviors, and computer-aided engineering are taught by professors with expertise in their respective fields. Some of the most complex and difficult issues of the modern world are tackled in classrooms and laboratories on campus. Students work alongside world-class research faculty as they study such areas as global climate change, domestic violence, criminal justice, child psychology, education, public affairs, and genetics, among others.

Community Partnerships

As a vital, vibrant institution in Southwest Washington, WSU Vancouver seeks to enrich the intellectual, social and cultural life of the citizens of the region.

And while WSU Vancouver provides service to the community in a variety of ways, the reverse is also true. The health of our financial systems, public schools, transportation systems, employment opportunities, healthcare and social services contribute to the university's ability to succeed. WSU Vancouver thrives when the community thrives.

Some of WSU Vancouver's community activities include:

Business Growth Mentor & Analysis Program: WSU Vancouver's Business Growth MAP provides pro-bono, student-conducted analysis and consulting services to small businesses in an effort to help them grow and prosper. Faculty and students work with organizations from all industries throughout Southwest Washington and the Portland metropolitan area, including organizations in under-served communities. They conduct an analysis of a company's financial, market and organizational capabilities and create an actionable plan to grow the business. Business Growth MAP is a “win-win-win” providing practical experience to students while offering analysis and consulting to small businesses and contributing to the economic development of the Southwest Washington/Portland metropolitan area.

Technology and civic engagement: WSU Vancouver's creative media and digital culture program exemplifies the collaborative and inventive efforts of students, technology and local businesses. Students partnered with the Fort Vancouver National Historic Site, Dick Hannah Dealerships, and the Oregon Museum of Science and Industry to create mobile apps and video interfaces that provide park and museum visitors an enhanced, interactive experience.

College Goal Sunday Washington: WSU Vancouver partners with Clark College to host College Goal Sunday Washington, a free program that helps students and families complete the Free Application for Federal Student Aid, the form required to apply for federal financial assistance for higher education. WSU Vancouver's College Goal Sunday Washington is the largest in the state and the only event to offer workshops and help filing the FAFSA in four languages—ASL, English, Russian and Spanish.

Summary of Academic Policies

Registration

Instructions for registration and policies and procedures for dropping and adding classes are included in the Schedule of Classes, available at www.registrar.wsu.edu. See Appendix, Rules 47-69.

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. See Appendix, Rules 71-73.

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 23 or more hours (10 hours for summer session) without written overload approval from their major department chair or Center for Advising and Career Development advisor. (See Tuition and Fees for additional credit hour charge over 18 hours.)

CougarCard

The CougarCard is the official WSU photo ID card. New students receive their CougarCard during New Student Orientation. The CougarCard is required for library privileges, obtaining and cashing checks, riding Pullman Transit and commuter buses, entry to the Student Recreation Center, access to WSU athletic events with a valid sports pass, and admission to many other University events and activities. Additional uses include Cougar CASH accounts, University dining accounts and access to certain campus buildings and offices.

Credit

Washington State University operates on the semester calendar. Each semester is 15 weeks long, plus one week of final examinations. 1 semester hour of credit is assigned in the following ratio of component hours per week devoted to the course of study: (1) lecture—1 hour of lecture per week for each credit hour; (2) laboratory—3 hours of laboratory per week for each credit hour; (3) studio—2 hours of studio work per week for each credit hour; (4) ensemble—4 hours of ensemble work per week for each credit hour. The proportion of time in each course assigned to lecture, studio, laboratory, 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. See Appendix, Rules 27-30, 33, 34, 121, 123.

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 is considered a full load for graduate students. (Six hours in summer session is full time for undergraduates; five 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 Tuition and Fee information at www.wsu.edu/studacct/tuition.htm.

Financial Aid: For financial aid purposes, full-time enrollment for an undergraduate student is 12 credit hours and half-time enrollment is considered to be 6-11 credit hours. For graduate students, full-time enrollment is 10 credit hours and half-time enrollment is considered to be 5-9 credit hours. Aid programs and policies require a student to be enrolled full-time. Students planning to enroll less than full-time should contact the Financial Aid Office. In order to maintain financial aid eligibility, students must meet Satisfactory Academic Progress (SAP) requirements for credit hour completion and cumulative grade point average (GPA). The complete SAP policy regarding credit hour completion, GPA, and degree completion time frame is available at www.finaid.wsu.edu.

Loan Deferments: Deferments on Perkins Loans and Federal Family Education Loans require at least half-time enrollment (6 credit hours) for undergraduate and graduate students. Five credit hours constitute half-time enrollment for a graduate student on a half-time assistantship.

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

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 a semester for an undergraduate student is 12 hours, three-quarter-time is 9-11 hours, half-time is 6-8 hours, less than half-time is 4-5 credits, and quarter-time is 1-3 credits. For graduate students, full-time enrollment for a semester is 10 hours, three-quarter-time is 7-9 hours, half-time is 5-6 hours, less than half-time is 3-4 credits, and quarter-time is 1-2 credits. Full time enrollment for summer session for undergraduate students and graduate students is based on the number of credits taken and the length of the class. Detailed information on training time eligibility can be obtained from the WSU Veterans Affairs Office.

International Students Holding F-1 and J-1 Visas: The Immigration and Naturalization Service requires that nonimmigrant F-1 and J-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 International Programs/International Students and Scholars, Bryan 108, 509-335-4508.

Auditing

No University credit will be allowed for auditing courses. To visit a class more than three times requires official approval and written permission of the instructor is required. An audit fee is charged for other than regularly enrolled full-fee-paying students. See Appendix, Rules 20, 21.

Cancellation of Enrollment

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 Registrar's Office. See Appendix, Rule 70.

Classification of Students

Undergraduate students who have completed less than 30 semester credits are classified as first-year students, 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 post-graduates, these students include those completing requirements for a second baccalaureate degree, those taking courses for personal enrichment, and those working toward teacher certification.

Graduate degree students are those admitted to a graduate program in a degree classification on the basis of a specific application to the Graduate School. See Appendix, Rule 25.

Numbering System of Courses

Lower-division

Courses numbered 100-199 inclusive are normally taken by first-year students.

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.

Professional

Courses numbered 500-800 and designated with a P following the course number are professional courses.

Course Prerequisites

When applicable, prerequisites are listed in this catalog with the specific course prefix and number, preceded by the words: "Course Prerequisite:". 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 II (MATH 172) requires a prereq of Calculus I (MATH 171) with a C or better, meaning that the student may not enroll for MATH 172 until successfully completing MATH 171. Prereqs may also be as general as two semesters of biology or concurrent enrollment. Prereqs may include a level of expertise or a specified major, e.g., students may not enroll in Spanish 310 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 as well at the end of the course description, preceded by "Recommended preparation".

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 24 semester hours with the approval of the appropriate department chair and notification to the Center for Advising and Career Development.

A student who has completed 60 semester hours should be certified in a major. The student initiates the certification procedures at the Center for Advising and Career Development (CACD), acquires the signatures of the academic advisor and the department chair, and returns the signed documents to the CACD office. Certified majors who wish to transfer to another academic major do so by requesting a change of major card from the Registrar's Office, 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 the appropriate minimum cumulative gpa are qualified for certification except in those departments whose majors are impacted or whose certification requirements are higher. 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, digital technology and culture, economics, education, engineering, environmental science, fine arts, hospitality business management, interior design, landscape architecture, mathematics, music, neuroscience, nursing, pharmacy, psychology, and sport management 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 24 hours for certification and a GPA 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. See Appendix, Rule 53, 55, 56.

Minor, Second Major, or Second Baccalaureate Degree

A student who has completed 60 semester hours and is certified in a major 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 University Common Requirements (UCOREs). A minor requires a minimum of 16 semester hours, 9 of which must be in upper-division course work and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. 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 student who desires to complete a second baccalaureate degree shall satisfy the second degree program and college requirements and present not less than 150 semester hours of credit. The first bachelor's degree, whether at WSU or at another accredited institution, is understood to fulfill all University requirements for graduation, including the 300-400-level requirements, University Writing Portfolio, the minimum hours for the first degree, as well as the requirements proscribed by the University Common Requirements. See Appendix, Rule 54.

Certificates

An officially recorded undergraduate certificate is a document issued by WSU, displaying the WSU seal and president's signature. Certificates are issued to students who have completed a course of study that meets the guidelines and has been approved by the Faculty Senate. To have the undergraduate certificate recorded on the official transcript, the student must apply for the certificate through the Registrar's Office and pay the \$50 fee.

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). Guidelines for grading may be found in Rule 90, listed in the Appendix.

A—4 grade points per credit hour.

B—3 grade points per credit hour.

C—2 grade points per credit hour.

D—1 grade point per credit hour.

F—no credit; 0 grade points. (Credits attempted are calculated in GPA) Fail.

S (Satisfactory)—No grade points (credit not calculated in GPA). Grade given upon satisfactory completion of courses numbered 499, 600, 700, 702, 800, Special Examinations (Rule 15), and other courses duly authorized for S, F grading by the Faculty Senate. (Courses approved for S, F grading are footnoted in the Schedule of Classes.) 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.

M (Marginal Pass)—No grade points (credit not calculated in GPA). Grade given only by the College of Veterinary Medicine.

P (Passing)—No grade points (credit not calculated in GPA). A satisfactory grade for a course taken under the pass, fail grading option. 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).

H (Honors Pass)—No grade points (credit not calculated in GPA). Grade given only by the College of Pharmacy.

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. All outstanding incomplete work (including grades of I, X, and blank/no grade) must be completed and posted to the official transcript prior to the conferral of the degree. Students 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.

U (Unsatisfactory.) Student work demonstrates unsatisfactory performance, failed examination, or unfulfilled requirements in courses numbered 700, 702, and 800.

W (Withdrawal)—No credit or grade points. Used if the student has withdrawn from the course prior to the end of the 13th week, or withdrew from the University prior to the last day of instruction. For undergraduates who enter WSU in fall 1998 or later, the maximum number of WSU withdrawals is 6, not counting withdrawals that result from the cancellation of enrollment. For undergraduates who enter WSU in the fall 2004 or later, the maximum number of WSU withdrawals is 4, not counting withdrawals that result from the cancellation of enrollment. After the 4th or 6th withdrawal, a student may, in exceptional circumstances, submit a petition through the Registrar's Office for an exception to the withdrawal limit. See Appendix, Rule 68.

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. All outstanding incomplete work (including grades of I, X, and blank/no grade) must be completed and posted to the official transcript prior to the conferral of the degree. An X grade may also be used when no final grade is reported due to instructor's illness or absence. See Appendix, Rule 90, 92, 98-103.

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 that they wish to enroll in the course on a pass, fail basis. The advisor'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 enrollees will not be included in computing the GPA; however, F grades earned by pass, fail enrollees will be included in GPA computations. Courses approved for S, F grading (Rule 90f) are excluded from the pass, fail option. Courses approved for S, F grading are footnoted in the Schedule of Classes.

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 letter-graded enrollment cannot be changed to a pass, fail 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 University Common 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. Two courses is the limit for summer session. Students in the College of Veterinary Medicine with advisor approval may enroll for a total of six courses in the professional curriculum on a pass, fail basis, subject to the regulations listed above. Allowances for transfer students are as follows:

Transfer status upon entering WSU	Pass, fail allotment
1-44 credits	six courses
45-59 credits	five courses
60-74 credits	four courses
75-89 credits	three courses
90 and above credits	two courses

Departments and programs may deny their majors permission to take courses on a pass, fail basis 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. See Appendix, Rules 50, 90.

Grade Point Average

The student's grade point average (GPA) is computed by dividing grade points earned by the number of credit hours attempted. Grades P and S do not carry grade points, and the credit hours are not calculated into the GPA. Credits attempted for F grades are calculated into the GPA. Transfer and other nonresident credit is not computed in the Washington State University grade point average.

Course	Credits	Grade	Grade points
Engl 301	3	A	12.0
Bio S 422	3	C-	5.1
Soc 420	3	B+	9.9
Mus 491	2	P	
Soc 499	4	S	

Credit hours attempted (9) divided into total grade points earned (27) = GPA (3.00) Total hours earned: 15

Note: P and S grades yield no grade points, thus are excluded from the GPA calculation.

Grade Reports

Midterm grades will be submitted for students enrolled in undergraduate courses by 5:00 p.m. on the Wednesday of the eighth week of the fall and spring semesters. The assessment should not be interpreted as a formal grade, but rather as an indication of the student's progress to date. Midterm grades are advisory and do not appear on the student's permanent record, the WSU transcript.

Final grades will be submitted to the Registrar's Office by 5:00 p.m. on the second working day after the close of finals week.

Grades for all students are available online at the zzusis portal.

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 form of payment for the per copy fee. Order forms are available on the Web at www.transcript.wsu.edu. Phone orders for transcripts cannot be accepted. For rush service, call 509-335-5330. 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. Copies of international transcripts in which WSU possesses the original copy may be requested using the International Transcript Request form, also available online.

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 one time at WSU during fall or spring semesters. 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. Repeats by correspondence, extension, or in residence at other institutions must be reported orally or in writing to the Registrar's Office. See Appendix, Rule 34.

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. See Appendix, Rule 34.

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 allow 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 offered to WSU students by the University of Idaho and program description are listed in this catalog under the UI Cooperative Courses section as well as online through the WSU Registrar's Office homepage.

WSU Tuition Fee Waiver Program

A tuition fee waiver option is available for eligible individuals who wish to enroll for up to 6 credits for fall or spring semesters or 4 credits for summer. Individuals enrolling for more than the credit hour limits are not eligible for this program. This program is based on availability of space and facilities.

Eligible Individuals (some restrictions apply)

WSU Employees

- Civil Service employees holding half-time or greater appointments and having permanent status by the 10th day of classes (fall and spring semesters).
- Civil Service employees on trial service appointments meeting the above criteria.
- Faculty and Administrative Professional employees holding half-time or greater appointments.
- Employees covered by collective bargaining unit agreements are eligible on the same basis as Civil Service employees unless otherwise defined by the terms of the applicable bargaining unit contracts.

Others:

- Employees of other state of Washington agencies or higher education institutions meeting the WSU employee eligibility requirements above.
- ROTC faculty and staff employed at WSU locations who meet WSU employee eligibility requirements above are eligible on a space available basis.
- Teachers at public common and vocational schools holding or seeking valid endorsements and assignments in state-identified shortage areas.

Individuals Must be Admitted to WSU

Qualified individuals who wish to enroll under this program must follow regular admission procedures and present a completed staff/faculty registration authorization form beginning the first day of classes to the Registrar's Office (or Summer Session Office if for summer). Forms and instructions are available online at www.ronet.wsu.edu under RO Publications or at www.summer.wsu.edu under Faculty and Staff for summer session. Complete information on this fee waiver program can be found in the WSU Business Policies and Procedures Manual online at www.wsu.edu/~forms/PDF/BPPM/60-00.pdf. (Fall and Spring: 60.70 & Summer: 60.73).

Fees

WSU charges each eligible individual a nonrefundable \$5 administrative fee plus any special course and laboratory fees as well as any applicable late registration fees and late fee payment charges.

Other Restrictions

Individualized instruction such as independent study, distance degree and extended degree program courses, thesis, dissertation, research, internships, tutorials, self-sustaining courses (fall and spring semesters), private lessons, or practicums may not be taken under the fee waivers.

Audit Enrollments

Auditing under the fee waiver is limited to two courses per semester. Laboratory courses may not be audited. The instructor's signature is required for auditing and cannot be obtained prior to the first day of classes. For fall and spring semesters, applicants wishing to audit should report to the Registrar's Office during the first week of classes to obtain the Permission to Audit form.

Applicants wishing to use the fee waivers to audit summer courses should first check with the Summer Session Office to see if they qualify, as special conditions apply. Fee waiver students will be admitted to class on a space-available basis and are responsible for paying a \$5 nonrefundable registration fee, plus any special course fees or other fees as appropriate.

Waiver of Fees for Persons Age 60 and Over

Persons age 60 or over who are residents of the state of Washington may enroll in up to six audit hours per semester for fall and spring only, using a tuition fee waiver obtained at the Registrar's Office. See Audit Enrollment information above for Fee Waiver Program.

Partial Waiver of Fees for Children of Deceased or Totally Disabled Law Enforcement Officers and Firefighters

Students a child of a law enforcement officer or firefighter who lost his/her life or became totally disabled in the line of duty while employed by a any public law enforcement agency or full-time or volunteer fire department in the state of Washington may be eligible for a partial tuition waiver. Washington State law defines a totally disabled individual for waiver purposed 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. To apply visit www.va.wsu.edu or contact the WSU Veterans Affairs Office, French Administration Building Room 346, Pullman, WA, 99164-1035, 509-335-1234 or 509-335-1857.

Credit by Examination

Matriculated students who are 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 University Common Requirements for graduation. For further information contact the Registrar's Office. See Appendix, Rule 15c.

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, provided that the semester gpa is a 3.0 or better.

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 3.90 or better, will graduate magna cum laude if cumulative grade point average is 3.7 to 3.89, and will graduate cum laude if the minimum cumulative grade point average is 3.50 but less than 3.70. The appropriate Latin phrase will be printed on the diploma and on the final transcript. Qualified students electing to participate in the Honors College who complete its requirements satisfactorily, regardless of whether they qualify to graduate summa cum laude, magna 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 GPA including the last semester's work, and only this computation will determine official graduation honors. See Appendix, Rules 133, 137.

Academic Complaint Procedure

Students having complaints about instruction or grading should refer them first to the instructor. If not resolved, then the student may refer the complaint in writing to the chairperson of the department in which the course is offered by the end of the last day of the following semester (excluding summer term). After the chair's decision, the student or the instructor may appeal to the Dean's Office within 20 business days of the chair's decision. The decision of the dean is the final step. The University Ombudsman is available at any stage for advice or assistance in resolving academic complaints. See Appendix, Rule 104.

Students having complaints about academic advising should refer them first to the advisor. If the complaint is not resolved, then the student may refer the complaint and remedy sought, in writing, to the chairperson or director of the unit to which the advisor reports. After the chair's decision, the student may appeal to the Dean's office within 20 days. The written statement should describe the complaint, indicate how it affects the student, and include the remedy sought from the Dean's office. The decision from the Dean's office is the final step. The University Ombudsman is available at any stage for advice or assistance in resolving advising complaints.

Academic Deficiency

Washington State University expects students to maintain academic standards of excellence and make satisfactory academic progress toward their degree objectives. Undergraduate students are in good academic standing if both their current WSU semester and cumulative grade point averages are 2.00 or above, and/or if they are eligible to enroll. Students not meeting the criteria above are considered academically deficient. The first time an undergraduate student has failed to maintain a 2.00 semester or cumulative grade point average (gpa), he/she must complete an application and an interview through the Center for Advising and Career Development on the Pullman campus, the WSU Online program, or the designated office on other campuses (Rule 38). An undergraduate student whose cumulative gpa falls below 2.0 any three semesters will be dismissed from the University (Rule 39). Students who are dismissed from the University are required to remain out of WSU for one academic year. Students seeking future reinstatement may apply for reinstatement and must provide, as part of the application for reinstatement additional documentation that demonstrates potential for academic success at WSU. All academic coursework during the time away from WSU is required to be documented and transcripts submitted to the Office of Admissions.

Decertification

The department may decertify a certified major who is academically deficient. The department may also decertify a certified major undergraduate student after two semesters where the student's GPA has fallen below the minimum departmental requirements. See Appendix, Rules 56, 38-43.

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.

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 and telephone numbers; electronic mail address(es); 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; enrollment status (e.g., undergraduate or graduate, full-time or part-time); 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 Office of Payroll Services or online through my.wsu.edu.

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 GPA may become a candidate for the bachelor's degree, depending upon the field of study. NOTE: Financial indebtedness to the University will prevent the release of a student's diploma and transcript. The award of a degree is conditioned upon the student's

good standing in the University and satisfaction of all University graduation requirements. "Good standing" means the student has resolved any unpaid fees or acts of academic or behavioral misconduct, and complied with all sanctions imposed as a result of the misconduct. The University shall deny the award of a degree if the student is dismissed from the University based on his or her misconduct (See Rule 45 and the Student Conduct Code).

Application for an undergraduate or professional 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. Students must have 70 credit hours and be certified in their major and option before applying. 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, earned a minimum of 150 semester hours of credit, and met the requirements in the paragraphs above may become a candidate for the bachelor's degree in that field of study.

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. 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 Vice Provost for Undergraduate Education or designee 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. See Appendix, Rule 106.

Catalog Options and Limitations

The University requirements for graduation 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. University requirements for graduation include the University Common Requirements. 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.

This policy does not apply to major and specific college requirements. All major program and college requirements (including those in a college which does not have separate departmental requirements) are set at the time the student initially certifies the major. Changes in major requirements after the time of certification may apply to all students, provided they neither require a student to enroll in more than a normal complement of credit hours in any semester nor prolong the time necessary to complete degree requirements. Department and program chairs have authority to waive or provide substitute course work for major requirements.

Undergraduates who will not graduate within the normal minimum degree time frame (four years for four-year baccalaureate programs, five for a five-year, and six for a six-year program) have a total of eight years in four-year programs and ten in five- and six-year programs to complete their degrees under their original catalog listing of University graduation requirements. Those who take longer to complete their degrees must meet the University and University Common Requirements for graduation as published in the catalog four years prior to the date of graduation. In addition, if more than four years elapses between certification and graduation, the major and specific college requirements in place four years prior to graduation will apply.

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).

General Catalog

The General Catalog is a comprehensive reference guide for Washington State University students. It provides an overall view of the programs and courses at the University and the rules that pertain to admissions, registration, and graduation. The General Catalog is published annually online in July, at the web site catalog.wsu.edu. In addition, a catalog is published by the Graduate School on the web site www.gradsch.wsu.edu/future-students/academics/catalog. Most academic departments and colleges maintain their own web pages with additional information.

All announcements in the General Catalog are subject to change without notice and students assume the responsibility of consulting the appropriate academic unit or advisor for more current or specific information.

The Schedule of Classes is published each semester on the web site www.schedules.wsu.edu and gives additional detailed information on courses offered, class hours, and classroom locations, and contains the latest calendar dates, fees, and details on registration.

The Office of the Registrar coordinates the updates and revisions to the printed General Catalog and to the information from the General Catalog that is published on the web site. The Graduate School coordinates the updates and revisions to the printed Graduate Catalog and to the information from the Graduate Catalog that is published on the web site.

Statement of Institutional Responsibility

As a general rule, undergraduate students who are certified majors or graduate degree candidates can assume that a degree will be granted if they maintain continuous enrollment and meet all requirements as listed in Academic Regulations, Rules 114-118. However, because of serious reductions in financial support, loss of faculty, or for other significant reasons, the University may from time to time find it necessary to discontinue a degree program. When this occurs, further admission into the degree program will be frozen effective with the official action dropping 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) (4) 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. The faculty has established minimum standards in terms of credit hours, grade points, and distribution requirements within the University Common Requirements (UCORE). For complete listing of all the rules pertaining to graduation, see the Appendix, Rules 106-137.

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 (Mid-Career Assessment)—Successful completion of the University Writing Portfolio is a requirement for

graduation at WSU. Students must satisfy this requirement once they have earned 60 credit hours. To complete the University Writing Portfolio students must submit three papers they have written as a result of previously assigned college course work and take a Timed Writing Exam consisting of two writing exercises. The University Writing Portfolio must be completed before a student enrolls in an [M] course (see below). Visit www.writingportfolio.wsu.edu for more information.

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. University Common Requirements (UCORE)—All students, regardless of major, must fulfill the minimum requirements of WSU's University Common Requirements (UCORE), which are described below, or of University Honors College. See Appendix, Rules 106-137.
6. The award of a degree is conditioned upon the student's good standing in the University and satisfaction of all University graduation requirements. "Good standing" means the student has resolved any unpaid fees or acts of academic or behavioral misconduct, and complied with all sanctions imposed as a result of the misconduct. The University shall deny the award of a degree if the student is dismissed from the University based on his or her misconduct (See Rule 45 and the Student Conduct Code).

College of Arts and Sciences Graduation Requirements

In order to provide a broad-based education in the humanities, social sciences, and sciences, the College of Arts and Sciences require the following in addition to University Requirements for Graduation. The additional college graduation requirements have already been incorporated in the departmental requirements listed in this catalog.

Humanities [HUM], Social Sciences [SSCI], and Creative and Professional Arts [ARTS]—3 credits in addition to the University Common Requirements (UCOREs).

Sciences [BSCI] [PSCI] [SCI]—Additional 1 lab credit of [BSCI] or [PSCI] for a total of 8 semester credits (2 labs) or SCIENCE 101 [SCI] and 102 [SCI].

Foreign Language—Two years of one HS Foreign Language (includes ASL or NAL), or two college semesters (two quarters) of one Foreign Language (includes ASL or NAL), or Foreign language proficiency not based on HS or college instruction. Documentation or testing required for all.

Notes: A foreign language course taken in eighth grade may satisfy one year of the requirement if the second year is completed in high school. If only one year is completed in high school, a WSU student must complete an additional semester (e.g. SPANISH 102) or transfer an additional college-level quarter or semester in the same foreign language. International students who have completed formal instruction in their primary language as well as formal instruction in English as a second language in their secondary education have met the intent of the foreign language requirement. (Records indicating the successful completion of both languages are required to document the foreign language requirement).

Transfer students are responsible for meeting the above requirements. This includes those students holding the approved Associate of Arts or Associate of Science degree from Washington community colleges or Associate of Arts—Oregon Transfer degree from an Oregon community college.



Achieving Academic Success

ACADEMIC ADVISING

Academic advising is an educational relationship in which students and advisors are partners in planning academic, personal, and career goals. It fosters intellectual and personal development that leads to academic success and self-directed life-long learning.

The Center for Advising and Career Development (CACD) at Washington State University (WSU) helps students create short and long-term plans to build the foundation to their education and future careers. All students are required to meet with an academic advisor each semester to discuss academic and career direction. The CACD offers students a variety of services, programs, and resources to aid in completion of academic courses, cultivate skill sets, and gain experience marketable to future employers.

The CACD academic and career advisors and career counselors engage students in critical thinking about career development and required components of a degree at WSU. The CACD recommends that students gain experiential learning, through an internship, summer position, volunteering/community service, and/or study abroad. This provides a strong professional background that enables students to move toward a career, with confidence in the ability to function in a complex, global, and diverse world of work.

WSU academic advisor responsibilities:

- Be accessible, knowledgeable, informed and demonstrate care and respect.
- Guide students as they define and develop realistic goals.
- Teach students decision-making skills and how to assume responsibility to explore their educational plans, options, and achievements.
- Understand and effectively communicate the curriculum, graduation requirements, and university and college policies and procedures.
- Teach and support students with information about and strategies for utilizing the available resources and services on campus and in the community.
- Teach students to understand the purposes and goals of higher education and its effects on their lives and personal goals.

WSU student responsibilities:

- Schedule regular appointments with an advisor (minimum one per semester).
- Clarify personal values and goals and provide the advisor with accurate and truthful information regarding interests and abilities.
- Gather all relevant decision-making information and necessary materials (advisement report, tentative course selections, forms, etc.) to aid in decision making and to build a schedule free of conflicts.
- Prepare a list of questions or concerns before meeting with the advisor.
- Discuss any problems that effect academic performance, for example: study skills, difficulties in course work, personal concerns.
- Find out where help is available.
- Know where to access accurate information about educational options, requirements, policies, and procedures.
- Discuss why and how to add or drop courses or to take a course pass-fail or audit.
- Discuss career considerations, changing directions/major/interests.
- Keep a personal record of progress toward academic goals. Be proactive in checking the electronic resources to keep track of academic progress.
- Accept responsibility for decisions and actions that affect your educational progress and goals.

Students are encouraged to take advantage of the skill and knowledge of the advising professionals available. The responsibility of making decisions about personal goals and educational plans ultimately rests with the student.

CHOOSING A MAJOR

Washington State University has nine degree-granting colleges. Colleges are divided into various departments that offer majors. A major is a set of courses that is an in depth study of an academic area.

Choosing a major is an important decision for students. Identifying academic and personal interests and abilities help students narrow the field of choices. From there, selecting courses in different areas enables students to learn more

about a specific major. Choosing a major does not have to be an immediate decision. Often students find a passion while completing University Common Requirements (UCORE) courses or elective courses. Taking time to investigate different majors and careers is essential to make an appropriate choice. Typically, students are more successful if a chosen major is well-suited to skills and abilities. Further, students who are academically successful are more likely to be competitive in the job market and when pursuing graduate degrees. The Center for Advising and Career Development (CACD) assists students in major and career selection through individual career counseling, courses such as College Majors and Career Exploration (UCOLLEGE 100), or through various resources within the center.

University Certification Requirements

Entering students may identify an area of interest. Students are assigned an advisor in the major interest area by the Center for Advising and Career Development (CACD). This advisor can be changed if the original interest should change. Students who do not specify a major interest area will be assigned an academic and career advisor in the CACD.

An undergraduate may certify an academic major upon completion of 24 semester hours with a 2.0 or better cumulative gpa, with the approval of the department chair. Some departments have additional certification requirements and may require a higher minimum cumulative gpa and require specific courses. Consult the departmental section of the catalog for specific departmental requirements. Admission to Washington State University does not ensure acceptance into any department or program.

Some students choose to complete a minor or second major to enhance their degree program. Formal certification of a minor or second major is completed after completion of 60 semester hours. Approved minors are identified in the departmental section of this catalog. Consult with an advisor or the department for more information.

How is a major related to a career?

Today's workplace is changing rapidly. Most adults change careers several times over the course of their working lives. A well-chosen major will prepare students to do well in many occupations, because it will provide problem-solving, critical thinking, and communication skills necessary to succeed. Some jobs require specific college majors; others do not.

Courses that students complete for their degrees will provide them with skills and knowledge to last a lifetime, no matter how much the workplace may change. As students complete University Common Requirements (UCORE) courses and major courses, they will learn skills that apply to any career:

- Communication skills: how to read, write, speak, and listen effectively.
- Analytical reasoning skills: how to break problems down into their component parts and find solutions.
- Cross-cultural skills: how to assess information about other cultures from a critical and comparative perspective.
- Research skills: how to use the scientific method to explore change and development in the natural world.
- Ethical skills: how to discuss questions of value.
- Aesthetic understanding: how to appreciate works of art.

Take a good look at what's out there

The Center for Advising and Career Development (CACD) has many resources and programs to help students with career planning. Experienced counselors and advisors are available to help with academic major and career decisions. They help students examine values, interests, and abilities, locate current career information, and identify various influences that affect decision-making. Vocational testing can also be arranged. The CACD also provides information about internships opportunities that can enhance an academic major.

Students should use this catalog and other resources to identify departmental or University Common Requirements (UCORE) courses that sound interesting. Consult with various departments regarding courses or programs that meet interests and abilities. Students may also access departmental information through the WSU homepage at www.wsu.edu. Finally, working carefully with an academic advisor will aid in building a degree at Washington State University.

Undergraduate Degrees, Majors, and Options

The following are the undergraduate degrees offered at Washington State University. Following the degree, majors are listed with bullets, and any options offered within the major are noted in parenthesis. Degrees that are offered exclusively at the regional campuses (Spokane, Tri-Cities, Vancouver, or through WSU Online) are noted. Not all degrees or majors listed are offered at every WSU campus. Students with questions about degree programs should consult with a representative at the specific campus for additional information.

College of Agricultural, Human, and Natural Resource Sciences

Agricultural and Food Systems, Bachelor of Science

- Agricultural and Food Business Economics
- Agricultural Education
- Agricultural Technology and Production Management
- Agriculture and Food Security
- Organic Agriculture Systems

Animal Sciences, Bachelor of Science

- Animal Sciences (options: Animal Management; and Pre-Veterinary Medicine/Science)

Apparel, Merchandising, and Textiles, Bachelor of Arts

- Apparel, Merchandising, and Textiles (options: Apparel Design; and Merchandising)

Economic Sciences, Bachelor of Science

- Economic Sciences (options: Agricultural Economics; Business Economics; Economics, Policy and Law; Economic Development; Environmental and Resource Economics; Financial Markets; and Quantitative Economics)

Food Science, Bachelor of Science

- Food Science

Human Development, Bachelor of Arts

- Human Development (options: General; and Family and Consumer Science)

Integrated Plant Sciences, Bachelor of Sciences

- Agricultural Biotechnology
- Field Crop Management
- Fruit and Vegetable Management
- Landscape Design and Implementation
- Landscape, Nursery, and Greenhouse Management
- Turfgrass Management
- Viticulture and Enology

College of Arts and Sciences

— Arts

Anthropology, Bachelor of Arts

- Anthropology

Asian Studies, Bachelor of Arts

- Asian Studies

Comparative Ethnic Studies, Bachelor of Arts

- Comparative Ethnic Studies

Criminal Justice, Bachelor of Arts

- Criminal Justice

Digital Technology and Culture, Bachelor of Arts

- Digital Technology and Culture (options: Digital Technology and Culture, Pullman campus; and Creative Media and Digital Culture, Vancouver campus)

English, Bachelor of Arts

- English (options: Literary Studies; Rhetoric and Professional Writing; Creative Writing; and Teaching)

Fine Arts, Bachelor of Arts

- Fine Arts (BA) (options: Art History; and Studio Fine Arts)

Fine Arts, Bachelor of Fine Arts

- Fine Arts (BFA)

Foreign Languages and Cultures, Bachelor of Arts

- Chinese Language and Culture (options: General; and Teaching)
- French (options: General; and Teaching)
- Spanish (options: General; and Teaching)

History, Bachelor of Arts

- History (options: General; Pre-Law; and Teaching)

Humanities, Bachelor of Arts

- Humanities (options: International Area Studies; Linguistics; and Religious Studies)

Music, Bachelor of Arts

- Music (BA)

Music, Bachelor of Music

- Music (BMus) (options: Business; Composition; Music Education; and Music Performance)

Philosophy, Bachelor of Arts

- Philosophy (options: Traditional; and Pre-Law)

Political Science, Bachelor of Arts

- Political Science (options: General; Pre-Law; and Global Politics)

Psychology, Bachelor of Science

- Psychology

Public Affairs, Bachelor of Arts (Vancouver)

- Public Affairs

Social Sciences, Bachelor of Arts

- Social Sciences (options: Plan A; and Plan B)

Social Studies, Bachelor of Arts

- Social Studies

Sociology, Bachelor of Arts

- Sociology

Speech and Hearing Sciences, Bachelor of Arts

- Speech and Hearing Sciences

Women's Studies, Bachelor of Arts

- Women's Studies

— Sciences

Biology, Bachelor of Science

- Biology (options: General; Botany; Ecology and Evolutionary Biology; Entomology; Pre-Physical Therapy, Pre-Occupational Therapy, and Pre-Physician's Assistant; and Teaching)

Chemistry, Bachelor of Science

- Chemistry (options: Materials; Professional; and Teaching)

Earth and Environmental Science, Bachelor of Science

- Earth Sciences
- Environmental and Ecosystem Sciences
- Wildlife Ecology and Conservation Sciences (options: Basic; and Pre-Vet)

Mathematics, Bachelor of Science

- Mathematics (options: Actuarial Science; Applied Mathematics; Theoretical Mathematics; and Secondary Mathematics Teaching Option)

Physics, Bachelor of Science

- Physics (options: Astrophysics; Biophysics; Computation; Continuum Physics & Acoustics; Education; Environmental; Instrumentation; Materials Science; Mathematical Physics; Nanotechnology; Optics and Electronics; and Standard)

Science, Bachelor of

- General Studies, Science (options: Basic Medical; Biological; Mathematical; and Physical)

Zoology, Bachelor of Science

- Zoology (options: General; Pre-Medicine/Pre-Dentistry; and Pre-Veterinary/Animal Care)

College of Business

Business Administration, Bachelor of Arts

- Accounting
- Business Administration (Vancouver, Tri-Cities, and DDP)
- Entrepreneurship
- Finance
- International Business
- Management Information Systems
- Management and Operations
- Marketing

Hospitality Business Management, Bachelor of Arts

- Hospitality Business Management
- Wine Business Management

College of Communication

Communication, Bachelor of Arts

- Communication and Society (options: Communication Technology; and Science Communication)
- Journalism and Media Production (options: Broadcasting; and Multimedia Journalism)
- Strategic Communication (options: Advertising; and Public Relations)

College of Education

Education, Bachelor of Arts

- Elementary Education
- Specific Subject Secondary Teacher Certificate (primary majors – biology; Chinese language and culture; English; French; German; history; mathematics; music education; physics; social studies; and Spanish)

Kinesiology, Bachelor of Science

- Health and Fitness
- Sports Science

Athletic Training, Bachelor of Science

- Athletic Training

Sport Management, Bachelor of Arts

- Sport Management

College of Engineering and Architecture

Architectural Studies, Bachelor of Science

- Architectural Studies

Bioengineering, Bachelor of Science

- Bioengineering (options: General; and Pre-Med)

Chemical Engineering, Bachelor of Science

- Chemical Engineering (options: General; and Pre-Med)

Civil Engineering, Bachelor of Science

- Civil Engineering (options: General; Environmental Engineering; Infrastructure Engineering; Structural Engineering; and Water Resources)

Construction Management, Bachelor of Science

- Construction Management

Computer Engineering, Bachelor of Science

- Computer Engineering

Computer Science, Bachelor of Arts

- Computer Science (BA)

Computer Science, Bachelor of Science

- Computer Science (BS)

Electrical Engineering, Bachelor of Science

- Electrical Engineering

Interior Design, Bachelor of Arts

- Interior Design

Landscape Architecture, Bachelor of

- Landscape Architecture

Materials Science and Engineering, Bachelor of Science

- Materials Science and Engineering

Mechanical Engineering, Bachelor of Science

- Mechanical Engineering

College of Nursing

Nursing, Bachelor of Science

- Nursing (Junior and Senior years are at ICN in Spokane or Yakima)

College of Pharmacy

Doctor of Pharmacy

- Pharmacy - (Six year program only)

Nutrition and Exercise Physiology, Bachelor of Science (Pullman/Spokane)

- Nutrition and Exercise Physiology (option: Dietetics)

College of Veterinary Medicine

Biochemistry, Bachelor of Science

- Biochemistry (options: Biophysics; and Molecular Biology)

Genetics and Cell Biology, Bachelor of Science

- Genetics and Cell Biology (options: Molecular Biology)

Microbiology, Bachelor of Science

- Microbiology (options: Molecular Biology; and Medical Technology)

Neuroscience, Bachelor of Science

- Neuroscience (options: Neuroscience; Computational Neuroscience; PreMed/PreDent; and Pre-Veterinary)

Doctor of Veterinary Medicine (DVM)

- Undergraduate majors that prepare for the DVM include, but are not limited to: Animal Science, Biology, Biochemistry, Biosystems Engineering, Genetics and Cell Biology, Neuroscience, Microbiology, or Zoology.

Division of Health Sciences (Spokane)

Speech and Hearing Sciences, Bachelor of Arts

- Speech and Hearing Sciences

Undergraduate Minors

The following are the undergraduate minors offered at Washington State University. The department offering the minor is noted. Minors that are offered exclusively at the regional campuses are noted. Not all minors listed are offered at every WSU campus. Students with questions about degree programs should consult with a representative at the specific campus for additional information.

A minor requires a minimum of 16 semester hours, 9 of which must be in upper-division course work and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Upon completion of the requirements, the department will notify the Registrar's Office, and the minor will be posted on the student's permanent record (transcript).

Minor	Department
Addiction Studies (Vancouver only)	Psychology
Aerospace	Aerospace Studies
Aging	Human Development
Agribusiness Economics	Economic Sciences
Agricultural Systems	Agricultural and Food Systems
American Indian Studies	General Studies, Liberal Arts
Animal Sciences	Animal Sciences
Anthropology	Anthropology
Architectural Studies	Architecture and Construction Management
Art	Fine Arts
Art History	Fine Arts
Asian Studies	Asia
Astronomy	Physics
Biochemistry	Molecular Biosciences
Biology	Biological Sciences
Business Administration	Business
Business Economics	Economics
Chemistry	Chemistry
Chinese	Foreign Languages and Cultures
Communication	Communication
Community Studies	Community and Rural Sociology
Comparative Ethnic Studies	Comparative Ethnic Studies

Computer Engineering	Electrical Engineering and Computer Science
Computer Science	Electrical Engineering and Computer Science
Construction Management	Architecture and Construction Management
Criminal Justice	Criminal Justice
Crop Science	Crop and Soil Sciences
Digital Technology and Culture	Digital Technology and Culture
Economics	Economic Sciences
Electrical Engineering	Electrical Engineering and Computer Science
Engineering	Engineering and Architecture
English	English
Entomology	Entomology
Environmental and Resource Economics and Management	Economic Sciences
Environmental Science	Earth and Environmental Sciences
Ethics	Philosophy
Film Studies	Foreign Languages and Cultures
Forestry	Natural Resource Sciences
French	Foreign Languages and Cultures
French Area Studies	Foreign Languages and Cultures
Genetics and Cell Biology	Molecular Biosciences
Geology	Earth and Environmental Sciences
Geospatial Analysis	Crop and Soil Sciences
German	Foreign Languages and Cultures
German Area Studies	Foreign Languages and Cultures
Global Studies	International Programs
History	History
Horticulture	Horticulture and Landscape Architecture
Hospitality Business Management	Hospitality Business Management
Human Development	Human Development
Humanities	English
Japanese	Foreign Languages and Cultures
Jazz Studies	Music
Latin American & Spanish Area Studies	Foreign Languages and Cultures
Linguistics	English
Materials Science and Engineering	Mechanical and Materials Engineering
Mathematics	Mathematics
Mechanical Engineering	Mechanical and Materials Engineering
Microbiology	Molecular Biosciences
Military Science	Military Science
Molecular Biology	Molecular Biosciences
Music	Music
Natural Resources	Natural Resource Sciences
Naval Science	Naval Science
Neuroscience	Neuroscience
Philosophy	Philosophy
Physics	Physics
Political Science	Political Science
Pre-Genetic Counseling	Molecular Biosciences
Professional Writing	English
Psychology	Psychology
Queer Studies	Women's Studies
Rangeland Ecology and Management	Environment
Religious Studies	General Studies, Liberal Arts
Russian	Foreign Languages and Cultures
Sociology	Sociology
Soil Science	Crop and Soil Sciences
Spanish	Foreign Languages and Cultures
Sport Management	Educational Leadership, Sports Studies, and Educational/Counseling Psychology
Statistics	Statistics
Strength and Conditioning	Educational Leadership, Sports Studies, and Educational/Counseling Psychology
Sustainable Development	Economic Sciences
Wildlife	Environment
Women's Studies	Women's Studies
Zoology	Biological Sciences

Undergraduate Certificates

The following are the official certificates offered at Washington State University. The department offering the certificate is noted. Certificates that are offered exclusively at the regional campuses are noted. Not all certificates listed are offered at every WSU campus. Students with questions about degree programs should consult with a representative at the specific campus for additional information.

An officially recorded undergraduate certificate is a document issued by WSU, displaying the WSU seal and president's signature. Certificates are issued to students who have completed a course of study that meets the guidelines and has been approved by the Faculty Senate. To have the undergraduate certificate recorded on the official transcript, the student must apply for the certificate through the Registrar's Office and pay the \$50 fee.

Certificate Requirements – A certificate requires a minimum of 15 credit hours with the exact number specified by the department offering the certificate. The maximum number of transfer credit hours that may apply towards a particular WSU certificate is ¼ of the total number of credit hours required for the certificate. The number of credit hours that may be taken for a Pass/Fail (or S/F) grade is ¼ of the total number of credit hours required for the certificate. The minimum gpa to earn a certificate is a 2.0.

Certificate	Department
Adolescence	Human Development
Aging	Human Development
American Indian Studies	General Studies
Early Child Development & Care	Human Development
East Asian Studies for Business Majors	Asia Program
East Asian Studies for Engineering and Architecture Majors	Asia Program
Family Studies	Human Development
Gerontology	Human Development
Global Competencies	Honors College
Global Leadership	University College
Human Services Case Management and Administration	Human Development (Vancouver)
Molecular Biosciences	Molecular Biosciences
Organic Agriculture	CAHNRS
Professional Sales	Business (Vancouver)
Professional Writing	English
Professional Science and Technology Writing	English
Quantitative Biology	Biology/Mathematics
Teaching English as a Foreign Language	English

LEARNING ENRICHMENT OPPORTUNITIES

Several departments at Washington State University work closely together to offer support to students as they develop their research and writing abilities—key components of a WSU education. From the first year to the senior year, students may take advantage of all or part of these learning enrichment courses and services, which include:

First-Year Focus Learning Communities – First-Year Focus is the residential living/learning community program in which first-semester students living in the same residence hall are co-enrolled in UCORE courses. Students form classroom connections, instant study groups, and social networks. First-Year Focus makes the transition to college life easier because there is a solid academic focus that is enhanced by interaction with faculty and residence hall peers. Contact: University College, Center for Undergraduate Education, Room 519, 509-335-5488.

The Pathways to Academic Success Seminar (PASS) – PASS is a small interactive learning community facilitated by graduate level peers. Students who enroll in the two-credit PASS (UCOLLEGE 104), participate in discussion, activities, and projects that provide tips and strategies for college success; an introduction to research, writing, and critical thinking; and assists in the preparation for and transition to university life and academic expectations. Contact: University College, Center for Undergraduate Education, Room 519, 509-335-5699, success.wsu.edu.

Accessing Information for Research – With sophomore standing and above, students may enroll in UColl 300, a one-credit course intended to assist them in exploring the technological resources available for conducting academic research. Transfer students who may not be familiar with the resources of the research library are also encouraged to enroll. Contact: Library Instruction Office, Holland Terrell Library, 509-335-7735.

Service Learning – Students in academic courses across the curriculum are provided with opportunities to learn through engagement in community-based service. Service learning experiences such as child and youth mentoring and environmental restoration inform classroom learning, enhance civic awareness, promote personal growth, and foster skill development. Contact: Center for Civic Engagement, 509-335-7708, cce@wsu.edu, www.wsu.edu.

Global Learning – Students from all academic majors are encouraged to incorporate global experiences into their academic program of study. One way to do this is through an education abroad experience, which includes taking courses at foreign universities, doing an internship, or participating in service or research. Over 700 students each year take advantage of the opportunity to engage in academic and culturally enriching experiences abroad. Students may also earn a Global Leadership Certificate or Global Studies minor to enhance their experience at home and abroad. The Global Learning Department within the Office of International Programs advises students on all of these opportunities. Contact: Global Learning, Bryan Hall, Room 105, 509-335-6204, <http://ip.wsu.edu/global-learning>.

Writing Center:

- **Free individual peer tutoring for writing** – Writing Center Tutors assist students with writing for all university courses. Drop-in tutoring is available in the WSU Writing Center, Center for Undergraduate Education, Room 403. To check on open hours go to: www.writingprogram.wsu.edu.
- **Writing Tutorial** – Engl 102, 107, and 299 are one-credit courses offering students an opportunity to improve their ability to write in a student-centered group tutorial setting. The tutorial is connected to first-year writing courses. Contact: WSU Writing Center, Center for Undergraduate Education, Room 403, 509-335-6471.
- **Advanced Writing Tutorial** – UColl 302 can be taken concurrently with an M course or upper-division writing intensive course in the student's major. This advanced course also employs a small-group, student-centered approach focusing on students' discipline-specific needs. Grammar in Context-English 202 can be taken concurrently with an M course or upper-division writing intensive course. This course also employs a small-group, student-centered approach focusing on supporting issues of grammar and sentence structure as students complete writing assignments for various courses. This tutorial is open to multi-lingual and native speakers of English. Contact: WSU Writing Center, Center for Undergraduate Education, Room 403, 509-335-6471.

Learning Assistance

The Center for Advising and Career Development (CACD) provides learning assistance programs for all WSU students.

Wellbeing Workshops – Wellbeing Workshops are scheduled throughout each semester and are open to all WSU students. These workshops focus on academic topics such as tips for test-taking, note-taking, and learning skills for science. Other topics include stress and time management, how to choose a major, and preparation for academic advising. Students may benefit from the more in-depth look at tips and strategies covered in these workshops. There are also on-line tools designed to get students organized and ready for academic challenges. Students can browse through the Wellbeing Workshops at <http://cacad.wsu.edu> to become familiar with the variety of workshops available.

Tutoring – Tutoring should be sought immediately when additional help is needed or anytime any grade is lower than desired. The goal of tutoring is to provide students with assistance that enables them to develop academic mastery and independence. During tutorial appointments, students can get help with homework, help with understanding concepts necessary to pass courses, and useful study techniques. Tutoring helps students master course information by providing alternate explanations, techniques, and examples. Tutors are not a substitute for attending class. Students who have taken advantage of tutoring have found that their grades improved. Tutoring should be in addition to the help that is available from professors' and TAs' office hours.

The Peer Tutorial Program provides one-on-one assistance or small group tutoring in a wide range of subjects.

CACD tutors are trained to meet the requirements of the College Reading and Learning Association's International Tutor Program Certification. New to the WSU menu of tutoring services is eTutoring.org, an online tutoring resource for popular subjects such as math, accounting, and writing. The tutoring website <http://cacad.wsu.edu> also hosts a list of all free drop-in tutoring services available throughout the university. Contact: Center for Advising and Career Development, Lighty 180, 509-335-6000.

Other Learning Assistance Programs

Student Support Services Program (SSS) – SSS is a federally-funded TRiO academic assistance program. The program is designed to provide comprehensive academic support services on a one-to-one basis focusing on a student's personal, academic, and social success. Services include: academic/financial advising, college success workshops, career/personal counseling, free tutoring, mentoring, study skills training, cultural enrichment activities, scholarship opportunities, and referral services. To be eligible, students must be enrolled or accepted to WSU and meet one or a combination of the following criteria: first-generation college student (neither parent has received a baccalaureate degree), meet federal low-income guidelines, and/or have a documented disability. Students must also demonstrate an academic need. All services are provided at no cost to the participant. Interested students must submit a program application. Contact information: (509) 335-7324; Lighty Building, Room 260; www.sssp.wsu.edu.

The College Assistance Migrant Program (CAMP) – The College Assistance Migrant Program (CAMP) is a federally funded program that provides services to eligible first-year students from migrant and seasonal farmworker backgrounds. We offer services such as recruitment to WSU and provide a structured first year experience which entails academic support services and personal counseling to enhance the retention and graduation rates for CAMP participants. Academic, personal, and financial aid services include: financial aid stipends up to \$1,300; academic, career, and personal counseling; free tutoring; academic workshops and seminars; and referral services. For more information, visit us at Lighty Building Room 260, <http://camp.wsu.edu>, or call 509-335-4503.

Washington Achievers Scholars/Governor's Scholars /Passport to College Programs – Washington Achievers Scholars and Governor's Scholars are low-income, and often first generation students who receive a scholarship from the College Success Foundation. Passport to College students are emancipated foster youth who receive support from the College Success Foundation. Achievers, Governor's, and Passport scholars are supported on campus with faculty/staff mentors, academic success workshops, counseling, tutoring, advising, referral services and social events. Contact the College Mentor Coordinator in the Center for Advising and Career Development, Lighty 180, <http://cacad.wsu.edu/CSFS>, 509-335-8065.

UI Cooperative Courses

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 allow 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 offered to WSU by the University of Idaho are listed below. WSU students desiring to enroll in cooperative courses taught must be degree seeking and eligible to register at WSU.

WSU students can go to the following site, <http://www.uidaho.edu/registrar/registration/coop> to view the cooperative information and application specifically for Washington State University students.

After filling out the UI non-degree cooperative admission application at the UI website listed above and being admitted, the student will receive credentials from UI to register using VandalWeb, UI's student information system.

WSU students will not be charged tuition at UI, but will be responsible for any special course fees.

WSU student credit hours at UI will count toward their enrollment hours at WSU for billing and financial aid.

A UI transcript will be sent to WSU, at the end of the term, without request or fee, and the UI course work will be posted as transfer credit and the appropriate transfer course equivalencies will be given.

UI cooperative classes for WSU Students may be viewed at <http://www.uiweb.uidaho.edu/schedule/>.

Note that the courses listed below may not be available every semester.

Subject Number Course Title

Aero	391	Private Pilot Ground School (2 cr)
Aero	392	Instrument Pilot Ground School (2 cr)
AgEc	525	Master's Econometrics (3 cr)
AgEc	526	Master's Microeconomics Analysis (3 cr)
AgEc	527	Mathematics for Economists (3 cr)
AgEc	529	Research Methods (1 or 2 cr)
AgEc	532	Natural Resource Economics and Policy (3 cr)
AgEc	533	International Trade and Policy (3 cr)
AgEc	534	Production Economics (3 cr)
AgEc	535	Applied Industrial Organization (3 cr)
Anth	411	Human Evolution (3 cr)
Anth	422	Plateau Indians
Anth	511	Human Evolution (3 cr)
Anth	531	Historical Archaeology (3 cr)
Arbc	101	Elementary Modern Standard Arabic I (4 cr)
ASM	107	Beginning Welding (2 cr)
ASM	305	GPS and Precision Agriculture (3 cr)
ASM	315	Irrigation Systems and Water Management (3 cr)
ASM	331	Electric Power Systems for Agriculture (3 cr)
AVS	109	The Science of Animals that Serve Humanity (4 cr)
AVS	172	Dairy Cattle Management Laboratory (1 cr)
AVS	218	Artificial Insemination and Pregnancy Detection (2 cr)
AVS	263	Live Animal and Carcass Evaluation (3 cr)
AVS	305	Animal Nutrition (4 cr)
AVS	306	Feeds and Ration Formulation (4 cr)
AVS	330	Genetics of Livestock Improvement (3 cr)
AVS	451	Endocrine Physiology (3 cr)
AVS	452	Physiology of Reproduction (4 cr)
AVS	466	Horse Science and Management (3 cr)
AVS	472	Dairy Cattle Management (3 cr)
AVS	474	Beef Cattle Science (3 cr)
AVS	475	Advanced Dairy Management (3 cr)
AVS	476	Sheep Science (3 cr)
AVS	551	Endocrine Physiology (3 cr)
BAE	441	Instrumentation and Measurements (3 cr)
BAE	541	Instrumentation and Measurements (3 cr)
BAE	558	Groundwater Flow and Contaminant Transport

Biol	417	Endocrine Physiology (3 cr)
Biol	461	Neurobiology (3 cr)
Biol	548	Evolutionary Ecology (3 cr)
Biol	551	Seminar on Reproductive Biology (1 cr, max 5)
Biol	558	Reproductive Biology of Fishes (2 cr)
CE	422	Hydraulic Structures Analysis and Design (3 cr)
CE	428	Open Channel Hydraulics (3 cr)
CE	474	Traffic Systems Design (3 cr)
CE	510	Advanced Mechanics of Materials (3 cr)
CE	521	Sedimentation Engineering (3 cr)
CE	531	Environmental Engineering Unit Operations (3 cr)
CE	532	Design of Water and Wastewater Systems II (3 cr)
CE	534	Environmental Engineering Unit Processes (3 cr)
CE	541	Reliability of Engineering Systems (3 cr)
CE	542	Advanced Design of Steel Structures (3 cr)
CE	543	Dynamics of Structures (3 cr)
CE	546	Finite Element Analysis (3 cr)
CE	547	Advanced Reinforced Concrete (3 cr)
CE	556	Properties of Highway Pavement Materials (3 cr)
CE	561	Engineering Properties of Soils (3 cr)
CE	562	Advanced Foundation Engineering (3 cr)
CE	563	Seepage and Slope Stability (3 cr)
CE	566	Geotechnical Earthquake Engineering (3 cr)
CE	571	Traffic Flow Theory (3 cr)
CE	572	Intersection Traffic Operations (3 cr)
CE	573	Transportation Planning (3 cr)
CE	574	Public Transportation (3 cr)
CE	575	Advanced Pavement Design and Analysis (3 cr)
CE	577	Pavement Management and Rehabilitation (3 cr)
ChE	515	Transport Phenomena (3 cr)
ChE	527	Thermodynamics (3 cr)
ChE	529	Chemical Engineering Kinetics (3 cr)
ChE	541	Chemical Engineering Analysis I (3 cr)
CS	324	Computer Graphics (3 cr)
CS	438	Network Security (3 cr)
CS	510	Programming Language Theory (3 cr)
ECE	427	Power Electronics (3 cr)
ECE	452	Communication Systems (3 cr)
ECE	526	Protection of Power Systems II (3 cr)
ECE	530	Advanced Electromagnetic Theory I (3 cr)
ECE	533	Antenna Theory (3 cr)
ECE	570	Random Signals (3 cr)
ECE	571	Estimation Theory for Signal Processing, Communications, and Control (3 cr)
ECE	572	Linear System Theory (3 cr)
ECE	574	Optimal Control Theory (3 cr)
ECE	579	Engineering Acoustics (3 cr)
Econ	527	Mathematics for Economists (3 cr)
EdAd	535	School Finance (3 cr)
Engr	210	Engineering Statics (3 cr)
Engr	220	Engineering Dynamics (3 cr)
Engr	320	Engineering Thermodynamics and Heat Transfer (3 cr)
Engr	335	Engineering Fluid Mechanics (3 cr)
Engr	350	Engineering Mechanics of Materials (3 cr)
Ent	440	Insect Identification (4 cr)
Ent	441	Insect Ecology (3 cr)
Ent	446	Host Plant Resistance to Insects and Pathogens (3 cr)
Ent	472	Aquatic Entomology (3 cr)
Ent	490	Special Topics in Entomology (1-4 cr, max 4)
Ent	540	Insect Identification (4 cr)
Ent	541	Advanced Insect Ecology (3 cr)
Ent	546	Host Plant Resistance to Insects and Pathogens (3 cr)
Ent	549	Insect-Plant Interactions (3 cr)
Ent	551	Applied Biological Control: Weeds (1 cr)
Ent	572	Aquatic Entomology (3 cr)
Ent	584	Insect Anatomy and Physiology (4 cr)

Ent	590	Special Topics in Entomology (1-4 cr, max 4)	Geol	567	Volcanology (3 cr)
Fish	314	Fish Ecology (3 cr)	Geol	592	Advanced Topics in Structural Geology (1-4 cr, max 6)
Fish	418	Fisheries Management (4 cr)	Germ	301	Advanced German Grammar (3 cr)
Fish	422	Concepts in Aquaculture (3 cr)	Germ	420	Topics in German Culture and Literature - Themes (3 cr, max 6)
Fish	424	Fish Health Management (4 cr)	JAPN	101	Elementary Japanese I (4 cr)
Fish	510	Advanced Fishery Management (3 cr)	JAPN	102	Elementary Japanese II (4 cr)
Fish	511	Fish Physiology (2 cr)	JAPN	201	Intermediate Japanese I (4 cr)
Fish	515	Large River Fisheries (2 cr)	JAPN	202	Intermediate Japanese II (4 cr)
For	472	Remote Sensing of the Environment (4 cr)	LARC	358	Professional Office Practice in Landscape Architecture (2 cr)
For	541	Stable Isotope Theory and Methods (3 cr)	LARC	389	History of Landscape Architecture (3 cr)
Fren	407	Topics in French Literature (3 cr, max arr)	LARC	559	Northern Rocky Regional Landscapes (4 cr)
Fren	410	The Arts in France and the Francophone World (3 cr)	Latn	461	Latin Literature of the Empire (3 cr, max 9)
FS	110	Introduction to Food Science (3 cr)	Latn	462	Latin Literature of the Empire (3 cr, max 9)
FS	204	Special Topics (1-16 cr)	Law	947	Environmental Law (3 cr)
FS	220	Food Safety and Quality (3 cr)	Math	388	History of Math (3 cr)
FS	303	Food Processing (3 cr)	Math	437	Mathematical Biology (3 cr)
FS	304	Cereal Products (2 cr)	Math	451	Probability Theory (3 cr)
FS	398	Internship (cr arr)	Math	452	Mathematical Statistics (3 cr)
FS	403	Workshop (1-4 cr)	Math	453	Stochastic Models (3 cr)
FS	404	Special Topics (1-16 cr)	Math	494	Seminar in Mathematical Biology (1 cr)
FS	406	Evaluation of Dairy Products I (1 cr)	Math	521	Topology (3 cr)
FS	409	Principles of Environmental Toxicology (3 cr)	Math	528	Differentiable Manifolds (3 cr)
FS	416	Food Microbiology (3 cr)	Math	531	Complex Variables (3 cr)
FS	417	Food Microbiology Laboratory (2 cr)	Math	538	Stochastic Models (3 cr)
FS	418	Oral Seminar in Food Science (1 cr)	Math	539	Theory of Ordinary Differential Equations (3 cr)
FS	422	Sensory Evaluation of Food and Wine (3 cr)	Math	540	Partial Differential Equations I (3 cr)
FS	423	Sensory Evaluation of Food and Wine Laboratory (1 cr)	Math	541	Seminar in Analysis (1-3 cr, max arr)
FS	429	Dairy Products (3 cr)	Math	543	Approximation Theory (3 cr)
FS	430	Dairy Products Lab (1 cr)	Math	555	Groups and Fields I (3 cr)
FS	432	Food Engineering (3 cr)	Math	556	Groups and Fields II (3 cr)
FS	433	Food Engineering Lab (1 cr)	Math	557	Ring Theory (3 cr)
FS	436	Principles of Sustainability (3 cr)	Math	558	Introduction to Algebraic Geometry (3 cr)
FS	460	Food Chemistry (3 cr)	Math	563	Mathematical Genetics (3 cr)
FS	461	Food Chemistry Laboratory (1 cr)	Math	583	Seminar in Applied Mathematics (3 cr, max arr)
FS	462	Food Analysis (4 cr)	Math	590	Seminar in Mathematics Education (1-3 cr, max arr)
FS	464	Food Toxicology (3 cr)	ME	444	Air Conditioning Engineering (3 cr)
FS	465	Wine Microbiology and Processing (3 cr)	ME	472	Mechanical Vibrations (3 cr)
FS	466	Wine Microbiology and Processing Lab (1 cr)	ME	481	Control Systems (3 cr)
FS	470	Advanced Food Technology (3 cr)	ME	513	Engineering Acoustics (3 cr)
FS	489	Food Product Development (3 cr)	ME	527	Thermodynamics (3 cr)
FS	499	Directed Study (1-16, max arr)	ME	546	Convective Heat Transfer (3 cr)
FS	504	Special Topics (1-16 cr)	ME	520	Fundamentals of Neurobiology (4 cr)
FS	509	Principles of Environmental Toxicology (3 cr)	Neur	521	Biological Signal Processing (3 cr)
FS	510	Functional Foods and Health (3 cr)	NS	101	Introduction to Naval Science (2 cr)
FS	511	Food Lipids (3 cr)	NS	102	Ships Systems I (3 cr)
FS	512	Food Proteins and Enzymes (2 cr)	NS	103	Introduction to Naval Science Laboratory (1 cr)
FS	513	Food Carbohydrates (3 cr)	NS	201	Ships Systems II (3 cr)
FS	516	Food Laws (2 cr)	NS	202	Seapower and Maritime Affairs (3 cr)
FS	517	Writing Seminar (2 cr, max 4)	NS	299	Directed Study (1-16, max arr)
FS	518	Graduate Oral Seminar (1 cr)	NS	301	Navigation (3 cr)
FS	520	Instrumental Analysis (2 cr)	NS	302	Naval Operations (3 cr)
FS	522	Sensory Evaluation of Food and Wine (3 cr)	NS	311	Evolution of Warfare (3 cr)
FS	529	Dairy Products (3 cr)	NS	401	Naval Leadership and Management (3 cr)
FS	530	Dairy Products Lab (1 cr)	NS	402	Naval Leadership and Ethics (3 cr)
FS	536	Principles of Sustainability (3 cr)	NS	412	Amphibious Operations (3 cr)
FS	538	Introduction to Physical Properties of Foods (2 cr)	NS	499	Directed Study (1-16, max arr)
FS	564	Food Toxicology (3 cr)	Phil	221	Philosophy in Film (3 cr)
FS	565	Wine Microbiology and Processing (3 cr)	Phil	320	History of Ancient and Medieval Philosophy (3 cr)
FS	570	Advanced Food Technology (3 cr)	Phil	321	History of Modern Philosophy (3 cr)
FS	583	Advances in Cereal Science and Technology (2 cr)	Phil	351	Philosophy of Science (3 cr)
GeoE	428	Geostatistics (3 cr)	Phil	409	Advanced Logic (3 cr)
Geol	407	Basin Analysis (3 cr)	Phil	442	Philosophy of Mind (3 cr)
Geol	490	Field Geology II (3 cr)	Phil	443	Philosophy of Language (3 cr)
Geol	507	Basin Analysis (3 cr)	Phil	446	Metaphysics (3 cr)
Geol	510	Geosystems (3 cr, max 6)	Phil	447	Theory of Knowledge (3 cr)
Geol	532	Geologic Development of North America (3 cr)	Phil	470	Philosophy of Law (3 cr)
Geol	541	Structural Analysis (3 cr)	Phil	509	Advanced Logic (3 cr)
Geol	542	Advanced Structural Geology (3 cr)	Phil	510	Seminar in the History of Philosophy (3 cr, max 6)
Geol	548	Tectonics (3 cr)	Phil	520	Seminar in Ethical Theory (3 cr)
Geol	550	Advanced Mineralogy (3 cr)			
Geol	554	Physical Petrology (3 cr)			

UI Cooperative Courses

Phil	522	Seminar in Metaphysics (3 cr)
Phil	524	Seminar in Epistemology (3 cr)
Phys	465	Particle and Nuclear Physics (3 cr)
Phys	484	Astrophysics (3 cr)
Phys	521	Advanced Mechanics (3 cr)
Phys	533	Thermal and Statistical Physics I (3 cr)
Phys	541	Electromagnetic Theory (3 cr)
Phys	542	Electromagnetic Theory (3 cr)
Phys	550	Quantum Mechanics (3 cr)
Phys	551	Quantum Mechanics (3 cr)
Phys	565	Particle and Nuclear Physics (3 cr)
Phys	571	Mathematical Methods of Physics (3 cr)
PlSc	340	Nursery Management (3 cr)
PlSc	341	Nursery Management Laboratory (1 cr)
PlSc	451	Vegetable Crops (3 cr)
PlSc	490	Potato Science (3 cr)
PlSc	510	Invasive Plant Biology (3 cr)
PlSc	520	Plant Cytogenetic Techniques (3 cr)
PlSc	533	Plant Tissue Culture Techniques (3 cr)
PlSc	546	Plant Breeding (3 cr)
PlSc	547	Biometrics for Plant Scientists (3 cr)
PlSc	590	Potato Science (3 cr)
Psyc	446	Engineering Psychology (3 cr)
Psyc	516	Industrial/Organizational Psychology (3 cr)
Psyc	535	Personnel Psychology (3 cr)
Psyc	541	Social Psychology in the Workplace (3 cr)
Psyc	561	Human-Computer Interaction (3 cr)
Psyc	562	Advanced Human Factors (3 cr)
REM	472	Remote Sensing of the Environment (4 cr)
REM	551	Rangeland Vegetation Ecology (3 cr)
REM	556	Foraging Behavior of Herbivores (3 cr)
REM	560	Plant Ecophysiology (3 cr)
Soil	415	Soil and Environmental Physics (3 cr)
Soil	416	Sustainable Small Acreage Farming and Ranching (3 cr)
Soil	422	Environmental Soil Chemistry (3 cr)
Soil	454	Pedology (3 cr)
Soil	526	Soil Mineralogy (3 cr)
Soil	537	Soil Biochemistry (3 cr)
Soil	557	Advanced Soil Genesis and Classification (3 cr)
Stat	422	Sample Survey Methods (3 cr)
Stat	428	Geostatistics (3 cr)
Stat	431	Statistical Analysis (3 cr)
Stat	446	Six Sigma Innovation (3 cr)
Stat	507	Experimental Design (3 cr)
Stat	514	Nonparametric Statistics (3 cr)
Stat	519	Multivariate Analysis (3 cr)
Stat	550	Regression (3 cr)
Stat	555	Statistical Ecology (3 cr)
Stat	565	Computer Intensive Statistics (3 cr)
Stat	575	Theory of Linear Models (3 cr)
WLF	544	Large Mammal Ecology (3 cr)
WLF	545	Wildlife Habitat Ecology (2 or 3 cr)
WLF	555	Statistical Ecology (3 cr)

Writing Proficiency Requirements

Writing Proficiency Requirements

WSU faculty, administration, and regents have identified writing proficiency as a priority at WSU. Accordingly, all students will satisfy specified requirements to meet WSU's writing proficiency standards for graduation. The requirements are outlined below:

1. The WSU Writing Experience

- a. All students must satisfy the University Common Requirements by passing 6 hours of written and oral communication courses, including at least 3 in written communication.
- b. Prior to enrollment in first-year writing courses, all students must take the WSU 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 into appropriate first-year writing course(s). In some instances, students may be exempted from Engl 101 on the basis of their performance in the Placement Examination. For more information, contact the Writing Assessment Office in CUE 305, or call 509-335-7959 or visit us at <http://writingprogram.wsu.edu>.
- c. All Honors College students are required to take the Honors College Writing Diagnostic for placement into Honors 298—Honors Writing and Research. The Honors College Writing Diagnostic is offered during sessions of Alive! and during a session scheduled during the Week of Welcome in conjunction with the Honors College Orientation. All students who have been admitted to WSU's Honors College must take the Honors College Writing Diagnostic unless they have credit for a 200-level composition course from another college or university. An AP score of 4 or higher in English composition does NOT fulfill this requirement. For more information, contact the Writing Assessment Office in CUE 305, or call 509-335-7959 or visit us at <http://writingprogram.wsu.edu>.
- d. University Common Requirement (UCORE) 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.
- e. Transfer students who have completed an approved Associate of Arts (AA) or Associate of Science (AS) degree at a Washington or Oregon community college are considered to have fulfilled the lower-division University Common 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 associate degrees.

2. The University Writing Portfolio—Writing Assessment at Mid-Career

Successful completion of the University Writing Portfolio is a requirement for graduation at WSU. Students must satisfy this requirement once they have earned 60 credit hours or junior standing. The Writing Portfolio is a mid-career assessment of student progress and a diagnostic about student readiness for upper division writing challenges. Therefore the Portfolio must be completed before a student enrolls in Writing in the Major [M] courses. To complete the University Writing Portfolio, students must submit three papers they have written as a result of previously assigned college course work and take a timed writing exam consisting of two writing exercises. Visit <http://writingportfolio.wsu.edu> for more information.

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. Students must complete the University Writing Portfolio before enrolling in an [M] course.

WSU Graduation Requirements

Students who enter the University Fall 2012 and after as first-semester students, or Summer 2013 and after as transfer students must complete the University graduation requirements listed below. Students with initial postsecondary enrollment prior to fall 1993 should consult with the Registrar's Office.

- University Honors College students do not complete University Common Requirements. Contact the Honors College for additional information.
- Students who have completed an approved transferable AA degree should check the Admissions section of the catalog for more information.

UNIVERSITY COMMON REQUIREMENTS (UCORE)

These graduation requirements were developed to help students achieve WSU's Learning Goals and Outcomes. Four broad categories are divided into ten requirements; only approved classes will fulfill them. Match courses in the WSU Catalog (<http://catalog.wsu.edu>) to requirements using the [bracketed notation] that appears in the list below. Of the 34 total credits, only three, three-credit courses may be taken within the major.

FIRST-YEAR EXPERIENCE: 3 semester credit hours

- Roots of Contemporary Issues [ROOT] (3 cr.)
course: History 105 semester/year F Sp Su _____

FOUNDATIONAL COMPETENCIES: 9 cr.

- Quantitative Reasoning [QUAN] (3 cr.)
course: _____ semester/year F Sp Su _____
- Written Communication [WRTG] (3 cr.)
course: _____ semester/year F Sp Su _____
- Communication [COMM] [WRTG] (3 cr.)
course: _____ semester/year F Sp Su _____

WAYS OF KNOWING: 16 cr.

- Inquiry in the Social Sciences [SSCI] (3 cr.)
course: _____ semester/year F Sp Su _____
- Inquiry in the Humanities [HUM] (3 cr.)
course: _____ semester/year F Sp Su _____
- Inquiry in the Creative and Professional Arts [ARTS] (3 cr.)
course: _____ semester/year F Sp Su _____
- Inquiry in the Natural Sciences [BSCI] [PSCI] [SCI] (7 cr.)*
course: _____(L) semester/year F Sp Su _____
course: _____ semester/year F Sp Su _____

*At least 7 credits: one biological science [BSCI] and one physical science [PSCI] and one lab; or take SCIENCE 101 [SCI] and 102 [SCI] with two labs (8 cr).

INTEGRATIVE AND APPLIED LEARNING: 6 cr.

- Diversity [DIVR] (3 cr.)
course: _____ semester/year F Sp Su _____
- Integrative Capstone [CAPS] (3 cr.)
course: _____ semester/year F Sp Su _____

UNIVERSITY GRADUATION REQUIREMENTS

- 120 semester credits (or total credits for a specific degree program)
- 40 Upper Division (300/400 level) semester credits
- 2.0 minimum cumulative grade point average
- Completion of Writing Proficiency and UCORE requirements and college requirements, if applicable (see below)
- Completion of requirements for major (see relevant catalog section)

WRITING PROFICIENCY REQUIREMENTS

Graduation requirements that all students must complete:

- University Writing Profolio/Qualifying Exam (to be completed when a student reaches 60 semester credits).
- Writing in the Major [M] courses*
course: _____ semester/year F Sp Su _____
course: _____ semester/year F Sp Su _____

*For more information about these, refer to the WSU Writing Program (<http://writingprogram.wsu.edu>) or the WSU Catalog (<http://catalog.wsu.edu>).

COLLEGE OF ARTS AND SCIENCES ADDITIONAL REQUIREMENTS

All students, including community college transfer students with an approved transferable AA degree from Washington, Oregon, Idaho, California, Arizona, or Hawaii, or students pursuing a second bachelor's degree in the majors in this college, will be held to the following requirements:

- Foreign Language: Complete 2 years of high school or 1 year of collegiate-level foreign language study (must be the same language)
- Additional 3 semester credits of [SSCI], [HUM], or [ARTS] for a total of 12 semester credits
- Additional 1 lab credit of [BSCI] or [PSCI] for a total of 8 semester credits (2 labs) or SCIENCE 101 [SCI] and 102 [SCI].

University Common Requirements

Washington State University's general education curriculum, called the **University Common Requirements** (UCORE), applies to first-year students entering WSU in fall 2012, and to transfer students who enter WSU fall 2013 and after. Continuing students must refer to the requirements detailed in prior catalogs under the General Education Requirement section. Honors students complete the Honors College version of the general education curriculum outlined in the Honors section of this catalog.

The University Common Requirements (UCORE) are the center of the undergraduate curriculum. While the greater part of students' courses of study will be devoted to their major fields, the UCORE curriculum provides a degree of balance between the specialized focus of the major and the broader traditional objectives of higher education. UCORE is intended to accommodate needs and objectives not adequately served by academic specialization, while being flexible enough to work for all majors. Accordingly, the program offers a wide variety of elective choices and provides many individual pathways through the curriculum.

Seven Goals of the Baccalaureate

All bachelor's degree requirements are rooted in the Seven Goals of the Baccalaureate described below. Courses in the UCORE curriculum engage students in meeting these goals.

CRITICAL and CREATIVE THINKING

Graduates will use reason, evidence, and context to increase knowledge, to reason ethically, and to innovate in imaginative ways.

Graduates may demonstrate critical and creative thinking by their ability to:

1. Define, analyze, and solve problems.
2. Integrate and synthesize knowledge from multiple sources.
3. Assess the accuracy and validity of findings and conclusions.
4. Understand how one thinks, reasons, and makes value judgments, including ethical and aesthetic judgments.
5. Understand diverse viewpoints, including different philosophical and cultural perspectives.
6. Combine and synthesize existing ideas, images, or expertise in original ways.
7. Think, react, and work in an imaginative way characterized by a high degree of innovation, divergent thinking, and risk taking.

QUANTITATIVE REASONING

Graduates will solve quantitative problems from a wide variety of authentic contexts and everyday life situations.

Graduates may demonstrate quantitative and symbolic reasoning by their ability to:

1. Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, and words).
2. Convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, and words).
3. Understand and apply quantitative principles and methods in the solution of problems.
4. Make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis.
5. Identify and evaluate important assumptions in estimation, modeling, and data analysis.
6. Express quantitative evidence in support of the argument or purpose of work (in terms of what evidence is used and how it is formatted, presented, and contextualized).

SCIENTIFIC LITERACY

Graduates will have a basic understanding of major scientific concepts and processes required for personal decision-making, participation in civic affairs, economic productivity and global stewardship.

Graduates may demonstrate scientific literacy by their ability to:

1. Identify scientific issues underlying global, national, local and personal decisions and communicate positions that are scientifically and technologically informed.
2. Evaluate the quality of scientific and health-related information on the basis of its source and the methods used to generate it.
3. Pose and evaluate arguments based on evidence and apply conclusions from such arguments appropriately.
4. Recognize the societal benefits and risks associated with scientific and technological advances.

INFORMATION LITERACY

Graduates will effectively identify, locate, evaluate, use responsibly and share information for the problem at hand.

Graduates may demonstrate information literacy by their ability to:

1. Determine the extent and type of information needed.
2. Implement well-designed search strategies.
3. Access information effectively and efficiently from multiple sources.
4. Assess credibility and applicability of information sources.
5. Use information to accomplish a specific purpose.
6. Access and use information ethically and legally.

COMMUNICATION

Graduates will write, speak and listen to achieve intended meaning and understanding among all participants.

Graduates may demonstrate communication skills by the ability to:

1. Recognize how circumstances, background, values, interests and needs shape communication sent and received.
2. Tailor message to the audience.
3. Express concepts, propositions, and beliefs in coherent, concise and technically correct form.
4. Choose appropriate communication medium and technology.
5. Speak with comfort in front of groups.
6. Follow social norms for individual and small group interactions, which includes listening actively.

DIVERSITY

Graduates will understand, respect and interact constructively with others of similar and diverse cultures, values, and perspectives.

With regard to local and global diversity, graduates may demonstrate their ability to:

1. Critically assess their own core values, cultural assumptions and biases in relation to those held by other individuals, cultures, and societies.
2. Analyze and critique social, economic and political inequality on regional, national and global levels, including identifying one's own position within systems.
3. Recognize how events and patterns in the present and past structure and affect human societies and world ecologies.
4. Critically assess the cultural and social underpinnings of knowledge claims about individuals and groups, and their relations to one another.
5. Actively seek opportunities to learn from diverse perspectives and to combat inequalities.

DEPTH, BREADTH, AND INTEGRATION OF LEARNING

Graduates will develop depth, breadth, and integration of learning for the benefit of themselves, their communities, their employers, and for society at large.

Graduates may demonstrate depth, breadth, and integration of learning:

1. Through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts.
2. By showing a depth of knowledge within the chosen academic field of study based on integration of its history, core methods, techniques, vocabulary, and unsolved problems.
3. By applying the concepts of the general and specialized studies to personal, academic, service learning, professional, and/or community activities.
4. By understanding how the methods and concepts of the chosen discipline relate to those of other disciplines and by possessing the ability to engage in cross-disciplinary activities.

The Structure of the UCORE Program

Students are required to take a minimum of 34 credit hours distributed among the categories listed below.

These graduation requirements were developed to help students achieve WSU's Learning Goals and Outcomes. Four broad categories are divided into ten requirements, which only approved classes will fulfill. Match courses in the WSU Catalog (catalog.wsu.edu) to requirements using the bracketed notation that appears in the list below.

FIRST-YEAR EXPERIENCE	Credits
Roots of Contemporary Issues - HISTORY 105 [ROOT]	3
FOUNDATIONAL COMPETENCIES	
Quantitative Reasoning [QUAN]	3
Written Communication [WRTG]	3
Communication or Written Communication [COMM] [WRTG]	3
WAYS OF KNOWING	
Inquiry in the Social Sciences [SSCI]	3
Inquiry in the Humanities [HUM]	3
Inquiry in the Creative and Professional Arts [ARTS]	3
Inquiry in the Natural Sciences [BSCI] [PSCI] [SCI] ¹	7
INTEGRATIVE AND APPLIED LEARNING	
Diversity [DIVR]	3
Integrative Capstone [CAPS]	3
Total Required Semester Credit Hours	34 credits

¹At least 3 hours in Biological Science and 3 hours in Physical Science plus 1 additional lab hour, or 8 hours of SCIENCE 101 and 102.

General Rules

- No course designated as a University Common Requirement (UCORE) can be taken on a pass, fail basis. All UCORE-designated courses must be letter-graded (i.e., A, B, C, D, and F). The only exception possible is for CAPS courses, which may have S, F grading. However, such an exception is not automatic and must be justified when the course is submitted by the department for UCORE approval.
- A maximum of three, 3-credit courses may be taken within the major. All other courses must be taken outside the major.
- Quantitative Reasoning [QUAN]: This requirement can be satisfied by passing a designated course or courses in mathematics, through satisfactory performance on the Advanced Placement examination, or by passing a calculus course beyond Math 171.

Transfer Students: Two full years of credit and completion of lower-division University Common Requirements normally will be granted to students who have been awarded the Direct Transfer Associate (AA) degree from a Washington community college. The Associate of Arts—Oregon transfer degree from an Oregon community college guarantees completion of the lower-division University Common Requirements, but does not guarantee junior standing or 60 semester credits. Certain approved associate's degrees from Arizona, California, Hawaii, and Idaho may also be considered to have fulfilled the lower-division University Common Requirements for graduation, but do not guarantee junior status (60 semester credits). For details on specific degrees consult the Office of Admissions.

Transfer 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 Integrated Capstone {CAPS} are not lower-division requirements and therefore cannot be satisfied by the approved AA or AS degrees. Please note that other kinds of degrees from community colleges, or degrees from states other than Washington and Oregon, do not automatically fulfill University Common Requirements.

UCORE Categories and Course Lists**FIRST-YEAR EXPERIENCE****Roots of Contemporary Issues [ROOT]**

HISTORY 105	Roots of Contemporary Issues
HISTORY 305	Roots of Contemporary Issues for Transfer Students

FOUNDATIONAL COMPETENCIES**Quantitative Reasoning [QUAN]**

ENGR 107	Introductory Mathematics for Engineering Applications
FIN 223	Personal Finance
MATH 105	Exploring Mathematics
MATH 140	Mathematics for Life Scientists
MATH 171	Calculus I
MATH 202	Introduction to Mathematical Analysis
MATH 252	Fundamentals of Elementary Mathematics II
PHIL 201	Elementary Logic
STAT / MATH 205	Statistical Thinking
STAT / MATH 212	Introduction to Statistical Methods

Written Communication [WRTG]

ENGLISH 101	Introductory Writing
ENGLISH 105	Composition for ESL Students
ENGLISH 201	Writing and Research
ENGLISH 298	Writing and Research Honors
ENGLISH 301	Writing and Rhetorical Conventions
ENGLISH 402	Technical and Professional Writing

Communication [COMM] or Written Communication [WRTG]

COM 102	Public Speaking: Theory, Models, and Practice
COM 210	Multimedia Content Creation
ENGLISH 101	Introductory Writing
ENGLISH 105	Composition for ESL Students
ENGLISH 106	Communicating in Academic Contexts
ENGLISH 201	Writing and Research
ENGLISH 298	Writing and Research Honors
ENGLISH 301	Writing and Rhetorical Conventions
ENGLISH 402	Technical and Professional Writing
H D 205	Communication in Human Relations

WAYS OF KNOWING**Inquiry in the Social Sciences [SSCI]**

AFS 336	Agriculture, Environment, and Community
ANTH 130	Great Discoveries in Archaeology
ANTH / WOMEN ST 214	Gender and Culture in America

ANTH 302	Childhood and Culture
ANTH 309	Cultural Ecology
CES 131	Introduction to Black Studies
CES 171	Introduction to Indigenous Studies
CES 244	Critical Globalizations
ECONS 101	Fundamentals of Microeconomics
ECONS 102	Fundamentals of Macroeconomics
HBM 235	Travel, Society, and Business
H D 101	Human Development Across the Lifespan
H D / WOMEN ST 204	Family Systems: Understanding Family Interaction
H D 334	Principles of Community Development
POL S 101	American National Government
POL S 102	Introduction to Comparative Politics
POL S 103	International Politics
PSYCH 105	Introductory Psychology
SOC 101	Introduction to Sociology
SOC 102	Social Problems

Inquiry in the Humanities [HUM]

ANTH 201	Art and Society
CES 111	Introduction to Asian Pacific American Studies
CES 151	Introduction to Chicano/Latino Studies
CES 209	Hip Hop Around the Globe
CES/ENGLISH 220	Introduction to Multicultural Literature
CES 260	Race and Racism in US Popular Culture
CES 313/ENGLISH 311	Asian Pacific American Literature
COM 105	Communication in Global Contexts
ENGLISH 108	Introduction to Literature
ENGLISH 110	Reading Now
ENGLISH 205	Introduction to Shakespeare
ENGLISH 210	Readings in American Literature
ENGLISH 366	The British Novel to 1900
ENGLISH 368	The American Novel to 1900
FINE ART 201	World Art History I
FINE ART 202	World Art History II
FINE ART 305	Arts of Ancient Greece and Rome
FINE ART 307	The Arts of Renaissance Europe
FOR LANG 102	Humanities in the Ancient World
FRENCH 110	French/Francophone Film
FRENCH 120	French Culture
HISTORY 101	Classical and Christian Europe
HISTORY 110	American History to 1877
HISTORY 111	American History Since 1877
HISTORY 121	World History II
HISTORY 230	Latin America, The Colonial Period
HISTORY 231	Latin America, The National Period
HISTORY 331	Latin American Cultural History
HISTORY/ASIA 373	Chinese Civilization
HUMANITY 101	Humanities in the Ancient World
HUMANITY 103	Mythology
HUMANITY/FOR LANG 302	Humanities in the middle Ages and Renaissance
HUMANITY/FOR LANG 304	Humanities in the Modern World
JAPANESE 123 / ASIA 123	Modern Japanese Culture
MUS 265 / CES 271	Native Music of North America
MUS 359	History of Music: Antiquity to 1650
PHIL 103	Introduction to Ethics
PHIL 207	Philosophy of Religion
PHIL 360	Business Ethics
PHIL 365	Biomedical Ethics
SPANISH 120	Peninsular Spanish Culture
SPANISH 121	Latin American Culture
WOMEN ST / ENGLISH 211	Diverse Sexualities and Cultural Production
WOMEN ST 338	Women and Popular Culture

Inquiry in the Creative and Professional Arts [ARTS]

AMDT 408	Visual Analysis and Aesthetics
DTC 101	Introduction to Digital Technology and Culture
FINE ART 101	Introduction to Art
FINE ART 303	Modern Art - 19th Century

MUS 153	Musical Style in Composition
MUS 160	Survey of Music Literature
MUS 161	Introduction to Theatre
MUS 262	Rock Music: History and Social Analysis
MUS 428	Opera Workshop
MUS 431	Concert Choir
MUS 432	University Singers
MUS 433	Vocal Ensembles
MUS 434	Symphony Orchestra
MUS 436	Symphonic Band
MUS 437	Wind Symphony
MUS 438	Jazz-Lab Band
MUS 439	Vocal Jazz Ensemble
SPANISH 110	Peninsular Spanish Film
SPANISH 111	Latin American Film
WOMEN ST 369/CES 309	Queer Identities in Contemporary Cultures

Inquiry in the Natural Sciences [BSCI] [PSCI] [SCI]

Courses that fulfill the lab requirement are marked with (L).

— Biological Sciences [BSCI]

ANIM SCI 205	Companion Animal Nutrition
ANTH 260	(L) Introduction to Physical Anthropology
ANTH 381	Primate Behavioral Ecology
BIOLOGY 101	Direction in Biological Sciences
BIOLOGY 102	(L) General Biology
BIOLOGY 106	(L) Introductory Biology: Organismal Biology
BIOLOGY 107	(L) Introductory Biology: Cell Biology and Genetics
BIOLOGY 110	Scientific Perspective on Global Issues
BIOLOGY 111	(L) Laboratory Experiments in Biology and Genetics
BIOLOGY 120	(L) Introduction to Botany
BIOLOGY 125	Genetics and Society
BIOLOGY 135	Animal Natural History
BIOLOGY 140	Introduction to Nutritional Science
BIOLOGY 150	Evolution
BIOLOGY 233	Human Nutrition, Health, and Disease
BIOLOGY 298	(L) Honors Biology for Non-Science Majors
BIOLOGY 308	Marine Biology
BIOLOGY/WOMEN ST 407	Biology of Women
ENTOM 101	Insects and People: A Perspective
ENTOM 102	Entomology in Human Health
ENTOM 150	Insects, Science, and World Cultures
ENTOM 201	Science in the Public Eye
ENVR SCI 101	(L) Environment and Human Life
FS 201	Science on Your Plate
HORT 150	Plants and Society
MBIOS 101	(L) Introductory Microbiology
MBIOS 320	DNA and Society
PL P 150	Molds, Mildews, Mushrooms: The Fifth Kingdom
PSYCH 372	Biological Basis of Behavior
SOIL SCI 201	Soil: A Living System

— Physical Sciences [PSCI]

ASTRONOM 135	(L) Astronomy
ASTRONOM 138	Planets and Planetary Systems
ASTRONOM 150	Science and the Universe
ASTRONOM 390	The Night Sky
CHEM 101	(L) Introduction to Chemistry
CHEM 105	(L) Principles of Chemistry I
ENVR SCI 250	Introduction to Earth System Science
GEOLOGY 101	(L) Introduction to Geology
GEOLOGY 210	(L) Earth's History and Evolution
GEOLOGY 230	Introductory Oceanography
PHYSICS 101	(L) General Physics
PHYSICS 102	(L) General Physics
PHYSICS 150	Physics and Your World
PHYSICS 201	(L) Physics for Scientists and Engineers I

University Common Requirements

PHYSICS 202	(L) Physics for Scientists and Engineers II
PHYSICS 205	(L) Physics for Scientists and Engineers I - Honors
PHYSICS 206	(L) Physics for Scientists and Engineers II - Honors

— Sciences [SCI]

SCIENCE 101	Origins in the Natural World
SCIENCE 102	Dynamic Systems in the Natural World

MBIOS 494
ME 416
MECH 417
MGMT 491
PHYSICS 408
SOC 495
SOC 496

Senior Project in Molecular Biosciences
Mechanical Systems Design
Mechanical Systems Design II
Business Strategy and Policy
Physics and Society
Internship Capstone
Capstone - From Theory to Practice: The Sociology of Service

INTEGRATIVE AND APPLIED LEARNING

Diversity [DIVR]

AMDT 417	Social and Psychological Aspects of Dress
ANTH 101	General Anthropology
ANTH 203	Peoples of the World
ANTH 307	Contemporary Cultures and Peoples of Africa
ANTH/WOMEN ST 316	Gender in Cross Cultural Perspective
CES 101	Introduction to Comparative Ethnic Studies
CES 325	Traveling Cultures: Tourism in Global Perspective
CHINESE 111*	Asian Film
CHINESE 131*	Masterpieces of Asian Literature
COMSOC 321	Intercultural Communication
COMSOC/CES 421	Intercultural Communication and Globalization
COUN PSY 457	Chicano/a Latino/a Psychology
FOR LANG 101	Introduction to the World of Languages
FOR LANG 120	Introduction to Foreign Cultures
FOR LANG / ASIA 220	Global Issues, Regional Realities
H D 350	Diversity in Contemporary Families
HISTORY 120	World History I
HISTORY 150	Peoples of the United States
HISTORY / ASIA 270	India: History and Culture
HISTORY 274	Introduction to African History
HISTORY / ASIA 275	Introduction to East Asian Culture
HISTORY/WOMEN ST 298	History of Women in American Society
HISTORY 314/CES 304	American Roots: Immigration, Migration, and Ethnic Identity
HISTORY/WOMEN ST 398	History of Women in the American West
HISTORY/WOMEN ST 399	Lesbian and Gay History: Culture, Politics and Social Change in the US
JAPANESE 120*	Traditional Japanese Culture
JAPANESE 320*	Issues in East Asian Ethics
MUS 362	History of Jazz
MUS/WOMEN ST 363	Women in Music
NATRS 312	Natural Resources, Society, and the Environment
SOC 340	Social Inequality
SOC/WOMEN ST 351	The Family
WOMEN ST 101	Gender and Power: Introduction to Women's Studies
WOMEN ST 220	Gender, Culture, and Science
WOMEN ST/SOC 484	Lesbian and Gay Studies

*offered under several course subjects; see the catalog description for details.

Integrative Capstone [CAPS]

ASTRO 450	Life in the Universe
BIOLOGY 408	Contemporary Genetics
CES 405/ENGLISH 410	Cultural Criticism and Theory
CS 420	Software Engineering in Practice
ECE 452	Capstone Design II
FRENCH 410	French Film in Translation
FRENCH 420	French Culture Through Wine
GEOLOGY 408	Field Geology
HBM 495	Case Studies and Research
H D 403	Families and Poverty
HISTORY/WOMEN ST 436	Imperialism in the Modern World
HORT 425	Trends in Horticulture

Departments, Requirements, and Courses

Department of Aerospace Studies

afrotc.wsu.edu
Kruegel 417
509-335-5598

Colonel G. Cain; Major R. Partain; Captain A. Starkey; Captain B. Starkey.

The Department of Aerospace Studies (Air Force Reserve Officer Training Corps) 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.

General Military Course (GMC)

This sequence of courses consists of four 1-credit academic and 2-credit lab courses normally taken during the first and second years. The GMC sequence prepares the student for field training and the Professional Officer Course, 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 3-credit academic courses; and 2-credit lab courses normally taken during the student's last two years in the university. Entry into the POC is competitive. Students must normally complete field training the summer before they enter the POC. Four-year students compete for entry during their last year in the GMC. Other students should begin the application process early in the fall semester before they plan on attending field training.

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 \$450 per semester book allowance, as well \$250 per month for contracted First-year students, \$300 per month for contracted Sophomores, \$350 per month for contracted Juniors, and \$400 per month for contracted Seniors.

Minors

Aerospace Studies

A minor in aerospace studies requires at least 16 hours, 9 of which must be 300-400-level taken in residence at WSU or through WSU-approved education abroad or educational exchange courses, from: AERO 101, 102, 201, 202, 311, 312, 411, 412.

Description of Courses

AEROSPACE STUDIES

AERO

101 The Foundations of USAF I 1 Course
Prerequisite: Concurrent enrollment in AERO 103 required. Introduces students to the Air Force and AFROTC.

102 The Foundations of USAF II 1 Course
Prerequisite: Concurrent enrollment in AERO 103 required. Introduces students to the Air Force and AFROTC.

103 Leadership Laboratory I 2 (0-4) May be repeated for credit; cumulative maximum 4 hours. Leadership principles, military experience, and management practice; 2 hours laboratory and 2 hours required physical training. S, F grading.

201 The Evolution of USAF Air and Space Power I 1 Course Prerequisite: Concurrent enrollment in AERO 203 required. Examines general aspects of air and space power through a historical perspective. Leadership Laboratory is mandatory for AFROTC.

202 The Evolution of USAF Air and Space Power II 1 Course Prerequisite: Concurrent enrollment in AERO 203 required. Examines general aspects of air and space power through a historical perspective. Leadership Laboratory is mandatory for AFROTC.

203 Leadership Laboratory II 2 (0-4) May be repeated for credit; cumulative maximum 4 hours. Leadership principles, military experience, and management practice; 2 hours laboratory and 2 hours required physical training. S, F grading.

291 Four-Week Field Training Course 2 Course
Prerequisite: 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. S, F grading.

292 Six-Week Field Training Course 6 Course
Prerequisite: 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. S, F grading.

299 Directed Studies V 1-4 May be repeated for credit. Course Prerequisite: By interview only. Cooperative: Open to UI degree-seeking students. S, F grading.

311 Air Force Leadership Studies I 3 Course
Prerequisite: Concurrent enrollment in AERO 313 required. Examines general aspects of air and space power through a historical perspective.

312 Air Force Leadership Studies II 3 Course
Prerequisite: Concurrent enrollment in AERO 313 required. Examines general aspects of air and space power through a historical perspective.

313 Leadership Laboratory III 2 (0-4) May be repeated for credit; cumulative maximum 4 hours. Leadership principles, military experience, and management practice; 2 hours laboratory and 2 hours required physical training. S, F grading.

411 National Security Affairs/Preparation for Active Duty I 3 Course Prerequisite: Concurrent enrollment in AERO 413 required. Examines general aspects of air and space power through a historical perspective.

412 National Security Affairs/Preparation for Active Duty II 3 Course Prerequisite: Concurrent enrollment in AERO 413 required. Examines general aspects of air and space power through a historical perspective.

413 Leadership Laboratory IV 2 (0-4) May be repeated for credit; cumulative maximum 4 hours. Introduces students to leadership principles, military experience, and management practice; 2 hours laboratory and 2 hours required physical training. S, F grading.

485 Special Topics: Study Abroad V 1-15 May be repeated for credit. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

Program in Aging

Johnson Tower 501
509-335-9540

Chair, M. Young.

The Program in Aging offers an interdisciplinary curriculum in gerontology, including courses in the social and health sciences, and offers a minor in aging. Students can choose to continue and earn a Certificate in Gerontology*. 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; and

(4) To further university and societal goals of equity for persons of all ages.

*Contact Dr. Margret H. Young at margaret_young@wsu.edu.

Minors

Aging

The minor in aging requires a minimum of 18 hours of credit including BIOLOGY 140; H D 203 or 305; PSYCH 363 or 490; SOC 356, and approved aging-related courses (6 hours) to be selected from a list of recommended courses available from the program chair. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Students must obtain approval of their course selection from the program chair. To register for the Program in Aging, students need to contact the program chair, M. Young at (509) 335-9203.

Certificates

Gerontology

A certificate in Gerontology is granted to students who complete the minor in aging with a gpa of at least 2.5 and an internship experience. The internship with a focus on aging must be completed either in human development or alcohol studies and may require additional prerequisites. All internships must be approved by the chair of the program prior to their initiation.

Description of Courses

AGING

AGING

486 Special Topics in Aging: Study Abroad
V 1-15 May be repeated for credit; cumulative maximum 15 hours. S, F grading.

Program in Agricultural and Food Systems

afs.wsu.edu
Hulbert Hall 423
509-335-8406

Program Director, K. Kidwell; Academic Directors, R. Knowles, J. Harsh, A. Love, H. Pappu, S. Sheppard, D. Smith; Professors, J. Davenport, A. Felsot, M. Flury, S. Hulbert, V. McCracken, T. Murray; W. Pan, J. Reganold, J. McNamara; Associate Professors, M. Neff, S. Neiberger, T. Peever, P. Andrews, B-K. Baik, D.

Brown; Assistant Professors, J. Goldberger, I. Burke, A-M. Fortuna, B. Schroeder Senior Instructors, J. Baser, J. Durfey, B. Jaeckel; Information Systems Coordinator, R. Rupp; Academic Coordinator, Cristie Crawford (cristie.crawford@wsu.edu).

Feed the world. Power the planet. Save the environment. It's a tall order by any measure, but especially when you consider that experts predict that by 2050, the world population will grow to more than 9 billion human beings. At the center of the issue is the agricultural enterprise of the 21st Century. WSU's Agricultural and Food Systems Degree Program focuses on vital aspects of agricultural and food systems ranging from plant and animal production to marketing and education. This innovative program provides students with what they need to build or work in a modern food system that is productive, competitive and sustainable.

Delivered collaboratively by departments within the College of Agricultural, Human, and Natural Resource Sciences, the AFS program provides foundational education in a wide array of disciplines, including crop and soil sciences, horticulture, entomology, plant pathology, and economics. Students can choose among five Bachelor of Science degree majors: Agricultural Education; Agricultural Technology and Production Management; Agricultural and Food Business Economics; Agriculture and Food Security; and Organic Agriculture Systems. The college offers a minor in Agricultural Systems, which is specifically designed to complement a major in Communications, for students interested in careers in the communications sector of the agricultural industry. The college also offers an interdisciplinary Master of Science in Agriculture degree, an Undergraduate Certificate in Organic Agriculture, and a Graduate Certificate in Sustainable Agriculture.

Bachelor of Science in Agricultural and Food Systems (Pullman campus)

Systems not silos. The AFS degree program emphasizes the highly integrated nature of the science disciplines involved in growing food. All students take a core set of courses designed to provide them with a broad interdisciplinary background as well as the decision making skills they'll need to succeed and excel in the workplace.

In addition to WSU's Six Learning Goals of the Baccalaureate, graduates with a major in AFS will be able to:

- Identify and understand the interaction among key components that comprise agricultural and food systems across disciplines.
- Obtain, evaluate, and apply scholarly information to expand understanding and knowledge-base of the systems.
- Apply scientific and quantitative reasoning to address real world problems in agricultural and food systems.
- Consider, evaluate, and integrate varying perspectives on issues related to agricultural and food systems.
- Integrate ethical, economic, environmental, and cultural/societal contexts at the global and/or local level.
- Communicate effectively to a broad range of audiences using appropriate traditional and emerging technological media.

- Appreciate the breadth and depth of professional opportunities in agricultural and food systems.

The hands-on possibilities with the AFS degree are numerous. Students are encouraged to participate in undergraduate research projects, work as part-time employees with research and extension personnel, and/or participate in professional internships to put their classroom training to work. Student clubs also provide a variety of ways to interact with peers, faculty, and staff within the college, yet another way to enrich the educational experience.

Scholarships

Scholarships for AFS majors are available on a competitive basis, and are awarded based on ability, need, and interest in a career path in associated professions. In order to certify in an AFS major, a student must have a minimum of 24 credits with a minimum cumulative GPA of 2.0. For complete information about all majors within the AFS degree programs, please see the AFS webpage at: <http://afs.wsu.edu>.

Transfer Students

Students planning to transfer into the AFS program should take courses that meet the university's general education requirements (GERs) and are encouraged to consult with an advisor within the AFS program for further guidance. Transfer articulation agreements have been developed with several Washington community colleges degree programs.

Master of Science in Agriculture (Pullman and Distance Delivery)

This advanced degree program focuses on the agricultural professional, practitioner, and educator to meet the growing need for prepared individuals to apply new and emerging technologies and science to the advancement of agriculture. This degree offers professionals already working in the field the opportunity to continue their education while they continue employment either inside or outside of the Pullman area. Both thesis and non-thesis options are available. Access complete program description on-line at: <http://www.msag.wsu.edu/>.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

AGRICULTURAL AND FOOD BUSINESS ECONOMICS (120 HOURS)

The Agricultural and Food Business Economics major gives students what they need to succeed in the food and agricultural business world – knowledge of business and economics practices as well as a deep understanding of animal, plant, and food systems. Graduates in this major are highly qualified to fill positions ranging from market researcher to product analyst to food broker in a variety of venues, including private industry, commercial farms and ranches, government agencies, production agriculture, and universities.

First Year

<i>First Term</i>	<i>Hours</i>
AFS 101	3
ANIM SCI 101	3
ECONS 101 [SSCI] or 102 [SSCI]	3
HORT 102	3
MATH 201 ¹	3

<i>Second Term</i>	<i>Hours</i>
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
H D 205 [COMM] or COM 102 [COMM]	3 or 4
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ¹	4

Second Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 120 [BSCI]	4
CHEM 101 [PSCI]	4
Creative & Professional Arts [ARTS]	3
STAT 212 or MGTOP 215	4

<i>Second Term</i>	<i>Hours</i>
ACCTG 230	3
AFS 201	3
BIOLOGY 106	4
CHEM 102	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
CROP SCI 360	3
CRS 336	3
ECONS 301	3
ECONS 350 ²	3
ECONS 351	3

<i>Second Term</i>	<i>Hours</i>
ECONS 302	3
ECONS 311 [M]	3
FIN 325 or ECONS 335	3
Humanities [HUM]	3
SOIL SCI 201	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Electives	3
Diversity [DIVR]	3
ECONS 452 [M]	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
AFS 401, or Integrative Capstone [CAPS]	3
ECONS 450 [M] or 453	3
ECONS 451 (AFS Core Systems Elective)	3
Electives	6

¹ An alternative to MATH 201 and 202 is MATH 171 and 220.

² ECONS 352, which is only offered in the spring, may be used as an alternative for ECONS 350.

AGRICULTURAL EDUCATION (126 HOURS)

Combining the best of both agriculture and teaching, the Agricultural Education major prepares students to educate the next generation of agricultural leaders and consumers. Highly sought

after by employers, they teach high school and middle school agricultural science classes, as well as serve as FFA advisors, adult education instructors, community outreach coordinators, university extension agents, etc.

This major requires students to complete the AFS core courses and agricultural education required courses, as well as a series of teaching and learning courses to meet initial teacher certification requirements. Students also spend a semester student teaching in an agricultural education program in a Washington high school.

Students electing a major in Agricultural Education must complete at least 6 hours in Communication Proficiency, 3 hours in Humanities, 6 hours in Social Sciences, 3 hours in Mathematics, 8 hours in Biological Sciences, 8 hours in Physical Sciences, 42 hours in professional education. The program requires a minimum of 134 semester hours for graduation. Students must take all core agriculture courses plus 16 additional credits in technical agriculture from the College of Agricultural, Human, and Natural Resource Sciences. (Student teaching requires AG ED 407 and TCH LRN 415). Students must also meet the College of Education certification requirements for entry into the program.

First Year

<i>First Term</i>	<i>Hours</i>
AFS 101	3
ANIM SCI 101	3
CHEM 101 [PSCI]	4
CROP SCI 102 or HORT 102	3
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Hours</i>
AGTM 201	3
CHEM 102	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
PSYCH 105 [SSCI]	3
Complete West B Exam	

Second Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 120 [BSCI]	4
Creative & Professional Arts [ARTS]	3
ECONS 101	3
ENGLISH 201 [WRTG]	3
TCH LRN 301	3
Certify in College of Education	

<i>Second Term</i>	<i>Hours</i>
AFS 201	3
BIOLOGY 106	4
SOIL SCI 201	3
STAT 212 [QUAN], MATH 140 [QUAN], 171 [QUAN], or 202 [QUAN]	3 or 4
TCH LRN 317	2
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Ag Elective (300-400 level)	3
Diversity [DIVR]	3
ECONS 350 ¹	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

<i>Second Term</i>	<i>Hours</i>
AFS 401, or Integrative Capstone [CAPS]	3
AGTM 402	3
ED PSYCH 468	3
TCH LRN 467 [M]	3
TCH LRN 469	2
TCH LRN 470	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
AG ED 440 [M]	2
AG ED 450	3
AG ED 471	2
AGTM 305	3
CROP SCI 360	3

<i>Second Term</i>	<i>Hours</i>
AG ED 407	8
TCH LRN 415	8

¹ ECONS 352, which is only offered in the spring, may be used as an alternative for ECONS 350.

AGRICULTURAL TECHNOLOGY AND PRODUCTION MANAGEMENT (121 HOURS)

Students in this hands-on major gain a science-based overview of agriculture and food systems, with an emphasis on the practical application of technology to agricultural production systems. The program combines students' inherent creativity and interest in physical and biological sciences, technology, mathematics, business, and related subjects with their desire to develop innovative solutions to a variety of agricultural problems.

Areas of application include precision agricultural operations and services, management of agricultural businesses, production operations, sales, and promotional work in domestic and international agricultural communities. Graduates are prepared to own, operate, and manage their own enterprises or to provide services for private or governmental entities.

First Year

<i>First Term</i>	<i>Hours</i>
AFS 101	3
ANIM SCI 101	3
CHEM 101 [PSCI]	4
HORT 102	3
Elective or MATH 201 ¹	3

<i>Second Term</i>	<i>Hours</i>
CHEM 102	4
COM 102 [COMM] or H D 205 [COMM]	3 or 4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
STAT 212 [QUAN], MATH 140 [QUAN], 171 [QUAN], or 202 [QUAN]	3 or 4

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230 or Elective ¹	3
AGTM 305	3
AGTM 314	3
BIOLOGY 120 [BSCI]	4
Creative & Professional Arts [ARTS]	3

<i>Second Term</i>	<i>Hours</i>	
BIOLOGY 106	4	
CRS 336	3	
ECONS 101 [SSCI]	3	
Humanities [HUM]	3	
SOIL SCI 201	3	
Complete Writing Portfolio		

Third Year

<i>First Term</i>	<i>Hours</i>	
AGTM 330	3	
CROP SCI 305, CROP SCI 403, ENTOM 340, or PL P 429	3	
CROP SCI 360	3	
ECONS 350 ²	3	
MGMT 301 or Elective ¹	3	

<i>Second Term</i>	<i>Hours</i>	
400-Level Business or Elective ¹	3	
AFS 201	3	
AGTM 315	3	
AGTM 412	3	
ECONS 450 or Elective ¹	3	

Fourth Year

<i>First Term</i>	<i>Hours</i>	
400-Level Business or Elective ¹	3	
AFS Core Systems Elective	3 or 4	
AGTM 451	1	
Diversity [DIVR]	3	
MKTG 360 or Elective ¹	3	

<i>Second Term</i>	<i>Hours</i>	
400-Level Business or Elective ¹	1	
AFS 401, or Integrative Capstone [CAPS]	3	
AGTM 405	2	
AGTM 416	3	
AGTM 436	2	
ENGLISH 402	3	

¹ Courses required for a Business minor. Working with their advisors, students are encouraged to apply electives towards a minor of their choice.

² ECONS 352, which is only offered in the spring, may be used as an alternative for ECONS 350.

AGRICULTURE AND FOOD SECURITY (120 HOURS)

Students in this major are the protectors of the world's plant-based food supply. The Agriculture and Food Security major prepares students to manage plant pests and diseases from a holistic perspective.

Students learn to understand the complexity of relationships within agricultural ecosystems, how external factors influence these systems, and how to effectively manage pests and diseases without incurring undue risks to human or environmental health. Course offerings begin with a strong scientific base in biology and chemistry, and expand to focus on crop science, soil science, integrated pest management, and plant pathology.

The major is an exciting blend of classroom instruction and field experience that is tailored to the eventual employment goals of the student. Graduates who can evaluate and diagnose pest and plant disease problems and recommend economically and ecologically sound ways to correct them are in great demand. Excellent employment opportunities exist with state, federal,

and international agricultural, environmental, and regulatory agencies, agrichemical companies, agricultural and environmental consulting firms, food processing, forest product, and vegetable and seed companies, and a wide range of other agribusiness enterprises.

First Year

<i>First Term</i>	<i>Hours</i>	
AFS 101	3	
ANIM SCI 101	3	
CHEM 101 [PSCI] or 105 [PSCI]	4	
HISTORY 105 [ROOT]	3	
HORT 102	3	

<i>Second Term</i>	<i>Hours</i>	
CHEM 102 or 106	4	
Creative & Professional Arts [ARTS]	3	
ENGLISH 101 [WRTG]	3	
HORT 202	4	

Second Year

<i>First Term</i>	<i>Hours</i>	
BIOLOGY 107 [BSCI] or 120 [BSCI]	4	
COM 102 [COMM] or H D 205 [COMM]	3 or 4	
ENVR SCI 174	3	
IPM 201	2	
SOIL SCI 201	3	

<i>Second Term</i>	<i>Hours</i>	
AFS 201	3	
BIOLOGY 106	4	
ECONS 101 [SSCI]	3	
Humanities [HUM]	3	
Complete Writing Portfolio		

Third Year

<i>First Term</i>	<i>Hours</i>	
AFS Core Systems Elective	3 or 4	
CROP SCI 305	3	
CROP SCI 360	3	
Diversity [DIVR]	3	
ECONS 350 ¹	3	

<i>Second Term</i>	<i>Hours</i>	
ENTOM 340	3	
IPM 452	3	
IPM 462	3	
STAT 212 [QUAN]	4	
Electives	3	

Fourth Year

<i>First Term</i>	<i>Hours</i>	
CROP SCI 403	3	
CRS 336	3	
PL P 300	2	
PL P 429	3	
SOIL SCI 301 [M] ²	3	

<i>Second Term</i>	<i>Hours</i>	
300-400-level Electives	3	
400-500-level Seminar in any CAHNRS Dept	1	
AFS 401, or Integrative Capstone [CAPS]	3	
SOIL SCI 441	3	
Electives	7	

¹ ECONS 352, which is only offered in the spring, may be used as an alternative for ECONS 350.

² Or SOIL SCI 414 and 415 spring semester.

ORGANIC AGRICULTURE SYSTEMS (120 HOURS)

Significantly different than conventional agriculture, organic food production is one of the fastest growing segments of agriculture, with retail sales increasing by 20 percent annually since 1991. In many ways, Washington State has been a leader in this burgeoning new industry. This revolutionary new major is the first of its kind to be offered in the United States. Students in this major take a diverse array of courses in the natural, environmental, economic and social sciences, as well as a number of courses focused on organic production practices.

Students wanting a hands-on degree experience thrive in the organic major. WSU has over a four-acre certified organic teaching farm where students learn to produce certified organic vegetables, fruit, herbs, and flowers that they distribute through local food banks, on-campus food service, a 100-member CSA (community supported agriculture), and a local farmers' market. Students have the opportunity to tailor their program of study to specific areas of emphasis, such as organic animal and dairy production, economics and marketing, crop production, food science, pest management, soil management, etc. in consultation with their advisor.

The Organic Agriculture Program at WSU prepares students to work on or develop their own organic farm. It also prepares students for employment opportunities with nonprofit organizations and government agencies involved in environmental and food safety, as well as private-sector food processing, marketing, organic certification, and product development industries.

First Year

<i>First Term</i>	<i>Hours</i>	
AFS 101	3	
ANIM SCI 101	3	
CHEM 101 [PSCI] or 105 [PSCI]	4	
ENGLISH 101 [WRTG]	3	
HORT 102	3	

<i>Second Term</i>	<i>Hours</i>	
CHEM 102 or 106	4	
HISTORY 105 [ROOT]	3	
HORT 202	4	
SOIL SCI 101	3	

Second Year

<i>First Term</i>	<i>Hours</i>	
BIOLOGY 107 [BSCI] or 120 [BSCI]	4	
COM 102 [COMM] or H D 205 [COMM]	3 or 4	
Creative & Professional Arts [ARTS]	3	
STAT 212 [QUAN]	4	

<i>Second Term</i>	<i>Hours</i>	
AFS 201	3	
BIOLOGY 106	4	
ECONS 101 [SSCI]	3	
Humanities [HUM]	3	
SOIL SCI 201	3	
Complete Writing Portfolio		

Third Year

<i>First Term</i>	<i>Hours</i>	
BIOLOGY 140	3	
CROP SCI 305, ENTOM 340, or PL P 429	3	

CROP SCI 360	3
IPM 201	2
SOIL SCI 301 [M] ¹	3

<i>Second Term</i>	<i>Hours</i>
AFS 445	3
ECONS 352 ²	3
IPM 462 [M]	3
SOIL SCI 498	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
CROP SCI 403	3
CRS 336	3
Diversity [DIVR]	3
NATRS 300 (AFS Core Systems Elective)	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
AFS 401, or Integrative Capstone [CAPS]	3
CROP SCI 412	1
SOIL SCI 441	3
SOIL SCI 480	6
Electives	3

¹ Or SOIL SCI 414 and 415 spring semester.

² EconS 350, which is only offered in the fall, may be used as an alternative for EconS 352.

Minors

Agricultural Systems

The minor in Agricultural Systems requires a minimum of 18 hours, 9 of which must be upper-division and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. The requirements are 6 hours from ANIM SCI 101, AFS 101, CROP SCI/HORT 102, and SOIL SCI 101; 3 hours from CrROP SCI/HORT 202, ECONS 101 and SOIL SCI 201; and 3 hours each from three of four areas: Biotic Influences on Crop Production, Economic Aspects of Agricultural Systems, Sustainability, and Production. See department for an approved list of courses.

Certificates

Organic Agriculture (Online and in Pullman)

The Certificate in Organic Agriculture is an 18-credit undergraduate program that can be taken along with a major in another field, or as a stand-alone educational experience. The certificate is ideal for professionals working in agriculture or related fields who require in-depth knowledge of organic systems, those wanting to pursue a career in organic agriculture, anyone interested in beginning a community-supported agriculture (CSA) enterprise, home gardeners, as well as current WSU students in other majors at WSU with an interest in organic agriculture. Students develop knowledge and skills that are applicable to industries and agencies involved in the food chain—from production, processing, and delivery to policy, regulation, and education.

The 18-credit certificate program is designed

with 3 core courses (9 credit hours) required for all students, 3 credit hours of “experiential learning”, plus a minimum of 6 additional credit hours (electives) selected from a range of courses. All courses already exist as permanent courses, and the certificate can be fulfilled through on-line delivery or in-class participation on the Pullman campus.

Requirements: Core: 9 credit hours from SOIL SCI 101, 201, and 302 (cross-listed as AFS 302); Experimental Learning: 3 credit hours from SOIL SCI 480 (for on-campus students) or 498 (for on-line students); Electives: 6 credit hours from AFS 445, BIOLOGY 140, CROP SCI 102, 360, 443, CRS 336, ECONS 101, 102, or SOIL SCI 441.

Sustainable Agriculture

The Graduate Certificate in Sustainable Agriculture provides post-baccalaureate students with an interdisciplinary understanding of practices and current issues in sustainable agriculture, along with the science that makes it work. Students who earn the Graduate Certificate in Sustainable Agriculture may take these skills into all industries and agencies involved in the food chain; from production, processing, and delivery to policy, regulation, and education. Students in any WSU graduate degree program are eligible for the certificate if they meet the prerequisites of the courses needed for the certificate. Students pursuing a graduate certificate may only accumulate 6 credits toward a master's degree and 9 credits towards a Ph.D. degree.

Students not in degree programs are also eligible to earn the certificate by enrolling as non-degree students, again providing that they meet the prerequisites of the courses needed for the certificate. Apply for admission to an academic department, indicating your intention to be classified as a part-time, certificate graduate student.

Description of Courses

AGRICULTURAL AND FOOD SYSTEMS

AFS

101 Introduction to Agricultural and Food Systems 3 Course Prerequisite: ANIM SCI 101 or concurrent enrollment; HORT 102 or concurrent enrollment. Introduction to the disciplines and integration of the fields of agriculture, food production, manufacturing and distribution to define and solve real-world problems.

201 Systems Skills Development for Agricultural & Food Systems 3 (2-2) Course Prerequisite: AFS 101; ECONS 101; ANIM SCI 101; CROP SCI 102. Development of tools and skills in building, evaluating and applying model systems in agricultural production, food manufacturing and distribution in rural society and society as a whole; focus on the types of systems, construction and analysis.

302 [M] Introduction to Agroecology 3 Agroecological crop production through case study analyses and applications of ecological principles in traditional and modern farming systems. (Crosslisted course offered as SOIL SCI 302, AFS 302). Recommended preparation: SOIL SCI 201.

336 [SSCI] Agriculture, Environment, and Community 3 Course Prerequisite: 3 credits [S] or [K] GER, or [SSCI] UCORE; sophomore standing. Sociological perspectives on major agrifood trends, alternative agrifood movements, and impacts on human communities and the natural environment.

401 Advanced Systems Analysis and Design in Agricultural & Food Systems 3 (2-2) Course Prerequisite: AFS 201; STAT 212 or 412; junior standing. Problem solving methodologies as applied to integrated agricultural systems analysis and design problems; strong emphasis on teamwork.

445 Field Analysis of Sustainable Food Systems 3 Experiential course visiting farms, food processing and marketing facilities to develop understanding of issues and relationships of sustainable food systems. (Crosslisted course offered as AFS 445, CRS 445).

501 Current Research in Organic and Sustainable Agriculture 3 Multidisciplinary framework to assess the sustainability of a range of farming and food systems.

545 Field Analysis of Sustainable Food Systems 3 Experiential course visiting farms, food processing and marketing facilities to develop understanding of issues and relationships of sustainable food systems. (Crosslisted course offered as AFS 445, CRS 445).

AGRICULTURAL EDUCATION

AG ED

342 Methods of Teaching Agriculture 3 Course Prerequisite: TCH LRN 303; admitted to teacher education (Secondary Education). Methods and strategies for teaching agricultural science.

407 Student Teaching in Agricultural Education V 4-16 Course Prerequisite: AG ED 450; AG ED 442; AG ED 471. Supervised teaching in public schools including seminars reflecting effective teaching. Required preparation: Includes applying; paying certification fees; completing all other coursework for degree and teacher certification; receiving fingerprint clearance from WSP, FBI, and Office of Professional Practices; maintaining 2.5 gpa overall and in endorsement and professional core classes. Placement by interview only. S, F grading.

440 [M] Principles of Career and Technical Education V 2-3 Course Prerequisite: TCH LRN 464 or concurrent enrollment; TCH LRN 465 or concurrent enrollment; TCH LRN 466 or concurrent enrollment. Local, state, and national vocational technical educational legislation, policies, programs, and organizations.

442 Program Planning in Agricultural Education 2 Organization and management of a total vocational agricultural program.

- 450 Planning, Curriculum, and Techniques in Ag Ed** 3 Course Prerequisite: TCH LRN 301; TCH LRN 317; admitted to teacher education (Secondary Education). Focus on career and technical education program planning, curriculum development, and instructional techniques for agricultural education programs.
- 471 Student Organizations in Agricultural Education** 2 Course Prerequisite: Concurrent enrollment AG ED 450. Role of Future Farmers of America (FFA) in student organizations; role of advisor; principles of leadership; characteristics of successful FFA chapters. Course equivalent to OSU's Ag 421/521.
- 497 Internship in Agricultural Education** V 2-12 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By interview only. Off-campus professional experience. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 504 Special Topics in Vocational Education** V 1-3 Special topics in agricultural education or agriculture that will provide advanced training for teachers of agriculture.
- 508 Foundations of Vocational Education** 3 Historical, philosophical, social, political and economic factors that influence education in vocational environments.
- 511 Seminar in Career and Technical Education** V 1-2 Seminar addressing new and emerging legislation and educational programs in vocational education.
- GENERAL AGRICULTURE**
- AGRI**
- 501 Agriculture Master's Practicum** V 2-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to graduate program in Masters of Science in Agriculture. Course individually designed to provide practical participation/experience under professional supervision in areas related to student's specialization.
- 502 Graduate Seminar** 3 Presentations and discussions of contemporary issues, trends, and recent research and development by graduate students, faculty, and visiting scholars.
- 560 Contemporary Issues in Agricultural Technology and Policy** 3 Contemporary issues in agricultural technology and policy implications.
- 562 Advanced Topics** V 1-3 May be repeated for credit; cumulative maximum 4 hours. Directed group study of selected advanced topics in agriculture and related areas.
- 587 Research and Extension in Agriculture** 3 Ways to effectively communicate research and extension information to diverse audiences; and to plan and assess effective extension programs.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- AGRICULTURAL TECHNOLOGY AND MANAGEMENT**
- AGTM**
- 201 Metal Fabrication** 3 (1-6) Theory, applications, and practices of welding, machining, and associated techniques in fabricating with metals. (Crosslisted course offered as AGTM 201, ENGR 201).
- 305 Agricultural Precision Systems** 3 (2-3) Systems for precision agriculture, equipment, software uses, principles, construction, care, tillage, planting, spraying, harvesting, and materials handling machinery. Field trips required. Cooperative: Open to UI degree-seeking students.
- 310 Small Engine Maintenance and Repair** 3 (2-3) Safety, operation, maintenance, and troubleshooting engines; understanding of engine systems and components including compression, carburetion, cooling, fuel, and lubrication.
- 314 Agricultural Power Units and Mobile Electrical Systems** 3 (2-3) Principles of thermodynamics, engine cycles, transmissions, electrical, starting, braking, steering, suspension systems, differentials and hydraulic systems.
- 315 Irrigation Systems and Water Management** 3 (2-3) Principles of irrigation and drainage, water measurement, irrigation methods and practices, selection of irrigation system components. Cooperative: Open to UI degree-seeking students.
- 330 Electrical Power Systems for Agriculture** 3 (2-3) Course Prerequisite: Sophomore standing. Methods of selecting and installing electrical power circuits in agricultural operations; light frame construction; motor and control circuits; Programmable Logic Controllers (PLCs).
- 402 Methods, Materials, and Machines for Teaching Ag Mechanics** 3 Course Prerequisite: AGTM 201. Development of shop programs in project planning, demonstrations, and skills performance; safety and management of materials, tools, and machines.
- 405 Advanced Agricultural Precision Systems** 2 (1-3) Course Prerequisite: AGTM 305. Advanced principles of precision agricultural systems, software uses, management of controllers on equipment, geographical information systems and global positioning systems.
- 412 Human and Machinery Risk Management** 3 Course Prerequisite: Junior standing. History and current status of farm worker injury prevention programs in the US including worker's compensation insurance.
- 416 Fluid Power Systems** 3 (2-3) Fluid power principles applied to the selection, design, operation, and management of agricultural and industrial machinery. Field trips required.
- 436 Agricultural Technology Design** 2 Course Prerequisite: Junior standing; AGTM 305 or 405. Design applications to methodologies as applied to precision agricultural systems; group problem solving activities, data analysis utilizing computers, and team design efforts. Credit not granted for both AGTM 436 and AGTM 536.
- 444 Teaching Practicum** 1 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: By instructor permission. Laboratory and research techniques for AgTM.
- 451 Seminar** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Junior standing. Readings and interviews, research, and oral presentation of professional subjects.
- 481 Independent Research** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By instructor permission.
- 495 Internship in Agricultural Technology and Management** V 2-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: sophomore standing; prior approval of internship coordinator and advisor required. Work experience related to academic learning. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 505 Precision Agricultural Systems Management** 3 Evolving technologies involved in precision agriculture and their application to agricultural systems.

536 Agricultural Technology Design 2 Design applications to methodologies as applied to precision agricultural systems; group problem solving activities, data analysis utilizing computers, and team design efforts. Credit not granted for both AGTM 436 and AGTM 536.

Department of Animal Sciences

www.ansci.wsu.edu

Clark 116

509-335-5523

Professor and Department Chair, M. E. Benson; Professors, J. R. Busboom, M. V. Dodson, M. Du, L. K. Fox, J. H. Harrison, K. A. Johnson, J. P. McNamara, D. D. Nelson, T. E. Spencer, R. W. Wright, Jr.; Associate Professors, Z. Jiang, H. L. Neibergs, M. L. Nelson, R. C. Newberry, J. K. Pru, B. D. Rodgers.

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

Bachelor of Science Degree Program

Animal Sciences students learn the biological and economic principles and practices associated with agricultural animal production, and companion and laboratory animal care. This training prepares graduates for a wide variety of career opportunities. These opportunities include animal production and food processing (meats, dairy products, etc.); animal research, biomedical research; zoos; companion animal services; the agricultural service industries (including feed manufacturing and sales, pharmaceuticals, artificial insemination, agricultural equipment, 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 strong foundation in science and 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. Required core courses include: AS 101 Introductory Animal Science, AS 180 Animal Science Orientation, AS 313 Feeds and Feeding, AS 330 Animal Genetics, AS 350, 351 Physiology of Reproduction, AS 380 Careers in Animal Science and a 400 level animal science production course. 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 individual program specialization in areas of animal management or pre-veterinary medicine/science.

We expect that students graduating with a B.S. in Animal Sciences will have acquired: 1) a knowledge and understanding of the sciences associated with the biological systems of animals; 2) a knowledge of sound business, environmental, and well-being management practices associated with animal production; 3) the ability to think critically and solve real-world problems; 4) the ability to communicate effectively using oral, written, and electronic communication forms; and 5) leadership and teamwork skills with application to diverse career paths.

The Animal Management Option emphasizes the business, economics and practical management aspects of animal production and care of animals. This option is recommended for students preparing to work in agricultural animal production, companion animal care, or agribusiness.

The Pre-veterinary Medicine/Science Option places emphasis on basic science courses. This option is recommended for students planning to attend graduate school, apply to the professional program leading to the Doctor of Veterinary Medicine, or work in technical or specialized areas of animal science, such as extension, academia, research, 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. The department offers experiential learning opportunities in dairy, beef cattle and swine that allow students to practice decision making and management skills. Active student clubs within the Department of Animal Sciences, the College of Agricultural, Human, and Natural Resource Sciences, and the university community provide students with both professional and social contacts with faculty and other students. 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 any background. 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.

Transfer Students

Students planning to transfer to the Department of Animal Sciences, Washington State University, from community colleges or other institutions should complete as many science, mathematics, and general education courses as possible prior to transfer.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

ANIMAL MANAGEMENT (120 HOURS)

At least 40 of the total hours required for the bachelor's degree in this program must be in 300-400-level courses.

First Year

<i>First Term</i>	<i>Hours</i>
ANIM SCI 101	3
ANIM SCI 180	1
CHEM 101 [PSCI] or 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH 107 or 140	4

Second Term

ANIM SCI 178 or 280	1
BIOLOGY 106 [BSCI]	4
CHEM 102 or 106	4
COM 102 [COMM] or H D 205 [COMM]	3
ENGLISH 101 [WRTG]	3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
ANIM SCI 172 or 174	1
BIOLOGY 107 [BSCI]	4
Creative & Professional Arts [ARTS]	3
Electives	3

Second Term

ANIM SCI Elective	3
B LAW 210	3
ECONS 101 [SSCI]	3
Humanities [HUM]	3
STAT 212 [QUAN]	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ANIM SCI 260, 274, 285, or 346	3
ANIM SCI 313	4
ANIM SCI 330	3
ANIM SCI 380	1
ANIM SCI 399	1
ECONS 350	3

Second Term

ANIM SCI 314, 345, or 360	3
ANIM SCI 350	3
ANIM SCI 351	1
Diversity [DIVR]	3
ENGLISH 301 or 402	3
VET CLIN 361	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Ag Sciences Elective	3
ANIM SCI 399 or 499	3
ANIM SCI 440 or 488 [M]	3
ANIM SCI 454	2
ANIM SCI 464 or 472 [M]	3

<i>Second Term</i>	<i>Hours</i>
ANIM SCI 408, 473, or 474 [M]	3
ANIM SCI Upper-Division Elective	3
Integrative Capstone [CAPS]	3
Electives	6

JOINT PROGRAM IN ANIMAL SCIENCES AND VETERINARY MEDICINE (100 HOURS)

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 300-400-level 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 scholastic 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. Selected students will be identified and invited to apply for the AS-DVM program after the second semester of the first year. Students would then declare animal sciences as a major in the first semester of the sophomore year and enter 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. 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.

Fourth-Seventh Years

Those students finishing all required classes would complete only the DVM curriculum from this point on. Most students will meet these requirements after one year of the DVM program. Successful completion of the College of Veterinary Medicine program will earn the Doctor of Veterinary Medicine.

First Year

<i>First Term</i>	<i>Hours</i>
ANIM SCI 101	3
ANIM SCI 172, 174, or 178	1
ANIM SCI 180	1
CHEM 105 [PSCI]	4

HISTORY 105 [ROOT]	3
MATH 107 or 140	4
<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 106	4
COM 102 [COMM] or H D 205 [COMM]	3
Creative & Professional Arts [ARTS]	3
ENGLISH 101 [WRTG]	3

Second Year

<i>First Term</i>	<i>Hours</i>
ANIM SCI Elective	3
BIOLOGY 107	4
CHEM 345	4
Diversity [DIVR]	3
Humanities [HUM]	3

<i>Second Term</i>	<i>Hours</i>
ECONS 101 [SSCI]	3
MBIOS 301	4
STAT 212 [QUAN]	4
VET PH 308	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ANIM SCI 313	4
ANIM SCI 330	3
ANIM SCI 380	1
ANIM SCI 440, 464, 472, or 488 [M]	3
ECONS 350	3
MBIOS 303	4

<i>Second Term</i>	<i>Hours</i>
ANIM SCI 350	3
ANIM SCI 351	1
ANIM SCI 408, 473, or 474 [M]	3
ANIM SCI 499	3
Integrative Capstone [CAPS]	3
PHYSICS 101	4

PRE-VETERINARY MEDICINE/SCIENCE (120 HOURS)

At least 40 of the total hours required for the bachelor's degree in this program must be in 300-400-level courses.

First Year

<i>First Term</i>	<i>Hours</i>
ANIM SCI 101	3
ANIM SCI 180	1
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH 107	4

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 106	4
ENGLISH 101 [WRTG]	3
MATH 140 recommended, or Elective	4

Second Year

<i>First Term</i>	<i>Hours</i>
ANIM SCI 172 or 174	1
BIOLOGY 107	4
CHEM 345	4
COM 102 [COMM] or H D 205 [COMM]	3
Creative & Professional Arts [ARTS]	3

<i>Second Term</i>	<i>Hours</i>
ANIM SCI 178 or 280	1
Humanities [HUM]	3
MBIOS 301	4
STAT 212 [QUAN]	4
VET CLIN 361	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ANIM SCI 285 or 346	3
ANIM SCI 313	4
ANIM SCI 330	3
ANIM SCI 380	1
ECONS 101 [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
ANIM SCI 314, 345, or 360	3
ANIM SCI 350	3
ANIM SCI 351	1
Diversity [DIVR]	3
ENGLISH 301 or 402	3
MBIOS 303	4

Fourth Year

<i>First Term</i>	<i>Hours</i>
ANIM SCI 440 or 488 [M]	3
ANIM SCI 464 or 472 [M]	3
PHYSICS 101	4
Electives	5

<i>Second Term</i>	<i>Hours</i>
ANIM SCI 408, 451, 473, or 474 [M]	3
ANIM SCI 499	1
BIOLOGY 324 or VET PH 308	4
Integrative Capstone [CAPS]	3
Electives	3

Minors

Animal Sciences

A minor requires a minimum of 16 semester hours of animal science courses, 9 of which must be in 300-400-level work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Students wishing to declare a minor should consult the department as early as possible to develop an approved schedule of courses.

Description of Courses

ANIMAL SCIENCES

ANIM SCI

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: Open to UI degree-seeking students.

172 Dairy Cattle Management Laboratory 1 (0-3) Management practices associated with a dairy enterprise. Cooperative: Open to UI degree-seeking students. S, F grading.

- 174 Beef Cow Calf Management Laboratory** 1 (0-3) Management practices associated with a beef cow calf enterprise for students without experience. Cooperative: Open to UI degree-seeking students. S, F grading.
- 178 Swine Management Laboratory** 1 (0-3) Management practices associated with a swine enterprise. Field trip and special clothing required. Cooperative: Open to UI degree-seeking students. S, F grading.
- 180 Animal Sciences Orientation** 1 Animal sciences as a profession; career opportunities, curriculum, advisement, internships, externships, animal centers, special services centers, and course requirements.
- 205 [BSCI] Companion Animal Nutrition** 3 Biological concepts with application in nutrition of pet animals, including evolution and selection of pet species and their nutrient requirements.
- 260 Live Animal and Carcass Evaluation** 3 (1-6) Basic principles of live animal and carcass evaluation. Cooperative: Open to UI degree-seeking students.
- 274 Beef Feedlot Systems** 2 (1-3) Overview of feeding management, feed milling and batching, animal health, and economics of the commercial cattle feeding business. One 1-day field trip. Cooperative: Open to UI degree-seeking students.
- 280 Animal Science and Society: Current Topics** 1 (0-2) A discussion of the products, science, and management of animal agriculture and how they relate to, and impact, society.
- 285 Rights and Welfare of Animals** 3 Ethical considerations and welfare of animals used as companions, for food, and in scientific research. Recommended preparation: BIOLOGY 102 or 106 or concurrent enrollment. Cooperative: Open to UI degree-seeking students.
- 313 Feeds and Feeding** 4 (3-3) Course Prerequisite: BIOLOGY 106. Utilization, practices, requirements, nutritive characteristics, and calculations of rations for animals. Field trip required. Cooperative: Open to UI degree-seeking students.
- 314 Principles of Nutrition** 3 Course Prerequisite: BIOLOGY 107; CHEM 102 or 106. Digestion, absorption, metabolism, and function of nutrients. Cooperative: Open to UI degree-seeking students.
- 330 Animal Genetics** 3 (2-3) Course Prerequisite: STAT 212; BIOLOGY 106. Basic genetic concepts and methods for the genetic improvement of Mendelian and polygenic traits in animals. Cooperative: Open to UI degree-seeking students.
- 345 Introduction to Animal Growth and Development** 3 Course Prerequisite: ANIM SCI 101; BIOLOGY 106. Animal structure, composition, whole body and cellular growth, prenatal and postnatal growth; emphasis on skeletal muscle, bone and adipose tissue. Cooperative: Open to UI degree-seeking students.
- 346 Introduction to Skeletal Muscle Physiology** 3 Structure, function and regulation of skeletal muscle; embryonic, neonatal, postnatal growth/atrophy; muscle-specific proteins. Cooperative: Open to UI degree-seeking students.
- 350 Physiology of Reproduction** 3 Course Prerequisite: BIOLOGY 106; BIOLOGY 107; CHEM 102 or 106. Anatomy and physiology of reproductive organs; hormones of reproduction; production of gametes; artificial insemination; fertilization; prenatal development; fertility and infertility. Cooperative: Open to UI degree-seeking students.
- 351 Physiology of Reproduction Laboratory** 1 (0-3) Course Prerequisite: ANIM SCI 350 or concurrent enrollment. Laboratory and field techniques used in animal reproduction involving hormones, artificial insemination, semen evaluation and pregnancy.
- 360 Meat Science** 3 (2-3) Course Prerequisite: BIOLOGY 107. Anatomy, slaughter, classification, and processing of meat animal species. Special clothing and equipment required. Cooperative: Open to UI degree-seeking students.
- 378 Advanced Livestock and Meat Selection and Evaluation** 2 (0-6) May be repeated for credit. Course Prerequisite: ANIM SCI 260. Principles and practices of livestock and meat selection and evaluation. Off-campus and weekend participation required.
- 380 Careers in Animal Science** 1 Course Prerequisite: Certified major in Animal Sciences; junior standing. Issues and preparation for careers in animal sciences areas.
- 398 Cooperative Education Externship** V 2 (0-6) to 8 (0-24) May be repeated for credit; cumulative maximum 8 hours. Cooperative education externship in livestock production or related field. S, F grading.
- 399 Practicum** V 1-8 May be repeated for credit; cumulative maximum 12 hours. Directed internship in livestock production and related fields conducted at WSU centers on or off campus. S, F grading.
- 408 [M] Ruminant Nutrition** 3 Course Prerequisite: ANIM SCI 313. Anatomy, physiology, and metabolism in ruminant animals.
- 440 [M] Physiology of Domestic Animals** 3 Course Prerequisite: BIOLOGY 106; BIOLOGY 107. Basic animal functions; relationship and difference between domestic animals; measurement of functional processes.
- 451 [M] Endocrine Physiology** 3 Course Prerequisite: BIOLOGY 106; BIOLOGY 107; MBIOS 303 or concurrent enrollment; ANIM SCI 440, BIOLOGY 350, 352, or 353. Anatomy, physiology, and biochemistry of endocrine systems and hormone action; emphasis on comparative, veterinary, and biomedical models. Credit not granted for both ANIM SCI 451 and ANIM SCI 551. Cooperative: Open to UI degree-seeking students.
- 454 Artificial Insemination and Pregnancy Detection** 2 (1-3) Course Prerequisite: ANIM SCI 351. Techniques in semen handling, insemination and pregnancy detection in cattle. Special clothing required. Cooperative: Open to UI degree-seeking students.
- 460 Advanced Meat Science** 3 (2-3) Course Prerequisite: ANIM SCI 345, 346, or 360. Structure and development of skeletal muscle, postmortem biological changes, meat quality, meat processing, food safety, and meat industry. Cooperative: Open to UI degree-seeking students.
- 464 [M] Companion Animal Management** 3 (2-3) Course Prerequisite: Junior standing. Care and management of companion animal species throughout the life cycle, including nutrition, reproduction, exercise and behavior. Cooperative: Open to UI degree-seeking students.
- 472 [M] Dairy Cattle Management** 3 Course Prerequisite: ANIM SCI 313; ANIM SCI 330; ANIM SCI 350. Principles of breeding, feeding, and management of dairy cattle. Field trip required. Cooperative: Open to UI degree-seeking students.
- 473 [M] Advanced Dairy Management** 3 (1-6) Course Prerequisite: ANIM SCI 472. Current dairy record keeping and database management systems. Cooperative: Open to UI degree-seeking students.
- 474 [M] Beef Cattle Production** 3 (2-3) Course Prerequisite: ANIM SCI 313; ANIM SCI 330; ANIM SCI 350. Breeding, feeding, and management; commercial and purebred enterprises; management of beef cattle on ranges, pastures and in the feedlot. Field trip required. Cooperative: Open to UI degree-seeking students.
- 478 [M] Swine Production** 3 (2-3) Course Prerequisite: ANIM SCI 313; ANIM SCI 330; ANIM SCI 350. Principles of breeding, feeding, management, and marketing of swine. Field trips and special clothing required. Cooperative: Open to UI degree-seeking students.
- 480 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 485 [M] Applied Animal Behavior** 3 (2-3) Course Prerequisite: BIOLOGY 106; BIOLOGY 107; STAT 212; junior standing. Application of scientific principles governing animal behavior to practical aspects of animal housing, breeding, handling, training, and care. Cooperative: Open to UI degree-seeking students.
- 488 [M] Perspectives in Biotechnology** 3 Course Prerequisite: MBIOS 301 or ANIM SCI 330. Theory and application of biotechnology in agriculture, industry, and medicine; methodological, environmental, social, and economic concerns. Credit not granted for both ANIM SCI 488 and ANIM SCI 588. Cooperative: Open to UI degree-seeking students.

- 499 Special Problems V** 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 500 Seminar in Animal Sciences 1** May be repeated for credit. Current developments in animal sciences.
- 501 Milk, Meat, and Methane: Contemporary Animal Production Issues 3** Provides knowledge and understanding of livestock issues that affect contemporary livestock production.
- 504 Special Topics V** 1-4 May be repeated for credit; cumulative maximum 12 hours.
- 507 Advanced Nutrient Metabolism 3** Advanced topics in metabolic regulation of carbohydrate, fat and amino acid use by animals.
- 510 Digestion and Nutrient Utilization in Animals 3** (2-3) Gastrointestinal physiology, rate of passage, feed intake regulation, measures of digestibility, starch, fat and nonstarch polysaccharide, and digestion and utilization of nutrients.
- 513 Mineral and Vitamin Metabolism 4** Absorption, excretion, metabolism, dietary requirements and interactions of minerals and vitamins in animals and humans. Cooperative: Open to UI degree-seeking students.
- 520 Preparation of Scientific Literature in Animal Sciences 2** Preparation of grant proposals, manuscripts, and literature reviews on research topics.
- 528 Topics in Animal Breeding 2** May be repeated for credit; cumulative maximum 4 hours. Systems of selection and mating for genetic improvement in farm animals.
- 551 [M] Endocrine Physiology 3** Anatomy, physiology, and biochemistry of endocrine systems and hormone action; emphasis on comparative, veterinary, and biomedical models. Credit not granted for both ANIM SCI 451 and ANIM SCI 551. Cooperative: Open to UI degree-seeking students.
- 558 Molecular and Cellular Reproduction 3** (2-2) State of the art concepts of the molecular, cellular, and physiological aspects of mammalian reproduction. (Crosslisted course offered as MBIOS 528, ANIM SCI 558). Cooperative: Open to UI degree-seeking students.
- 581 Stem Cell Biology, Therapeutics and Regenerative Medicine 3** Provides information on the latest cutting edge research in the areas of stem cell biology and tissue regeneration; covers stem cell therapeutics, gene transfer vectors and methods for isolating, characterizing, and generating stem cells. (Course offered as PHARMSCI 581, ANIM SCI 581).

582 Seminar in Reproductive Biology 1 Current developments in reproductive biology. Cooperative: Open to UI degree-seeking students. S, F grading.

588 [M] Perspectives in Biotechnology 3 Theory and application of biotechnology in agriculture, industry, and medicine; methodological, environmental, social, and economic concerns. Credit not granted for both ANIM SCI 488 and ANIM SCI 588. Cooperative: Open to UI degree-seeking students.

598 Advanced Topics in Animal Sciences V 1-2 May be repeated for credit. Recent research in various disciplines of animal sciences. Cooperative: Open to UI degree-seeking students.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Anthropology

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509-335-3441

Professor and Department Chair, A. Duff; Professors, W. Andrejsky, Jr., J. H. Bodley, B. S. Hewlett, T. A. Kohler, J. M. Mageo; Associate Professors, E. Hagen, N. P. McKee, R. J. Quinlan, S. A. Weber; Assistant Professors, J. Cassaniti, J. d'Alpoim Guedes, C. Grier, B. Kemp, C. L. Meehan, L. Premo, E. Thornton, M. B. Quinlan, C. Wilkinson-Weber; Professors Emeriti, R. E. Ackerman, W. D. Lipe, W. Willard.

The curriculum includes courses in the four major subfields of anthropology: archaeology, cultural/social anthropology, linguistic anthropology, and physical/biological anthropology. These courses familiarize students with current issues in human evolution, linguistics, the prehistoric development of culture, and cultural theory. Undergraduate majors are required to gain a background in all four of these major subfields. Graduate students may specialize in archaeology, cultural anthropology, or evolutionary anthropology. The program in archaeology emphasizes the prehistory of western North America as well as ecological archaeology,

past environments, quantitative methods, modeling and simulation, and lithic analysis, and includes courses taught by faculty with specialties in each of these areas. The department also conducts summer archaeological field schools in the Pacific Northwest and the Southwest. The program in cultural anthropology emphasizes globalization, historical ethnography, psychological anthropology, medical anthropology, gender and culture, biocultural perspectives, and public health anthropology. The public health anthropology emphasis is part of the Peace Corps Master's International Program. Faculty research is based in North and South America, Polynesia, Sub-Saharan Africa, and South Asia. The program in evolutionary anthropology emphasizes evolutionary psychology, behavioral ecology, evolutionary cultural anthropology, evolutionary archaeology and paleoanthropology. Evolutionary faculty have research interests that span several continents including the Americas, Europe and Africa. The department also emphasizes research and training in Psychological/Medical Anthropology and Ethnobiology.

Departmental offices and laboratories are located in College Hall near the center of campus. Physical facilities include special laboratories for physical anthropology, lithic analysis, paleoecology, geoarchaeology, and zooarchaeology, as well as research laboratories for faculty and advanced students. The Museum of Anthropology, with permanent and temporary exhibits, and ethnographic and archaeological research collections, is also housed in College Hall.

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, private consulting firms, and international business. In addition, anthropology provides a strong general foundation for a pre-professional education.

We expect that our graduating students will have:

1. Familiarity with the basic principles and findings of ethnology, archaeology, physical anthropology, and linguistics, the four subfields of American anthropology as well as the ways in which these four subfields are interrelated;

2. Awareness of the basic research and analytical methods and underlying theories of the four subfields of anthropology;

3. Ability to read critically and synthesize information produced by professional anthropologists and published in academic books and journals;

4. Ability to write in accessible, standard, academic prose narratives that are marked by: a framework of clear, general statements; specific, concrete evidence that supports these statements; analysis and discussion of the material presented; and a coherent summary conclusion, indicating the significance of the work;

5. Ability to apply the principles, findings, and research and analytical methods of anthropology to new situations and data, including those of everyday life.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

ANTHROPOLOGY (120 HOURS)

A minimum of 34 hours in anthropology courses are required. Grades of C- or higher are considered passing grades for all anthropology classes; D+ and lower are failing grades. No required course can be taken pass, fail.

The anthropology major must complete a core: ANTH 203, 230, 260, 390, 490, and one course from each of the following: a) ANTH 300, 301, 303, 304, 306, 307, 309, 316, 320, 327, 401, 402, 403, 404, 405, 418, 419, or 428; b) ANTH 350, 355, or 450; c) ANTH 463, 465, 466, or 468; d) ANTH 300, 330, 331, 334, 336, 370, 430, or 436.

First Year

First Term	Hours
ANTH 203	3
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
ENGLISH 101 [WRTG]	3
Foreign Language, if necessary, or Elective ¹	3 or 4
HISTORY 105 [ROOT]	3

Second Term	Hours
ANTH 260	4
Communication [COMM] or Written Communication [WRTG]	3
Foreign Language, if necessary, or Elective ¹	3 or 4
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4

Second Year

First Term	Hours
ANTH 230	3
Creative & Professional Arts [ARTS]	3
Quantitative Reasoning [QUAN] ²	3 or 4
Social Sciences [SSCI]	3
Electives	3

Second Term	Hours
Biological ANTH Elective ³	3
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Cultural ANTH Elective ³	3
Diversity [DIVR]	3
Electives	3
Complete Writing Portfolio	

Third Year

First Term	Hours
ANTH 390	3
Archaeology ANTH Elective ³	3
Humanities [HUM]	3
Electives ⁴	6

Second Term	Hours
300-400-level Electives ⁴	9
ANTH Electives ⁵	6
Consider study abroad or summer field school	

Fourth Year

First Term	Hours
300-400-level Electives ⁴	9
ANTH 340 [M], 390 [M], 401 [M], 403 [M], 405 [M], or 430 [M]	3
Linguistic ANTH Elective ³	3

Second Term	Hours
ANTH 490 [M]	3
Integrative Capstone [CAPS]	3
300-400-level Electives ⁴	9

¹ Two years of one foreign language from high school or one year at college required.

² MATH 212 preferred.

³ 3 hours credits in each area. Biological: ANTH 463, 465, 466, 468; Archaeology: ANTH 300, 330, 331, 334, 336, 370, 430, 436; Cultural: ANTH 300, 303, 306, 307, 309, 316, 320, 327, 401, 402, 403, 404, 405, 417, 418, 419, 428; Linguistics: ANTH 350, 355, 450.

⁴ Concentrating electives beginning in the junior year in one subarea of anthropology or in a minor discipline in consultation with the adviser is recommended.

⁵ Select courses from the four subdisciplines.

Minors

Anthropology

A student with 60 semester hours may certify a minor. A minor requires a minimum of 18 semester hours in anthropology, including three of the following: ANTH 101 or 198, 203, 230, and 260. At least 9 hours must be 300-400-level work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. A minimum grade of C- is required in each course contributing to the minor.

Description of Courses

ANTHROPOLOGY

ANTH

101 [DIVR] General Anthropology 3 Major subfields of anthropology; physical (human evolution and race), cultural-social, archaeology, and linguistics.

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

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

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

214 [SSCI] Gender and Culture in America 3 Exploration or variation in gender roles, relationships, values, and institutions among men and women in US, ethnic, and other subcultures. (Crosslisted course offered as ANTH 214, WOMEN ST 214).

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

260 [BSCI] Introduction to Physical Anthropology 4 (3-3) Evidence for human evolution; processes of racial differentiation; techniques of physical anthropology.

275 Special Topics: Study Abroad V 1-15 May be repeated for credit. S, F grading.

300 Field Methods V 2-8 Course Prerequisite: By instructor permission. Practice in methods of archaeological, ethnological, or linguistic field research.

301 Arts and Media in Global Perspective 3 Contemporary arts and media around the world, and their impact on identity, society, and culture.

302 [SSCI] Childhood and Culture 3 Anthropological theory and methods applied to the study of infant, child, and adolescent development.

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

306 Cultures and Peoples of the Middle East 3 Contemporary Arab cultures in a historical perspective within the framework of Western-Middle Eastern relations. (Crosslisted course offered as ANTH 306, ASIA 306, HISTORY 306).

307 [DIVR] 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 [SSCI] Cultural Ecology 3 Major findings of ecological anthropology relating to problems of population, resources, and environment in small-scale cultures. Recommended preparation: Sophomore standing, ANTH 101 or 203.

312 Indigenous Women in Traditional and Contemporary Societies 3 Course Prerequisite: One of ANTH 101, 214, CES 101, 171, or WOMEN ST 101, or WOMEN ST 201. Exploration of roles and activities of women in indigenous societies; how traditional gender roles have developed and changed. (Crosslisted course offered as CES 372, ANTH 312, WOMEN ST 372).

316 [DIVR] Gender in Cross Cultural Perspective 3 Cross-cultural examination of the status and roles of women and men, sexuality and marriage, and folk concepts of sexual anatomy in traditional cultures in Western science; concepts of nature and culture are explored through a variety of perspectives. (Crosslisted course offered as ANTH 316, WOMEN ST 316). Recommended preparation: Sophomore standing; ANTH 101, PSYCH 105, SOC 101, or WOMEN ST 101 or 201.

- 317 Global Feminisms 3** An interdisciplinary approach to examining women's roles and experiences throughout the world and different approaches to feminism/feminisms. (Crosslisted course offered as WOMEN ST 332, ANTH 317).
- 320 Native Peoples of North America 3** A culture history/culture area study of native North America. (Crosslisted course offered as ANTH 320, CES 377).
- 327 Contemporary Native Peoples of the Americas 3** Contemporary cultures of Native American communities emphasizing North America. (Crosslisted course offered as ANTH 327, CES 378). Recommended preparation: ANTH 101 or CES 171.
- 330 Origins of Culture and Civilization 3** Prehistoric roots of culture from the beginnings of humankind to the rise of the first civilizations in Africa and Eurasia. Recommended preparation: 3 hours ANTH.
- 331 America Before Columbus 3** Cultures and environments of North/Middle America from the arrival of the earliest hunter-gatherers to the complex Mayan and Aztec civilizations. (Crosslisted course offered as ANTH 331, CES 376). Recommended preparation: ANTH 101.
- 334 Time and Culture in the Northwest 3** The archaeologically reconstructed environmental and cultural past of the Northwest including contemporary scientific and social approaches and issues. Recommended preparation: ANTH 101.
- 336 Old World Civilizations 3** Evolution of complex society, urbanism, states and empires in the eastern hemisphere; survey of European, African and Asian civilizations. Recommended preparation: ANTH 101, 230, or 330.
- 340 [M] Maya, Aztec and Inca Civilizations 3** Examination of the great prehistoric civilizations of Mesoamerica and South America. Recommended preparation: ANTH 101, 330, or 336.
- 350 Speech, Thought and Culture 3** The role of language in social situations and as a reflection of cultural differences. (Crosslisted course offered as ANTH 350, FOR LANG 350).
- 370 Past Environments and Culture 3** People and their environments from the Ice Age to modern time; archaeological, ecological, and biological data.
- 380 Introduction to Osteology 3** Introduction to the field of osteology including molecular analysis, paleopathology, taphonomy and forensic analysis.
- 381 [BSCI] Primate Behavioral Ecology 3** Evolution of primate behavior from ecological and phylogenetic perspective emphasizing methods for understanding primate adaptations and diversity. Recommended preparation: ANTH 101 or BIOLOGY 101, 102 or 150.
- 390 [M] History of Anthropological Thought 3** Course Prerequisite: ANTH 203; ANTH 230; ANTH 260. Development of theories in anthropology including contributions of significant individuals, representative classics and influential current movements. Recommended preparation: Junior standing.
- 395 Topics in Anthropology V 3-6** May be repeated for credit; cumulative maximum 6 hours. Examination of selected topics in contemporary anthropological theory and practice. Recommended preparation: Junior standing.
- 399 Archaeological Field School V 2-8** Course Prerequisite: By instructor permission. Training in methods of archaeological data recovery and analysis.
- 402 Cross-cultural Gender and Kinship 3** Principles of kinship in anthropology applied to questions of cross-cultural gender definition. Recommended preparation: ANTH 101 or SOC 101.
- 404 The Self in Culture 3** Course Prerequisite: One course each at the 100-level, 200-level, and 300-level in any of the following subjects: AMER ST, ANTH, CES, COM, ENGLISH, FINE ART, HISTORY, HUMANITY, PHIL, POL S, PSYCH, SOC, or WOMEN ST; Junior standing. Survey of anthropological theories exploring self in Western/non-Western cultures through dreams, history, and human development.
- 405 Medical Anthropology 3** Relationships among disease, curing, culture and environment; non-Western medical systems; political economy of health care. Recommended preparation: Junior standing.
- 406 Anthropology of Epidemic Disease and Bioterrorism 3** Human and world response to epidemics, cultural contexts terrorism, biocultural approaches to epidemic disease, bioterrorism in human history.
- 410 History of American Indian Sovereignty and Federal Indian Law 3** The history of sovereignty and Federal Indian Law against the backdrop of treaties and trust responsibility. (Crosslisted course offered as HISTORY 410, ANTH 410, POL S 410).
- 417 Anthropology and World Problems 3** Data and methods of cultural anthropology applied to the solution of contemporary human problems, emphasizing sustainable development. Recommended preparation: 3 hours ANTH; junior standing.
- 418 Human Issues in International Development 3** Interdisciplinary analysis of complex interaction between tradition and modernity in Third World societies. (Crosslisted course offered as ANTH 418, POL S 418, SOC 418).
- 430 [M] Introduction to Archaeological Method and Theory 3** Archaeological theory in anthropological perspective; current trends in method and theory in American archaeology. Recommended preparation: ANTH 230; 330 or 331.
- 450 Descriptive Linguistics 3** Introduction to analysis and description of natural languages; phonological, syntactic, and semantic analysis of data from a variety of languages. (Crosslisted course offered as ANTH 450, FOR LANG 450). Cooperative: Open to UI degree-seeking students.
- 463 Anthropology of Life and Death 3** Demography, dynamics of evolution, human ecology, and their relationships to the biology of living, historical, and archaeological populations. Credit not granted for both ANTH 463 and ANTH 563. Recommended preparation: ANTH 260. Cooperative: Open to UI degree-seeking students.
- 465 Human Evolution 3** Human origins in the light of the fossil record and evolutionary theory. Credit not granted for both ANTH 465 and ANTH 565. Recommended preparation: ANTH 260. Cooperative: Open to UI degree-seeking students.
- 468 Sex, Evolution, and Human Nature 3** Human sexuality, male-female relations, cooperation, violence and parent-child relations examined cross-culturally and in nonhuman primates utilizing evolutionary and biocultural perspectives. Recommended preparation: Junior standing; 3 hours ANTH or BIOLOGY.
- 469 Genes, Culture and Human Diversity 3** Relationships between genes, language and culture are explored as a means to understanding world history, genetic and cultural diversity and unity. Recommended preparation: Junior standing.
- 480 Special Topics: Study Abroad V 1-15** May be repeated for credit. S, F grading.
- 490 [M] Integrative Themes in Anthropology 3** Course Prerequisite: ANTH 203; ANTH 230; ANTH 260; ANTH 390. Current research crosscutting traditional subdisciplines of anthropology. Recommended preparation: Senior standing.
- 498 Anthropology Internship V 1-15** May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By instructor permission. Participation as archaeological or cultural anthropological intern in public or private sectors; requires special arrangement with faculty advisor. S, F grading.
- 499 Special Problems V 1-4** May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 500 Field Methods V 2 (0-6) to 8 (0-24)** Course Prerequisite: By instructor permission. Training in gathering and analyzing field data.
- 504 Tribal Peoples and Development 3** Global and historic perspectives on the complex issues surrounding the problem of tribal peoples and development.
- 507 Advanced Studies in Culture Theory 3** May be repeated for credit; cumulative maximum 6 hours. 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) Methods and theory of lithic technology.
- 514 Ceramic Analysis** 4 (3-3) Basic concepts, methods, and approaches used in the analysis of archaeological pottery.
- 519 International Development and Human Resources** 3 History of and recent changes in international development emphasizing anthropological perspectives. (Crosslisted course offered as ANTH 519, POL S 538, SOC 519).
- 521 Psychological Anthropology** 3 Psychological and anthropological aspects of personhood, self, human development, gender, sexuality, emotion and cognition in various cultures.
- 528 Historical Ethnography** 3 May be repeated for credit; cumulative maximum 9 hours. Culture history, ethnography, theoretical, and contemporary problems of selected culture areas.
- 529 Seminar in Ethnography** 3 Methodological, stylistic and craft issues in the process and product of ethnography.
- 530 Archaeological Method and Theory** 3 History of archaeological method and theory; analysis of current literature.
- 535 Cultural Resource Management** 3 Role of archaeology in historic preservation and resource conservation; legal and institutional frameworks; research and interpretation in a CRM context. Cooperative: Open to UI degree-seeking students.
- 537 Quantitative Methods in Anthropology** 4 (3-3) May be repeated for credit; cumulative maximum 8 hours. Sampling, exploratory data analysis, inferential statistics, and use of SAS in anthropological research with emphasis on archaeology.
- 539 Prehistory of the Southwest** 3 Prehistory of the American Southwest; emphasis on Pueblo, Mogollon and Hohokam traditions and relationships to historic native groups.
- 540 Prehistory of the Northwest Coast** 3 Prehistoric cultures, chronologies, and interrelationships on the northwest coast of North America.
- 543 Prehistory of the Plateau and Basin** 3 Archaeology of the interior Northwest and Great Basin.
- 546 Complexity in Small Scale Societies** 3 Seminar focused on classic literature and current issues relevant to complexity in small scale societies, predominately covering hunter-gatherer systems. Recommended preparation: ANTH 530.
- 547 Models and Simulation** 3 Models and model-building as an anthropological approach to present and past cultures.
- 548 Hunters and Gatherers: Past and Present** 3 Introduction to hunter-gatherer studies in anthropology and archaeology exploring uses of evolutionary approaches to modeling and reconstructing hunter-gatherer behavior in contemporary and prehistoric contexts.
- 549 Settlement and Agro-Pastoralism** 3 Development of settled communities and food production through evaluation of their social, economic and spatial configurations. Recommended preparation: ANTH 530.
- 550 Descriptive Linguistics** 3 Introduction to analysis and description of natural languages; phonological, syntactic, and semantic analysis of data from a variety of languages. (Crosslisted course offered as ANTH 450, FOR LANG 450). Cooperative: Open to UI degree-seeking students.
- 554 Anthropological Field Methods Seminar** 3 Elicitation, recording techniques and analysis of sociocultural and linguistic field data. Recommended preparation: ANTH 450 or 550.
- 561 Current Trends in Physical Anthropology** 3 May be repeated for credit. Intensive review of major current trends in physical anthropology. Recommended preparation: ANTH 465.
- 562 Evolutionary Method and Theory in Anthropology and Archaeology** 3 A graduate-level seminar-based course focusing on the evolutionary analysis of past and present human behavior.
- 563 Anthropology of Life and Death** 3 Demography, dynamics of evolution, human ecology, and their relationships to the biology of living, historical, and archaeological populations. Credit not granted for both ANTH 463 and ANTH 563. Recommended preparation: ANTH 260. Cooperative: Open to UI degree-seeking students.
- 564 Advances in Evolution and Human Behavior** 3 Recent trends in the study of evolution and human behavior.
- 565 Human Evolution** 3 Human origins in the light of the fossil record and evolutionary theory. Credit not granted for both ANTH 465 and ANTH 565. Recommended preparation: ANTH 260. Cooperative: Open to UI degree-seeking students.
- 567 Primate Behavioral Ecology** 3 Seminar-based course focusing on evolutionary analysis of primate behavior, morphology and ecology.
- 569 Evolutionary Cultural Anthropology** 3 Evolutionary nature of culture and its interactions with human biology (genes) and ecology.
- 570 Sediments in Geoarchaeology** 4 (3-3) Sediment-forming processes, sedimentological techniques, reconstruction of Quaternary environments, and sedimentology of site-forming processes.
- 573 Zooarchaeology** 4 (2-6) Identification of animal bones from archaeological sites, methodological and theoretical techniques for interpreting faunal remains. Cooperative: Open to UI degree-seeking students.
- 576 Palynology** 4 (3-3) Pollen and spore morphology, evolution, production, dispersal, and preservation; index fossils, dating, archaeology, and vegetational history. Field trip required.
- 581 Comparative Biology of Social Traditions** 3 Phylogenetic and modeling perspectives used to examine the evolution of social learning and cultural transmission in humans and other animals. (Crosslisted course offered as ANTH 581, BIOLOGY 581).
- 591 Special Topics in Anthropology** 3 May be repeated for credit; cumulative maximum 9 hours. Examination of current areas of anthropological theory and research.
- 593 Publishing and Professional Communication** 3 Preparation of original research reports; survey of types of professional communication, and of standards and techniques.
- 596 IPERM Seminar** 1 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By permission only. Symposia and project work sessions for the WSU/UW IGERT: Program in Evolutionary Modeling. (Crosslisted course offered as ANTH 596, BIOLOGY 598). S, F grading.
- 598 Advanced Anthropology Internship V** 1-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By instructor permission. Participation as archaeological or cultural anthropological intern in public or private sectors; requires special arrangement with faculty advisor. S, F grading.
- 599 Archaeological Field School V** 2-8 Course Prerequisite: By instructor permission. Training in methods of archaeological data recovery and analysis.
- 600 Special Projects or Independent Study V** 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V** 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V** 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Apparel, Merchandising, Design And Textiles

amdt.wsu.edu
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Chair, J. Ellis; Professor, L. Bradley, C. Black; Associate Professors, C. Salusso; Assistant Professor, T. Chi; Senior Instructor, P. Fischer.

Apparel, Merchandising, Design and Textiles offers Bachelor and Master of Arts degrees, and also participates in the Interdisciplinary Doctoral Program.

As the premier and only state-supported 4-year apparel and textiles program offering options in Apparel Design and Merchandising in Washington, we offer students all of the tools necessary to succeed in the fashion, retails, textiles and apparel industries. There are many career options in this industry; in the state of Washington in 2010 there were 51,900 careers in the textile and apparel industry and in the United States 421,800 careers in 2009. (Seattle Enterprise and OTEXA, 2010). We have state of the art classroom equipment, fully equipped apparel design studios, a program and curriculum aligned with industry, and nationally and internationally recognized faculty who challenge students to understand all the aspects of the discipline. Students in the AMDT department graduate with a thorough understanding of the interdisciplinary nature of the apparel and textile industry from concept to consumer. The curriculum options are designed to teach students to:

- Recognize the global world that we live in today by understanding how dynamic and diverse political, socio-cultural, and economic systems and how they impact human behavior and industry processes in a global economy.
- Increase knowledge of the Industry by applying industry relevant decision making and creative processes in the selection, production and placement of goods and services that meet consumer needs in the textile, apparel & retail complex using industry best practices.
- Utilize technology by applying knowledge and skills regarding current technology to retrieve, analyze and disseminate information, and develop solutions relevant to the textile, apparel, and retail complex.
- Improve verbal, visual, and written communication skills by demonstrating the ability to effectively communicate ideas verbally, visually and in writing as team members and/or leaders within a professional environment.
- Think analytically and critically by demonstrating analytical and critical thinking skills to recognize problems, collect, analyze, synthesize information, develop, evaluate and implement solutions.
- Develop an understanding of sustainable practices by understanding environmentally sound, economically viable, and socially supportive sustainable practices in the textile, apparel & retail complex.

Students can choose an emphasis in apparel design or merchandising. Each option includes the program's core courses, as well as option requirements and electives. Students can individualize their

expertise by exploring minors and supporting work in fine arts, business administration, marketing, international business, and communication.

An internship is a valuable way to gain experience and contacts in the industry. Having an internship makes students much more competitive when they graduate and many internships lead to job opportunities after graduation. There are thousands of companies in the U.S. and abroad that offer internships in the textile and apparel field. Internship exposures help students gain work experience, better their understanding of the industry, and determine what career path is best for them.

Normally the applicant for graduate study should have an undergraduate major in apparel, merchandising, design, or textiles. However, candidates with a good record in related fields (such as business, economics, marketing, psychology, sociology, and etc.) may be well prepared for certain areas of advanced study. All graduate students must show competency in their area of study (through an undergraduate degree or industry experience) in order to earn their degree. Please refer to WSU Graduate catalog and web site at <http://www.gradschool.wsu.edu>.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

APPAREL DESIGN (120 HOURS)

Apparel design focuses on the interaction between design and merchandising and offers depth in apparel design. Students typically complete a minor in Fine Art and/or Business Administration.

Students wishing to certify in apparel merchandising, design, and textiles must have a minimum 2.70 cumulative gpa. Students must receive a C or better grade in all AMDT courses and MKTG 360. A course may only be repeated once. Courses required in these programs cannot be taken on a pass, fail basis. To maintain certification, a 2.70 cumulative gpa is required each semester. Independent study and internship courses (490, 495, 498) will not be included in gpa calculations. Students dropping below a 2.70 gpa will be de-certified and can reapply when the gpa is 2.70 or above. Students interested in the apparel design option are accepted through a portfolio review process. Applications are available in the main office and need to be submitted during the spring semester of the second year. Transfer student who have completed two years of college may submit an application during the summer prior to the first semester of attendance at WSU for consideration.

First Year

First Term	Hours
AMDT 108	3
ENGLISH 101 [WRTG]	3
FINE ART 101 [ARTS] recommended	3
HISTORY 105 [ROOT]	3
SOC 101 [SSCI] or PSYCH 105 [SSCI] recommended	3

Second Term	Hours
AMDT 208	3
BIOLOGY 140 [BSCI] recommended ¹	3
COM 102 [COMM] or H D 205 [COMM] recommended	3
FINE ART 110 or 111	3
Humanities [HUM]	3

Second Year

First Term	Hours
AMDT 210	4
AMDT 211	3
AMDT 220	3
STAT 212 [QUAN] recommended	4

Second Term	Hours
AMDT 212	3
AMDT 368	3
Physical Sciences [PSCI] with lab ¹	4
ECONS 101	3
Electives	3
Complete Writing Portfolio	

Third Year

First Term	Hours
AMDT 311	3
AMDT 314	3
AMDT 310	4
AMDT Elective	3
Electives	2

Second Term	Hours
AMDT 312	3
AMDT 420 [M]	3
Diversity [DIVR]	3
MKTG 360	3
Electives	3

Fourth Year

First Term	Hours
AMDT 318	3
AMDT 411	3
AMDT 490 or AMDT Electives	6
AMDT 492	3
Integrative Capstone [CAPS]	3

Second Term	Hours
AMDT 412	3
AMDT 413 [M]	3
AMDT 417 [M]	3
Electives	3

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

MERCHANDISING (120 HOURS)

Merchandising includes courses designed to allow students to develop competence in the planning, buying, and selling of merchandise in either manufacturing or retail organizations. Curriculum includes a focus on marketing. Students often pursue one of the minors in Business.

Students wishing to certify in apparel merchandising, design, and textiles must have a minimum 2.70 cumulative gpa. Students must

receive a C or better grade in all AMDT courses, MKTG 360, and ECONS 352. A course may only be repeated once. Courses required in these programs cannot be taken on a pass, fail basis.

First Year

<i>First Term</i>	<i>Hours</i>
AMDT 108	3
COM 102 [COMM] or H D 205 [COMM] recommended	3
ENGLISH 101 [WRTG]	3
FINE ART 101 [ARTS]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
AMDT 208	3
BIOLOGY 140 [BSCI] recommended ¹	3
Humanities [HUM]	3
SOC 101 [SSCI] or PSYCH 105 [SSCI] recommended	3
STAT 212 [QUAN] recommended	4

Second Year

<i>First Term</i>	<i>Hours</i>
AMDT 210	4
ECONS 101	3
Physical Sciences [PSCI] with lab ¹	4
Electives ²	3

<i>Second Term</i>	<i>Hours</i>
ACCTG 230	3
AMDT 212	3
Diversity [DIVR]	3
Electives ²	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
AMDT 314	3
AMDT 318	3
AMDT 417 [M]	3
Electives ²	6

<i>Second Term</i>	<i>Hours</i>
AMDT 307	3
AMDT 420 [M]	3
ECONS 352	3
MKTG 360	3
Electives ²	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
AMDT 490	3
Integrative Capstone [CAPS]	3
Electives ²	9

<i>Second Term</i>	<i>Hours</i>
AMDT 413 [M]	3
AMDT 430	3
AMDT 450	3
AMDT 440	3
Electives ²	3

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² A maximum of 9 hours of electives may be taken at the 100-200 level.

Description of Courses

APPAREL, MERCHANDISING, DESIGN & TEXTILES

AMDT

108 Introduction to Apparel, Merchandising, Design and Textiles 3 An introduction to apparel, textiles, merchandising and design with an emphasis on an examination of industry structures and careers.

208 Visual Merchandising and Promotion 3 (2-2) Course Prerequisite: AMDT 108. Examination of fashion promotion components of visual display and store layout; application of principles and elements of design and concept development.

210 Textile Specifications 4 (3-2) Examination of basic textile components including fibers, yarns, structure, coloration, and finishes relative to performance standards and expectations for intended use.

211 Apparel Assembly 3 (0-6) Problem solving approach to apparel and textile product assembly with emphasis on product development process.

212 Apparel Quality and Product Analysis 3 Course Prerequisite: AMDT 210. Analysis of apparel manufacturing including product development, product management and production and analysis of overall quality assessment.

220 Historic Costumes and Textiles 3 Global survey of dress and textiles from prehistory to mid-1800s.

307 Consumer Behavior in Fashion 3 Course Prerequisite: Junior standing; certified major in Apparel, Merchandising, and Textiles. Concepts and theories from social sciences to consumer behavior research related to fashion and apparel marketing.

310 (410) Advanced Apparel Assembly 4 (1-6) Course Prerequisite: AMDT 211; certified in Apparel Design. Advanced assembly techniques for a range of textiles and multi-layer garments; emphasis of high-quality execution on final products.

311 Apparel Flat Patterning and Design 3 (0-6) Course Prerequisite: AMDT 211; certified major in Apparel Design. Flat pattern techniques for apparel patternmaking; development and creation of original design.

312 Apparel Draping, Fitting, and Design 3 (0-6) Course Prerequisite: AMDT 311; certified major in Apparel Design. Exploration of draping and flat pattern techniques; fitting techniques emphasized; development and creation of original design.

314 Fashion Forecasting 3 Course Prerequisite: AMDT 208; AMDT 210; certified major in Apparel, Merchandising, and Textiles. Developing forecasting expertise needed to work in merchandising environment; examined through influences on acceptance and rejection of apparel/textile products.

315 Textile Product Analysis 3 (2-3) Course Prerequisite: AMDT 210. Analysis of textile product characteristics including fiber, structure, finish, apparel product properties, garment performance, and overall quality assessment and assurance.

318 Merchandise Buying and Planning 3 (2-2) Course Prerequisite: MATH [QUAN]; certified major in Apparel, Merchandising, and Textiles. In-depth study of apparel buying and planning, application of buying and planning principles, problem solving skill development.

368 Apparel Illustration and Rendering 3 (0-6) Illustration and rendering used for costume and fashion design. (Crosslisted course offered as AMDT 368, FINE ART 369).

408 [ARTS] Visual Analysis and Aesthetics 3 Course Prerequisite: AMDT 208, AMDT 368, ANTH 201, ANTH 301, COM 321, FINE ART 301, FINE ART 302, FINE ART 304 or MKTG 360; junior standing. In-depth analysis of the visual interaction among apparel, accessories and the body; identifying effective visual communication.

411 Advanced Apparel Design 3 (0-6) Course Prerequisite: AMDT 312; AMDT 492; senior standing; certified major in Apparel Design. Integrated application of apparel design, patternmaking principles with assembly processes to demonstrate capacity to develop and create high quality original designs.

412 Apparel Design Collection 3 (0-6) Course Prerequisite: AMDT 411; certified major in Apparel Design. Problem-solving creation and presentation of two and three-dimensional high quality original apparel and designs.

413 [M] International Trade in Textiles and Apparel 3 Course Prerequisite: MKTG 360; certified major in Apparel, Merchandising, and Textiles. Economic/social conditions influencing apparel trade and consumption; comparison of production, distribution, and consumption of apparel in the global economy.

414 Creativity: Development of Consumer Products 3 Course Prerequisite: Junior standing; certified major in Apparel, Merchandising, and Textiles. Processes and techniques to stimulate creativity from a multidisciplinary approach for the development of new consumer products.

417 [DIVR] Multicultural Perspectives on the Body and Dress 3 Course Prerequisite: 6 credits [S], [K], or [SSCI]; junior standing. Engagement in multidisciplinary approaches that explore the social importance of the body, gender and dress.

419 Regional Experience in Apparel/Textiles Field V 1-3 Course Prerequisite: Certified in any major. Field trips to experience the textile and apparel industry from the perspective of professionals within a wide range of careers. Additional cost associated with class. See department for details.

420 [M] History of Fashion Design 3 Course Prerequisite: AMDT 210; certified major in Apparel, Merchandising, and Textiles. Overview of apparel design, designers and social history in the 20th century.

- 429 National Experience in Apparel/Textiles Field** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Certified major in Apparel, Merchandising, and Textiles. Field trip to experience national culture integrated with the field of textiles and apparel in industry centers in the US. Additional cost associated with class. See department for details.
- 430 Soft Goods Supply Chain Management 3** Course Prerequisite: AMDT 318; certified major in Apparel, Merchandising, and Textiles. Stages and functional areas of soft goods supply chain management.
- 439 International Experience in Apparel/Textiles Field** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Certified in any major. Field trip to experience international culture integrated with the field of textiles and apparel in industry centers worldwide. Additional cost associated with class. See department for details.
- 440 Advanced Retail Management 3 (2-2)** Advanced application of management principles and theory in the retail world.
- 450 Strategy Planning and Decision Making 3** Course Prerequisite: AMDT 318; certified major in Apparel, Merchandising, and Textiles. Examination and synthesis of advanced merchandising theory; strategic planning, decision-making and the role of technology in the textile and apparel industry.
- 460 [M] Costume Museum Management 3** Course Prerequisite: Junior standing. Skills and techniques for handling textiles and apparel artifacts in museums.
- 480 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 488 Internship Preparation 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: AMDT 307 with a C or better, or AMDT 314 with a C or better; AMDT 492 with a C or better or concurrent enrollment. Orientation and practical information for students in preparation for an internship.
- 490 Cooperative Education Internship** V 1 (0-0) to 10 (0-30) May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: AMDT 488. Experience with business, industry or government unit.
- 492 Computer Applications in Apparel, Textile, and Design 3 (1-4)** Course Prerequisite: AMDT 368; certified major in Apparel Design. Computer-aided design techniques in fashion graphics; portfolio development and presentation.
- 495 Instructional Practicum** V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By interview only.
- 496 Special Event Production** V 1 (0-2) to 3 (0-6) May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: AMDT 208 or 211; certified major in Apparel, Merchandising, and Textiles; by permission of instructor. Producing, exhibiting, and promoting product lines/special events or apparel, textiles and illustrations exhibits.
- 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 (0-0) to 4 (0-12) May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 508 Theoretical Frameworks Underlying Scholarship 3** Exploration of current topics through readings in apparel, merchandising, and textiles.
- 512 Apparel Design Graduate Studio 3** Course Prerequisite: AMDT 508. Integration of consumer demand target market research with the development, application, and testing of prototype products for specific end uses.
- 517 Theory and Methods of Culture, Gender and Dress 3** Exploration of appearance issues, theory, and research from the perspective of social science, feminist theory, postmodern and poststructural discourses.
- 518 Apparel Merchandising Analysis 3** Analysis of marketing and retailing strategies, trends and technological developments in relation to business and consumer aspects within a global context.
- 519 Research Methods 3** Course Prerequisite: AMDT 508 or concurrent enrollment. Analysis and understanding of research methods, exploration of thesis topic as applicable to the fields of apparel, merchandising, design and textiles.
- 520 Aesthetic Analysis of Fashion Design 3** In-depth analysis of apparel fashion design provided through exploration of aesthetic and human perception theories within a socio-historic context.
- 596 Advanced Instructional Practicum 3** Information and direction for graduate student 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** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

Asia Program

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Program Director and Associate Professor D. Pietz (History, East Asia); Professors, P. Tansuhaj (International Business, South East Asia), M. Tolmacheva (History, Middle East), M. Myers (Philosophy and Religion, South Asia, East Asia), C. S. Ivory (Art History, the Pacific); Associate Professors, N. Kawamura (History, East Asia), R. Sun (History, East Asia), P. Thiers (Political Science, East Asia); Assistant Professors, E. Anderson (History, Japan), W. Brecher (Japanese), J. Cassaniti (Anthropology), K. Inoue (Japanese), X. Liu (Chinese), P. Narayanan (English, South Asia), X. Wang (History), C. Wilkinson-Weber (Anthropology, South Asia); Clinical Assistant Professors, L. Gerber (History, China); Instructors, W. Cao (Chinese), R. Chan (History, East Asia), K. Niimi (Japanese), L. Rahman-Turner (History/Anthropology, South Asia), R. Snyder (Philosophy, East Asia, South Asia), C. Weller (History, Central Asia); Professors Emeriti, T. Kennedy (History, China), A. Spitzer (Library).

The WSU Asia Program promotes teaching, research, and outreach to prepare present and future leaders for the opportunities and challenges of Asia's increasing presence in global and regional affairs.

The WSU Asia Program offers a Bachelor of Arts in Asian Studies, a minor in Asian Studies, Certificate in East Asian Studies for College of Business Majors, and a Certificate in East Asian Studies for College of Engineering and Architecture Majors. The curriculum, leading to a B.A. in Asian Studies, promotes depth and breadth. The program provides students the opportunity to focus on one country or region (China, Japan, India, Middle East), while at the same time, requiring students to develop pan-Asian perspectives through geographic disciplinary distribution requirements.

The Asia Program is designed to provide a broad, systematic knowledge of Asia through interdisciplinary study and is intended to serve four major objectives:

- To prepare students intending to teach courses on Asia in public schools,
- To provide academic background for those planning to pursue graduate work on Asia,
- To prepare students for business careers dealing with Asia, and
- To train those interested in governmental and various private career opportunities related to Asia.

Upon completion of the Asia Program curriculum, graduates will be able to: 1) identify, locate, and critically evaluate resources for the study of Asia; 2) understand the commonalities, complexity,

and diversity of Asia; 3) understand disciplinary approaches to the study of Asia; 4) identify problems and questions related to Asia and place in appropriate context; 5) understand traditions and transformations of Asian cultures; and 6) have competency in an Asian language equivalent to 2nd year level.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

ASIAN STUDIES REQUIREMENTS (120 HOURS)

A minimum of 40 hours of courses on Asia, including 16 hours of an appropriate language and 18 hours at the 300 level or above, are required. 18 of the 40 credits of the Asia major must be earned at WSU.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
ENGLISH 101 [WRTG]	3
Foreign Language Elective ¹	4
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
ASIA 270 or 314	3
Foreign Language Elective ¹	4
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3 or 4
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
ASIA 131, 275, or 315	3
ASIA 272, 273, or 306	3
Foreign Language Elective ¹	4
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
Foreign Language Elective ¹	4
Major Coursework	3
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level Electives	9
Diversity [DIVR]	3
Major Coursework	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Electives	9
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Major Coursework [M]	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3

Major Coursework	3
300-400-level Electives	9
<i>Second Term</i>	
300-400-level Electives	12
Major Coursework	3

¹ 16 hours of college level study of a single Asian language (e.g., CHINESE/JAPANESE 101, 102, 203, 204). Languages not taught at WSU may be studied through distance learning programs, intensive summer courses, etc. For the second year of languages not taught at WSU, students may substitute 8 hours of any Asian study abroad credit. Although native speakers of an Asian language may be exempt from the language requirement and take 16 additional credit hours of ASIA courses, they are encouraged to complete a minimum of one year college level study of a different Asian language.

Geographic Distribution: 9 hours (3 hours minimum from EACH the following groups): East Asia (ASIA 131, 275, or 315); South Asia (ASIA 270 or 314); and Middle East (ASIA 272, 273, or 306).

Disciplinary Distribution: 12 hours (6 hours minimum from each of the following groups): Asia humanities courses; and Asia social science courses.

Additional requirements: A minimum of 18 hours of 300-400-level ASIA courses; and 6 hours of Writing in the Major (M GER). Note: Courses may be used to satisfy requirements in more than one of the above categories. Students should consult their advisor to determine when courses are offered. Relevant 300-400-level courses not cross-listed with ASIA may be counted toward a major or minor if approved by the Director of the Asia Program.

Study Abroad is very strongly encouraged. Contact your advisor and the Education Abroad Office for more information.

Minors

Asian Studies

A minor in Asian Studies requires 23 hours, including one year of a single Asian language or 8 hours of Asian study abroad credit. Of the 23 required credits, at least half must be upper division, and at least 9 credit hours must be earned at WSU. Native speakers of an Asian language are exempt from the language requirement for the minor (they instead take 8 additional credit hours of ASIA courses).

Certificates

Certificate in East Asian Studies for Business Majors

The Certificate in East Asian Studies for College of Business Majors requires a total of 17 credit hours and is open to any declared College of Business undergraduate major in good standing.

The requirements are: CHINESE 101 and 102 or JAPANESE 101 and 102 or other East Asia Language available through study abroad; one from ASIA 121, 275, 315, 373, 374, 475, 476, or 477; ASIA 479; and one from I BUS 380, HBM/I BUS 435, MGTOP/I BUS453, ECONS/I BIS 470, FIN/I BUS 481 or MKTG/I BUS 482.

Students who complete two semesters of foreign language beyond the one-year requirement may waive three credits required from ASIA 121, 275, 315, 374, 475, or 477. Study abroad is encouraged and appropriate credit toward completion of certificate will be accepted at the discretion of the Asia Program Director. No more than 4 hours earned at other institutions that may apply towards the certificate and no more than 4 hours may be pass/fail. Native speakers of an East Asian language may waive the foreign language requirement, but must take eight additional hours from the list of "cultural survey" courses (see department for an approved list). A minimum cumulative GPA of 2.0 is required for successful completion of the certificate.

Certificate in East Asian Studies for Engineering and Architecture Majors

The Certificate in East Asian Studies for College of Engineering and Architecture Majors requires a total of 17 credit hours and is open to any declared College of Engineering and Architecture undergraduate major in good standing.

The requirements are: CHINESE 101 and 102 or JAPANESE 101 and 102 or other East Asia Language available through study abroad; two from ASIA 121, 274, 315, 373, 374, 475, 476, or 477; and ASIA 479.

Students who complete two semesters of foreign language beyond the one-year requirement may waive three credits required from ASIA 121, 275, 315, 374, 475, or 477. Study abroad is encouraged and appropriate credit toward completion of certificate will be accepted at the discretion of the Asia Program Director. No more than 4 hours earned at other institutions that may apply towards the certificate and no more than 4 hours may be pass/fail. Native speakers of an East Asian language may waive the foreign language requirement, but must take eight additional hours of courses from the list of "cultural survey" courses (see department for an approved list). A minimum cumulative GPA of 2.0 is required for successful completion of the certificate.

Description of Courses

ASIA PROGRAM

ASIA

111 [DIVR] Asian Film 3 Asian film from a cultural perspective. Taught in English. (Crosslisted course offered as CHINESE 111, ASIA 111, JAPANESE 111). Cooperative: Open to UI degree-seeking students.

120 Traditional Chinese Culture 3 Cultural development of China from early times through the golden age of Chinese civilization. Taught in English. (Crosslisted course offered as CHINESE 120, ASIA 120, HUMANITY 120).

121 Modern Chinese Culture 3 An introduction to the culture of modern China, including Hong Kong and Taiwan. All readings in English. (Crosslisted course offered as CHINESE 121, ASIA 121). Cooperative: Open to UI degree-seeking students.

- 122 [DIVR] Traditional Japanese Culture 3** Traditional Japanese society and culture from ancient times to the 19th century. Taught in English. (Crosslisted course offered as JAPANESE 120, ASIA 122).
- 123 [HUM] Modern Japanese Culture 3** Issues, trends, and forms of popular culture that define modern and contemporary Japanese life. Taught in English. (Crosslisted course offered as JAPANESE 123, ASIA 123).
- 131 [DIVR] Masterpieces of Asian Literature 3** Introduction to Asian literature. Taught in English. (Crosslisted course offered as CHINESE 131, ASIA 131, HUMANITY 131, JAPANESE 131). Cooperative: Open to UI degree-seeking students.
- 201 Special Topics: Study Abroad V 1-15** May be repeated for credit. S, F grading.
- 220 [DIVR] Global Issues, Regional Realities 3** Introduction to the themes and concepts involved in global studies. Taught in English. (Crosslisted course offered as FOR LANG 220, ASIA 220).
- 270 [DIVR] India: History and Culture 3** Survey of South Asian history, societies and cultures - development of civilization and contemporary societies of India and South Asia. (Crosslisted course offered as HISTORY 270, ASIA 270).
- 271 Southeast Asian History: Vietnam to Indonesia 3** Historical introduction to Southeast Asian social, religious, political, economic and cultural institutions including Vietnam, Thailand, Burma, the Philippines and Indonesia. (Crosslisted course offered as HISTORY 271, ASIA 271).
- 272 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. (Crosslisted course offered as HISTORY 272, ASIA 272).
- 273 Foundations of Islamic Civilization 3** Main ideas and institutions that have characterized Islamic civilization since its founding, presented thematically. (Crosslisted course offered as HISTORY 273, ASIA 273).
- 275 [DIVR] Introduction to East Asian Culture 3** Survey of East Asia (China, Japan, Korea, and others) history from 1766 BCE to the present. (Crosslisted course offered as HISTORY 275, ASIA 275).
- 280 Philosophy and Religion of Islam 3** Philosophical and religious framework of Islam. (Crosslisted course offered as PHIL 280, ASIA 280).
- 301 East Meets West 1** May be repeated for credit; cumulative maximum 3 hours. Interdisciplinary course on the encounter between ASIA and the West taught as a multicultural symposium.
- 302 [M] Arts of Asia 3** Art and architecture of India, China and Japan within their historical, religious and cultural contexts. (Crosslisted course offered as FINE ART 302, ASIA 302).
- 306 Cultures and Peoples of the Middle East 3** Contemporary Arab cultures in a historical perspective within the framework of Western-Middle Eastern relations. (Crosslisted course offered as ANTH 306, ASIA 306, HISTORY 306).
- 314 [M] Philosophies and Religions of India 3** Metaphysical, epistemological, ethical, aesthetic, social, and political views of Hinduism, Buddhism, and Islam, and their influence on Indian civilization. (Crosslisted course offered as PHIL 314, ASIA 314).
- 315 [M] Philosophies and Religions of China and Japan 3** The philosophies and religions of China and Japan, and their metaphysical, epistemological, ethical, social, and political positions and views of God and gods. (Crosslisted course offered as PHIL 315, ASIA 315).
- 320 [DIVR] [M] Issues in East Asian Ethics 3** Philosophical foundations of ethical thought in East Asia; informed responses to modern ethical dilemmas. Taught in English. (Crosslisted course offered as JAPANESE 320, ASIA 320, CHINESE 320, HUMANITY 320). Cooperative: Open to UI degree-seeking students.
- 321 [M] Gender and Love in East Asian Culture 3** The theme of gender with respect to love, courage, self-sacrifice, and vulnerability in traditional Chinese and Japanese literature and culture. (Crosslisted course offered as CHINESE 321, ASIA 321, JAPANESE 321, WOMEN ST 322).
- 330 [M] The Art of War 3 (2-2)** The philosophy behind war, military strategy and its consequences and representation in literature and film from East Asia. Taught in English. (Crosslisted course offered as CHINESE 330, ASIA 330). Cooperative: Open to UI degree-seeking students.
- 370 History of Ancient and Medieval India 3** Historical development to 1500 CE of states, religions, caste society, gender customs and social ecology in India. (Crosslisted course offered as HISTORY 370, ASIA 370).
- 373 [HUM] Chinese Civilization 3** Growth of Chinese civilization from the Bronze Age to the present. (Crosslisted course offered as HISTORY 373, ASIA 373).
- 374 Japanese Civilization 3** Overview of the evolution of Japanese culture and society from ancient times to the present. (Crosslisted course offered as HISTORY 374, ASIA 374).
- 387 World War II in Asia and the Pacific 3** Imperial rivalries in Asia; Japanese militarism; military, ideological and social aspects of the war; the atomic bomb; memory of the war. (Crosslisted course offered as HISTORY 387, ASIA 387).
- 472 [M] The Middle East Since World War I 3** Course Prerequisite: Junior standing. Developments in the Middle East since World War I including nationalism, fundamentalism, and revolution. (Crosslisted course offered as HISTORY 472, ASIA 472).
- 473 The Middle East and the West 3** Course Prerequisite: Junior standing. East-west tensions in the context of historical relations between the Middle East and West Europe since the rise of Islam. (Crosslisted course offered as HISTORY 473, ASIA 473).
- 474 Modern South Asia: Community and Conflict 3** Historical transformation of communities and communal conflicts in modern South Asia from 1500 to present; themes: caste, religion, geography, environment and economy. (Crosslisted course offered as HISTORY 474, ASIA 474).
- 475 Mao to Deng: The People's Republic of China, 1949 - 1999 3** The major political, social, economic and cultural developments during the People's Republic of China. (Crosslisted course offered as HISTORY 475, ASIA 475, POL S 475).
- 476 [M] Revolutionary China, 1800 to Present 3** Continuity and change in the political, social, cultural and economic experience of China since 1800. (Crosslisted course offered as HISTORY 476, ASIA 476, POL S 476).
- 477 [M] Modern Japanese History 3** Examination of political, socioeconomic and cultural changes and the international crises in modern Japan since the 19th century. (Crosslisted course offered as HISTORY 477, ASIA 477).
- 479 History of East Asian Economic Development Since 1945 3** The historical relationships between politics and economics in East Asian since 1945. (Crosslisted course offered as HISTORY 479, ASIA 479).
- 499 Special Problems V 1-4** May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

School of Biological Sciences

sbs.wsu.edu
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Professor and Director, Larry Hufford; Professor and Associate Director of Graduate Program, Andrew Storfer; Associate Professor and Associate Director of Undergraduate Program, Patrick Carter; Professors, K. Beerman, J. Bishop (Vancouver), S. Bollens (Vancouver), D. Evans, R. Gornikiewicz, R. Mack, D. Moffett, C. Omoto, C. Robbins, H. Schwabl, M. Skinner, M. Tegeder, G. Thorgaard; Associate Professors, A. Cavagnetto, A. Cousins, M. Dybdahl, H. Hellmann, B. Kemp, M. Knoblauch, R. Lee, J. Mallatt, A. McCubbin, M. McGuire, C. Portfors (Vancouver), E. Roalson, C. Schultz (Vancouver), P. Verrell; Assistant Professors, J. Busch, J. Brunner, W. Cooper (Tri-Cities), O. Cornejo, E. Crespi, J. Kelley, E. Schwartz; Clinical Associate Professors, D. Banker (Vancouver), G. Rollwagen-Bollens (Vancouver); Clinical Assistant Professors, L. Carloye, C. Davitt, E. Johnson, K. McAteer, S. Ritchie; Research and Adjunct

Faculty, S. Baker, D. Holmes, D. Monk, E. Nilsson, R. Phillips, M. Webster; Senior Instructor/Instructor, B. Marshall, A. Brown; Professors Emeriti, R. A. Black, G. Edwards, R. Johnson, K. Kardong, L. Kirschner, M. Ku, J. Larsen, D. Miller, S. Moffett, J. Paznokas, P. Schroeder, E. Uribe.

The School of Biological Sciences offers training in molecular, cellular, organismal, ecological and environmental biology with an emphasis on plants and animals. The School offers Bachelor of Science programs in biology and zoology, Master of Science programs in biology, botany, and zoology, and Ph.D. programs in botany and zoology. The School also offers undergraduate minors in zoology and biology.

Facilities

There are modern facilities for study of molecular and cellular biology, genetics, plant and animal physiology, anatomy and ultrastructure, functional morphology, ecology, molecular systematics, behavior, and environmental and evolutionary biology. The University's location is conducive to field studies at sites such as the 800 acre George E. Hudson Biological Preserve at Smoot Hill and nearby public lands. Special facilities include the Franceschi Microscopy and Imaging Center, plant growth facilities, a laboratory for bioanalysis and biotechnology with facilities for both DNA genotyping and sequencing, a laboratory for stable isotope analyses, and the collections of the Charles R. Conner Museum and the Marion Ownbey Herbarium.

Cooperation with many other campus units extends research opportunities. Cooperative arrangements with faculty in units such as Molecular Biosciences, Animal Sciences, Environment, and the College of Veterinary Medicine are readily achieved.

Undergraduate Programs

Introductory biological sciences courses provide background in the concepts common to life sciences and an overview of the diversity of animals, plants, and microorganisms. Advanced biological sciences courses probe specific areas in depth.

Undergraduate preparation in either biology or zoology provides a student with a basis for pursuing career opportunities in ecology and environmental biology, laboratory research and biotechnology, human health, animal health and welfare, plant sciences, education, and a variety of other biological specializations.

Candidates for the Bachelor of Science in Biology or the Bachelor of Science in Zoology must fulfill the University and the College of Arts and Sciences requirements for graduation as described elsewhere in this catalog. Honors students complete honors requirements in place of general education requirements. The math and science components of those requirements are fulfilled as part of the departmental requirements below. Other university requirements include 120 total credit hours of which 40 must be 300-400-level credits, the writing portfolio, and two writing in the major courses (identified by [M] in the course listings). College requirements include one year of foreign language if two years were not taken in high school. The Schedule of Studies below provides a sample curriculum for each of the degree options offered by the School of Biological Sciences. All

Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester hours of core BIOLOGY courses (BIOLOGY 106, 107, 301, 372 and 405 or 403). An additional 21 semester hours of biological sciences coursework selected in consultation with your biology advisor is required. The 21 semester hours must include 15 upper division credits, six of which must be BIOLOGY taken in residence at WSU. An overall GPA of at least 2.0 must be maintained in all college and departmental requirements. A maximum of 4 credits of coursework that are graded S, F (i.e., 490, 491, 495, 496, 499) may be used toward fulfilling departmental requirements or program options, and no other courses taken S or P can be applied toward fulfilling departmental requirements or program options. Students may not double major or take an additional minor in any combination of Biology, Zoology, General Biological Sciences or General Medical Sciences.

We expect that students graduating with a B.S. in biology or zoology will have acquired: (1) an understanding of and ability to explain major biological concepts; (2) an ability to use critical thinking and scientific skills to analyze and solve problems; (3) an ability to communicate effectively about biological problems and their possible solutions to both the scientific community and the public at large in writing and in discussion; (4) skills to formulate logical hypotheses and test them by designing and running appropriate experiments or observational studies and analyses; (5) an ability to identify the central body of knowledge in biology or zoology (including molecular and cellular biology, genetics, evolution, ecology, and organismal biology); and (6) skills to use scientific literacy and knowledge of biology or zoology to analyze contemporary social, cultural, and environmental issues and contribute to informed opinion.

Biology

Six options are available for the Bachelor of Science degree in Biology: general biology, biology education, botany, ecology/evolutionary biology, entomology, and pre-physical therapy/pre-occupational therapy/pre-physician's assistant. The general biology option provides broad training in the life sciences, particularly for students seeking to continue in professional or graduate school. The biology education option is particularly suitable for students who would like to teach biology at the high school level. The botany option is available for students with a special interest in plants and serves students who would like to pursue graduate studies. The ecology/evolutionary biology option provides a concentration on ecological and evolutionary biology to address interests in such fields as environmental and wildlife biology. The entomology option is available for students who wish to focus on insect biology. The pre-physical therapy/pre-occupational therapy/pre-physician's assistant option is designed for students who would like to pursue studies in physical therapy, occupational therapy, or physician assistant programs.

Zoology

Three options are available for the Bachelor of Science degree in Zoology: general zoology, pre-veterinary/animal care, and pre-medicine/pre-dentistry. Each of these options includes a core curriculum that provides a strong science

foundation plus additional specialized courses taken in the particular program option. The flexible curriculum leading to a zoology degree meets the needs of students with various interests and goals. The general zoology option provides a broad, solid foundation in zoology. It is especially aimed at students desiring a well-rounded background for further professional studies or for entry into the work force in areas such as wildlife biology or fisheries. Students aspiring to enter medical or dental school will find the pre-medicine/pre-dentistry option to be particularly appropriate. The pre-medicine/pre-dentistry option is offered by the School of Biological Sciences as a course program designed to provide a solid academic foundation that successfully prepares the student for admission into medical, dental, or pharmacy school. The pre-veterinary/animal care option prepares students for careers involving animal care and maintenance in research institutions, zoos, aquaria, and clinics and for application to colleges of veterinary medicine.

Joint Program in Zoology and Veterinary Medicine

The School of Biological Sciences and the College of Veterinary Medicine have a combined program to allow highly qualified students to earn both a Bachelor of Science in Zoology and a Doctor of Veterinary Medicine degree within a seven-year program. Students will take a three-year zoology program, completing all General Education Requirements, the zoology core courses and pre-veterinary medicine requirements. This program includes mathematics; chemistry, including organic and biochemistry; general biology; physics; and the core zoology courses. Students will then enter the College of Veterinary Medicine and complete the requirements for total hours and 300-400-level hours before earning the BS in Zoology. 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 School of Biological Sciences. Qualified students will be invited to apply for the program. High scholastic achievement and the promise of the same along with demonstrated experience and interest in working with animals will be the primary criteria for initial invitation. Selected students will be identified and invited to apply for the ZOOL-DVM program after the second semester of the first year. Students would then declare zoology as a major in the first semester of the sophomore year and enter 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 zoology program and begin the veterinary medicine curriculum in their fourth year of study. Those students finishing all required classes would complete only the DVM curriculum from this point on. Most students will meet these requirements after one year of the DVM program. If the student is not accepted or withdraws from the AS-DVM program, the student could earn the BS in Zoology and/or apply to the College of Veterinary Medicine under normal procedures.

Transfer Students

Science courses taken at other institutions will be evaluated and credits accepted where possible. Inquiries should be directed to the Associate Director of Undergraduate Program.

Graduate Programs

At the graduate level, the school awards Masters of Science degrees in biology, botany, and zoology, and doctoral degrees in botany and zoology. Faculty interests and research programs are diverse, ranging from cellular and developmental biology, through various aspects of organismal biology of plants and animals to ecology and evolutionary biology. A list of specific faculty interests can be obtained at <http://sbs.wsu.edu> or by writing to the school.

Preparation for Graduate Study in Botany or Zoology

Students with undergraduate majors in such fields as animal sciences, biology, botany, cell biology, environmental sciences, genetics, microbiology, natural resources, plant sciences, wildlife biology, and zoology may be prepared for graduate study in the School of Biological Sciences. Graduate Record Examination scores from the general aptitude section are required.

Students who complete M.S. and Ph.D. degrees in our program find careers as faculty in colleges and universities, managers of natural resources, biologists and technicians for state and federal agencies, and scientists and laboratory technicians in biotechnology and other life sciences industries.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

BIOLOGY - BOTANY OPTION (120 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 301	4
CHEM 345	4
Humanities [HUM]	3
PHYSICS 101 or 201	4

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
PHYSICS 102 or 202	4
Social Sciences [SSCI]	3
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 320	4
BIOLOGY 372 [M]	4

Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
STAT 212, 412, or PSYCH 311	3 or 4

<i>Second Term</i>	<i>Hours</i>
Biol 460, 462, or 469	3
BIOLOGY 332 [[M]	4
Diversity [DIVR]	3
Program Option Courses or Electives ¹	2 or 3
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 405	3
BIOLOGY 409	4
Program Option Courses or Electives ¹	6
Electives	3

<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
Program Option Courses or Electives ¹	12

¹ A minimum of 3 credits of biological science courses should be selected from the following courses or chosen in consultation with an advisor: BIOLOGY 325, 393, 406, 417, 429, 431, 440, 352, 460, 462, 463, 469, 470, 499, 504, 512, 513, 516, 518, 586, MBIOS 401 (BIOLOGY 500-level courses may be taken with the approval of the advisor and instructor).

BIOLOGY - ECOLOGY AND EVOLUTIONARY BIOLOGY OPTION (120 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
Communication [COMM] or Written Communication [WRTG]	3
Humanities [HUM]	3
PHYSICS 101 or 201	4

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 301	4
PHYSICS 102 or 202	4
Program Option Courses or Electives ¹	4
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 372 [M]	4
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3

Program Option Courses or Electives ¹	7
Electives	3

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
Program Option Courses or Electives ¹	6 or 7
STAT 212, 412, or PSYCH 311	3 or 4
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Program Option Courses or Electives ¹	11
BIOLOGY 405	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Program Option Courses or Electives ¹	13 or 14
Integrative Capstone [CAPS]	3

¹ 21 hours from a minimum of four of the following five areas: physiology / biochemistry, ecology, evolution, animal, plant, conservation / management. See advisor.

BIOLOGY - EDUCATION OPTION (136 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
PHYSICS 101 or 201	4
PSYCH 105 [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 301	4
ENGLISH 201 [WRTG], or approved Communication [COMM] or Written Communication [WRTG]	3
PHYSICS 102 or 202	4
TCH LRN 301	3
TCH LRN 317 ¹	2
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 372 [M]	4
Degree Program Electives ²	6
Humanities [HUM]	3
STAT 212, 412, or PSYCH 311	3 or 4

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3

MBIOS 305	3
MBIOS 306	2
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

Fourth Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 405	3
BIOLOGY 430	3
ED PSYCH 468	3
MBIOS 303	4
TCH LRN 467	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 499	2 or 3
Degree Program Elective ²	3
Integrative Capstone [CAPS]	3
TCH LRN 469	2
TCH LRN 470	3

Fifth Year

<i>First Term</i>	<i>Hours</i>
TCH LRN 415	16

¹ A three-week intensive experience in a K-12 public or private school in the student's home community takes place mid-May through early June after the completion of WSU's spring semester.

² A minimum of 9 credits of biological science courses should be selected from the following courses or chosen in consultation with an advisor: BIOLOGY 251, 305, 315, 320, 322, 324, 330, 332, 353, 412, 418, 423, 428, 432, 438, 462, 463, 469, ENTOM 343, MBIOS 340, 440, 442, 450. One course must fulfill [M] requirement.

**BIOLOGY - ENTOMOLOGY OPTION
(120 HOURS)**

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG] or 201 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Communication [COMM] or Written Communication [WRTG]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
Creative & Professional Arts [ARTS]	3
ENTOM 343 [M]	3
ENTOM 344 [M]	2
Humanities [HUM]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 120, 320, or 332	4
BIOLOGY 301	4
PHYSICS 101 or 201	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 352 or MBIOS 401	3
BIOLOGY 405	3
Diversity [DIVR]	3
PHYSICS 102 or 202	4
STAT 212, 412, or PSYCH 311	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 372 [M]	3
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
ENTOM 439 [M] or 440 [M]	4
MBIOS 303	4
Social Sciences [SSCI]	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Program Option Courses or Electives ¹	12
Electives	3

<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
Program Option Courses or Electives ¹	10
Electives	3

¹ Select from BIOLOGY 305, 321, 322, 325, 330, 350, 352, 353, 393, 409, 418, 431, 438, 452, 460, 462, 463, ENTOM 441, 445, 446, 448, 472, MBIOS 340, 446.

**BIOLOGY - GENERAL OPTION
(120 HOURS)**

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
Communication [COMM] or Written Communication [WRTG]	3
Humanities [HUM]	3
PHYSICS 101 or 201	4

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 301	4
MBIOS 303	4
PHYSICS 102 or 202	4
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 372 [M]	4
Diversity [DIVR]	3
Program Option Courses or Electives	8 or 9

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Program Option Courses or Electives	9
STAT 212, 412, or PSYCH 311	3 or 4

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Program Option Courses or Electives	10
BIOLOGY 405	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Program Option Courses or Biology Electives	7
BIOLOGY 352 or MBIOS 401	3
Integrative Capstone [CAPS]	3
Electives	3

**BIOLOGY - PRE-PHYSICAL THERAPY /
PRE-OCCUPATIONAL THERAPY / PRE-
PHYSICIAN'S ASSISTANT OPTION
(120 HOURS)**

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
COMMUNICATIONS [COMM]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 251	4
CHEM 345	4
Diversity [DIVR]	3
PSYCH 105 [SSCI]	3
SOC 101 [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 301	4
Creative & Professional Arts [ARTS]	3
PHYSICS 101 or 201	4
PSYCH 361	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 315	4
BIOLOGY 393 [M] or 490 [M]	2
Humanities [HUM]	3
PHYSICS 102 or 202	4
STAT 212 or 412	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 220	2
BIOLOGY 372 [M]	4
H D 101	3
PSYCH 333	3
Program Option Courses or Electives ¹	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 402	3
KINES 380 or MBIOS 303	3 or 4
PHIL 365	3
Program Option Courses or Electives ¹	6
<i>Second Term</i>	<i>Hours</i>
BIOLOGY 405	3
Integrative Capstone [CAPS]	3
Program Option Courses or Electives ¹	8

¹ A minimum of 4 credits of Biological Science courses should be selected from the following courses or chosen in consultation with an advisor: ANTH 203, 260, 380, 405, BIOLOGY 233, 331, 352, 407, 491, 495, 497, KINES 462, MBIOS 303, 304, 305, 423, 440, NEUROSCI 301, 302, or PHIL 365.

ZOOLOGY - GENERAL OPTION (120 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 140 [QUAN], 171 [QUAN], or 202 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
Humanities [HUM]	3
Program Option Courses or Electives ¹	7

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 301	4
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Program Option Courses or Electives ¹	3-6
STAT 212, 412, or PSYCH 311	3 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 321 [M], 322, or 324	4
PHYSICS 101 or 201	4
Program Option Course or Electives ¹	6 or 7
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 321 [M], 322, or 324	4
BIOLOGY 372 [M]	4
PHYSICS 102 or 202	4
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 350 or 353	4
BIOLOGY 405	3
Program Option Courses or Electives ¹	6-8
<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
Program Option Courses or Electives ¹	9
Electives	1

¹ A minimum of 9 credits of Biological Science courses should be selected from the following courses or chosen in consultation with an advisor: BIOLOGY 305, 352, 393, 410, 412, 418, 423, 428, 432, 438, 447, 461, 469, 486, 495; ENTOM 343/344, 448; or MBIOS 303.

ZOOLOGY - PRE-MEDICINE/PRE-DENTISTRY OPTION (120 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 301	4
CHEM 345	4
PHYSICS 101 or 201	4
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 322 or 418	4
BIOLOGY 372	4
CHEM 348	4
PHYSICS 102 or 202	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 321 [M]	4
BIOLOGY 405	3
Communication [COMM] or Written Communication [WRTG]	3
Humanities [HUM]	3
Program Option Courses or Electives ¹	3 or 4

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Diversity [DIVR]	3
MBIOS 303	4
Electives	2
Program Option Courses or Electives or MBIOS 401 ¹	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 322 or 418	4
BIOLOGY 352	3
MBIOS 305	3
MBIOS 306	2
Electives	3
<i>Second Term</i>	<i>Hours</i>
BIOLOGY 315	4
BIOLOGY 353	4
Integrative Capstone [CAPS]	3
STAT 212, 412, or PSYCH 311	3 or 4

¹ Select from BIOLOGY 322, 393, 394, 418, 495, PHIL 365.

ZOOLOGY - PRE-VETERINARY/ANIMAL CARE OPTION (120 HOURS)

A minimum of six years is required to obtain the DVM degree. Two or more years of preprofessional (pre-veterinary) training must be taken followed by four years of professional study in veterinary medicine. The following curriculum will allow students to finish preprofessional academic requirements in two years. This schedule is rigorous. A student who cannot maintain a high gpa following this schedule should choose to finish the preprofessional requirements in three years.

All preprofessional academic requirements must be completed by the end of the academic year during which the application is under consideration. Students wishing to apply to Veterinary School during the sophomore year must complete the Graduate Record Exam (GRE) General Test and have sufficient Veterinary medical exposure and/or animal experience. Applications are due by October of the sophomore year if prerequisites will be met by the end of the sophomore year.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI] ¹	4
CHEM 105 [PSCI] ¹	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107 ¹	4
CHEM 106 ¹	4
Creative & Professional Arts [ARTS]	3
MATH 140 [QUAN] or 171 [QUAN] ¹	4

Second Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 301 ¹	4
CHEM 345 ¹	4
Communication [COMM] or Written Communication [WRTG]	3
Humanities [HUM]	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
MBIOS 303 ¹	4
PHYSICS 101 or 202 ¹	4

Program Option Courses or Electives ²	3
STAT 212, 412, or PSYCH 311	3 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 321 [M], 322, or 324	4
PHYSICS 102 or 202 ¹	4
Program Option Courses or Electives ²	6

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 321 [M], 322, or 324	4
BIOLOGY 372 [M]	4
Diversity [DIVR]	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 350 or 353	4
BIOLOGY 405	3
Program Option Courses or Electives ²	3-6
Electives	3

<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
Program Option Courses or Electives ²	10-12
Electives	3

¹ Science requirements for admission to WSU College of Veterinary Medicine.

² A minimum of 12 credits of Biological Science courses should be selected from the following courses or chosen in consultation with an advisor: BIOLOGY 305, 352, 393, 410, 412, 418, 423, 428, 438, 447, 461, 495, ANIM SCI 314, NATRS 431, MBIOS 303, 305, 306.

Minors

Biology

A minor in biology requires a minimum of 20 hours in BIOLOGY coursework including BIOLOGY 106, 107, 301 and 8 additional hours of BIOLOGY courses at the 300-level or above. No more than 2 hours in BIOLOGY 490, 491, 494, 495, 496, 497 or 499 may be included in the 20 hours. 9 credit hours must be earned in residence at WSU or through WSU-approved education abroad or educational exchange courses. All coursework for the minor must have a minimum cumulative gpa of 2.0. Students who major in biology or zoology cannot be granted a minor in biology.

Zoology

A minor in zoology requires a minimum of 20 hours, including BIOLOGY 106, 107, and one of 321, 322, or 324; and 8 additional hours of biological sciences courses focused on animals. No more than 2 hours of BIOLOGY 490, 491, 494, 495, 496, 497, 498, or 499 may be included in the 20 hours. Credit hours for the minor must include 9 hours taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. All coursework for the minor must have a minimum cumulative gpa of 2.0.

Certificates

Certificate in Quantitative Biology

The certificate in quantitative biology requires 28 credit hours including MATH/BIOLOGY 340 and MATH/BIOLOGY 494. In addition to the two required courses, students must take at least 12 hours of courses in mathematics, statistics, or computer science of which at least 8 hours must be at the 300-level or above and at least 12 hours of life sciences courses of which at least 8 hours must be at the 300-level or above. A list of recommended courses is provided in the departments. The requirement for 300-level or above may include independent research credits. However, no more than 4 hours of S, F graded coursework (including MATH/BIOLOGY 494 and 499) may count towards the 28 credits. No more than 7 out of the 28 credits may be transfer credits. Students must earn a cumulative GPA of 2.5 and no less than a C for graded courses used to fulfill the requirements of the certificate. A faculty coordinator shall be designated to oversee the certificate approval process.

Description of Courses

BIOLOGY

BIOLOGY

101 [BSCI] Biology of Humans 3 The biology of good health and longevity; evaluation of lifestyle choices; consideration of each body system and the potential for disease and disorder. Lecture only; not for students majoring in the life sciences. Credit granted only to students who have not completed BIOLOGY 102. Credit not granted to students who have already completed BIOLOGY 106 and/or 107. Students who declare a major requiring BIOLOGY 106 and/or 107 will need to complete those courses for credit toward their major.

102 [BSCI] General Biology 4 (3-3) Understanding current and future advances in biology as 'citizen scientists'. Lecture and laboratory; not for students majoring in the life sciences. Credit granted only to students who have not already completed BIOLOGY 101, 105, or BIOLOGY 101 and 105. Credit not granted to students who have already completed BIOLOGY 106 and/or 107. Students who declare a major requiring BIOLOGY 106 and/or 107 will need to complete those courses for credit toward their major.

105 General Biology Laboratory 1 (0-3) Course Prerequisite: Junior standing. Understanding biology as a science and its effect on issues within society. Laboratory only; not for students majoring in the life sciences. Credit granted only to students who have not already completed BIOLOGY 102. Credit not granted to students who have already completed BIOLOGY 106 and/or 107. Students who declare a major requiring BIOLOGY 106 and/or 107 will need to complete those courses for credit toward their major.

106 [BSCI] Introductory Biology: Organismal Biology 4 (3-3) One semester of a two semester sequence (BIOLOGY 106/107 or BIOLOGY 107/106) for science majors and pre-professional students. Biology of organisms; plants, animals, ecology and evolution.

107 [BSCI] Introductory Biology: Cell Biology and Genetics 4 (3-3) Course Prerequisite: Minimum 2 credits 100 level CHEM or concurrent enrollment. First or second semester of a one-year sequence (BIOLOGY 106/107 or BIOLOGY 107/106) for science majors and pre-professional students. Cell biology and genetics of prokaryotes and eukaryotes.

110 [BSCI] Scientific Perspective on Global Issues 3 Course Prerequisite: For non-science majors. Current case studies of human interaction with the environment exploring concepts in ecology, biodiversity, global chemical cycles, and climate change.

111 [BSCI] Laboratory Experiments in Biology and Genetics 1 (0-3) Scientific method and its application to a diverse range of biology and genetics topics and research questions.

120 [BSCI] Introductory Botany 4 (3-3) Introduction to plant science, highlighting certain aspects of plant biology and current research and how these relate to us all in the modern world.

125 [BSCI] Genetics and Society 3 Genetic topics in media and daily life including human health, agriculture, ecology and forensics for the educated non-biologist.

130 Biology of the Oceans 3 Survey of the ocean biosphere including physical and chemical aspects and the biology of marine organisms in specific marine environments.

135 [BSCI] Animal Natural History 3 Identification, life history, habitat relations, ecology, behavior, and conservation of animals commonly found in the Pacific Northwest.

140 [BSCI] Introduction to Nutritional Science 3 Information related to dietary sources of nutrients, their functions in the body, physiologic and environmental factors that govern nutrient requirements, and guidelines for optimal dietary patterns.

150 [BSCI] Evolution 3 Basic principles and implications of Darwinian evolution.

201 Contemporary Biology 1 Course Prerequisite: BIOLOGY 101, 102, 106, 107, 120, or MBIOS 101. Biological information that provides a framework for understanding life processes; impact of biological information on human affairs.

210 Your Future in Life Sciences 2 Exploration of career options in biological sciences with faculty and outside speakers; guide to preparing resume and career plans. (Crosslisted course offered as SCIENCE 210, BIOLOGY 210, MBIOS 210). S, F grading.

220 Medical Terminology 2 Course Prerequisite: BIOLOGY 101, 102, 106, 107, or KINES 262. Terms and word constructions for health care occupations; format and function of medical records.

- 233 [BSCI] Human Nutrition, Health, and Disease** 3 Applying principles of chemistry, biology, and physiology to the study of nutrition emphasizing nutrient functions, nutrient requirements and impact of diet on health and disease. Recommended preparation: BIOLOGY or CHEM course; or BIOLOGY 251 or 315.
- 251 Introductory Human Physiology** 4 (3-3) Course Prerequisite: BIOLOGY 102, 106, or 107. Basic physiological processes in humans from the cellular to the organismal level. Credit not granted for both BIOLOGY 251 and 353.
- 298 [BSCI] Honors Biology for Non-Science Majors** 4 (3-3) Understanding the natural world from a biological perspective for non-science majors.
- 301 General Genetics** 4 Course Prerequisite: BIOLOGY 106 or 120; BIOLOGY 107; CHEM 101 or 105; CHEM 102 or 106. Principles of modern and classical genetics. (Crosslisted course offered as MBIOS 301, BIOLOGY 301).
- 308 [BSCI] Marine Biology** 3 Course Prerequisite: BIOLOGY 106; sophomore standing. Introduction to the marine environment including oceanic, near-shore and estuarine communities of organisms and their roles and interactions.
- 315 Gross and Microanatomy** 4 (3-3) Course Prerequisite: At least 3 hours of BIOLOGY; sophomore standing; cumulative WSU gpa 2.5 or better. Gross and microscopic anatomy of the human body. Recommended for pre-health care professionals only.
- 321 [M] Principles of Animal Development** 4 (3-3) Course Prerequisite: BIOLOGY 106; BIOLOGY 107. Experimental analyses of development and descriptive and comparative examination of embryology; emphasis on the chordates. Recommended preparation: BIOLOGY 301 or MBIOS 301.
- 322 [M] Invertebrate Biology** 4 (3-3) Course Prerequisite: BIOLOGY 106. Phylogenetic relationships, development, and functional ecology of the invertebrate animals.
- 324 Comparative Vertebrate Anatomy** 4 (2-6) Course Prerequisite: BIOLOGY 106. Evolution of vertebrates and their organ systems; correlation of structural modification with function. Cooperative: Open to UI degree-seeking students.
- 330 Principles of Conservation** 3 Course Prerequisite: BIOLOGY 102, 106, or 107. Conservation of major natural resources through a biological approach; philosophical, economic, and political aspects of important conservation issues.
- 331 Nutrition in the Human Life Cycle** 3 Course Prerequisite: BIOLOGY 140 or 233. How growth and development impacts nutrient requirements throughout the life cycle.
- 332 [M] Systematic Botany** 4 (3-3) Course Prerequisite: BIOLOGY 106 or 120. Identification and classification of vascular plants with emphasis on the local flora.
- 335 Genome Biology** 3 Course Prerequisite: BIOLOGY 301. Comparative analysis of genomes from bacteria to humans including methods for sequencing, genotyping, annotation of genomes, population genetics and evolution.
- 340 Introduction to Mathematical Biology** 3 Course Prerequisite: MATH 140 with a C or better, or MATH 172 with a C or better; BIOLOGY 101, BIOLOGY 102, BIOLOGY 106, or BIOLOGY 107. Mathematical biology and development of mathematical modeling for solutions to problems in the life sciences. (Crosslisted course offered as MATH 340, BIOLOGY 340).
- 350 Comparative Physiology** 4 (3-3) Course Prerequisite: BIOLOGY 107; CHEM 345. Analysis of systems and integrative physiology with an emphasis on evolutionary adaptation among mammalian and non-mammalian vertebrates.
- 352 Cell Physiology** 3 Course Prerequisite: BIOLOGY 107; CHEM 345. Function and control at the cell-tissue level.
- 353 Advanced Human Physiology** 4 (3-3) Function and control at the organ-organismic level with emphasis on mammals, including humans; emphasis on human health science applications. Credit not granted for both BIOLOGY 251 and 353. Recommended preparation: BIOLOGY 315 or 354.
- 354 Human Anatomy for Health Occupations** 4 (3-3) Course Prerequisite: BIOLOGY 107; CHEM 345; certified major in Biology. History and anatomy of humans with non-cadaver-based laboratory utilizing preserved and histological specimens, models and software.
- 372 [M] General Ecology** 4 (3-3) Course Prerequisite: BIOLOGY 106; CHEM 102 or 105. Relationship of organisms with physical and biotic components of their environment at the population, community, and ecosystem level.
- 390 Stream Monitoring** 1 (0-3) Course Prerequisite: BIOLOGY 101, 102, or 106; CHEM 101 or 105; junior standing. Principles and methods of water quality monitoring, including habitat assessment, water chemistry, and biological assessment. Field work and independent research required.
- 393 [M] Professional Communications in Biology** 2 Course Prerequisite: Certified major in Biology or Zoology or General Biological Sciences or General Studies Basic Medical Sciences. Literature investigation, oral presentation and written reports of selected topics in biology.
- 394 Medicine as a Career** 1 Course Prerequisite: Junior standing. Current issues in medicine; ethical, financial, and personal aspects of medical practice. S, F grading.
- 401 Plants and People** 3 Course Prerequisite: Biol 102, 106, or 120; junior standing. Relationships between plants and people, especially cultural and economic applications of plants.
- 403 Evolutionary Biology** 3 Course Prerequisite: BIOLOGY 301. The survey of evidence for evolution and operation of evolutionary processes that influence adaptation, diversification and speciation in organisms.
- 405 Principles of Organic Evolution** 3 (2-3) Course Prerequisite: BIOLOGY 301. The evolutionary processes that influence adaptation, population differentiation, and speciation in organisms.
- 407 [BSCI] Biology of Women** 3 Course Prerequisite: BIOLOGY 102 or 106; junior standing. Biological basis of sex and its relationship to body function, women and health care, and the impact of social and cultural perspectives on the experience of being female. (Crosslisted course offered as BIOLOGY 407, WOMEN ST 407).
- 408 [CAPS] Contemporary Genetics** 3 Course Prerequisite: MBIOS / BIOLOGY 301 with a C or better; junior standing. Consideration of the state-of-the-art genetic technologies and their impact on society, environment and the economy.
- 409 Plant Anatomy** 4 (2-6) Course Prerequisite: BIOLOGY 106 or 120. Developmental anatomy and morphology of vascular plants; economic forms. Credit not granted for both BIOLOGY 409 and BIOLOGY 509.
- 410 Marine Ecology** 3 Course Prerequisite: BIOLOGY 107. The ecology and conservation of marine organisms, communities, and ecosystems.
- 412 Biology and Management of Fishes** 3 (2-3) Course Prerequisite: BIOLOGY 106. Evolution, identification, life history, and management of important fish species.
- 416 Fisheries Management** 4 (3-3) Techniques employed in sampling and application of principles toward managing recreational and commercial aquatic resources. (Crosslisted course offered as NATRS 416, BIOLOGY 416). Recommended NATRS 411. Recommended preparation: NATRS 411. Cooperative: Open to UI degree-seeking students.
- 418 [M] Parasitology** 4 (3-3) Course Prerequisite: BIOLOGY 102 or BIOLOGY 106; junior standing. Types of associations, life cycles, control, prevention, and modifications of parasites; examination of parasitic protozoa and helminths.
- 420 Plant Physiology** 3 Course Prerequisite: BIOLOGY 106 or 120. Water relations, mineral nutrition, photosynthesis, respiration, and growth of plants. Recommended: Organic chemistry.
- 421 Plant Physiology Laboratory** 1 (0-3) Course Prerequisite: BIOLOGY 420 or concurrent enrollment. Laboratory for Biol 420.
- 423 Ornithology** 4 (3-3) Course Prerequisite: BIOLOGY 106. Ecology, systematics, and evolution of birds. Field trips required include two Saturdays.
- 428 Mammalogy** 4 (3-3) Course Prerequisite: BIOLOGY 106. Ecology, systematics, and evolution of mammals.

- 430 Methods of Teaching Science** 3 Course Prerequisite: Junior standing. Methods, philosophy, and structure of science; application in teaching middle and secondary school science courses. (Crosslisted course offered as BIOLOGY 430, SCIENCE 430).
- 432 [M] Biology of Amphibians and Reptiles** 4 (3-3) Characteristics, evolution, and systematics; patterns of distribution; adaptive strategies; interactions between humans and amphibians and reptiles.
- 438 [M] Animal Behavior** 3 (2-3) Course Prerequisite: BIOLOGY 106. Biological study of animal behavior as viewed from ethological, genetic, developmental, ecological, and evolutionary perspectives.
- 456 Neuroethology** 3 Course Prerequisite: BIOLOGY 301, MBIOS 303, or 300-level NEUROSCI course; STAT 412 or concurrent enrollment. Introduction to neural mechanisms underlying natural animal behaviors from the cellular level to the organismal level.
- 462 Community Ecology** 3 Course Prerequisite: BIOLOGY 106. Assembly, essential properties, levels of interactions, succession, and stability of natural communities; emphasizes an experimental approach to community investigation. Credit not granted for both BIOLOGY 462 and BIOLOGY 562. Recommended preparation: BIOLOGY 372.
- 465 Field Stream Ecology** 2 Course Prerequisite: BIOLOGY 372. Ecological roles of immature insects in different size streams; pattern changes along the stream continuum; other ecological characteristics.
- 469 Ecosystem Ecology and Global Change** 3 Historic and current factors controlling the function of ecosystems and their responses to natural and human caused global change. (Crosslisted course offered as BIOLOGY 469, ENVR SCI 469, BIOLOGY 569, ENVR SCI 569). Credit not granted for both BIOLOGY 469 and 569, or ENVR SCI 469 and 569. Cooperative: Open to UI degree-seeking students.
- 475 Systems Biology of Reproduction** 3 Current literature based course on systems biology with a molecular/epigenetic to physiological level understanding of cell, development, disease, and evolutionary biology. Credit not granted for both BIOLOGY 475 and 575.
- 476 Epigenetics and Systems Biology** 3 Course Prerequisite: BIOLOGY 301. Current literature based course on epigenetics and systems biology with topics in environmental epigenetics, disease etiology, and role epigenetics in evolutionary biology. Credit not granted for both BIOLOGY 476 and 576.
- 480 [M] Writing in Biology** 2 Course Prerequisite: Certified major in Biology or Zoology or General Biological Sciences or General Studies Basic Medical Sciences. Discussion and practice in relating thinking and writing; popular and professional communication in biology.
- 486 Marine Invertebrate Communities** 2 (0-6) Course Prerequisite: BIOLOGY 106; BIOLOGY 107. Survey of marine invertebrates and their habitats. One-week field/lab course at a marine station.
- 490 [M] Professional Seminar in Physical Therapy** 2 Course Prerequisite: By permission only. Consideration of treatment modalities and health issues in physical therapy and related disciplines. A, S, F grading.
- 491 Clinical Experience** V 1-4 May be repeated for credit; cumulative maximum 20 hours. Course Prerequisite: PSYCH 105; BIOLOGY 315; junior standing; by permission only. Work experience under supervision of a qualified professional in a clinical setting. S, F grading.
- 492 Topics in Biology** V 1-3 May be repeated for credit; cumulative maximum 6 hours.
- 494 Seminar in Mathematical Biology** 1 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MATH 140 with a C or better, or MATH 172 with a C or better, or MATH 182 with a C or better; BIOLOGY 101, BIOLOGY 102, BIOLOGY 106, or BIOLOGY 107. Oral presentation of research approaches, research results and literature review of mathematical biology including mathematical modeling of biological systems. (Crosslisted course offered as MATH 494, BIOLOGY 494). Cooperative: Open to UI degree-seeking students. S, F grading.
- 495 Internship in Biology, Botany, and Zoology** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By permission only. Experience in work related to specific career interests. S, F grading.
- 496 [M] Special Problems and Reports** V 1-4 Course Prerequisite: By permission only. Independent project with written project proposal, progress report, and final report required. S, F grading.
- 497 Instructional Practicum** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Academic traineeship in laboratory teaching and tutoring.
- 499 Special Problems** V 1-4 May be repeated for credit. Course Prerequisite: By permission only. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 500 Seminar** 1 May be repeated for credit. S, F grading.
- 501 Proposal Defense Seminar** 2 Research proposal defense as part of the preliminary examination for candidacy in the Ph.D. program. S, F grading.
- 504 Experimental Methods in Plant Physiology** 3 (2-3) Advanced techniques and instrumental methods applicable to research in plant physiology.
- 509 Plant Anatomy** 4 (2-6) Developmental anatomy and morphology of vascular plants; economic forms. Credit not granted for both BIOLOGY 409 and BIOLOGY 509.
- 512 Molecular Mechanisms of Plant Development** 3 Physiology of growth; metabolism during development and reproduction.
- 513 Plant Metabolism** 3 Metabolic processes unique to plants, including the primary incorporation of nitrogen, sulfur, carbon dioxide and phosphate into bio-molecules.
- 514 Fish Genetics** 2 Chromosomal, biochemical, quantitative, and ecological aspects of fish genetics with emphasis on applications to aquaculture and fish management. Cooperative: Open to UI degree-seeking students.
- 517 Stress Physiology of Plants** 3 Temperature, light, salinity, water effects on physiological processes; mechanistic understanding of stress.
- 519 Introduction to Population Genetics** 3 Survey of basic population and quantitative genetics. Cooperative: Open to UI degree-seeking students.
- 520 Conservation Genetics** 2 Genetic studies and approaches relevant to efforts to conserve threatened and endangered populations of organisms.
- 521 Quantitative Genetics** 3 Course Prerequisite: BIOLOGY 519. Fundamentals of quantitative genetics; evolutionary quantitative genetics. Cooperative: Open to UI degree-seeking students.
- 531 Principles of Systematic Biology** 3 Systematic theory; history and current views; approaches to phylogenetic analysis and classification.
- 533 Modern Methods in Phylogenetics** 4 (2-6) Selecting, gathering, and analyzing morphological, cytological, molecular data for phylogenetic and evolutionary studies.
- 537 Plant Cell Biology** 3 Structure and function of plant cells including membrane biology, protein targeting and molecular signaling with emphasis on current research.
- 540 Stable Isotope Theory and Methods** 3 (2-3) Theory and practice of measuring stable isotope ratios of biologically important elements; training in the use of isotope mass spectrometers. Cooperative: Open to UI degree-seeking students.
- 544 Nitrogen Cycling in the Earth's Systems** 3 Nitrogen dynamics in terrestrial, aquatic, and atmospheric systems; nitrogen transformations in natural and managed systems and responses to human activities. (Crosslisted course offered as BIOLOGY 544, SOIL SCI 544).
- 548 Evolutionary Ecology of Populations** 3 Evolutionary dynamics of natural populations and the co-evolution of species. Cooperative: Open to UI degree-seeking students.
- 556 Biochemical Adaptation** 3 Relationships between enzyme/macromolecule adaptation and animal performance.
- 559 Hormones, Brain and Behavior** 3 Classical behavioral endocrinology from molecular to whole organisms, integrating evolutionary ecology, neuroethology and behavioral neuroendocrinology.

- 560 Plant Ecophysiology** 3 Relationships of biotic and abiotic environment to plant distribution and evolution through study of physiological processes.
- 561 Environmental Physiology** 3 Individual and evolutionary adaptations to changing environments with emphasis on recent literature.
- 562 Community Ecology** 3 Assembly, essential properties, levels of interactions, succession, and stability of natural communities; emphasizes an experimental approach to community investigation. Credit not granted for both BIOLOGY 462 and BIOLOGY 562. Recommended preparation: BIOLOGY 372.
- 563 Field Ecology** 2 (0-6) Field implementation of descriptive and experimental techniques to quantify the structure, composition, and interactions within natural communities. Field trips required. Cooperative: Open to UI degree-seeking students.
- 564 Molecular Ecology and Phylogeography** 3 Use of genetic markers for the study of ecological phenomena, including kinship, population structure, and phylogeography. Cooperative: Open to UI degree-seeking students.
- 565 Ecology and Evolution of Disease** 3 Disease ecology and evolution with a focus on current literature. Recommended preparation: BIOLOGY 372; BIOLOGY 405. Cooperative: Open to UI degree-seeking students.
- 566 Mathematical Genetics** 3 Mathematical approaches to population genetics and genome analysis; theories and statistical analyses of genetic parameters. (Crosslisted course offered as MATH 563, BIOLOGY 566). Required preparation must include multivariate calculus, genetics, and statistics. Cooperative: Open to UI degree-seeking students.
- 567 Ecological Restoration** 3 Introduction to major issues in restoration ecology; major ecological dimensions of restoration.
- 568 Conservation Ecology** 3 Prereq Graduate standing. Diagnosis of endangered species, population viability analysis, invasive species ecology, landscape ecology and ecosystem management.
- 569 Ecosystem Ecology and Global Change** 3 Historic and current factors controlling the function of ecosystems and their responses to natural and human caused global change. (Crosslisted course offered as BIOLOGY 469, ENVR SCI 469, BIOLOGY 569, ENVR SCI 569). Credit not granted for both BIOLOGY 469 and 569, or ENVR SCI 469 and 569. Cooperative: Open to UI degree-seeking students.
- 570 Diversity of Plants** 3 Morphological, life history, and ecological diversity of major plant clades; emphasis on principles of homology, character transformation, and macroevolution.
- 572 Quantitative Methods and Statistics in Ecology** 4 (3-3) Course Prerequisite: By permission only. Philosophy and methods of formulating hypotheses as mathematical models and confronting them with data.
- 573 Ancient DNA** 3 The prospects and problems associated with the study of ancient DNA are explored through reading and discussing primary literature.
- 575 Systems Biology of Reproduction** 3 Current literature based course on systems biology with a molecular/epigenetic to physiological level understanding of cell, development, disease, and evolutionary biology. Credit not granted for both BIOLOGY 475 and 575.
- 576 Epigenetics and Systems Biology** 3 Current literature based course on epigenetics and systems biology with topics in environmental epigenetics, disease etiology, and role epigenetics in evolutionary biology. Credit not granted for both BIOLOGY 476 and 576.
- 579 Mathematical Modeling in the Biological and Health Sciences** 3 Techniques, theory, and current literature in mathematical modeling in the biological and health sciences, including computational simulation. (Course offered as BIOLOGY 579, MATH 579).
- 581 Comparative Biology of Social Traditions** 3 Phylogenetic and modeling perspectives used to examine the evolution of social learning and cultural transmission in humans and other animals. (Crosslisted course offered as ANTH 581, BIOLOGY 581).
- 582 Professional Communication in Biology - Grant Writing** 2 Mechanics and style of publishing biological research and findings; adaptation of writing to various venues and audiences with emphasis on grant writing.
- 585 Professional Development and Training for College and University Teaching** 2 Preparation for roles as teaching assistants and as instructors of undergraduate classroom education.
- 589 Advanced Topics in Biology** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Recent advances in biology.
- 591 Seminar in Molecular Plant Sciences** 1 May be repeated for credit; cumulative maximum 4 hours. A cross-discipline seminar, including botany, crop and soils sciences, horticulture, plant pathology, and molecular plant sciences.
- 593 Seminar I** 1 May be repeated for credit. Literature and problems.
- 597 Teaching Practicum** V 1-4 May be repeated for credit; cumulative maximum 4 hours. Zoology laboratory teaching internship. S, F grading.
- 598 IPEM Seminar** 1 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By permission only. Symposia and project work sessions for the WSU/UW IGERT: Program in Evolutionary Modeling. (Crosslisted course offered as ANTH 596, BIOLOGY 598). S, F grading.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study and/or Examination** V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

ELECTRON MICROSCOPY**E MIC**

586 Special Projects in Electron Microscopy V 2 (0-6) to 3 (0-9) May be repeated for credit. Practical training in one or more areas of electron microscopy; TEM, SEM, ultramicrotomy, specimen processing; confocal fluorescent microscopy.

587 Special Topics in Electron Microscopy 1 May be repeated for credit; cumulative maximum 4 hours. S, F grading.

Department of Biological Systems Engineering

bsyse.wsu.edu
Smith Hall 213
509-335-1578

Professor and Department Chair, C. O. Stöckle; Professors, G. V. Barbosa-Cánovas, S. Chen, G. Hoogenboom, J. Tang, J. Wu, Q. Zhang; Associate Professor, P. Ndegwa; Assistant Professors, M. García-Pérez, M. Karkee, H. Lei, R. Peters, S. Sablani, B. Yang; Research Assistant Professors, C. Frear, U. Zaher; Affiliate Faculty, D. Bender, M. Flury, V. Yadoma, J. Zhang; Adjunct Faculty, W. Elliott, P. Robichaud, J. Ullman, S. Wang.

BIOLOGICAL SYSTEMS ENGINEERING

Biological and Agricultural Engineering is a multidisciplinary program that provides students flexibility to acquire and apply knowledge of engineering and science in their programs of study and research projects. The Department offers Ph.D. and M.S. degrees in Biological and

Agricultural Engineering. Students apply scientific and engineering principles to conduct high-quality research and to disseminate knowledge and technologies in four areas of emphasis: a) food engineering, b) bioenergy and bioproduct engineering, c) land, air, water resources and environmental engineering, and d) agricultural automation engineering.

Only graduate degrees are offered. See department for more information.

Description of Courses

BIOLOGICAL SYSTEMS ENGINEERING

BSYSE

512 Research and Teaching Methods 3 (2-3) Graduate research with an emphasis on biological systems engineering and college instruction.

530 Machine Vision for Biological Systems 3 Image analysis techniques as applied to machine vision applications integrated into autonomous equipment used in specialty crops.

532 Electrohydraulic Systems Control 3 Fluid power transmission, E/H control, control systems and controller design.

550 Soil and Water Conservation Engineering 3 Land, water and air conservation emphasizing on soil and water engineering concepts, state of science solution techniques, and engineering design.

551 Advanced Biological Systems Engineering Topics V 1-4 May be repeated for credit; cumulative maximum 6 hours. Directed group study of selected advanced topics in biological systems engineering. Cooperative: Open to UI degree-seeking students.

552 Advanced Biological Systems Engineering Topics V 1-4 May be repeated for credit. Directed group study of selected advanced topics in biological systems engineering. Cooperative: Open to UI degree-seeking students.

554 Aquatic System Restoration 3 Study of natural, damaged and constructed ecosystems with emphasis on water quality protection and restoration of lakes, rivers, streams and wetlands. (Crosslisted course offered as CE 585, BSYSE 554, ENVR SCI 585). Required preparation must include CHEM 345; MBIOS 101. Required preparation must include CHEM 345; MBIOS 101.

555 Natural Treatment Systems 3 Principles and design procedures of natural systems for wastewater treatment for agricultural and non-agricultural applications. (Crosslisted course offered as CE 555, BSYSE 555).

556 Surface Hydrologic Processes and Modeling 3 (2-3) Fundamental hydrologic processes, governing equations and solution methods, GIS techniques commonly used in hydrology, class project on modeling surface hydrology.

557 Nutrient Cycling and Transport 3 Cycling of carbon, nitrogen and phosphorus at global and watershed scales; modeling of transportation and transport in agricultural systems

558 Groundwater Flow and Contaminant Transport 4 (3-3) Physics of flow and contaminant transport in saturated porous media including governing equations, well hydraulics and computer modeling.

560 Aquatic Chemistry 3 Chemical principles as applied to natural environmental system, water supply and pollution and control engineering. (Crosslisted course offered as CE 583, BSYSE 560). Cooperative: Open to UI degree-seeking students.

564 Agricultural Waste and Air Quality Management 3 Detailed analyses of agricultural wastes and their potential adverse impacts on the environment; current management systems; reuse and recycle.

581 Advanced Physical Properties of Foods 3 Analysis, modeling, and experimental procedures to measure food physical properties for use in food processing system design.

582 Food Process Engineering I 3 Design of food processing systems; design and simulation of sterilization and pasteurization processes in foods. Cooperative: Open to UI degree-seeking students.

583 Food Process Engineering II 3 Design of food separation unit operations including concentration, dehydration, and membrane processes.

584 Thermal and Nonthermal Processing of Foods 3 Food preservation methods based on application of thermal and nonthermal processes.

585 Food Packaging 3 Properties of packaging materials, manufacturing of packages, shelf-life testing and food packaging interaction.

593 Renewable Energy Technologies 3 Thermochemical biorefinery technologies for biofuels and bioproducts; facility operations, analysis, and design of integrated processes for biofuel and bioproduct production

594 Design and Analysis of Biomass Conversion Processes and Systems 3 Analysis of bioprocessing and biotreatment processes including energetics, stoichiometry, species competition, process infiltration, product separation and optimization.

595 Biosystems Engineering for Fuel and Chemicals 3 Design and optimization of biological systems for industrial functions, modeling and simulation of cell processes, bioreactors and system integration.

596 Biomass Thermo-Chemical Conversion 3 Biomass chemistry, analytical thermochemistry, torrefaction, pyrolysis, gasification and combustion; characterization and uses of thermochemical products.

597 Biomass Biological Process Engineering 3 Technical issues in the biological process engineering field, commercial application and evaluation of new technologies in resource, environment and economic contexts.

598 Graduate Seminar 1 May be repeated for credit. Required of all graduate students in biological systems engineering. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Departments of Business

business.wsu.edu
Todd Hall 570
509-335-3596

The College of Business (CB) at Washington State University prepares students to become innovative and purposeful leaders with the skill and knowledge to succeed in the global marketplace. CB graduates lead insightfully by effectively applying core business competencies, employing a global perspective, and embracing diversity. CB students, graduates, and researchers apply integrated business tools and entrepreneurial perspectives to successfully execute and deliver transformational innovations across disciplines and around the world.

The College of Business fosters positive societal change by advancing the understanding of the impact of business on society and the environment, enabling graduates to lead responsibly and make meaningful contributions to the world's business communities. Students enjoy top rate, modern educational facilities in Todd Hall, the home of the college, located at the heart of the WSU campus. Wireless computer connectivity in every classroom and study areas enable students to collaborate both in and out of the classroom. Facilities such as the Financial Markets Lab, the Marriott Hospitality Teaching Center, and the Center for Behavioral Business Research support the delivery of cutting-edge content and enable students to develop real-world skills. Staff in the Scott and Linda Carson Center for Student Success serves more than 1,800 students per semester through a wealth of professional development activities that prepare them to become strong leaders, competitive job

seekers and responsible citizens in a global society. The new space houses academic advising, careers and involvement, study abroad and scholarships. More than 25,000 WSU business alumni comprise a professional network throughout the world.

The College of Business is among two percent of business schools worldwide to achieve accreditation by the Association to Advance Collegiate Schools of Business (AACSB), the world's premier business education accrediting body, at the baccalaureate, master's, and doctoral levels. Its business programs are ranked 45th among public national universities in the United States by U.S. News & World Report. In addition to the accounting programs receiving specialized AACSB accreditation, the International Business program maintains a consistent spot in the top 20 in the nation (U.S. News & World Report). The CB sends more students abroad than any other college at WSU. The School of Hospitality Business Management is a top provider of career services to its students, and the program is one of the oldest in the country, celebrating its 75th anniversary in 2007.

The faculty in the College of Business have identified six competencies our students should have upon completion of an undergraduate degree in business: 1) mastery of core business knowledge and skills; 2) critical thinking; 3) innovative and entrepreneurial thinking; 4) the ability to write clearly and concisely without sacrificing content; 5) the ability to communicate well orally; and 6) the ability to effectively lead and work in teams.

Faculty across disciplines produce scholarly and applied research at the main campus in Pullman as well as at urban campuses in Vancouver and the Tri-Cities. International activities include academic centers in China and Switzerland as well as thriving partnerships with several schools around the globe. Innovative online programs supplement face-to-face offerings. For more information and news about the college, its students, and programs, visit <http://www.business.wsu.edu>.

Certification Requirements

Given high demand for business courses and strict accreditation requirements, certifying as a business major is competitive and course enrollments are limited. A student must meet the following minimum requirements to be eligible to apply to certify a major in business: 1) Complete the following certification courses with an average gpa of 2.50 or higher: ACCTG 230, 231; B LAW 210; MGTOP 215; ECONS 101, 102; ENGLISH 101; MATH 201, 202; and MIS 250; 2) Have a WSU cumulative gpa of at least 2.5; and 3) Have earned at least 60 credit hours. Students will then be placed in rank order based on cumulative gpa and other performance criteria. The top students then are certified based on the number of spots available that semester.

To be eligible to apply to certify a business minor, a student must be certified in a major, have a cumulative gpa of at least 2.5, and have earned at least 60 credit hours. Students will then be placed in rank order based on cumulative gpa and other performance criteria. The top students then are certified based on the number of spots available that semester.

Students on the Pullman campus must apply online for enrollment into the Business and Hospitality Business Management degree programs at www.business.wsu.edu/advising to be considered in the applicant pool.

Freshman Admit Program

Upon acceptance to WSU any incoming freshman is invited to apply for the College of Business Freshman Admit Program. This is an opportunity for any student who maintains a 3.0 cumulative gpa and who completes the required program requirements, to be automatically accepted into the College of Business as certified major, upon completion of 60 semester hours and the 10 qualifying core business courses (see certification requirements above).

If a student fails to maintain a 3.0 cumulative gpa or does not meet the other program requirements each semester, then he or she will be dropped from the Freshman Admit Program. Those students dropped from the Freshman Admit Program must go through the normal business certification application process and compete for certification into the College of Business. Please check our website at <http://business.wsu.edu/advising> for application deadlines.

Graduation Requirements

A minimum business gpa of 2.5 is required for graduation.

General Program Requirements

General course requirements, core courses, and fields of specialization are presented below. Requirements vary depending upon the field of specialization selected. For a detailed description of degree requirements (with changes approved since publication of the latest catalog), see current degree requirements for BA majors, available in the College of Business.

By the completion of 60 hours of credit, all students, including transfer students, must have completed English, Math and 100-200-level CB core courses: ACCTG 230, 231; B LAW 210; MGTOP 215; ECONS 101, 102; ENGLISH 101; MATH 201, 202; and MIS 250. Enrollment in 300-level business courses is restricted to those students who have met these requirements and have certified as BA or HBM majors. Students certified in non-business majors may enroll in required 300-400-level business courses with permission of the department chair as space is available.

All students majoring in business must complete 60 credit hours of their course work outside of the College of Business.

WSU Course Requirements: At least 50% of business core and major specialization courses and at least nine 300-400-level business/economics courses must be WSU courses. A WSU course is a course that does not require evaluation for transfer credit.

The chair of the department and/or the associate dean of the college must approve in writing any business courses to be satisfied by transfer, correspondence, independent study, or other credit. 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.

Only general elective courses that are not University Common Requirements (UCORE), not core/major requirements, and not offered by the CB may be taken pass, fail.

An honors senior project is required for Honors students.

International Learning Requirement

Students within the College of Business must complete one of the following International Learning Requirement options*:

1) Study abroad for 6 or more credit hours. Two smaller study abroad programs may be cumulated to meet the entire six credit hour requirement. International students in the College of Business (not including WSU Online students) will meet their study abroad requirement through their study in the United States.

2) Complete a major or minor in a foreign language or Global Studies. Honors College students that meet their demonstrated proficiency in a foreign language will also be deemed to have met the College of Business International Learning Requirement.

3) Complete a certificate with a major international component such as the Asia Program certificate.

4) Complete any two of the following requirements:

a. a brief study abroad program of less than 6 credit hours,

b. an international internship approved by the International Business Institute (maximum of three credit hours),

c. an accepted international course as approved through the International Business Institute. (See your advisor for a list of classes)**, or

d. a College of Business international course including IBUS 380, any International Business Institute 300 or 400 level course, any cross-listed course offered by the International Business Institute, (see your advisor for classes) or

e. an accepted petition to the International Business Institute to allow the use of extensive international travel experiences at the collegiate level for up to three credit hours towards the International Learning Requirement. Normally such an experience will be at least 3 months in duration. Credit for IBUS 498 or 499 may be given upon pre-approval.

5) Complete a minimum of one year international experience in any of the following areas: military service, Peace Corps, Volunteer work with an organization, missionary work, or other. Documentation is required for approval.

* Interpretations regarding the proposed policy will be made by the administrative head of the International Business Institute.

** Other courses may also be used under this guideline if approved through the International Business Institute.

Double Majors in Business

Students may double major within business provided that they satisfy the requirements of the second major. At a minimum, students must complete 15 additional credits (18 credits for accounting) from among those courses specifically designated by the second major and distinct from those used to satisfy the first major.

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; COM 102 or H D 205; ECONS 101, 102; ENGLISH 402 or 403; FIN 325; MATH 201, 202; MGTOP 215, 340; MGMT 301 and 491 or 492; MIS

250; MKTG 360; POL S elective; SOC or PSYCH [SSCI]; and the courses required for the student's chosen major in business.

The second degree can usually be completed in less than two years, depending on the number of business requirements completed as part of the first undergraduate degree. Second degree students must also go through the certification process (see Certification Requirements above) before they can enroll in 300-400-level business courses. Students should consult the CB Advising Office for specific requirements.

Transfer Students

Students planning to transfer to Washington State University at the end of the first or second 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 are not accepted as transferable equivalents to 300-400-level courses at WSU.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

BUSINESS ADMINISTRATION, VANCOUVER AND TRI-CITIES CAMPUSES ONLY (120 HOURS)

The following major is available only to students on the Vancouver and Tri-Cities campuses. Students on the Pullman campus may not certify into this major.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 201	3

<i>Second Term</i>	<i>Hours</i>
ECONS 101 or 102	3
Humanities [HUM]	3
MATH 202 [QUAN]	3
MIS 250	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	4 or 3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
SOC [SSCI] or PSYCH [SSCI] ²	3
Elective	3

<i>Second Term</i>	<i>Hours</i>
ACCTG 231	3
B LAW 210	3
COM 102, COMSOC 235, or H D 205	3

MGTOP 215	4
POL S Elective	4
Complete Writing Portfolio	
Consider studying abroad this summer	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level Business / ECONS Elective ³	3
FIN 325	3
MGTOP 301	3
MKTG 360	3
Elective	3

<i>Second Term</i>	<i>Hours</i>
ACCTG 338	3
ENGLISH 402 [WRTG]	3
MGTOP 340	3
MGTOP 401 [M]	3
Elective	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
400-level Business Elective ³	3
400-level Business Elective [M] ³	3
FIN 425	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
MGTOP 491 or ENTRP 492	3
MKTG 495 [M]	3
Electives	3

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Required for the major.

³ May not include courses from the business administration core, the set of required business administration courses, or any 498 or 499 courses.

Minors

Business Administration

To be eligible to certify in a Business Administration minor, students must be certified in a major and have a cumulative gpa of 2.5. The minor in business administration requires a minimum of 18 hours, 9 of which must be upper-division with an overall gpa of at least a 2.5 in the required courses. 9 hours must be 300-400 level courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Up to 6 hours may be transferred from another institution. The required courses are ACCTG 230 and 5 College of Business courses (excluding 498 and 499 courses). Students must ensure that they meet all course prerequisites before enrolling in any College of Business courses.

Certificates

Professional Sales Certificate (Vancouver only)

The Professional Sales Certificate Program at WSU is open to all majors. This program prepares students

for multiple forms of persuasive communication, creating and delivering value to business customers and effectively managing sales operations. To complete the certificate, students must complete five courses (15 credits) with a 2.5 GPA or better: MKTG 360 (Marketing), MKTG 379 (Professional Sales), MKTG 478 (Sales Management), MKTG 480 (Business-to-Business Marketing), and MGMT 485 (Negotiations).

Description of Courses

BUSINESS ADMINISTRATION

B A

501 Foundations in Marketing V 2-3 May be repeated for credit; cumulative maximum 6 hours. Foundation topics in marketing for MBA students.

502 Foundations in Operations Management V 2-3 May be repeated for credit; cumulative maximum 6 hours. Foundation topics in operations management for MBA students.

503 Foundations in Business Law V 2-3 May be repeated for credit; cumulative maximum 6 hours. Foundation topics in business law for MBA students.

504 Foundations in Finance V 2-3 May be repeated for credit; cumulative maximum 6 hours. Foundation topics in finance for MBA students.

514 Business Analytics: Transforming Data into Decisions 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Advanced decision-making concepts utilizing relevant datasets for data-driven problem-solving and formulating decision analyses to evaluate and recommend management action.

520 Resources, Stakeholders and Competitive Advantage 3 Course Prerequisite: Admission to the MBA program. Creating competitive advantage using resources provided by key stakeholders.

579 MBA Capstone 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Analyze, evaluate, and recommend management actions for a specific strategic business project (for an existing organization or new venture).

596 Doctoral Topics V 1-4 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: Admission to PhD programs in business. Advanced topics in business research and theory.

598 Research and Professional Development 1 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to PhD programs in business. Ph.D.-level professional development colloquium designed to improve research, teaching, and presentation skills and to provide professional socialization. S, F grading.

600 Special Projects or Independent Study

V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA program. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

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

V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA program. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination

V 1-18 May be repeated for credit. Course Prerequisite: Admission to PhD programs in business. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 201	3

<i>Second Term</i>	<i>Hours</i>
ECONS 101 or 102	3
Humanities [HUM]	3
MATH 202 [QUAN]	3
MIS 250	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	4 or 3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
SOC [SSCI] or PSYCH [SSCI] ²	3
Elective	3

<i>Second Term</i>	<i>Hours</i>
ACCTG 231	3
B LAW 210	3
COM 102, COMSOC 235, or H D 205	3 or 4
MGTOP 215	4
POL S Elective	3
Complete Writing Portfolio	
Consider studying abroad this summer	

Third Year

<i>First Term</i>	<i>Hours</i>
ACCTG 330	3
ACCTG 335 or 338	3
FIN 325	3
MGMT 301	3
MKTG 360	3

<i>Second Term</i>	<i>Hours</i>
ACCTG 331	3
ACCTG 335 or 338	3
MGTOP 340	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
400-level ACCTG course, MGMT 487, or 300-400-level MIS or FIN course ³	3
ACCTG 433 [M]	3
Integrative Capstone [CAPS]	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
400-level ACCTG course, MGMT 487, or 300-400-level MIS or FIN course ³	3
ACCTG 438 [M] or ACCTG 439 [M]	3
ENGLISH 402 [WRTG] ⁴	3
MGMT 491 or ENTRP 492	3
Elective	1

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Required for the major.

³ May not include courses from the business administration core, the set of required accounting courses, or any 498 or 499 courses.

⁴ If approved, ENGLISH 403 may fulfill the UCORE Communication [COMM] or Written Communication [WRTG] requirement.

Description of Courses

ACCOUNTING

ACCTG

230 Introduction to Financial Accounting 3 Course Prerequisite: Sophomore standing. Introduction to corporate financial reporting via the preparation and interpretation of financial statements.

231 Introduction to Managerial Accounting 3 Course Prerequisite: ACCTG 230. Introduction to managerial accounting; generation and use of accounting data for planning and controlling business operations.

330 Intermediate Accounting I 3 Course Prerequisite: Certified major or minor in the College of Business. Theory underlying the determination of income; analysis of financial statements.

331 Intermediate Accounting II 3 Course Prerequisite: ACCTG 330; certified major or minor in the College of Business. Continuation of ACCTG 330.

335 Introduction to Taxation 3 Course Prerequisite: Certified major or minor in the College of Business. Fundamentals of tax information use in making sound business and financial decisions.

338 Cost Accounting 3 Course Prerequisite: ACCTG 231; certified major or minor in the College of Business. Management uses of cost information; cost systems and system design; cost analysis.

420 Accounting and Culture 3 Course Prerequisite: Certified major or minor in the College of Business. Cultural differences and how they affect accounting practices and standards in a variety of countries. Not an accounting technical course.

430 Advanced Accounting 3 Course Prerequisite: ACCTG 330; certified major or minor in the College of Business. Partnership equities and extended forms of corporate ownerships and entities. Recommended preparation: ACCTG 331.

433 [M] Accounting Systems and Auditing 3 Course Prerequisite: ACCTG 330; certified major or minor in the College of Business. Accounting systems design; internal control and computerization.

435 Individual Income Taxes 3 Course Prerequisite: Certified major or minor in the College of Business. The study of individual income taxes from both compliance and planning perspectives. Credit not granted to those taking ACCTG 335 prior to Fall 1999. Recommended preparation: ACCTG 335.

Department of Accounting

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Chair and Associate Professor, S. Gill, Professors, R. Greenberg, D. Sanders, R. Toolson, B. Wong-On-Wing; Associate Professors, J. Cote, C. Latham; Assistant Professors, B. Barnes, L. Brooks, L. Chen, L. Xu, Clinical Faculty, J. Beaulieu, K. Joshi, N. Pearson, J. Smith-Hill.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

ACCOUNTING (120 HOURS)

The objectives of the Bachelor of Arts in Business Administration with a major in accounting are to provide knowledge about practical and conceptual accounting, basic accounting information systems, and the use of accounting information for managerial decision-making purposes. This provides preparation for careers in private, governmental, and non-profit accounting. It also provides a foundation to enter the Master of Accounting program for those interested in a professional career in public accounting or consulting.

- 438 [M] Advanced Cost Accounting and Management** 3 Course Prerequisite: ACCTG 338; certified major or minor in the College of Business. Cost/managerial accounting as it is used for decision making and strategic planning; emphasis on budgeting, product cost, and performance measurement.
- 439 [M] Auditing** 3 Course Prerequisite: ACCTG 330; certified major or minor in the College of Business. Nature of auditing, generally accepted auditing standards, and audit procedures as related to auditing of financial statements by independent accountants. Recommended preparation: ACCTG 433.
- 443 Business Processes and Controls** 3 Course Prerequisite: Certified major or minor in the College of Business. Introduction to business processes and internal controls, including risk assessment and internal audit. Recommended preparation: ACCTG 433; ACCTG 439.
- 496 Special Topics** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Certified major or minor in the College of Business. Contemporary topics in accounting including international financial reporting standards, forensic accounting, and international accounting.
- 498 Accounting Internship** V 2-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission. 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. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 530 Accounting Theory** 3 Course Prerequisite: Admission to the Master of Accounting program. Recent developments with respect to the determination of income and the valuation of assets.
- 532 Contemporary Accounting Cases and Problems** 3 Course Prerequisite: Admission to the Master of Accounting program. Accounting theory applied to external financial reporting practices.
- 533 Accounting, Performance Measurement and Controls** 3 Course Prerequisite: Admission to the MBA or Business PhD programs only. Managerial evaluation of budgeting, cost accounting, and financial analysis techniques; their utilization in control of operations.
- 535 Advanced Taxation** 3 Course Prerequisite: Admission to the Master of Accounting program. Federal income tax impact on corporations, S corporations, partnerships, estates, trusts and their beneficial owners.
- 537 Professional Research** 3 Course Prerequisite: Admission to the Master of Accounting program. Methodology used by accounting professionals to research applied problems in taxation, accounting, and auditing; communicate results.
- 538 Seminar in Cost/Managerial Accounting** 3 Course Prerequisite: Admission to the Master of Accounting program. Cost concepts, cost and managerial accounting systems; current issues and research in cost and managerial accounting.
- 539 Seminar in Public Accounting and Auditing** 3 Course Prerequisite: Admission to the Master of Accounting program. Public accounting and auditing to present; current issues including statistical sampling and computers.
- 540 Corporate Taxation** 3 Course Prerequisite: Admission to the Master of Accounting program. Application of federal tax provisions and rules pertaining to corporations, including S corporations; tax planning and consequences of corporate decisions.
- 541 Flow Through Entities** 3 Course Prerequisite: Admission to the Master of Accounting program. Tax law and preparation requirements for entities in which tax elements passes thorough to the owner's individual income tax return.
- 542 Gifts, Estates and Trusts** 3 Course Prerequisite: Admission to the Master of Accounting program. Estate and gift tax law.
- 543 Special Topics in Accounting** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the Master of Accounting program. Critical topics in accounting including new developments.
- 544 Advanced Accounting Systems and Auditing** 3 Course Prerequisite: Admission to the Master of Accounting program. Advanced topics in accounting systems, auditing and controls.
- 545 International Taxation** 3 Course Prerequisite: Admission to the Master of Accounting program. Tax issues for international transactions of businesses and individuals.
- 546 Accounting for Income Taxes** 3 Comprehensive coverage of accounting income taxes.
- 550 Introduction to Financial and Managerial Accounting** V 2-3 Course Prerequisite: Admission to the MBA or Business PhD programs only. Fundamentals of financial and managerial accounting; primarily for graduate students who wish to meet the MBA core requirements in accounting.
- 596 Doctoral Topics** 3 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: Admission to PhD programs in business. Advanced topics in accounting.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Course Prerequisite: Admission to the Master of Accounting program. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Course Prerequisite: Admission to PhD programs in business. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

BUSINESS LAW

B LAW

210 Law and the Legal Environment of Business 3 Fundamentals of business law; the legal system, legal reasoning, public, commercial, managerial and property law, and government regulation.

411 Managerial Law 3 Course Prerequisite: B LAW 210; certified major or minor in the College of Business. Law of agency, partnerships, limited liability companies and corporations; and securities regulation.

498 Business Law Internship V 2-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission. Cooperative educational internship with a business, government or nonprofit organization. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Course Prerequisite: By department permission. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

510 Business Law and Ethics 3 Course Prerequisite: Admission to the MBA or Business PhD programs. Legal process and reasoning; commercial, managerial, and employment law; government regulations; contracts, torts, crimes; ethical conflicts and ethical decision making.

511 Business Law II 3 Course Prerequisite: Admission to the Master of Accounting program. Law of partnerships, corporations, securities regulations, negotiable instruments, secured transactions, property, insurance and bankruptcy; government regulation of businesses and professions.

Department of Finance and Management Science

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Safeco Distinguished Professor of Insurance, Professor, and Department Chair, G. Lai; Associate Dean for Faculty Affairs and Research, and Associate Professor, D. Whidbee; Mutual of Enumclaw/Field Distinguished Professorship in Insurance, and Professor, M. McNamara; Brison Chair and Professor, G. Jiang; Professors, S. Ahn, S. Fotopoulos, C. Munson; D. Paul; Associate Professors, T. Baker, S. Liu, J. Nofsinger; Assistant Professors, J. Delisle, B. McTier; Clinical Professor, G. Kao; Adjunct Professor J. Koal.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

FINANCE (120 HOURS)

Preparation for careers in financial management, investment analysis, financial institutions management, financial services, real estate, or risk management and insurance.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 201	3
<i>Second Term</i>	<i>Hours</i>
ECONS 101 or 102	3
Humanities [HUM]	3
MATH 202 [QUAN]	3
MIS 250	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	4 or 3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
B LAW 210	3
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
Elective	3
<i>Second Term</i>	<i>Hours</i>
ACCTG 231	3
COM 102, COMSOC 235, or H D 205	3 or 4
MGTOP 215	4
SOC [SSCI] or PSYCH [SSCI] ²	3
Elective	3
Complete Writing Portfolio	
Consider studying abroad this summer	

Third Year

<i>First Term</i>	<i>Hours</i>
FIN 325	3
MGMT 301	3
MGTOP 340	3
MKTG 360	3
POL S Elective	3

<i>Second Term</i>	<i>Hours</i>
300-400-level FIN Elective ³	3
ACCTG 330	3
FIN 421	3
FIN 425 [M]	3
Elective	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level FIN Elective ³	3
FIN 427 [M] or FIN 437 [M]	3
Integrative Capstone [CAPS]	3
Elective	6

<i>Second Term</i>	<i>Hours</i>
300-400-level Business Elective ⁴	3
ENGLISH 402 [WRTG] ⁵	3
MGMT 491 or ENTRP 492	3
Elective	4

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Required for the major.

³ Finance majors are required to take ACCTG 330, FIN 421, 425 [M], one of FIN 427[M] or FIN 437[M], two 300-400-level FIN electives and one 300-400-level College of Business elective which cannot be from the business administration core, the set of required FIN courses, or any 498 or 499 courses.

⁴ Elective course may include ECONS 301 or 305. May not include courses from the business administration core, the set of required FIN courses, or any 498 or 499 courses.

⁵ If approved, ENGLISH 403 may fulfill the UCORE Communication [COMM] or Written Communication [WRTG] requirement.

MANAGEMENT AND OPERATIONS (120 HOURS)

Students may emphasize preparation for one of three careers in this major: (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.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 201	3

<i>Second Term</i>	<i>Hours</i>
ECONS 101 or 102	3
Humanities [HUM]	3
MATH 202 [QUAN]	3
MIS 250	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	4 or 3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
SOC [SSCI] or PSYCH [SSCI] ²	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ACCTG 231	3
B LAW 210	3
COM 102, COMSOC 235, or H D 205	3 or 4
MGTOP 215	4
POL S Elective	3
Complete Writing Portfolio	
Consider studying abroad this summer	

Third Year

<i>First Term</i>	<i>Hours</i>
FIN 325	3
MGMT 301	3
MGTOP 340	3
MKTG 360	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
MGMT 401 [M]	3
MGMT Electives ³	6
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Business/ECONS Elective ⁴	3
ENGLISH 402 [WRTG] ⁵	3
MGMT Electives [M] ³	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
300-400-level Business/ECONS Elective ⁴	3
Integrative Capstone [CAPS]	3
MGMT 491 or ENTRP 492	3
MGMT Elective ³	3
Elective	1

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Required for the major.

³ Organization Management track electives include MGMT 315, MGMT 450, I BUS 453[M], MGMT 455[M], MGMT 456, MGMT 483[M], MGMT 485, MGMT 487, ENTRP 489, and MGMT 496. Operations Management track electives include MGTOP 412[M], and three from MGTOP 418, MGTOP 452, MGTOP 470, and MGTOP 496.

⁴ May not include courses from the business administration core, the set of required MGMT/MGTOP courses, or any 498 or 499 courses.

⁵ If approved, ENGLISH 403 may fulfill the UCORE Communication [COMM] or Written Communication [WRTG] requirement.

Description of Courses

FINANCE

FIN

- 223 [QUAN] Personal Finance** 3 Consumer credit, financial institutions, investments, mutual funds, insurance, social security, home ownership, taxes, estate planning. Credit not applicable to business major requirements.
- 325 Introduction to Financial Management** 3 Course Prerequisite: ACCTG 231; MGTOP 215; ECONS 101; certified major or minor in the College of Business. Time value of money, financial securities and markets, financial decision making, valuation techniques, and cost of capital.
- 345 Real Estate** 3 Course Prerequisite: FIN 325 or concurrent enrollment; certified major or minor in the College of Business. Relationships between location and value; patterns of urban land use; legal, financial, and organizational framework of the real estate business.
- 346 Washington Real Estate Regulations** 1 Washington real estate regulations found in the Revised Code of Washington (RCW) and the Washington Administrative Code (WAC). S, F grading.
- 350 Risk and Insurance** 3 Course Prerequisite: B LAW 210; ECONS 102; certified major or minor in the College of Business. Concepts in risk management and insurance; personal risks and treatment methods; legal principles in risk and insurance; overview of the insurance industry, company operations, and insurance regulation.
- 421 Financial Institutions and Intermediation** 3 Course Prerequisite: FIN 325; certified major or minor in the College of Business. Characteristics of financial markets and institutions; analysis of fixed-income securities; and introduction to financial risk management.
- 422 Financial Institutions Management** 3 Course Prerequisite: FIN 325; certified major or minor in the College of Business. Problems facing financial institution managers and solution techniques; credit risk analysis and management; financial institutions structure and regulation.
- 425 [M] Intermediate Financial Management** 3 Course Prerequisite: FIN 325; certified major or minor in the College of Business. Application of finance theory and principles to corporate decisions such as capital budgeting, cost of capital, financing decisions, and valuation.
- 427 [M] Investment Analysis** 3 Course Prerequisite: FIN 325; certified major or minor in the College of Business. Investment objectives, modern portfolio theory, valuation, equilibrium, market efficiency and asset classes.
- 428 Portfolio Theory and Financial Engineering** 3 Course Prerequisite: FIN 427 or 437; certified major or minor in the College of Business. Pricing of forwards, futures, options, and swaps, financial derivatives markets, and managing portfolio risk.
- 429 Advanced Financial Modeling** 3 Course Prerequisite: FIN 325; FIN 421, 425, or 427, or concurrent enrollment; certified major or minor in the College of Business. Corporate finance, portfolio, option pricing, risk management and fixed income modeling.
- 437 [M] Cougar Investment Fund I** 3 Course Prerequisite: FIN 325; certified major or minor in the College of Business. Students manage a portion of the university's endowment; including security analysis, valuation, equilibrium, market efficiency, and modern portfolio theory.
- 438 Cougar Investment Fund II** 3 Course Prerequisite: FIN 325; FIN 427 or 437; certified major or minor in the College of Business. Students manage a portion of the university's endowment. Topics include portfolio risk management, return attribution, private equity, and hedge funds.
- 445 [M] Real Estate Valuation** 3 Course Prerequisite: FIN 325; FIN 345; certified major or minor in the College of Business. Principles and practices of real property valuation; factors affecting real property values and income; appraisal and location theory.
- 447 Real Estate Finance and Investments** 3 Course Prerequisite: FIN 325; certified major or minor in the College of Business. Instruments and institutions of real estate and financing: decision-making tools, mortgage financing analysis, mortgage securities and real estate portfolios.
- 451 Life Insurance and Financial Planning** 3 Course Prerequisite: FIN 325; certified major or minor in the College of Business. Analysis of the personal risks of premature death, poor health, and retirement security; financial planning solutions to these risks, including life insurance, health insurance and annuities.
- 452 Property and Liability Insurance** 3 Course Prerequisite: FIN 350; certified major or minor in the College of Business. Analysis and management of business property, liability and consequential loss exposures; issues in the property and liability insurance industry.
- 456 Risk Management** 3 Course Prerequisite: FIN 325; certified major or minor in the College of Business. Identification and analysis of loss exposures of business and non-profit organizations; application of risk treatment measures including loss control and risk financing alternatives.
- 481 [M] International Finance** 3 Course Prerequisite: FIN 325; certified major or minor in the College of Business. Financial management of multinational businesses; international financial market rates and capital flows. International economic institutions, sources of capital, and investments.
- 496 Special Topics** 3 May be repeated for credit; cumulative maximum 6 hours. Topics may include finance, real estate or risk management/insurance.
- 498 Finance Internship** V 2-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission. 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. Course Prerequisite: By department permission. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 500 Macroeconomic Theory I** 3 Introduction to dynamics, growth and investment, overlapping generations models, Ramsey model, consumption and investment. (Crosslisted course offered as ECONS 500, FIN 500). Required preparation must include intermediate macroeconomics and one year of calculus. Required preparation must include intermediate macroeconomics and one year of calculus.
- 501 Microeconomic Theory I** 3 Microeconomic theory, multivariate optimization, consumer and producer theory, competitive partial equilibrium, introduction to imperfect competition. (Crosslisted course offered as ECONS 501, FIN 501). Required preparation must include intermediate microeconomics and one year of calculus. Required preparation must include intermediate microeconomics and one year of calculus.
- 502 Macroeconomic Theory II** 3 Course Prerequisite: ECONS 500. Macroeconomic theory, short-run fluctuations and nominal rigidities, monetary economics and inflation, real business cycle models, unemployment international macroeconomics. (Crosslisted course offered as ECONS 502, FIN 502).
- 503 Microeconomic Theory II** 3 Course Prerequisite: ECONS 501. General equilibrium, welfare economics and social choice, market failure, game theory, economics of information. (Crosslisted course offered as ECONS 503, FIN 503).
- 504 Production and Consumption Economics** 3 Course Prerequisite: ECONS 502; ECONS 503. Advanced duality topics, demand and supply system modeling, financial economics and risk. (Crosslisted course offered as ECONS 504, FIN 504).
- 510 Statistics for Economists** 3 Statistical theory underlying econometric techniques utilized in quantitative analysis of problems in economics and finance. (Crosslisted course offered as ECONS 510, FIN 510). Required preparation must include college calculus and matrix algebra. Required preparation must include college calculus and matrix algebra.
- 511 Econometrics I** 3 Course Prerequisite: ECONS 510. Single equation linear and nonlinear models; estimation, inference, finite and asymptotic properties, effects and mitigation of violations of classical assumptions. (Crosslisted course offered as ECONS 511, FIN 511).

- 512 Econometrics II** 3 Course Prerequisite: ECONS 501; ECONS 511. Econometric methods for systems estimation; simultaneous equations, discrete and limited dependent variable, panel data, and time series data. (Crosslisted course offered as ECONS 512, FIN 512).
- 521 Interest Rates and Financial Markets** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Real and nominal interest rates; bond pricing; term and risk structure of interest rates; investment and commercial banking; financial futures.
- 525 Advanced Financial Management** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Theory of financial management; quantitative analysis of financial problems of the firm; empirical studies on financing modern corporations.
- 526 Financial Management** 3 Course Prerequisite: Admission to the MBA or Business Ph.D. programs. Advanced topics in corporate finance, including capital budgeting, cost of capital, capital structure, pay-out policy, and enterprise valuation.
- 527 Investment Analysis** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. A decision-making approach to the problems of asset management for personal and business portfolio.
- 528 Portfolio Theory and Financial Engineering** 3 Course Prerequisite: FIN 527; admission to the MBA, Master of Accounting, or Business PhD programs. The theory of portfolio management and the use of derivative securities in portfolio risk management.
- 581 International Finance** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Principles of international finance; financial management of multinational corporations; international investments.
- 593 Applications in Microeconomic Topics** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 511. Applied topics in healthcare, sports, transportation and other markets. (Crosslisted course offered as ECONS 593, FIN 593).
- 594 Theory of Industrial Organization** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 511. Theory of market structure and firm behavior, including price and non-price competition, information and strategic behavior, and technological change. (Crosslisted course offered as ECONS 594, FIN 594).
- 595 Advanced Topics in Resource and Production Economics** V 1-6 May be repeated for credit; cumulative maximum 12 hours. Same as ECONS 595.
- 596 Advanced Topics in Financial Economics** V 1-6 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Admission to PhD programs in business, or ECONS 500 and ECONS 501. Topics may include financial theory and empirical methods as applied to financial management, investments, international finance, and markets/institutions. (Crosslisted course offered as FIN 596, ECONS 596).
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA program. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Course Prerequisite: Admission to PhD programs in business. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.
- MANAGEMENT AND OPERATIONS**
- MGTOP**
- 215 Business Statistics** 4 (3-2) Course Prerequisite: MATH 201, 202, 171, or 172; MIS 250 or concurrent enrollment. Data presentation, probability, distributions, inferences, and linear regression as applied to business and economics.
- 340 Operations Management** 3 Course Prerequisite: MGTOP 215; certified major or minor in the College of Business. Management of operations, emphasizing production planning, inventory control, scheduling, forecasting, quality management, supply chain management, and facility layout and location.
- 412 [M] Data Analysis and Business Forecasting** 3 Course Prerequisite: Certified major or minor in the College of Business. Regression models, inference, residual analysis, time series modeling and forecasting as applied to business.
- 418 Quality Improvement for Management** 3 Course Prerequisite: MGTOP 215; certified major or minor in the College of Business. Total quality management as used in industries; philosophy of Deming and others, control charts, process capability analysis, team tools.
- 452 Supply Chain Management in the Digital Age** 3 Course Prerequisite: MGTOP 340; certified major or minor in the College of Business. Managing and modeling commercial supply chains, emphasizing electronic commerce, purchasing, supplier selection, logistics, global distribution networks, and supply chain coordination.
- 470 Business Modeling with Spreadsheets** 3 Course Prerequisite: MATH 202 or 220; MIS 250; certified major or minor in the College of Business. Use of advanced spreadsheet tools and Visual Basic programming to build and analyze mathematical models of business problems.
- 496 Seminar** 3 May be repeated for credit. Course Prerequisite: Certified major or minor in the College of Business.
- 498 Internship** V 2-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission. 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. Course Prerequisite: By department permission. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 516 Time Series** 3 ARIMA models; identification, estimation, diagnostics, and forecasting; seasonal adjustments, outlier detection, intervention analysis and transfer function modeling. (Crosslisted course offered as MGTOP 516, STAT 516). Recommended preparation: STAT 443.
- 519 Applied Multivariate Analysis** 3 Multivariate normal distribution, principal components, factor analysis, discriminant function, cluster analysis, Hotelling's T2 and MANOVA. (Crosslisted course offered as MGTOP 519, STAT 519). Recommended preparation: STAT 443.
- 540 Deterministic Business Models** 3 Decision analysis, linear optimization models, nonlinear models, network analysis including PERT, and dynamic programming as applied to business.
- 556 Advanced Business Modeling** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Spreadsheet modeling and solution of business problems using mathematical programming; Monte Carlo simulation, queuing theory, and decision analysis.
- 581 Operations Management** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Analytical approach to solving problems in production and operations management.

582 Personnel and Human Resource Management 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Human resources and personnel administration; selection, training, compensation, performance appraisal, labor relations, health and safety, EEO legislation.

587 Professional Ethics and Practice in Business 3 Course Prerequisite: Admission to the Master of Accounting program, MBA program, Master of Public Affairs (MPA) program, or Business Ph.D. programs. Ethical issues faced by businesses in the current environment; traditional sources for discerning professional and ethical practices.

588 Management of Innovation 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Technological transitions and technology strategy; knowledge and creativity in organizations; managing innovation processes, technical employees, and cross-functional cooperation. (Crosslisted course offered as MGTOP 588, ENTRP 588).

589 Seminar in Management 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Special topics in management, organization behavior, organization theory, human resource management and strategic management.

590 Strategy Formulation and Organizational Design 3 Course Prerequisite: Admission to the Master of Accounting program, MBA program, Master of Public Affairs (MPA) program, or Business Ph.D. programs. Relationship between the formulation of strategy and the selection of effective organizational structures and systems.

591 Statistical Analysis for Business Decisions 3 Course Prerequisite: Admission to the Master of Accounting program, MBA program, Master of Public Affairs (MPA) program, or Business Ph.D. programs. Analytical skills for decision-making; data collection and analysis, sampling, inferential, regression methodologies, experimental design, time series, forecasting analysis.

593 Managerial Leadership and Productivity 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Organizational behavior and human motivation in the workplace; organization and leadership theories, studies, projects and models leading to improved productivity.

596 Doctoral Topics V 1-4 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: Admission to PhD programs in business. Advanced topics in management and operations.

597 Doctoral Topics 3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Admission to PhD programs in business. Advanced topics in management and operations.

598 Research and Professional Development 1 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to PhD programs in business. Ph.D.-level professional development colloquium designed to improve research, teaching, and presentation skills and to provide professional socialization. S, F grading.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA program. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: Admission to PhD programs in business. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

The International Business Institute

business.wsu.edu/internationalbusiness/
Todd Hall 570
509-335-2180

Director, D. Sprott; International Business Fellows, S. Ahn, J. Callison, J. A. Cote, J. M. Cote, M. Featherman, S. Fotopoulos, D. Gursoy, J. Harbour, B. John-Mariadoss, J. Kim, G. Lai, V. Miskin, D. Muehling, J. Nofsinger, J. Osiri, J. Rose, S. Sarker, P. Tansuhaj, D. Whidbee, B. Wong-on-Wing.

The International Business Institute (IBI) was established to coordinate international activities in the College of Business. The IBI draws faculty, staff, and students together to achieve excellence in the internationalization of business education, research, and service. It administers the international business curriculum and advises all international business majors. The IBI aims at encouraging the business faculty, staff, and students to be involved in interesting and exciting activities in the global business.

Department of Management, Information Systems, and Entrepreneurship

business.wsu.edu/academics/MISE/
Todd 442
509-335-5319

Department Chair, S. Sarker; Professors, J. Cullen, J. Goodstein, K.D. Joshi, T. Tripp; Associate Professors, G. Rose (Vancouver), K. Kuhn; Assistant Professors, J. Arthurs, K. Butterfield, M. Featherman (clinical), V. Miskin (clinical), R. Portnoy, A. Sahaym, P. Skilton, W. Wu (Vancouver); Instructors, J. Harris, C. Sears.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

ENTREPRENEURSHIP (120 HOURS)

The entrepreneurship major has been developed for students interested in venture management, new venture startup and small business and the management of family firms.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 201	3

<i>Second Term</i>	<i>Hours</i>
ECONS 101 or 102	3
Humanities [HUM]	3
MATH 202 [QUAN]	3
MIS 250	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	4 or 3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
SOC [SSCI] or PSYCH [SSCI] ²	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ACCTG 231	3
B LAW 210	3
COM 102, COMSOC 235, or H D 205	3 or 4
MGTOP 215	4
POL S Elective	3
Complete Writing Portfolio	
Consider studying abroad this summer	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level Business Elective ³	3
FIN 325	3
MGMT 301	3
MKTG 360	3
Elective	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Elective	3
300-400-level ENTRP Elective	3
300-400-level ENTRP Elective [M]	3
MGTOP 340	3
Elective	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level ENTRP Electives	6
ENGLISH 402 [WRTG] ⁴	3
Integrative Capstone [CAPS]	3
Elective	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Business Elective ³	3
ENTRP 485, 486, or 496 [M]	3
MGMT 491	3
Electives	4

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Required for the major.

³ May not include courses from the business administration core, the set of required ENTRP courses, or any 498 or 499 courses.

⁴ If approved, ENGLISH 403 may fulfill the UCORE Communication [COMM] or Written Communication [WRTG] requirement.

MANAGEMENT INFORMATION SYSTEMS (120 HOURS)

Preparation for careers in every field of business, using information systems technology to solve business problems. Provides excellent training in systems design, development, networking, and support to meet the demands of this fast-growing occupational area.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 201	3

<i>Second Term</i>	<i>Hours</i>
ECONS 101 or 102	3
Humanities [HUM]	3
MATH 202 [QUAN]	3
MIS 250	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	4 or 3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
SOC [SSCI] or PSYCH [SSCI] ²	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ACCTG 231	3
B LAW 210	3
COM 102, COMSOC 235, or H D 205	3 or 4
MGTOP 215	4
MIS 271 or Elective	3
Complete Writing Portfolio	
Consider studying abroad this summer	

Third Year

<i>First Term</i>	<i>Hours</i>
FIN 325	3
MGMT 301	3
MIS 271 or 300-400-level MIS Electives	3
MIS 322 [M]	3
MIS 325	3

<i>Second Term</i>	<i>Hours</i>
300-400-level MIS Elective or Electives	3
MGTOP 340	3
MIS 372 [M]	3
MKTG 360	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Business Electives ³	6
ENGLISH 402 [WRTG] ⁴	3
Integrative Capstone [CAPS]	3
MGMT 491 or ENTRP 492	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Electives	3
POL S Elective	3
Electives	7

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Required for the major.

³ Admissible 300- or 400-level courses may not include courses from the business administration core, the set of required MIS courses, or any 498 or 499 courses.

⁴ If approved, ENGLISH 403 may fulfill the UCORE Communication [COMM] or Written Communication [WRTG] requirement.

Description of Courses**ENTREPRENEURSHIP****ENTRP**

426 Entrepreneurial Finance 3 Course Prerequisite: FIN 325; certified major or minor in the College of Business. Raising capital for new enterprises; venture capital, IPOs, debt financing, leasing and valuing start-up ventures.

485 [M] Topics in New Venture Business Planning 3 Course Prerequisite: Certified major or minor in the College of Business. Business competition to understand new venture creation utilizing technology breakthroughs, entrepreneurial business functions, and business plan development.

486 [M] Topics in New Venture Business Planning 3 Course Prerequisite: Certified major or minor in the College of Business. Business competition to understand new venture creation utilizing technology breakthroughs, entrepreneurial business functions, and business plan development.

489 Entrepreneurial Management 3 Course Prerequisite: FIN 325; MGMT 301; MKTG 360; certified major or minor in the College of Business. Philosophy and nature of entrepreneurship for all business organizations; analytical, financial and interpersonal entrepreneurial skills.

492 Small Business Policy 3 Course Prerequisite: FIN 325; MGMT 301; MKTG 360; certified major or minor in the College of Business. Application of management theory and principles to small firms; applied consulting experience with operating businesses.

496 [M] Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Certified major or minor in the College of Business. Course covers new or time-sensitive topics in entrepreneurship.

498 Entrepreneurship Internship V 2-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission. Cooperative educational internship with a business, government, or nonprofit organization. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Course Prerequisite: By department permission. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

501 Technology Entrepreneurship 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Basic business concepts and processes applied to technology commercialization and venture creation.

588 Management of Innovation 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Technological transitions and technology strategy; knowledge and creativity in organizations; managing innovation processes, technical employees, and cross-functional cooperation. (Crosslisted course offered as MGTOP 588, ENTRP 588).

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

MANAGEMENT

MGMT

101 (MgtOp) Introduction to Business 3 (MgtOp) Introduction to Business 3 Introduction to the practice of business with explanations of business environments, strategy, organization, functional areas, terminology, processes, tasks and ethics. Credit not allowed for MGMT 101 if credit already earned in MGMT 301 and/or Mktg 360.

301 Principles of Management and Organization 3 Course Prerequisite: Certified major [any college] with 60 semester hours. Principles of management and administration aimed at improving effectiveness of all types of organizations. Credit not allowed for MGMT 101 if credit already earned in MGMT 301.

315 Women in Management and Leadership 3 Analysis of women's historical and contemporary role in American management. (Crosslisted course offered as WOMEN ST 315, MGMT 315).

401 [M] Leadership Skills for Managers 3 Course Prerequisite: MGMT 301; certified major or minor in the College of Business, or option of Personnel Psychology & Human Resource Management. Leadership, motivation, team building, group dynamics, interpersonal and group conflict, and job design.

450 Personnel and Human Resources Management 3 Course Prerequisite: MGTOP 215; MGMT 301; certified major or minor in the College of Business, or option of Personnel Psychology & Human Resource Management. Policy and practice in human resource utilization, selecting, training, motivating, evaluating, and compensating employees; labor relations; EEO legislation.

455 [M] Staffing 3 Course Prerequisite: MGMT 450 or concurrent enrollment; certified major or minor in the College of Business, or option of Personnel Psychology & Human Resource Management. Selection issues; methods of forecasting, planning, recruitment, selection; analysis of psychometric properties of tests; techniques for assessing reliability and validity.

456 Compensation Administration 3 Course Prerequisite: MGMT 450 or concurrent enrollment; certified major or minor in the College of Business, or option of Personnel Psychology & Human Resource Management. Theoretical, research, and applied issues related to the compensation of employees.

483 [M] Macro Organization Behavior 3 Course Prerequisite: MGMT 301; certified major or minor in the College of Business, or option of Personnel Psychology & Human Resource Management. Organization level analysis of power, politics, and conflict; organizational communication, change, technology, structure, and environment; implications of organizational culture.

485 Negotiation Skills 3 Course Prerequisite: Certified major or minor in the College of Business, or option of Personnel Psychology & Human Resource Management. Bargaining skills across a broad range of business settings; experiential work.

487 Business Ethics 3 Course Prerequisite: MGMT 301; certified major or minor in the College of Business, or option of Personnel Psychology & Human Resource Management. The nature and sources of ethical conflicts and dilemmas individuals and organizations confront in the business context.

491 [CAPS] Business Strategy and Policy 3 Course Prerequisite: MGTOP 340; FIN 325; MGMT 301; MIS 250; MKTG 360; certified major or minor in the College of Business. Overall management of the firm; top-level decision-making and planning.

496 Seminar 3 May be repeated for credit. Course Prerequisite: Certified major or minor in the College of Business, or option of Personnel Psychology & Human Resource Management.

498 Internship V 2-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission. 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. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

584 Seminar in Entrepreneurship 3 Course Prerequisite: Admission to the Ph.D. in Business Administration. Advanced, doctoral-level topics in entrepreneurship.

585 Advanced Negotiation Skills 3 Course Prerequisite: Admission to the Master of Accounting program, MBA program, Master of Public Affairs (MPA) program, or Business Ph.D. programs. Bargaining skills in multi-stakeholder settings; experiential work.

594 Seminar in Organizational Theory 3 Course Prerequisite: Admission to the Ph.D. in Business Administration. Advanced, doctoral-level topics in organizational theory.

595 Seminar in Strategic Management 3 Course Prerequisite: Admission to the Ph.D. in Business Administration. Advanced, doctoral-level topics in Strategic Management.

597 Seminar in International Management 3 Course Prerequisite: Admission to the Ph.D. in Business Administration. Advanced, doctoral-level topics in International Management.

599 Seminar in Management (Organizational Behavior) 3 Course Prerequisite: Admission to PhD programs in business. Advanced doctoral-level topics in organizational behavior.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: Admission to PhD programs in business. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

MANAGEMENT INFORMATION SYSTEMS

MIS

171 Web Technologies and Innovation 3 Effects of web-based technologies and modern development environments on organizations.

250 Managing Information Technology 3 (2-2) Comprehensive overview of the role of management information systems in business, principles and application of MIS, and hands-on computer labs.

271 Business Systems Development 3 Top-down program design, structured development techniques, and system testing.

322 [M] Enterprise Business Process Analysis 3 Course Prerequisite: MIS 250; certified major or minor in the College of Business. The role of the systems analyst, and the application of systems analysis and design techniques in information systems development.

325 Enterprise Business Development 3 Course Prerequisite: MIS 250; certified major or minor in the College of Business. Basic principles of designing and developing enterprise-level business applications.

372 [M] Data Management 3 Course Prerequisite: MIS 322; certified major or minor in the College of Business. The management of data in business environments.

374 Information Technology Infrastructure and Security 3 Course Prerequisite: MIS 250; certified major or minor in the College of Business. Designing, managing, and securing corporate information technology infrastructures.

420 Business Intelligence 3 Course Prerequisite: MIS 250; certified major or minor in the College of Business. Fundamentals of using information systems for business intelligence and decision support.

426 Emerging Technologies 3 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MIS 250; certified major or minor in the College of Business. Special and advanced topics in MIS.

441 Global E-Commerce 3 Course Prerequisite: MIS 250; certified major or minor in the College of Business. Capabilities of the Internet to support and enable global electronic commerce; effective design and implementation; managerial issues.

448 Global IS Project Management 3 Course Prerequisite: Certified major or minor in the College of Business. Principles and techniques related to managing information systems projects in global business environments.

498 Management Information Systems Internship V 2-15 May be repeated for credit. Course Prerequisite: By department permission. Cooperative educational internship with a business, government or nonprofit organization. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Course Prerequisite: By department permission. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

557 Designing Business Intelligence Systems 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Design and use of business intelligence systems, and business performance analytics.

572 Database Management Systems 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Database management, data modeling, system design and implementation; the application of DBMS technologies to organizational and business problems.

574 Telecommunications and Networking in Business 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Business applications of data communications, infrastructure, protocols, topologies and management, the design of wired and wireless solutions, and related research issues.

575 Electronic Commerce and the Internet 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Technologies underlying electronic commerce and the internet; strategies and implementation plans for managing the implementation of electronic commerce systems.

576 Emerging Technologies 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Special and advanced topics in MIS.

580 Information Systems Management 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Data processing organization; operations, application development, computer selection, management of computer personnel and systems.

582 Systems Analysis and Design 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Research on and application of systems analysis, design, development and management of information systems; systems development life cycle.

595 MIS Research Foundations 3 Course Prerequisite: Admission to PhD programs in business. Seminal works in MIS, philosophy of science and theory development.

596 Doctoral Topics 3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Admission to PhD programs in business. Advanced topics in management information systems.

597 MIS Research Methods 3 Course Prerequisite: Admission to PhD programs in business. Study and application of research methods used in MIS research.

598 MIS Research Topics 3 Course Prerequisite: Admission to PhD programs in business. Major streams of research in MIS.

599 MIS Research Proposal Development 3 Course Prerequisite: Admission to PhD programs in business. Seminar on the process of creating a MIS research proposal.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: Admission to PhD programs in business. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Marketing and International Business

www.business.wsu.edu/marketing/
Todd 367
509-335-0924

Professor and Department Chair, D. Muehling; Professors, J. Cote, J. Johnson, E. Spangenberg, D. Sprott, P. Tansuhaj, U. Umesh; Associate Professor, J. Joireman, B. John Mariados; Assistant Professors, J. Catlin, I. Kareklas, A. SaVinhas; Clinical Professor, D. Knuff; Professor Emeritus, D. Stem.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

INTERNATIONAL BUSINESS (120 HOURS)

Preparation for careers with multinational corporations, governmental and intergovernmental

agencies both domestic and international. Students must complete 9 credits of foreign study except for students studying at WSU who reside outside the US and who attended at least one year of secondary school in a foreign country. One year of foreign language is required except for non-native speakers of English from outside the US who may substitute satisfactory TOEFL scores. Bilingual Americans may substitute satisfactory ETS scores or certification by a WSU faculty member who is a native speaker of the target language.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WRWG]	3
HISTORY 105 [ROOT]	3
MATH 201	3

<i>Second Term</i>	<i>Hours</i>
ECONS 101 or 102	3
Humanities [HUM]	3
MATH 202 [QUAN]	3
MIS 250	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	4 or 3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
SOC [SSCI] or PSYCH [SSCI] ²	3
Elective	2

<i>Second Term</i>	<i>Hours</i>
ACCTG 231	3
B LAW 210	3
COM 102, COMSOC 235, or H D 205	3 or 4
MGTOP 215	4
POL S Elective	3
Complete Writing Portfolio	
Consider studying abroad this summer	

Third Year

<i>First Term</i>	<i>Hours</i>
Foreign Language Elective ³	4
Study Abroad ⁴	12

<i>Second Term</i>	<i>Hours</i>
300-400-level Business Electives	3
FIN 325	3
I BUS 380	3
MGMT 301	3
MKTG 360	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Foreign Language Elective ³	4
I BUS 415 [M]	3
Integrative Capstone [CAPS]	3
MGTOP 340	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Business Electives	3
300-400-level I BUS Elective ⁵	3
ECONS 327, 427, or I BUS 470	3

ENGLISH 402 [WRTG] ⁶	3
MGMT 491 or ENTRP 492	3

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Required for the major.

³ May be taken as part of study abroad.

⁴ Study Abroad coursework may also be taken during summer.

⁵ I BUS Electives are: I BUS 415, I BUS 416 [M], I BUS 435, MIS 441, I BUS 453 [M], FIN 481 [M], I BUS 482 [M], ENTRP 492, I BUS 496, I BUS 498, I BUS 499; and ECONS 327 or I BUS 470.

⁶ If approved, ENGLISH 403 may fulfill the UCORE Communication [COMM] or Written Communication [WRTG] requirement.

MARKETING (120 HOURS)

Preparation for careers in marketing management, sales, retail management, marketing research, brand management, and promotion.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 201	3

<i>Second Term</i>	<i>Hours</i>
ECONS 101 or 102	3
Humanities [HUM]	3
MATH 202 [QUAN]	3
MIS 250	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	4 or 3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
SOC [SSCI] or PSYCH [SSCI] ²	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ACCTG 231	3
B LAW 210	3
COM 102, COMSOC 235, or H D 205	3 or 4
MGTOP 215	4
POL S Elective	3
Complete Writing Portfolio	
Consider studying abroad this summer	

Third Year

<i>First Term</i>	<i>Hours</i>
FIN 325	3
MGMT 301	3
MGTOP 340	3
MKTG 360	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Business Electives ³	3
300-400-level MKTG Elective ³	3
ENGLISH 402 [WRTG] ⁴	3
MKTG 407	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Business Electives ³	3
300-400-level MKTG Elective [M] ³	3
MKTG 368	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
MGMT 491 or ENTRP 492	3
MKTG 495 [M]	3
Electives	4

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Required for the major.

³ May not include courses from the business administration core, the set of required MKTG courses, or any 498 or 499 courses.

⁴ If approved, ENGLISH 403 may fulfill the UCORE Communication [COMM] or Written Communication [WRTG] requirement.

Description of Courses

INTERNATIONAL BUSINESS

I BUS

380 International Business 3 Course Prerequisite: Certified major or minor in the College of Business. International political economy; business relationships between nations; corporations and economic institutions.

399 Foreign Study V 1-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By permission only. Participation in approved programs of study at a foreign educational institution. S, F grading.

415 [M] Law of International Trade 3 Course Prerequisite: B LAW 210; certified major or minor in the College of Business. Legal organization of the international community; international aspects of trade and development, economic cooperation, and technical, social, and cultural cooperation.

416 [M] Public International Law 3 Course Prerequisite: B LAW 210; certified major or minor in the College of Business. Law governing states, intergovernmental organizations, and nongovernmental organizations (including multinational enterprises); human rights law; environmental law; and dispute settlement.

435 International Tourism 3 Course Prerequisite: Certified major or minor in the College of Business, or option of Personnel Psychology & Human Resource Management. International and domestic tourism; effects of tourism on the society.

453 [M] International Management 3 Course Prerequisite: Certified major or minor in the College of Business. Cross-cultural implications of management theories and approaches; the role of national culture in management theory and practice.

470 International Trade and Finance 3 Course Prerequisite: ECONS 101 or 198; ECONS 102 or 198. Analysis and description of international trade flows; commercial policy; multinational firms, foreign exchange markets; open economy macroeconomics; international monetary systems. (Crosslisted course offered as ECONS 327, I BUS 470).

482 [M] International Marketing 3 Course Prerequisite: I BUS 380; certified major or minor in the College of Business. Opportunities, characteristics, trends in foreign markets; alternative methods; strategies; organizational planning, control; problems of adapting American marketing concepts and methods.

496 Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Certified major or minor in the College of Business.

498 International Business Internship V 2-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission. 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. Course Prerequisite: By department permission. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

580 International Business Management 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Decision making in the international environment; political, cultural, and economic risk management.

582 International Marketing Management 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Principles of international marketing, marketing decision making in international environments, problems of adapting marketing programs to international markets.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

MARKETING**MKTG**

- 360 Marketing** 3 Course Prerequisite: Certified major [any college] with 60 semester hours. An introduction to the marketing process and the strategic managerial decisions that are made with regard to product, price, promotion, and distribution. Credit not allowed for MGTOP 101 if credit already earned in MKTG 360.
- 368 Marketing Research** 3 Course Prerequisite: MKTG 360; certified major or minor in the College of Business. Use of secondary and primary data to facilitate marketing managers' decision-making capabilities; applied marketing research techniques including focus groups, surveys, experiments and statistical analyses; preparation of marketing research reports.
- 379 Professional Sales** 3 Course Prerequisite: Certified major or minor in the College of Business. Theory, principles, and practices of professional sales with special attention to the business-to-business market.
- 407 Consumer Behavior** 3 Course Prerequisite: MKTG 360; certified major or minor in the College of Business. Investigation of social processes affecting consumer decision-making and behavior; models of consumer behavior are covered, as are the psychological phenomena of learning, motivation, and attitude development, and the sociological influences of social class, reference groups and culture.
- 450 Internet Marketing** 3 Course Prerequisite: MKTG 360; certified major or minor in the College of Business. An examination of marketing's role in the Internet and electronic commerce.
- 461 [M] Product Management** 3 Course Prerequisite: MKTG 360; certified major or minor in the College of Business. Management of existing products and product lines, and design, development, pricing and marketing of new products in the firm.
- 468 Public Policy and Marketing** 3 Course Prerequisite: MKTG 360; certified major or minor in the College of Business. The use of marketing principles and techniques to benefit society; the importance of marketing as it relates to government regulation of marketing structure, consumer protection, and consumer welfare.
- 470 Retail Management** 3 Course Prerequisite: MKTG 360; certified major or minor in the College of Business. Retailing system; organization, merchandising models, pricing, promotion, location, and control procedures; management decision processes.
- 477 Promotion Management** 3 Course Prerequisite: MKTG 360; certified major or minor in the College of Business. An overview of the managerial approaches and theoretical perspectives relevant to planning, implementing, and evaluating integrated marketing communications strategies.
- 478 [M] Sales Management** 3 Course Prerequisite: MKTG 360; certified major or minor in the College of Business. Sales management strategies and plans to achieve a firm's marketing objectives, including the hiring, firing, training, motivation, compensation, deployment, and evaluation of sales personnel.
- 480 Business to Business Marketing** 3 Course Prerequisite: MKTG 360; certified major or minor in the College of Business. Marketing strategies for creating customer and firm value in business-to-business markets.
- 487 Independent Research** 3 Course Prerequisite: Certified major or minor in the College of Business. Independent research project with faculty member including problem statement, literature review, hypotheses, data collection, and reporting of results.
- 490 [M] Entrepreneurship** 3 Course Prerequisite: MKTG 360; certified major or minor in the College of Business. Concepts, issues, and techniques of new venture creation and entrepreneurship in a marketing context.
- 495 [M] Marketing Management** 3 Course Prerequisite: MKTG 360; certified major or minor in the College of Business. Integrative marketing capstone course; the evaluation and design of marketing strategy; covers industry, competitor, and customer analysis with the goal of recommending and implementing an appropriate marketing strategy.
- 496 Special Topics** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: MKTG 360; certified major or minor in the College of Business. May be repeated for credit; cumulative maximum 6 hours.
- 498 Marketing Internship** V 2-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: MKTG 360; certified major or minor in the College of Business. Cooperative educational internship with a business, government or nonprofit organization. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Course Prerequisite: MKTG 360; certified major or minor in the College of Business. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 505 Survey of Marketing** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Marketing management; relevance of marketing to company profitability and consumer satisfaction; decision regarding price, product, promotion, and distribution.
- 506 Marketing Strategy** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Marketing analyses needed to recommend and implement a marketing strategy. Includes coverage of industry, competitor, and customer analysis as well as decision factors related to segmentation, positioning, and the marketing mix.
- 555 Marketing Analytics** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Development of marketing analytics skills utilizing large data sets to identify marketing and consumer trends in online and offline markets.
- 561 New Product Marketing** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Introduction of new products that are based on new technology; exploration of actual products in the market.
- 565 Seminar in Marketing** 3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Marketing structure and behavior from economic and behavioral perspectives; social evaluation and behavioral implications of marketing strategy.
- 590 Seminar in Consumer Behavior** 3 Course Prerequisite: Admission to PhD programs in business. Advanced, doctoral-level topics in consumer behavior.
- 591 Seminar in Marketing Management** 3 Course Prerequisite: Admission to PhD programs in business. Advanced, doctoral-level topics in marketing management.
- 592 Seminar in Marketing Theory** 3 Course Prerequisite: Admission to PhD programs in business. Advanced, doctoral-level topics in marketing theory.
- 593 Seminar in Research Design** 3 Course Prerequisite: Admission to PhD programs in business. Advanced, doctoral-level topics in research design.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA program. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: Admission to PhD programs in business. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Gene and Linda Voiland School of Chemical Engineering and Bioengineering

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Director and Professor, J. N. Petersen; Associate Director and Professor, R. Zollars; Battelle Distinguished Professor, B. Ahring; Hohenschuh Distinguished Professor, C. F. Ivory; Voiland Distinguished Professors, N. Kruse, Y. Wang; Professors, E. Pate, B. J. Van Wie; Associate Professors, N. Abu-Lail, H. Beyenal, W. Dong, S. Ha, D. Lin, H. Resat, A. Vasavada; Assistant Professors, A. Kostyukova, J. McEwen, S. Saunders, X. Zhang. Clinical Assistant Professor, H. Davis; Professors Emeriti, D. C. Davis, K. C. Liddell, R. C. Miller, W. J. Thomson.

The mission of the Gene and Linda Voiland School of Chemical Engineering and Bioengineering is to deliver academic programs in Chemical Engineering and Bioengineering that advance the boundaries of knowledge, educate competent engineering professionals, and contribute to the needs of society. Faculty, staff, and students engage in discovery, teaching, application, and integration, along with periodic review of achievement, to develop practitioners and scholars prepared to make meaningful and responsible contributions to society.

The Program Educational Objectives for baccalaureate degree programs in Chemical Engineering and Bioengineering define achievements of which the graduates are capable. Graduates of these programs will be able to:

- Engage successfully in graduate or professional education or entry-level employment.
- Perform responsibly and professionally in their chosen career paths.
- Communicate and collaborate effectively.
- Demonstrate competent, innovative problem solving skills.
- Continue learning and accept increasing levels of responsibility over time.

These long-term educational objectives will be achieved through development of student outcomes in a culture of integration and engagement. Student outcomes lay a solid, well-rounded foundation from which to build longer-term capabilities. Systemic integration of theory and practice deepens students' understanding and builds confidence they will need for bold innovation and lifelong learning. Frequent engagement of students with peers, faculty, and external constituencies builds their interpersonal

skills, refines their understanding, and leads them to opportunities for advanced study or employment. Dedicated faculty who effectively teach, mentor, refer, and model professional behaviors prepare our graduates for the professional world.

The school offers courses of study leading to the degrees of Bachelor of Science in Bioengineering, Bachelor of Science in Chemical Engineering, Master of Science in Chemical Engineering, and Doctor of Philosophy, with a focus in chemical engineering. We also graduate students who receive the Master of Science in Engineering and the Doctor of Philosophy in Engineering Science with an emphasis in bioengineering.

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 and operation of chemically based products or they may engage in research leading to new or improved chemical processes, products, and uses. Graduates also find rewarding work in plant operation, plant management, university teaching, sales-service, and other functions requiring chemical engineering training. Many students also use their educations in chemical engineering as preparation for other professional degrees such as medicine or law. The curriculum in chemical engineering is accredited by ABET.

To guide our student activities in developing the skills to meet these objectives we will monitor their attainment of the Student Outcomes as set forth by ABET and AIChE. These are: a) an ability to apply knowledge of mathematics, science, and engineering, b) an ability to design and conduct experiments, as well as to analyze and interpret data, c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability, d) an ability to function on multi-disciplinary teams, e) an ability to identify, formulate, and solve engineering problems, f) an understanding of professional and ethical responsibility, g) an ability to communicate effectively, h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context, i) a recognition of the need for, and an ability to engage in, life-long learning, j) a knowledge of contemporary issues, k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice, as well as a thorough grounding in the basic sciences including chemistry, physics, and biology, with some content at an advanced level, as appropriate to the objectives of the program, and the engineering application of these basic sciences to the design, analysis, and control of chemical, physical, and/or biological processes, including the hazards associated with these processes.

The curriculum in chemical engineering is accredited by ABET.

The total number of Chemical Engineering majors is restricted at the junior level.

Chemical Engineering Certification

Specific requirements for certification in chemical engineering can be obtained from the school although eligibility usually occurs at the middle of the sophomore year. Criteria for certification include overall gpa, grades earned in mathematics and physical science courses, and performance in the CHE 201 course. A certified student who is deficient under the University's Educational Policies and Procedures is subject to decertification. Students are allowed a maximum total of one repeat among all core chemical engineering courses.

Bioengineering

The curriculum in bioengineering has its foundations in conservation principles (conservation of mass, energy, momentum and charge). These principles are developed in introductory courses in basic sciences and engineering and integrated and applied in advanced bioengineering courses. The curriculum includes a range of engineering disciplines, from chemical to electrical and mechanical engineering, applied to biological systems and engineered systems interfacing with biology. The topics covered range in scale from molecular, cellular, tissue, and systems physiology.

Bioengineering is one of the fastest growing disciplines in the nation. Graduates are prepared to apply engineering methods to fields of biology and medicine and to utilize biological understanding in engineering problem solving and design. With these integrated science and engineering skills, bioengineering graduates are able to make valuable contributions to health care as well as bioengineering research and design. At Washington State University, bioengineering cooperates with and finds applications in numerous disciplines of engineering, medicine, and life sciences. The bioengineering curriculum accommodates pre-medical, pre-dental and pre-veterinary requirements for those students wishing to apply to professional schools in health care fields. Bioengineering students are uniquely prepared to participate in the entrepreneurial application of new technologies to advance health.

Bioengineering graduates are able to demonstrate the following Student Outcomes: 1) Application of Math/Science/Engineering, 2) Critical Thinking, 3) Independent Learning, 4) Systems Solutions, 5) Teamwork, 6) Bioengineering Design, 7) Experimentation, 8) Contemporary Issues, 9) Professional Ethics, 10) Communication, and 11) Physiology and Biology.

Bioengineering Certification

Specific requirements for certification in bioengineering can be obtained from the school although eligibility usually occurs at the end of the sophomore year. Criteria for certification include overall gpa, grades earned in biology, chemistry, mathematics and physical science courses, and performance in the CHE 201 and BE 210 courses. A certified student who is deficient under the University's Educational Policies and Procedures is subject to decertification. Students are allowed a maximum total of one repeat among all core bioengineering courses.

Computer Requirement

All Chemical Engineering and Bioengineering students are required to purchase laptop

computers. Please contact the school for details and specifications or visit <http://voiland.wsu.edu/academics.html>.

Transfer Students

Students who are planning to transfer to Chemical Engineering or Bioengineering at Washington State University from other institutions should coordinate their programs with the school 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 (through differential equations), 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. The curricula in Bioengineering and in Chemical Engineering are accredited by ABET.

Preparation for Graduate Study

As preparation for work toward an advanced degree in Chemical Engineering, a student should have completed the equivalent of the following chemical engineering schedule of studies. A Bachelor of Science degree in Chemical Engineering from an institution accredited by ABET normally will satisfy this requirement.

Students seeking advanced training in bioengineering should use the Engineering Science degree program. Such students should have completed the equivalent of the bioengineering program outlined above. A Bachelor of Science degree from any ABET accredited engineering program would normally satisfy this requirement.

Special programs are also available for students with bachelor's degrees in chemistry, biology, or other areas of science who wish to obtain advanced degrees.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

BIOENGINEERING, GENERAL OPTION (122 HOURS)

Students who plan to pursue pre-med studies should consult their advisor for further information about appropriate courses.

Criteria for Certification – Bioengineering Program

1) In March of each year, the faculty of the School of Chemical Engineering and Bioengineering will establish the total number of students (June and January) to be certified into the Bioengineering program.

2) Each student will be considered for certification during the semester after she/he has completed all of the following courses: MATH 171, MATH 172, CHEM 105, CHEM 106, BIOLOGY 107, PHYSICS 201, CHE 201, BIO ENG 210.

3) To be certified, each student must meet the following minimum standards:

- 2.0 cumulative GPA.
- A "C" grade or better in each of the courses listed in 2) above.

c. Students must be in good academic standing (semester gpa 2.00 or higher) at the time they are being considered for certification.

4) Certification decisions will be made at the end of Fall and Spring semesters, and those being certified at the end of Spring semester will be notified by June 1, while those being certified at the end of Fall semester will be notified by January 15.

5) If the number of students seeking certification exceeds the program capacity, as determined in 1) above, additional criteria will be used to select those who are certified. Those criteria include: (a)

average gpa received in the courses listed in 2) above; (b) average gpa earned in all the engineering/math/science courses which have already been completed; and (c) the gpa earned during the previous semester.

6) Students who have completed all the courses listed in 2) above, but who are not certified will be notified of the decision according to the time table described in 4) above. Such students who are not certified may appeal the decision. This appeal should describe any special circumstances which should be considered. A faculty committee will consider the appeal, the special circumstances described, and trends in the grades (e.g. trends in grades and/or withdrawals, typical course load attempted and typical course load completed) and make a final decision regarding certification. The appeal must be submitted within 2 weeks of the of the notification described in 4) above. The appeal will be considered and a decision made by July 1 and February 15.

7) Students who are deficient under the University's Educational Policies and Procedures are subject to decertification.

a. The first semester that a student is deficient, she/he must apply for recertification, stating changes that will be made to ensure success and explaining extenuating circumstances, if any, that hindered success. The student must provide sufficient information so that a reasonable individual will assume that the student will likely be able to successfully complete the program.

b. The second time that a student is deficient, she/he may apply to be recertified. However, such recertification will be granted only under rare, extenuating conditions.

8) Students are allowed a maximum total of one repeat among all core courses.

First Year

First Term	Hours
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
ENGR 120	2
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

Second Term	Hours
BIO ENG 140	1
BIOLOGY 107 [BSCI]	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 172	4

Second Year

First Term	Hours
BIO ENG 205	1
CHE 201	3

MATH 220	2
MATH 273	2
PHYSICS 201	4

Second Term	Hours
BIO ENG 210	2
CE 211	3
Humanities [HUM]	3
MATH 315	3
MATH 370 or 423	3
PHYSICS 202	4
Complete Writing Portfolio	

Third Year

First Term	Hours
BIO ENG 321	3
BIO ENG 322 [M]	1
BIO ENG 350	3
CHE 310	3
E E 261	3

Second Term	Hours
BIO ENG 330	3
BIO ENG 340	4
Bioengineering elective ¹	3
Diversity [DIVR]	3
ECONS 101 [SSCI] or 102 [SSCI]	3

Fourth Year

First Term	Hours
BIO ENG 410	3
BIO ENG 440	4
Bioengineering electives ¹	6
ENGLISH 402 [WRTG]	3

Second Term	Hours
BIO ENG 411	3
Bioengineering electives ¹	9
Integrative Capstone [CAPS]	3

¹ At least 7 hours must be 300-400-level, and must be approved by advisor prior to enrollment.

BIOENGINEERING, PRE-MED OPTION (131 HOURS)

First Year

First Term	Hours
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
ENGR 120	2
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

Second Term	Hours
BIO ENG 140	1
BIOLOGY 107 [BSCI]	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 172	4

Second Year

First Term	Hours
BIO ENG 205	1
BIOLOGY 106	4
CHE 201	3
MATH 220	2
MATH 273	2
PHYSICS 201	4

<i>Second Term</i>	<i>Hours</i>
BIO ENG 210	2
CE 211	3
Humanities [HUM]	3
MATH 315	3
MATH 370 or 423	3
PHYSICS 202	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIO ENG 321	3
BIO ENG 322 [M]	1
CHE 310	3
CHEM 345	4
E E 261	3
MBIOS 301	4

<i>Second Term</i>	<i>Hours</i>
BIO ENG 330	3
BIO ENG 340	4
CHEM 348	4
MBIOS 303	4

Fourth Year

<i>First Term</i>	<i>Hours</i>
BIO ENG 350	4
BIO ENG 410	3
BIO ENG 440	4
Diversity [DIVR]	3
ENGLISH 402 [WRTG]	3

<i>Second Term</i>	<i>Hours</i>
BIO ENG 411	3
Bioengineering Electives ¹	6
ECONS 101 [SSCI] or 102 [SSCI]	3
Integrative Capstone [CAPS]	3

¹ Must be approved by advisor prior to enrollment in the class.

CHEMICAL ENGINEERING - GENERAL (128 HOURS)

At least 66 of the total hours required for this degree must be in 300-400-level courses.

Criteria for Certification – Chemical Engineering Program

1) In September of each year, the faculty of the School of Chemical Engineering and Bioengineering will establish the total number of students (June and January) to be certified into the chemical engineering program.

2) Each student will be considered for certification during the semester after she/he has completed all of the following courses: MATH 171, MATH 172, MATH 273; CHEM 105, CHEM 106, CHEM 345, PHYSICS 201, CHE 201.

3) To be certified, each student must meet the following minimum standards:

- 2.0 cumulative GPA.
- A "C" grade or better in each of the courses listed in 2) above.
- Completed at least one semester of coursework at WSU.
- Be in good academic standing (semester gpa 2.00 or higher) at the time they are being considered for certification.

4) Certification decisions will be made at the end of Fall and Spring semesters, and those being certified at the end of Spring semester will be notified by

June 1, while those being certified at the end of Fall semester will be notified by January 15.

5) If the number of students seeking certification exceeds the program capacity, as determined in 1) above, additional criteria will be used to select those who are certified. Those criteria include: (a) average gpa received in the courses listed in 2) above; (b) average gpa earned in all the engineering /math/science courses which have already been completed; and (c) the gpa earned during the previous semester.

6) Students who have completed all the courses listed in 2) above, but who are not certified will be notified of the decision according to the time table described in 4) above. Such students who are not certified may appeal the decision. This appeal should describe any special circumstances which should be considered. A faculty committee will consider the appeal, the special circumstances described, and trends in the grades (e.g. trends in grades and/or withdrawals, typical course load attempted and typical course load completed) and make a final decision regarding certification. The appeal must be submitted within 2 weeks of the notification described in 4) above. The appeal will be considered and a decision made by July 1 and February 15.

7) Students who are deficient under the University's Educational Policies and Procedures are subject to decertification.

a. The first semester that a student is deficient, she/he must apply for recertification, stating changes that will be made to ensure success and explaining extenuating circumstances, if any, that hindered success. The student must provide sufficient information so that a reasonable individual will assume that the student will likely be able to successfully complete the program.

b. The second time that a student is deficient, she/he may apply to be recertified. However, such recertification will be granted only under rare, extenuating conditions.

8) Students are allowed a maximum total of one repeat among all core courses.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHE 110	2
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 172	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHE 201	3
CHEM 345	4
Humanities [HUM]	3
MATH 273	2
PHYSICS 201	4

<i>Second Term</i>	<i>Hours</i>
CHE 211	3
CHEM 346 or MBIOS 303	3 or 4

ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 315	3
PHYSICS 202	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
CHE 301	3
CHE 310	3
CHE 398	1
CHEM 331	3
MBIOS 301, 303, or 305	4
MSE 302	3

<i>Second Term</i>	<i>Hours</i>
CHE 321	3
CHE 332	2
CHE 334	2
CHE 398	1
CHEM 335	1
E E 304	2
MATH 423	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
CHE 432 [M]	3
CHE 441	3
CHE 450	3
CHE 475	3
CHE 498	1
ENGLISH 402 [WRTG]	3

<i>Second Term</i>	<i>Hours</i>
CHE 433 [M]	2
CHE 451 [M]	3
CHE 498	1
CHE Elective ¹	3
Integrative Capstone [CAPS]	3
Tech Elective	3

¹ CHE 418, 435, 461, 465, 467, 475, 476, 481, 485, 487, 495 and 499. Of the total of 9 credits in chemical engineering electives, a cumulative total of only 3 credits is allowed in CHE 495 and 499 combined.

CHEMICAL ENGINEERING - PRE-MED (135 HOURS)

Specific requirements for certification in chemical engineering can be obtained from the school although eligibility usually occurs at the middle of the sophomore year. Criteria for certification include overall gpa, grades earned in mathematics and physical science courses, and performance in the Ch E 201 course. A certified student earning a gpa of less than 2.0 for any two semesters is subject to decertification.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHE 110	2

CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 172	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHE 201	3
CHEM 345	4
Humanities [HUM]	3
MATH 273	2
PHIL 365	3
PHYSICS 201	4

<i>Second Term</i>	<i>Hours</i>
CHE 211	3
CHEM 346	3
ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 315	3
PHYSICS 202	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
CHE 301	3
CHE 310	3
CHE 398	1
CHEM 331	3
MBIOS 301 or 305	4
MSE 302	3

<i>Second Term</i>	<i>Hours</i>
CHE 321	3
CHE 332	2
CHE 334	2
CHE 398	1
CHEM 333	1
E E 304	2
MATH 423	3
MBIOS 303	4

Fourth Year

<i>First Term</i>	<i>Hours</i>
CHE 432 [M]	3
CHE 441	3
CHE 450	3
CHE 475	3
CHE 498	1
ENGLISH 402 [WRTG]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 315 or 352	3
CHE 433 [M]	2
CHE 451 [M]	3
CHE 498	1
CHE Elective	3
Integrative Capstone [CAPS]	3

Description of Courses**BIOENGINEERING****BIO ENG**

140 Introduction to Bioengineering 1 Seminar on current topics and issues in bioengineering; career options in bioengineering. S, F grading.

205 Bioengineering Professional Preparation and Ethics 1 Professional preparation for careers in bioengineering; ethical, social, and professional issues in bioengineering. S, F grading.

210 Bioengineering Analysis 2 (1-3) Course Prerequisite: MATH 220 or concurrent enrollment; certified major in Bioengineering. Analytical problem solving, modeling and computer methods for bioengineering applications.

321 Mechanics of Biological Materials 3 Course Prerequisite: CE 211 with a C or better; certified major in Bioengineering. Mechanical behavior of biological and engineering materials; relationships between external loads and internal stresses and strains within a structure.

322 [M] Mechanics of Biological Materials Lab 1 (0-3) Course Prerequisite: BIO ENG 321 or concurrent enrollment; and MATH 370 or concurrent enrollment; certified major in Bioengineering. Laboratory experiments focused on mechanics of biological and engineering materials; experimental design and statistical analysis of data; scientific writing.

330 Bioinstrumentation 3 (2-3) Course Prerequisite: E E 261 with a C or better; certified major in Bioengineering. Principles of instrumentation applicable to bioengineering systems; experimental design for measurement systems.

340 Unified Systems Bioengineering I 4 (3-3) Course Prerequisite: BIO ENG 210 or concurrent enrollment; E E 261 with a C or better; certified major in Bioengineering. Foundation for dynamic modeling and design of physiological systems; part one of two-semester course.

350 Introduction to Cellular Bioengineering 3 Course Prerequisite: MATH 315 with a C or better; certified major in Bioengineering. Integrating cellular biology and engineering science by applying quantitative engineering principles for development of cellular-based materials, diagnostic devices and sensor designs.

410 [M] Bioengineering Capstone Project I 3 (2-3) Course Prerequisite: BIO ENG 321 with a C or better; BIO ENG 322 with a C or better; BIO ENG 330 with a C or better; BIO ENG 340 with a C or better. Part I of capstone engineering design project; customer needs, design requirements, conceptual design, business assessment, project proposal, and presentation.

411 Bioengineering Capstone Project II 3 (2-2) Course Prerequisite: BIO ENG 410 with a C or better. Detailed design and business case for a biological engineering-related process, machine, structure, or system.

425 Biomechanics 3 Course Prerequisite: BIO ENG 321 with a C or better or CE 215 with a C or better; MATH 315 with a C or better. Methods for analysis of rigid body and deformable mechanics; application to biological tissue, especially bone, cartilage, ligaments, tendon and muscle. Credit not granted for both BIO ENG 425 and BIO ENG 525.

440 Unified Systems Bioengineering II 4 (3-3) Course Prerequisite: BIO ENG 210 with a C or better; BIO ENG 340 with a C or better. Continuation of BIO ENG 340; emphasis on feedback control system analysis and design, with examples from physiological systems.

481 Advanced Topics in Bioengineering V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Junior standing; instructor permission. Advanced topics in bioengineering.

495 Internship in Bioengineering V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: BIO ENG 205; junior standing; instructor permission. Work experience related to academic learning. S, F grading.

499 Special Problems in Bioengineering V 1-4 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Sophomore standing; instructor permission. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

525 Biomechanics 3 Methods for analysis of rigid body and deformable mechanics; application to biological tissue, especially bone, cartilage, ligaments, tendon and muscle. Credit not granted for both BIO ENG 425 and BIO ENG 525.

541 Systems Bioengineering 3 Physiological systems emphasizing the cardiovascular, pulmonary, renal, endocrine, musculoskeletal, nervous and sensory systems.

550 Cellular Bioengineering 3 Cellular biology integrated with engineering science; cellular phenomena from an engineering perspective; quantitative engineering principles for cellular-based materials, diagnostic device and sensor designs.

CHEMICAL ENGINEERING

Only certified chemical engineering majors may enroll in upper-division (300-400-level) Ch E courses. Exemptions must be made with permission of the director of the school.

CHE

110 Introduction to Chemical Engineering 2 Course Prerequisite: CHEM 105 with a C or better or concurrent enrollment; MATH 171 with a C or better or concurrent enrollment. Introduction to chemical engineering, development of problem solving skills.

201 Chemical Process Principles and Calculations 3 Course Prerequisite: CHEM 106 with a C or better or concurrent enrollment, or CHEM 331, CHEM 345, or CHEM 348; MATH 172 or 182 with a C or better or concurrent enrollment, or MATH 273 or MATH 315. Fundamental concepts of chemical engineering; problem-solving techniques and applications in stoichiometry, material and energy balances, and phase equilibria.

- 211 Process Simulation** 3 Course Prerequisite: MATH 315 with a C or better or concurrent enrollment. Computer solutions to problems in chemical engineering processing.
- 301 Chemical Engineering Thermodynamics** 3 Course Prerequisite: CHE 201 with a C or better; CHEM 331 with a C or better or concurrent enrollment; certified Chemical Engineering major. Basic concepts and laws; property relationships; compression and liquefaction; phase equilibria; reaction equilibria; applications in stagewise processing.
- 310 Introduction to Transport Processes** 3 Course Prerequisite: CHE 201 with a C or better; MATH 315 with a C or better or concurrent enrollment; certified major in Chemical Engineering or Bioengineering. Fundamentals of the phenomena governing the transport of momentum, energy, and mass.
- 321 Kinetics and Reactor Design** 3 Course Prerequisite: CHE 301 with a C or better; CHEM 331 with a C or better; MATH 315 with a C or better; certified Chemical Engineering major. Chemical reaction kinetics applied to the design of reactors, non-ideal flow, mixing, catalysis.
- 332 Fluid Mechanics and Heat Transfer** 2 Course Prerequisite: CHE 310 with a C or better; certified Chemical Engineering major. Design calculations, operations, and evaluation of equipment used in fluid flow, heat transfer, and evaporation.
- 334 Chemical Engineering Separations** 2 Course Prerequisite: CHE 301 with a C or better; CHE 310 with a C or better; CHE 332 with a C or better or concurrent enrollment; certified Chemical Engineering major. Design and evaluation of equipment used in continuous contacting.
- 398 Technical Seminar** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Junior standing; certified Chemical Engineering major. May be repeated for credit; cumulative maximum 2 hours. S, F grading.
- 432 [M] Chemical Engineering Lab I** 3 (1-6) Course Prerequisite: CHE 321 with a C or better; CHE 332 with a C or better; CHE 334 with a C or better. Statistical design and analysis of experiments; safety; experiments in heat and mass transfer; separations, other unit operations, kinetics, control; technical reports and presentations.
- 433 [M] Chemical Engineering Lab II** 2 (0-6) May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: CHE 432 with a C or better. Laboratory experiments in heat and mass transfer; separations, other unit operations, kinetics, control; design calculations; technical reports and presentations.
- 441 Process Control** 3 Course Prerequisite: CHE 211 with a C or better, or CHE 310 with a C or better. Measuring instruments, automatic control, process and instrument characteristics and theory applied to industrial control problems.
- 450 Chemical Process Analysis and Design I** 3 Course Prerequisite: CHE 321 with a C or better; CHE 332 with a C or better; CHE 334 with a C or better. Chemical engineering design; computer tools; safety and environmental constraints; cost and equipment optimization.
- 451 [M] Chemical Process Analysis and Design II** 3 Course Prerequisite: CHE 450 with a C or better. Development, design, and economic evaluation of chemical and related processes as practiced in industry.
- 461 Introduction to Nuclear Engineering** 3 Course Prerequisite: Certified major in engineering or physical sciences; senior standing; MATH 315. Applied nuclear physics; application to the nuclear fuel cycle and nuclear reactor core design; nuclear reactor systems and safety. (Crosslisted course offered as ME 461, CHE 461).
- 465 Integrated Envirochemical Engineering** 3 Course Prerequisite: CHE 321 with a C or better; CHE 334 with a C or better. Application of chemical engineering principles in assessment and remediation of industrial problems in air pollution, water pollution, and solid and hazardous waste.
- 475 Introduction to Biochemical Engineering** 3 Course Prerequisite: CHE 321 with a C or better; CHE 332 with a C or better. Application of chemical engineering principles to the processing of biological and biochemical materials.
- 476 Biomedical Engineering Principles** 3 Course Prerequisite: CHE 310 with a C or better. The application of chemical engineering principles to biomedical processes.
- 481 Special Topics in Chemical Engineering** V 1-3 Interfacial phenomena, high temperature material processing, integrated circuit manufacturing, in situ destruction of hazardous waste.
- 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 advisor and industrial supervisor. S, F grading.
- 498 Technical Seminar** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Senior standing; certified Chemical Engineering major. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Course Prerequisite: Sophomore standing. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. 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: Open to UI degree-seeking students.
- 527 Chemical Thermodynamics** 3 Thermodynamic laws for design and optimization of thermodynamic systems, equations of state, properties of ideal and real fluids and fluid mixtures, stability, phase equilibrium, chemical equilibrium; applications of thermodynamic principles. Cooperative: Open to UI degree-seeking students.
- 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: Open to UI degree-seeking students.
- 541 Chemical Engineering Analysis** 3 Mathematical analysis of chemical engineering operations and processes; mathematical modeling and computer application. Cooperative: Open to UI degree-seeking students.
- 549 Biochemical Conversion Laboratory** 2 (1-3) Analytical techniques in biomass characterization; bioproduct/biofuel production from renewable biomass including biochemical processes.
- 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: Open to UI degree-seeking students.
- 574 Protein Biotechnology** 3 Biotechnology related to the isolation, modification and large scale commercial production, patenting and marketing of useful recombinant proteins and products. (Crosslisted course offered as MBIOS 574, CHE 574). Recommended preparation: MBIOS 513.
- 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.
- 585 Interfacial Phenomena** 3 Chemical and physical nature of the interface including the molecular basis for interfacial forces and resulting macroscopic phenomena.
- 596 Research Methods and Presentation I** 2 Establish sound practices for graduate research and presentation of results; techniques used for performing through literature searching and establishing and testing research hypotheses.
- 597 Research Methods and Presentation II** 2 Establishing sound practices for presentation of research programs and research results.
- 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 V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Chemistry

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Professor and Department Chair, K. Hipps; Professors, C. Berkman, S. Clark, P. Garner, H. Hill, J. Jones, C. Kang, A. Li, U. Mazur, J. McHale, K. Nash, K. Peterson, R. Ronald, J. Satterlee, C.-S. Yoo, S. Wherland; Associate Professors, P. Benny, J. Brozik, A. Clark, P. Reilly, M. Xian; Assistant Professor, B. Clowers, Z. Heiden, N. Wall; Clinical Associate Professors, G. Crouch, J. Lessmann, L. Scudiero; Adjunct Faculty, J. Futrell, L. Wang; Scientist, B. Siems; Instructor, M. Finnegan; WSUTC Coordinator, K. Grant.

Chemistry is the fundamental science of 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 prepares you for a variety of careers in industry, education, and public service, or for graduate study and research in chemistry and many related fields.

The department has 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.

We expect that our graduating students will: 1) demonstrate their knowledge of the principals of the major subfields of chemistry, organic, analytical, physical, inorganic, and biochemistry, and be able to use it in the solution of the daily needs and

future problems of the workplace and society; 2) demonstrate independence and creativity through individual work in the research laboratory; 3) be able to access, read, and critically evaluate the chemical and general scientific literature; 4) apply their skills and knowledge of chemistry within the context of a strong, fundamental general education; and 5) communicate effectively both orally and in writing.

Typical areas for research include:

- Analytical chemistry 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 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 has as its center the study of the vast majority of the known elements and especially the transition metals; it includes investigations into the mechanisms of electron transfer processes. It is closely related to bioinorganic chemistry which includes the study of metal containing proteins, radiopharmaceuticals, and investigations of the role of reactive small molecule oxidizing agents in biological processes.

- Materials chemistry 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 deals with the many compounds of carbon and how these compounds interact in biological systems. It includes the study of medicinal, bioorganic, mechanistic, and synthetic chemistry and how these areas may be used in areas such elucidation of metabolic pathways, drug development in the treatment of diseases, and environmentally benign synthesis of important chemicals.

- Physical chemistry applies the methods and theories of physics to the study of chemical materials. It involves theoretical studies of chemical bonding using advanced computational methods and the investigation of the structures of solids and surfaces by a variety of instrumental methods including photon spectroscopies, X-ray techniques, and surface characterization.

The Department of Chemistry is on the approved list of the American Chemical Society and offers courses of study leading to the degrees of Bachelor of Science in Chemistry, with options in general chemistry, materials chemistry, and environmental chemistry. In addition, graduate study programs leading to the Master of Science in Chemistry and Doctor of Philosophy (Chemistry) are also offered.

A student beginning undergraduate work will begin with Chem 105. Student without high school chemistry will begin their study with Chem 101 prior to taking Chem 105. Additionally, if a student has completed one year of Advanced Placement high school chemistry and has scored 5 on the Advanced Placement Exam, credit is granted for the Chem 105 / 106 sequence. If a student has completed one year of advanced placement high school chemistry and has scored 3 or 4 on the Advanced Placement Exam, credit is granted for Chem 105. Students who complete an International Baccalaureate program with a high level pass and a grade of 4 or more on the exam are given credit for Chem 101.

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.

Certification Requirements

A student may certify as a chemistry major after completing 30 credit hours, including Chem 105 and 106 (or 116), each with a grade of C or better and Math 171.

LAB FEES

Charges for expendable laboratory supplies and computing are made in each laboratory course.

Chemistry Options

After the beginning of the first year, a student interested in majoring in chemistry should consult with chemistry advisors to arrange a schedule which will permit completion of required courses in proper sequence. The Department of Chemistry offers two BS degree options depending on the career goals of the student. These options are professional chemistry and materials chemistry. Both of these options leads to a degree for which students will be certified to the American Chemical Society and prepared for entry into the workforce or to pursue a graduate degree. Regardless of which option is chosen, a grade of C or better is required in all chemistry courses to fulfill requirements for the chemistry degree.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

CHEMISTRY - MATERIALS OPTION (120 HOURS)

The requirements for all chemistry options are the same through the first semester of the junior year.

First Year

First Term	Hours
CHEM 105 ¹	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
Second Term	Hours
BIOLOGY 106 [BSCI]	4

CHEM 106 or 116 ¹	4
Creative & Professional Arts [ARTS]	3
MATH 172	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
Humanities [HUM]	3
MATH 220	2
MATH 273	2
PHYSICS 201 [PSCI]	4
<i>Second Term</i>	<i>Hours</i>
CHEM 347	2
CHEM 348	4
PHYSICS 202	4
Social Sciences [SSCI]	3
Complete Writing Portfolio	3

Third Year

<i>First Term</i>	<i>Hours</i>
CHEM 222	2
CHEM 330	1
CHEM 331	3
CHEM 398	1
Diversity [DIVR]	3
MBIOS 303	4
MSE 302	3
<i>Second Term</i>	<i>Hours</i>
CHEM 332	3
CHEM 333	1
CPT S 153, 203, or 251 ²	2
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
MSE 301	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
CHEM 334 [M]	2
CHEM 401	3
CHEM 499	2
Integrative Capstone [CAPS]	3
MSE 302	3
MSE 320 [M]	3
Electives	3
<i>Second Term</i>	<i>Hours</i>
CHEM 410 [M]	3
CHEM 480	3
CHEM 495	1
ENGLISH 301 [WRTG] or 402 [WRTG], or Communication [COMM]	3
MSE 321	3
Elective ³	2

¹ Students who have taken CHEM 101 must take CHEM 105 and 106, or 102 and 106. Highly qualified students are encouraged to take CHEM 116 in place of CHEM 106.

² Or other course involving computational techniques approved by the materials chemistry advisor.

³ Elective must be approved by materials chemistry advisor.

CHEMISTRY - PROFESSIONAL OPTION (120 HOURS)

The requirements for all chemistry options are the same through the first semester of the junior year.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 106 or 116 ¹	4
Creative & Professional Arts [ARTS]	3
MATH 172	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
Humanities [HUM]	3
MATH 220	2
MATH 273	2
PHYSICS 201 [PSCI]	4
<i>Second Term</i>	<i>Hours</i>
CHEM 220	2
CHEM 347	2
CHEM 348	4
PHYSICS 202	4
Social Sciences [SSCI]	3
Complete Writing Portfolio	3

<i>Second Term</i>	<i>Hours</i>
CHEM 220	2
CHEM 347	2
CHEM 348	4
PHYSICS 202	4
Social Sciences [SSCI]	3
Complete Writing Portfolio	3

Third Year

<i>First Term</i>	<i>Hours</i>
CHEM 222	2
CHEM 330	1
CHEM 331	3
CHEM 398	1
Diversity [DIVR]	3
MBIOS 303	4
<i>Second Term</i>	<i>Hours</i>
CHEM 332	3
CHEM 333	1
CHEM 425	2
CHEM 499	1
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
CHEM 332	3
CHEM 333	1
CHEM 425	2
CHEM 499	1
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
CHEM 334 [M]	2
CHEM 401	3
CHEM 426	2
CHEM 499	2
Electives	6
<i>Second Term</i>	<i>Hours</i>
CHEM 410 [M]	3
CHEM 495	1
CHEM Electives ²	3
ENGLISH 301 [WRTG] or 402 [WRTG], or Communication [COMM]	3
Integrative Capstone [CAPS]	3
Electives	3

¹ Students who have taken CHEM 101 must take

CHEM 105 and 106, or 102 and 106. Highly qualified students are encouraged to take CHEM 116 in place of CHEM 106.

² Electives include: CHEM 415, 416, 421, 422, 424, 427, 430, 461, 480, 481, 514, 517, 518, and other 500-level courses; CE 341, 401, 415; GEOLOGY 102, 350, 403, 475, 480, 483; SOIL SCI 201, 301, 415, 416, 421; ENVR SCI 101, 150, 406, 445, BIOLOGY 372; PHIL 370; microbiology courses.

Minors**Chemistry**

The minor in chemistry requires at least 16 hours selected from the courses below. All courses used for the minor must be completed with a grade of C or better. At least 9 of the hours must be upper-division taken in residence at WSU. Courses must be selected from at least two of the following areas (note that some courses have prerequisites): Organic: CHEM 345, 346, 347, 348, 349, 540. Analytical: CHEM 220, 222, 425, 426, 520. Physical/Inorganic: CHEM 330, 331, 332, 333, 334, 336, 401, 480, 501, 531. CHEM 499/495 – may be used for up to 4 hours. MBIOS 303 and other MBIOS courses may be substituted with approval.

Description of Courses**CHEMISTRY****CHEM****101 [PSCI] Introduction to Chemistry 4 (3-3)**

Course Prerequisite: MATH 99, or placement into MATH 105, ALEKS math placement score of 40%, or concurrent enrollment in or credit for MATH 105, 106, 107, 108, 140, 171, 172, 182, 201, 202, ENGR 107, STAT 205 or 212. Basic chemical concepts; atomic theory, periodicity, reaction stoichiometry, gases, solutions, acids, basis, pH, equilibrium, kinetics, energy, applications to life sciences.

102 Chemistry Related to Life Sciences 4

(3-3) Course Prerequisite: CHEM 101 with a C or better, or CHEM 105 with C or better. Organic functional groups and their reactions; polymers, macro-molecules; carbohydrates, lipids, proteins, enzymes, nucleic acids, hormones, applications to life sciences.

105 [PSCI] Principles of Chemistry I 4 (3-3)

Course Prerequisite: MATH 106 or concurrent enrollment, or ALEKS math placement score of 70%, or concurrent enrollment in or credit for Math 107, 108, 140, 171, 172, 182, 202, or ENGR 107. Stoichiometry, structure, gases, liquids, solids, solutions, thermodynamics, kinetics, equilibrium, volumetric, and gravimetric analysis. Recommended preparation: One year high school chemistry or CHEM 101.

106 Principles of Chemistry II 4 (3-3)

Prerequisite: CHEM 105 with a grade of C or better; MATH 106, 107, or 108 with a grade of C or better, or MATH 108 or concurrent enrollment, or ALEKS math placement score of 50%. Acid-base, ionic, molecular, solubility, oxidation/reduction equilibria; kinetics, electrochemistry; systematic chemistry of the elements; coordination compounds. Credit not granted for both CHEM 106 and 116.

- 116 Chemical Principles Honors II 4** (3-3) Course Prerequisite: By department permission. Descriptive inorganic chemistry, organic chemistry principles, acid/base, ionic and molecular equilibrium, electrochem, thermodynamics, kinetics. Laboratory interfaced with computers. Credit not granted for both CHEM 106 and 116.
- 191 Independent Study in Modern Chemistry** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: CHEM 101 or concurrent enrollment, or CHEM 105 or concurrent enrollment. Independent study in the theory and practice of modern chemistry; written report required. S, F grading.
- 220 Quantitative Analysis 2** Course Prerequisite: CHEM 106 or 116. Theories of quantitative chemical analysis; statistical evaluation of data; chemical equilibrium; volumetric and gravimetric methods of analysis; introduction to electrochemistry.
- 222 Quantitative Analysis Laboratory 2** (0-6) Course Prerequisite: CHEM 220 or concurrent enrollment. Application of classical methods in volumetric and gravimetric analysis; acid-base, redox and EDTA titrations; ion-exchange chromatography; introduction to spectrophotometry.
- 330 Problem Solving in Physical Chemistry 1** Course Prerequisite: CHEM 106 with a C or better, or CHEM 116 with a C or better; MATH 172 or 182 with a C or better. Quantitative methods of data analysis and chemical concept development; emphasis on multivariable, matrix, and computer methods.
- 331 Physical Chemistry 3** Course Prerequisite: MATH 273 or 283 with a C or better; PHYSICS 202 with a C or better. Concepts of physical chemistry; basic thermodynamics; free energy and entropy; phase equilibria; properties of solutions of electrolytes and non-electrolytes.
- 332 Physical Chemistry 3** Course Prerequisite: MATH 273 with a C or better; MATH 220 with a C or better; PHYSICS 202 with a C or better. Elementary quantum theory; molecular structure and spectra; bonding theory; reaction rates; photochemistry and radiation chemistry; energy states and statistical thermodynamics.
- 333 Physical Chemistry Laboratory for Chemists 1** (0-3) Course Prerequisite: CHEM 331 with a C or better or concurrent enrollment. Experiments selected to meet the individual needs of students in biology, civil engineering, chemistry, or materials science.
- 334 [M] Physical Chemistry Laboratory 2** (0-6) Course Prerequisite: CHEM 332 with a C or better or concurrent enrollment; CHEM 333 with a C or better. Continuation of CHEM 333. Experiments in molecular structure, atomic molecular spectroscopy, chemical kinetics including computational methods.
- 335 Physical Chemistry Laboratory for Chemical Engineers 1** (0-3) Course Prerequisite: CHEM 331 with a C or better or concurrent enrollment. Experiments selected to meet the needs of students majoring in chemical engineering.
- 345 Organic Chemistry I 4** (3-3) Course Prerequisite: CHEM 102 with a C or better, or CHEM 106 with a C or better. Survey of organic chemistry providing an overview of the chemistry of the functional groups.
- 346 Organic Chemistry II 3** Lecture-only component of CHEM 348. Advanced concepts in organic chemistry including mechanisms and multistep-synthesis. Credit not granted for both CHEM 346 and 348.
- 347 Organic Qualitative Analysis Laboratory 3** (1-6) Course Prerequisite: CHEM 345 with a C or better. Isolation, purification and identification of unknown compounds; for chemistry and biochemistry majors.
- 348 Organic Chemistry II and Problem Solving 4** (3-2) Course Prerequisite: CHEM 345 with a C or better. Advanced concepts in organic chemistry including mechanisms and multistep-synthesis; problem analysis and critical thinking development in organic chemistry. Credit not granted for both CHEM 346 and 348.
- 350 Chemistry in Contemporary Society 4** (3-3) Course Prerequisite: Junior standing. Principles and applications of chemistry in the context of contemporary society.
- 398 Undergraduate Seminar 1** S, F grading.
- 401 Modern Inorganic Chemistry 3** Course Prerequisite: CHEM 332 with a C or better or concurrent enrollment. Properties of substances; periodic systems; oxidation-reduction and acid-base characteristics interpreted on the basis of atomic and molecular structure.
- 410 [M] Advanced Synthesis and Characterization 3** (1-6) Course Prerequisite: CHEM 346 with a C or better, or CHEM 348 with a C or better; CHEM 332 with a C or better. Synthesis and characterization of organic and inorganic compounds and solid-state materials; modern synthetic technology, characterization methods, and laboratory techniques.
- 425 Quantitative Instrumental Analysis 2** Course Prerequisite: CHEM 332 with a C or better or concurrent enrollment. Computer interfacing applicable to chemical instrumentation; principles and applications of modern chromatography, spectrophotometry and electrochemical techniques.
- 426 Quantitative Instrumental Analysis Laboratory 2** (0-6) Course Prerequisite: CHEM 425 with a C or better or concurrent enrollment. Laboratory experience in modern analytical methods.
- 480 Solid State Chemistry 3** Course Prerequisite: CHEM 332 with a C or better. Properties, bonding and synthesis of solid state material; crystalline and amorphous solids and coatings.
- 490 Current Topics in Chemistry V** 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. Recent advances in the understanding and application of chemical systems.
- 495 Directed Research 1** Course Prerequisite: By department permission. Poster presentation of final research project.
- 499 Special Problems V** 1-4 May be repeated for credit. Course Prerequisite: By department permission. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Advanced Inorganic Chemistry I 3** Periodic table survey, typical compounds and their reactivity; models and reactivity, acid-base, oxidation-reduction, and electronic structure contributions.
- 503 Advanced Topics in Inorganic Chemistry V** 1-3 May be repeated for credit. Recent significant developments. Cooperative: Open to UI degree-seeking students.
- 509 Chemical Group Theory 3** Mathematical definitions of groups and representations, applications to chemical structure and spectra, ligand field theory, chemical reactions and selection rules.
- 510 Introduction to Proteomics 2** Techniques and applications for the analysis of the proteome. Recommended preparation: MBIOS 303 or equivalent.
- 512 Bioanalysis 2** Methods for the measurement of biological compounds.
- 514 Mass Spectrometry 2** Current methods, techniques and interpretation of mass spectrometric analysis. Recommended preparation: CHEM 425 or equivalent.
- 517 Chromatography 2** Recommended preparation: CHEM 425 or equivalent.
- 518 Electrochemistry 2** Recommended preparation: CHEM 425 or equivalent.
- 520 Advanced Analytical Chemistry 3** Statistics in chemical analysis; sampling; control of contamination and losses in analysis; electrochemical methods; separation in analysis; spectroscopic techniques. Recommended preparation: CHEM 425 or equivalent.
- 521 Radiochemistry and Radiotracers 2** Graduate-level counterpart of CHEM 421; additional requirements. Recommended preparation: CHEM 425 or equivalent.
- 522 Radiochemistry Laboratory 1** (0-3) Graduate-level counterpart of CHEM 422; additional requirements. Required preparation must include CHEM 222, CHEM 331, and PHYSICS 202 or equivalent.
- 527 Environmental Chemistry 2** Natural water chemistry, AGRI processes, kinetics, thermodynamics, modeling in lake, river, and sea water.
- 529 Selected Topics in Analytical Chemistry V** 1-3 May be repeated for credit. Selected current developments.
- 531 Advanced Physical Chemistry I 3** Classical physical chemistry including basic thermodynamics and kinetics; an introductory discussion of surface chemistry and electrochemistry. Recommended preparation: CHEM 331 or equivalent.

Department of Civil and Environmental Engineering

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Professor and Department Chair, B. Muhunthan; Professors, M. E. Barber, D. A. Bender, C. S. Claiborn, W. F. Cofer, J. D. Dolan, M. A. Hossain, B. K. Lamb, P. Qiao, R. J. Watts, M. P. Wolcott, D. R. Yonge; Associate Professors, M. Beutel, L. Haselbach, T. Jobson, H. Liu, V. Yadama Assistant Professors, J. Adam, S. Brown,, J. Petrie, T. VanReken, H. Wen; Clinical Assistant Professors, S. Allena, K. Olsen.

Civil engineers plan, design, construct, and operate the physical works and facilities essential to modern life. Civil engineers are responsible not only for creating the facilities required by a modern civilization, but also are committed to the conservation and preservation of the environment. Examples of these facilities include bridges, highways, buildings, airports, flood control structures, purification plants for drinking water, waste treatment and disposal facilities, offshore structures, tunnels, irrigation systems, space satellites, and launching facilities.

The program leading to the Bachelor of Science degree in Civil Engineering is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET).

The mission of the undergraduate program of the Department of Civil and Environmental Engineering is to provide a premier undergraduate education in civil engineering that prepares our graduates to contribute effectively to the profession and society, for advanced study, and for life-long learning; to conduct world-class disciplinary and interdisciplinary research that is integrated with both graduate and undergraduate education in selected areas of excellence; and to serve a diverse constituency through technology transfer, public service, and outreach.

The objectives for undergraduates of our undergraduate program are as follows: 1) that they draw upon their civil engineering technical foundation to perform experimental measurements, quantitative analysis, and/or engineering design and construction, as required in their professional careers; 2) that they pursue their careers with ethical behavior and professionalism and grow into positions of leadership; 3) that they grow in their breadth and depth of knowledge and experience, adapting to changes in technology and society; and 4) that they communicate in a professional manner with others in a variety of settings.

Courses can be selected to provide in-depth studies in environmental, geotechnical, hydraulic, structural, construction, and/or transportation engineering.

Because design and planning are essential in the civil engineering profession, these activities are introduced in early C E courses. As students advance, they face open-ended assignments with alternative solutions, feasibility studies, safety considerations, economics, social and environmental impacts, and other concerns that test their creative ability. All students complete a senior capstone design class in which much of earlier course work is applied.

- 532 Advanced Physical Chemistry II 3** Introduction to quantum mechanics; postulates of quantum mechanics; exact solutions and approximation methods. Recommended preparation: CHEM 332 or equivalent.
- 534 Chemical Statistical Mechanics 3** Statistical theory of thermodynamic variables and chemical equilibrium; calculation of equilibrium properties from spectral data; fluctuations about equilibrium; quantum statistics.
- 536 Quantum Chemistry 3** Course Prerequisite: CHEM 532. Quantum mechanics applied to chemical problems: states of atoms and molecules, transitions and spectra, ladder operators and many electron methods.
- 537 Advanced Topics in Physical Chemistry V 1-3** May be repeated for credit. Selected subjects; irreversible thermodynamics; chemical bonding; NMR; ligand field theory; x-ray diffraction; neutron diffraction. Cooperative: Open to UI degree-seeking students.
- 540 Physical Organic Chemistry 3** Course Prerequisite: CHEM 542. The major classes of organic reaction mechanisms and their significance; kinetics and introductory theory. Cooperative: Open to UI degree-seeking students.
- 542 Advanced Organic Chemistry 3** Synthesis of organic compounds; recent developments from current literature.
- 543 Bioorganic Chemistry 3** Course Prerequisite: CHEM 542. Chemistry of biological systems, medicinal chemistry, protein chemistry, enzyme mechanisms and inhibitors.
- 544 Advanced Topics in Organic Chemistry V 1-3** May be repeated for credit. Current research in organic chemistry. Cooperative: Open to UI degree-seeking students.
- 545 Synthetic Organic Chemistry 3** Course Prerequisite: CHEM 542. Modern synthetic methods and strategies; detailed reaction mechanisms, reaction scope and issues in catalysis will be discussed. Cooperative: Open to UI degree-seeking students.
- 546 Spectroscopic Identification of Organic Compounds 3** Structural interpretation of mass spectrometry and IR, UV-VIS and NMR spectrometry of small molecule organic compounds.
- 550 Special Topics in Nuclear Processes and Radioactive Waste Management V 1-3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By instructor permission. Fundamental chemistry of the nuclear industry, chemical processing and waste management.
- 555 Teaching Chemistry 1** Teaching chemistry; workshops for new graduate teaching assistants in chemistry focusing on tutorials and labs.
- 564 Molecular Phenomena 3** Phenomena which yield information on structures, energy levels, and interactions of molecules in solid, liquid, and gaseous phases.
- 572 Enzyme Reaction Mechanisms 3** Course Prerequisite: CHEM 542. Methods used to explore enzyme mechanisms; how enzymes catalyze reactions; overview of enzyme cofactors and exploration of differing classes of enzyme catalyzed reactions.
- 581 Environmental Chemistry I 3** Chemistry of natural and pollutant species and their reactions in the atmospheric environment.
- 590 Introduction to Research Topics 1** Presentation and description of research areas and projects of current interest to faculty. S, F grading.
- 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 1** 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 V 1-18** May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V 1-18** May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

All seniors are required to take the Fundamentals of Engineering (FE) exam prior to graduation. Two purposes of this exam are: (1) It is a required step in becoming a professional engineer; and (2) It serves as an assessment tool for meeting the department's objectives.

Because of the ever-increasing knowledge required to practice at high levels of competence in the specialized branches of civil engineering, an educational preparation of five or more years of college study is becoming more important. By an appropriate choice of electives the undergraduate curriculum may be integrated with a graduate program to provide a continuous schedule of studies leading to both the bachelor's and master's degrees.

The department offers courses of study leading to the degrees of Bachelor of Science in Civil Engineering, Master of Science in Civil Engineering, Master of Science in Environmental Engineering, and Doctor of Philosophy (Civil Engineering). The department participates in interdepartmental programs leading to the degrees of Master of Science in Environmental Science, and Master of Regional Planning.

Computer Requirement

All incoming Civil and Environmental Engineering students are required to purchase laptop computers. Please contact the department for details and specifications and/or visit http://www.ce.wsu.edu/laptop_requirements.htm.

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 for certification under the Degree Programs. The Admissions Office will handle admissions applications from transfer students and the Department of Civil & Environmental Engineering will handle certification applications.

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 schedule of studies. For details on specific requirements for the various areas of specialty, visit <http://www.ce.wsu.edu/Grads/ceDef.htm>.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

CIVIL ENGINEERING (127 HOURS)

At least 50 of the total hours required for this degree must be in 300-400-level courses. None of the courses listed below may be taken on a pass, fail

basis and a grade of C or better in all CE courses is required for graduation.

Certification Requirements:

Students who will be completing at least 45 semester hours of course work at the end of the semester including CE 211, MATH 171, 172, and PHYSICS 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 depends upon the available resources and facilities. The best qualified students, based on cumulative gpa and grades in the prerequisite courses listed above, as well as all math, science and engineering courses taken to date, will be certified into the department until the carrying capacity is reached.

Experiential Requirement

Students within the Department of Civil and Environmental Engineering must complete one of the following experiential requirements:

1. An internship of at least eight weeks duration, with at least one credit of CE 495.
2. A research position of at least eight weeks duration under the supervision of a departmental faculty member or approved mentor, with at least one credit of CE 499.
3. Study abroad for six or more credit hours. International students in the Department of Civil and Environmental Engineering will meet this requirement through their study in the United States.
4. Participation in a recognized ROTC program. Veterans in the Department of Civil and Environmental Engineering will have met this requirement through their prior service in the armed forces.
5. A leadership or service experience of at least one semester, subject to departmental approval, with at least one credit of CE 499.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
ENGR 120	2
HISTORY 105 [ROOT]	3
MATH 171 [QUAN] ¹	4

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 102 [BSCI] or MBIOS 101 [BSCI]	4
Creative & Professional Arts [ARTS]	3
ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 172 ¹	4
MATH 220	2

Second Year

<i>First Term</i>	<i>Hours</i>
CE 211 ¹	3
COM 102 [COMM] or H D 205 [COMM]	3
Diversity [DIVR]	3
MATH 273	2
PHYSICS 201 [PSCI] ¹	4

<i>Second Term</i>	<i>Hours</i>
C E 215	3
CHEM 106, GEOLOGY 102, or PHYSICS 202 ²	4
E E 221	2
MATH 360 or 370	3
ME 212	3
ME 220	1

Complete Writing Portfolio

Third Year

<i>First Term</i>	<i>Hours</i>
CE 302	2
CE 315	3
CE 317 [M]	3
CE 330	3
CE 341	3
CST M 254	2

<i>Second Term</i>	<i>Hours</i>
CE 303	2
CE 322	3
CE 351	3
E E 304 or ME 370	2
ENGLISH 402	3
MATH 315	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
CE 463	3
CE 480 [M]	1
CE Electives ³	9
CE Laboratory ³	3

<i>Second Term</i>	<i>Hours</i>
CE 465 [M] or Integrative Capstone [CAPS] ⁴	3
CE 466	1
CE Elective ³	9
Humanities [HUM]	3

¹ Classes that must be completed prior to certification.

² Chem 106 strongly recommended for an Environmental and Infrastructure Engineering emphasis; Geol 102 strongly recommended for a Structural Engineering emphasis.

³ Elective courses: The total credit hours for elective courses must be distributed such that at least three courses, not including the lab, are DES (design emphasis) in order for a student to qualify for a degree. CE electives including CE laboratory will be selected such that at least one designated as DES should be chosen from two different areas (environmental, geotechnical, hydraulics, structural, and transportation/pavement).

⁴ Course to be taken in final semester.

ENVIRONMENTAL EMPHASIS (ALTERNATE SENIOR YEAR)

The alternate senior year schedule shown below is offered to those students interested in studying with an environmental engineering emphasis. This would substitute for the senior year above and complete the study schedule for the Bachelor of Science degree in Civil Engineering.

Fourth Year

<i>First Term</i>	<i>Hours</i>
CE 402	3
CE 415	3
CE 418	3
CE 463	3
CE 480 [M]	1

<i>Second Term</i>	<i>Hours</i>
CE 401	3
CE 403 or 419	3
CE 442	3

CE 465 [M] or Integrative Capstone [CAPS] ¹	3
CE 466	1

¹ CE 465 must be taken in the final semester.

INFRASTRUCTURE ENGINEERING EMPHASIS (ALTERNATE SENIOR YEAR)

The alternate senior year schedule shown below is offered to those students interested in studying with an infrastructure engineering emphasis. This would substitute for the senior year above and complete the study schedule for the Bachelor of Science degree in Civil Engineering.

Fourth Year

<i>First Term</i>	<i>Hours</i>
CE 400	3
CE 430	3
CE 433 or 425	3
CE 463	3
CE 474	3
CE 480 [M]	1
<i>Second Term</i>	<i>Hours</i>
CE 434	3
CE 435	3
CE 465 [M] or Integrative Capstone [CAPS] ¹	3
CE 466	1
CE 473	3

¹ CE 465 must be taken in the final semester.

STRUCTURAL ENGINEERING (ALTERNATE SENIOR YEAR)

The alternate senior year schedule shown below is offered to those students interested in studying with a structural engineering emphasis. This would substitute for the senior year above and complete the study schedule for the Bachelor of Science degree in Civil Engineering.

Fourth Year

<i>First Term</i>	<i>Hours</i>
CE 430	3
CE 433	3
CE 436	3
CE 463	3
CE 480 [M]	1
CE Elective	3
<i>Second Term</i>	<i>Hours</i>
CE 414	3
CE 431 or 434	3
CE 435	3
CE 465 [M] or Integrative Capstone [CAPS] ¹	3
CE 466	1

¹ CE 465 must be taken in the final semester.

WATER RESOURCES EMPHASIS (ALTERNATE SENIOR YEAR)

The alternate senior year schedule shown below is offered to those students interested in studying with a water resources emphasis. This would substitute for the senior year above and complete the study schedule for the Bachelor of Science degree in Civil Engineering.

Fourth Year

<i>First Term</i>	<i>Hours</i>
CE 404	3
CE 451	3
CE 456	3
CE 463	3
CE 475	3
CE 480 [M]	1
<i>Second Term</i>	<i>Hours</i>
CE 416	3
CE 460	3
CE 465 [M] or Integrative Capstone [CAPS] ¹	3
CE 466	1
CE Elective ²	3

¹ CE 465 must be taken in the final semester.

² Elective courses: The total credit hours for elective courses must be distributed such that at least three courses, not including the lab, are DES (design emphasis) in order for a student to qualify for a degree. C E electives including C E laboratory will be selected from at least two different areas (environmental, geotechnical, hydraulics, structural, and transportation/pavement).

Description of Courses

CIVIL ENGINEERING

CE

211 Statics 3 Course Prerequisite: MATH 172 or concurrent enrollment, or MATH 182 or concurrent enrollment; PHYSICS 201 or concurrent enrollment, or PHYSICS 205 or concurrent enrollment. Engineering mechanics concepts; force systems; static equilibrium; centroids, centers of gravity; shear and moment diagrams; friction; moments of inertia. Cooperative: Open to UI degree-seeking students.

215 Mechanics of Materials 3 Course Prerequisite: CE 211 with a C or better. Concepts of stress, strain, and their relationships; axial loads, torsion and bending; combined stress; properties of materials; columns, repeated loadings. Cooperative: Open to UI degree-seeking students.

302 Introduction to Surveying 2 (1-3) Course Prerequisite: MATH 171; certified civil engineering or construction management major. Surveying data collection, analysis and application; measuring distances and angles using total stations and global positioning systems; analysis of errors in measurements.

303 Civil Engineering Computer Applications 2 (1-3) Course Prerequisite: Certified major in Civil Engineering. Advanced civil engineering computer applications including Geographical Information Systems, Revit, and Excel.

315 Fluid Mechanics 3 Course Prerequisite: ME 212; certified major in Civil Engineering. Fluid statics, laminar and turbulent flow, similitude, pipe flow, boundary layer, lift and drag and measurement techniques.

317 [M] Geotechnical Engineering I 3 (2-3) Course Prerequisite: CE 215 with a C or better; CE 315 or concurrent enrollment; certified major in Civil Engineering. Structure, index properties, and classification of soils; compaction; effective stress; seepage; consolidation and shear strength.

322 Transportation Engineering 3 Course Prerequisite: MATH 360 or concurrent enrollment or MATH 370 or concurrent enrollment; CE 302 or concurrent enrollment; certified major in Civil Engineering. Road-vehicle interaction, geometric design, traffic flow and queuing theory, highway capacity and level of service, and introduction to pavement design and materials.

330 Introduction to Structural Engineering 3 Course Prerequisite: CE 215 with a C or better; certified major in CE. Introduction to structural analysis and design; structural modeling; design philosophies; deflections; indeterminate analysis by the Force Method.

341 Introduction to Environmental Engineering 3 Course Prerequisite: CHEM 105. Impact of pollutants on the environment; pollution sources and sinks; engineering aspects of air and water quality; introduction to pollution control.

351 Water Resources Engineering 3 Course Prerequisite: CE 315 with a C or better; certified major in Civil Engineering. Application of fluid mechanics to hydraulic infrastructure, principles of open channel flow, and introduction to surface and ground water hydrology.

400 Highway Materials Engineering 3 (2-3) Course Prerequisite: MATH 360 or concurrent enrollment or MATH 370 or concurrent enrollment; senior standing; certified major in Civil Engineering. Basic properties and mix designs of aggregates, asphalt, concrete and recycled materials; quality assurance, quality control.

401 Climate Change Science and Engineering 3 Course Prerequisite: CHEM 105; MATH 172; PHYSICS 201. Engineering solutions for climate change problems; basic science of climate change, engineering for mitigation and adaptation, and climate change policy.

402 Applied Meteorology 3 Course Prerequisite: MATH 172 or 182; PHYSICS 201. Atmospheric physical behavior across spatial scales linking concepts of meteorological phenomena to engineering design principles. Credit not granted for both CE 402 and CE 502.

403 Air Quality Management 3 Air pollution from the perspective of an environmental manager; regulatory framework, management strategies, monitoring, modeling tools, and control technologies.

- 405 Sustainability: Green Engineering** 3 Course Prerequisite: Senior standing; certified major in Architecture, Construction Management, Civil Engr, Electrical Engr, Bioengineering, Chemical Engr, Mechanical Engr, Computer Science, Materials Science Engr, or Computer Engr. Focus on the LEED green building rating system with topics on sustainable site selection, alternative transportation, heat island effect, light pollution, water and energy efficiency/use, regional and global climate/air issues, use/reuse of many material and resources, and indoor environmental quality.
- 414 Structural Design Laboratory 3** (2-3) Course Prerequisite: CE 330; MATH 360 or concurrent enrollment, or MATH 370 or concurrent enrollment; certified major in Civil Engineering. Senior lab requiring integration of previous course work into the execution of design projects and the assessment of experimental test data; design codes and standards, load determination, load path, influence lines; applications in concrete, masonry, steel, and wood.
- 415 Environmental Measurements 3** (1-6) Course Prerequisite: CE 341; MATH 360 or concurrent enrollment or MATH 370 or concurrent enrollment; certified major in Civil Engineering. Theory and laboratory measurement techniques used in analyzing environmental quality parameters. Credit not granted for both CE 415 and CE 515. Required preparation must include CE 341.
- 416 Hydraulic Engineering Laboratory 3** (1-6) Course Prerequisite: CE 315; MATH 360 or concurrent enrollment or MATH 370 or concurrent enrollment; certified major in Civil Engineering. Experiments related to fluid flow principles and their application to hydraulic engineering.
- 418 Hazardous Waste Engineering V** 3-4 Course Prerequisite: CE 341 with a C or better; certified major in Civil Engineering. Hazardous waste properties, chemodynamics, and health effects; introduction to risk assessment and hazardous waste remediation. Credit not granted for both CE 418 and CE 518. Cooperative: Open to UI degree-seeking students.
- 419 Hazardous Waste Treatment 3** Course Prerequisite: CE 418 with a C or better; certified major in Civil Engineering. Principles of operation and application of processes in design of technologies used in hazardous waste treatment and remediation. Credit not granted for both CE 419 and CE 519.
- 425 Soil and Site Improvement 3** Course Prerequisite: CE 317 with a C or better; certified major in Civil Engineering. Compaction theory and methods; deep densification of soils; advanced consolidation theory, preloading, vertical drains, chemical stabilization, grouting; design with geosynthetics. Credit not granted for both CE 425 and CE 525. Required preparation must include CE 317. Cooperative: Open to UI degree-seeking students.
- 430 Analysis of Indeterminate Structures 3** Course Prerequisite: CE 330 with a C or better; MATH 220; E E 221; certified major in Civil Engineering. Stiffness methods for the analysis of trusses, beams, and frames; matrix models; and computer applications.
- 431 Structural Steel Design 3** Course Prerequisite: CE 330 with a C or better; certified major in Civil Engineering. Design of steel structures by load and resistance factor design (LRFD); behavior and design of beams, columns, tension members and connections.
- 433 Reinforced Concrete Design 3** Course Prerequisite: CE 330 with a C or better; certified major in Civil Engineering. Behavior, analysis, and design of reinforced concrete structures; flexure; shear; bond; serviceability requirements; design of beams, columns, and slabs.
- 434 Prestressed Concrete and Reinforced Masonry Design 3** Course Prerequisite: CE 433 with a C or better; certified major in Civil Engineering. Behavior, analysis, and design of pretensioned and post-tensioned prestressed concrete structures; behavior and design of reinforced masonry structures. Credit not granted for both CE 434 and CE 534. Cooperative: Open to UI degree-seeking students.
- 435 Foundations 3** Course Prerequisite: CE 317 with a C or better; certified major in Civil Engineering. Site investigation; bearing capacity, settlement and design of shallow foundations, piles and piers; design of retaining walls.
- 436 Design of Timber Structures 3** Course Prerequisite: CE 330 with a C or better; certified major in Civil Engineering. Engineering properties of wood materials; analysis and design of members, connections, trusses, shearwalls and structural diaphragms; durability and moisture effects on engineered wood products. Cooperative: Open to UI degree-seeking students.
- 437 Structural Composites Design 3** Course Prerequisite: CE 330. Behavior, analysis and design of fiber-reinforced plastic composite structures; micro, ply and laminate mechanics; reinforcement of concrete and wood.
- 442 Water and Wastewater Treatment Design 3** Course Prerequisite: CE 341 with a C or better; certified major in Civil Engineering, or Environmental Science. Water and wastewater treatment processes and design.
- 450 Hydraulic Engineering Design 3** Course Prerequisite: CE 351 with a C or better; certified major in Civil Engineering. Hydraulic design and planning of facilities associated with gravity controlled and pressurized flow. Cooperative: Open to UI degree-seeking students.
- 451 Open Channel Flow 3** Course Prerequisite: CE 351 with a C or better; certified major in Civil Engineering. Steady, non-uniform flow; controls and transitions in fixed-bed channels. Credit not granted for both CE 451 and CE 551.
- 456 Sustainable Development in Water Resources 3** Course Prerequisite: CE 351 with a C or better; certified major in Civil Engineering. Sources of freshwater in Pacific Northwest; water demands; climate change impacts on water availability; approaches for developing sustainable water yield.
- 460 Advanced Hydrology 3** Course Prerequisite: CE 351 with a C or better; certified major in Civil Engineering. 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 CE 460 and CE 560.
- 463 Engineering Administration 3** Engineering economy; annual cost, present worth, rate of return, and benefit-cost ratio in engineering decision making; basic contract law.
- 465 [M] Integrated Civil Engineering Design 3** (1-6) Course Prerequisite: Senior standing; certified major in Civil Engineering. Civil engineering applications to planning and design; problem synthesis, data analysis, decision making and reporting; design of complete projects that include local and world wide problems through interdisciplinary teams.
- 466 Fundamentals of Engineering Examination Review 1** Course Prerequisite: Senior standing; certified major in Civil Engr, Electrical Engr, Bioengineering, Chemical Engr, Mechanical Engr, Computer Science, Materials Science Engr, or Computer Engr. Review of topics to prepare for the Fundamentals of Engineering Examination. S, F grading.
- 473 Pavement Design 3** Course Prerequisite: CE 317; ECONS 101 or ECONS 102; CE 322 or concurrent enrollment. Pavement performance evaluation, material characterization, traffic analysis, pavement structural response analysis, transfer function application, and pavement design procedures for both flexible and rigid pavements.
- 475 Groundwater 3** (2-3) Course Prerequisite: CE 317 or GEOLOGY 315; MATH 140 or concurrent enrollment, or MATH 172 or 182 or concurrent enrollment. Introduction to groundwater occurrence, movement, quality, and resource management, emphasizing physical and biogeochemical principles. Field trip required. (Crosslisted course offered as GEOLOGY 475, CE 475).
- 480 [M] Ethics and Professionalism 1** Course Prerequisite: Senior status; certified major in Civil Engineering. Professional aspects of civil engineering.
- 495 Engineering Internship V** 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By interview only. Placement in a professional, governmental, or industrial situation for specialized or general experience. S, F grading.
- 498 Special Topics in Civil Engineering V** 1-4 May be repeated for credit; cumulative maximum 6 hours. Contemporary topics in civil engineering.

- 499 Special Problems V** 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Advanced Topics in Transportation Engineering V** 2-4 May be repeated for credit; cumulative maximum 9 hours. Special topics course in transportation engineering. Cooperative: Open to UI degree-seeking students.
- 502 Applied Meteorology 3** Atmospheric physical behavior across spatial scales linking concepts of meteorological phenomena to engineering design principles. Credit not granted for both CE 402 and CE 502.
- 503 Air Quality Management 3** Air pollution from the perspective of an environmental manager; regulatory framework, management strategies, monitoring, modeling tools, and control technologies.
- 504 Sustainability Engineering I 3** Green building and sustainable development topics including low impact development (LID) stormwater design and environmental life cycle assessment (LCA).
- 505 Sustainability: Green Engineering 3** Focus on the LEED green building rating system with topics on sustainable site selection, alternative transportation, heat island effect, light pollution, water and energy efficiency/use, regional and global climate/air issues, use/reuse of many material and resources, and indoor environmental quality.
- 506 Theory and Measurement of Turbulent Fluxes 3** Fundamental concepts of turbulence and turbulent fluxes in the atmospheric surface layer, the statistical description of turbulence and turbulent fluxes, eddy covariance systems, and post-processed of flux data.
- 507 Sustainability: Life Cycle Assessment 3** Principles of life cycle assessment (LCA), environmental impacts categories, LCA system models, and methods for life cycle inventory.
- 509 Numerical Modeling of Geomaterials 3** Modeling of the response of geomaterials to changes in imposed stresses or strains under both static and dynamic conditions.
- 510 Advanced Geomaterial Characterization 3** Advanced mechanics of geomaterials; compressibility, concept of stress and strain; shear strength, stress/strain and time-dependent behavior; dynamic properties.
- 511 Advanced Topics in Geotechnical Engineering V** 2-4 May be repeated for credit; cumulative maximum 9 hours. Soil dynamics, theoretical soil mechanics, numerical methods in soil mechanics, and geohydrology, engineering geology, cold regions geoengineering. Required preparation must include CE 317. Cooperative: Open to UI degree-seeking students.
- 512 Dynamics of Structures 3** Equations of motion, free vibration, damping mechanisms, harmonic, impulse, and seismic loading; shock and seismic response spectra, time and frequency domain analysis, modal analysis, structural dynamics in building codes. Cooperative: Open to UI degree-seeking students.
- 514 Advanced Mechanics of Materials 3** Elastic stress-strain relations, shear center, unsymmetrical bending, curved beams, elastic stability, elastically supported beams, energy methods, thin plates, shells. Cooperative: Open to UI degree-seeking students.
- 515 Environmental Measurements 3** (1-6) Theory and laboratory measurement techniques used in analyzing environmental quality parameters. Credit not granted for both CE 415 and CE 515. Required preparation must include CE 341.
- 517 Mechanics of Sediment Transport 3** Cohesive and non-cohesive sediments; initiation of sediment motion; sediment transport; suspended and bed load entrainment; models of sediment transport for alluvial and gravel bed streams, sediment-flow interaction; river morphology and ecological restoration. Cooperative: Open to UI degree-seeking students.
- 518 Hazardous Waste Engineering V** 3-4 Hazardous waste properties, chemodynamics, and health effects; introduction to risk assessment and hazardous waste remediation. Credit not granted for both CE 418 and CE 518. Cooperative: Open to UI degree-seeking students.
- 519 Hazardous Waste Treatment 3** Principles of operation and application of processes in design of technologies used in hazardous waste treatment and remediation. Credit not granted for both CE 419 and CE 519.
- 524 Geotechnical Earthquake Engineering 3** Faulting and seismicity; site response analysis; probabilistic seismic hazard assessment; influence of soil on ground shaking; response spectra; soil liquefaction; seismic earth pressures; seismic slope stability; earthquake resistant design. Cooperative: Open to UI degree-seeking students.
- 525 Soil and Site Improvement 3** Compaction theory and methods; deep densification of soils; advanced consolidation theory, preloading, vertical drains, chemical stabilization, grouting; design with geosynthetics. Credit not granted for both CE 425 and CE 525. Required preparation must include CE 317. Cooperative: Open to UI degree-seeking students.
- 527 Engineering Properties of Soils 3** Physical properties, compressibility and consolidation, shear strength, compaction, saturated and unsaturated soils, laboratory and field methods of measurement, relations of physical and engineering properties, introduction to critical-state soil mechanics. Required preparation must include CE 317. Cooperative: Open to UI degree-seeking students.
- 530 Advanced Design of Steel Structures 3** Plate girder design; local and global buckling; plastic collapse analysis; shear and Moment-resisting connections; eccentrically-loaded connections. Required preparation must include CE 431. Cooperative: Open to UI degree-seeking students.
- 531 Probability and Statistical Models in Engineering 3** Engineering applications of probability and statistics; Monte Carlo simulation; model estimation and testing; probabilistic characterizations of loads and material properties; risk and reliability analyses. Cooperative: Open to UI degree-seeking students.
- 532 Finite Elements 3** Theory of finite elements; applications to general engineering systems considered as assemblages of discrete elements. (Crosslisted course offered as CE 532, ME 532). Cooperative: Open to UI degree-seeking students.
- 533 Advanced Reinforced Concrete Design 3** Composite design; slab design; limit state design; footings; retaining walls; deep beams; brackets and corbels; torsion; seismic design; shear walls. Required preparation must include CE 433. Cooperative: Open to UI degree-seeking students.
- 534 Prestressed Concrete and Reinforced Masonry Design 3** Behavior, analysis, and design of pretensioned and post-tensioned prestressed concrete structures; behavior and design of reinforced masonry structures. Credit not granted for both CE 434 and CE 534. Cooperative: Open to UI degree-seeking students.
- 535 Advanced Finite Elements 3** Plate and shell analysis; nonlinear solution methods for finite strain/rotation and nonlinear materials.
- 536 Nondestructive Testing of Structural Materials 3** Principles of nondestructive testing applied to wood-based materials, steel, concrete, and masonry. (Crosslisted course offered as CE 536, MSE 549).
- 537 Advanced Topics in Structural Engineering 3** May be repeated for credit; cumulative maximum 9 hours. Elastic stability, plates and shells, other relevant topics.
- 538 Earthquake Engineering 3** Seismology, size of earthquakes, seismic ground motion, seismic risk, behavior of structures subjected to earthquake loading seismic response spectra, seismic design codes, lateral force-resisting systems, detailing for inelastic seismic response.
- 539 Advanced Design of Timber Structures 3** Engineering properties of wood materials; theory and design of wood composites, connections and load-sharing systems; performance criteria and durability. Required preparation must include CE 436.
- 540 Instrumental Analysis of Environmental Contaminants 3** (1-6) Course Prerequisite: CE 515. Theory and methods of analysis of water and water suspensions for contaminants using electrometric, spectrophotometric, and chromatographic techniques.

- 541 Physicochemical Water and Wastewater Treatment** 3 Principles of physical and chemical operations used in water and wastewater treatment, including chemical reactor theory, sedimentation, filtration, precipitation, mass transfer, coagulation/flocculation, disinfection, adsorption and ion exchange. Recommended preparation: CE 442. Cooperative: Open to UI degree-seeking students.
- 542 Biochemical Wastewater Treatment** 3 Principles of biochemical operations used in wastewater treatment including biochemical energetics, kinetics, activated sludge and fixed film reactors, nutrient removal, and sludge handling and treatment. Cooperative: Open to UI degree-seeking students.
- 543 Advanced Topics in Environmental Engineering Practice** V 1-4 May be repeated for credit; cumulative maximum 9 hours. Analysis and evaluation of air/water/soil pollution problems, new measurement methods, hazardous waste treatment, global climate change, and water/wastewater treatments.
- 550 Hydroclimatology** 3 Water and energy budgets as they relate to climate, dynamics; and remote sensing, statistical, and modeling techniques for hydroclimatology.
- 551 Open Channel Flow** 3 Steady, non-uniform flow; controls and transitions in fixed-bed channels. Credit not granted for both CE 451 and CE 551.
- 552 Advanced Topics in Hydraulic Engineering** V 1-3 May be repeated for credit; cumulative maximum 9 hours. Cavitation, air entrainment, hydraulic machinery, similitude, mixing in rivers and estuaries, hydraulic design. Required preparation must include CE 351.
- 555 Natural Treatment Systems** 3 Principles and design procedures of natural systems for wastewater treatment for agricultural and non-agricultural applications. (Crosslisted course offered as CE 555, BSYSE 555).
- 560 Advanced Hydrology** 3 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 CE 460 and CE 560.
- 567 Properties of Highway Pavement Materials** 3 Physical and mechanical properties of asphalt and Portland cement concrete materials; design of asphalt concrete mixes; introduction to viscoelastic theory; characterization methods, emphasizing fatigue, rutting, and thermal cracking; modification and upgrading techniques. Three 1-hr lect a wk and variable number of lab hrs for demonstration. Cooperative: Open to UI degree-seeking students.
- 572 Advanced Pavement Design and Analysis** 3 Design of new and rehabilitated asphalt and Portland Cement concrete pavements; mechanistic-empirical design procedures, performance models; deflection-based structural analysis, overlay design, environmental effect; long-term pavement performance (LTPP), and introduction to research topics in pavement engineering. Required preparation must include CE 473. Cooperative: Open to UI degree-seeking students.
- 580 Graduate Seminar** 1 May be repeated for credit; cumulative maximum 2 hours. Lectures and reports on current developments in research and practice.
- 583 Aquatic Chemistry** 3 Chemical principles as applied to natural environmental system, water supply and pollution and control engineering. (Crosslisted course offered as CE 583, BSYSE 560). Cooperative: Open to UI degree-seeking students.
- 584 Environmental Microbiology** 3 Provides a fundamental understanding of microbiology to engineering and environmental science students; cell structure and metabolism; microbial ecology and diversity.
- 585 Aquatic System Restoration** 3 Study of natural, damaged and constructed ecosystems with emphasis on water quality protection and restoration of lakes, rivers, streams and wetlands. (Crosslisted course offered as CE 585, BSYSE 554, ENVR SCI 585). Required preparation must include CHEM 345; MBIOS 101. Required preparation must include CHEM 345; MBIOS 101.
- 586 Bioremediation of Hazardous Waste** 3 Applications of bioremediations to in situ subsurface treatment of hazardous waste; subsurface microbial degradation as related to microbial ecology.
- 588 Atmospheric Turbulence and Air Pollution Modeling** 3 Physical aspects of atmospheric turbulence, theoretical developments in atmospheric diffusion, and applied computer modeling with regulatory and research models.
- 589 Atmospheric Chemical and Physical Processes** 3 Processes of removal of pollutants from the atmosphere; radical chain reactions, particle formation, model calculations.
- 590 Spectroscopy and Radiative Transfer of the Atmosphere** 3 Concepts of radiative transfer and molecular spectra in the troposphere and stratosphere with applications to trace gas measurements.
- 591 Aerosol Dynamics and Chemistry** 3 Chemical and physical properties of atmospheric aerosols; sources, sinks, and transformation processes.
- 593 Polymer Materials and Engineering** 3 Preparation and structure-property relationship of polymer materials with emphasis on fracture mechanics and toughening. (Crosslisted course offered as CE 593, MSE 543). Required preparation must include MSE 402. Required preparation must include MSE 402.
- 594 Natural Fibers** 3 Structural aspects and properties of natural fibers including anatomy, ultrastructure, and chemistry. (Crosslisted course offered as CE 594, MSE 544).
- 595 Polymer and Composite Processing** 3 Polymer and composite processing from fundamental principles to practical applications. (Crosslisted course offered as CE 595, MSE 545).
- 596 Engineered Wood Composites** 3 Theory and practice of wood composite materials, manufacture and development. (Crosslisted course offered as CE 596, MSE 546).
- 597 Polymers and Surfaces for Adhesion** 3 Physical chemistry of polymers and surfaces needed to understand interface morphology, adhesion mechanisms and bond performance. (Crosslisted course offered as CE 597, MSE 547). Required preparation must include MSE 402, or 404. Required preparation must include MSE 402 or 404.
- 598 Natural Fiber Polymer Composites** 3 Fundamentals, development and application of composite materials produced from polymers reinforced with natural fibers and wood as major components. (Crosslisted course offered as CE 598, MSE 548).
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

The Edward R Murrow College of Communication

communication.wsu.edu
Student Services, Murrow East 226
509-335-7333

Founding Dean, L. Pintak; Associate Dean of Academics, P. David; General Manager of Murrow Public Media, M. Marcelo; Professors, E. Austin, E. L. James, B. Pinkleton, A. S. Tan; Lester Smith Distinguished Professor, G. Johnson; Associate Professors, J. Drzewiecka, D. Hindman, E. Hindman, S. Hust, T. Norton, J. Peterson; Assistant Professors, R. Bailey, M. Beam, P. Borah, A. Boyd, J. Kim, B. Oppegaard, C. Yan; Clinical Associate Professors, B. Atwood, R. Kelly, R. Taflinger; Clinical Assistant Professors, R. Cooney, D. Grewe, E. Hoffman, T. Paveglio, L. Paxson, B. Shors; Instructors, D. Petek, W. Popeski, P. Wadleigh; K. Rhoden; Lecturer, M. McLaughlin; Associate Director of Student Services, L. Laughter; Director of Special Projects, L. Ganders.

Communication is a vital force in society. New practices and techniques in communication require that instruction and research explain these phenomena and prepare students for careers in this exciting area that is being shaped by new communication technologies.

The curricula of The Edward R. Murrow College of Communication lead to the degrees of Bachelor of Arts in Communication, Master of Arts in Communication and Doctor of Philosophy (Communication).

Students may major in communication, with an emphasis in Journalism and Media Production (multimedia journalism and broadcasting), Strategic Communication (advertising and public relations), or Communication and Society (communication technology and science communication). The undergraduate program reflects a blending of emphasizes professional training, liberal arts, theory, and research courses grounded in communication theories and principles.

The College cooperates with the College of Agricultural, Human, and Natural Resource Sciences in support of the agricultural communications option.

Supplementing the classrooms and laboratories of the Murrow College are the professional internship programs, the Murrow News Service, Northwest Public Radio and Public Television facilities, and student publications, including a daily newspaper.

Students graduating from The Edward R. Murrow College of Communication will be able to: 1) effectively and efficiently collect and evaluate information utilizing traditional methods and new technologies; 2) communicate clearly and succinctly, in both written and verbal forms, to varied audiences; 3) carefully observe, interpret and accurately portray events, information, and activities to a diverse society; 4) shape messages to reflect the differing demands and strengths of different and developing media; 5) consider the legal, social, and economic contexts in which media operate and evolve; 6) examine the role and effects of media in contemporary society; 7) understand the ethical and civic responsibilities that accompany a lifelong career in communication in a democratic society; 8) understand the professionalism required to be successful in a highly competitive industry, and 9) compete successfully in regional and national job markets.

Undergraduate Minor

The Murrow College of Communication offers an undergraduate minor in Communication. Students may apply to certify in the minor after they have completed 60 credits and are certified in a major outside The Murrow College of Communication. See the requirements for the Minor in Communications below. Check with The Murrow College Student Services Office for additional information.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

COMMUNICATION AND SOCIETY (120 HOURS)

Certification Requirements

To certify a major in communication, a student must meet the following minimum requirements: (1) Complete COM 101, 105, and 138; (2) Sophomore standing (transfer students should have at least 15 graded credits from courses in residence at WSU); (3) Complete the Murrow College Grammar and Writing exam administered by the College of Communication.

Certification in the Murrow College is based on the following: the number of available seats, the applicant's cumulative WSU gpa, the number of credits completed at the time of application, and the applicant's performance on the Murrow College Grammar and Writing Exam. The top students are certified based on the number of seats available that semester. Transfer course grades will NOT be used to calculate the cumulative WSU gpa. Students transferring into the College with 55 or more hours should complete the certification requirements with in two semesters. All students should certify before earning 90 credit hours.

All majors require a minimum of 48 semester hours in communication.

First Year

<i>First Term</i>	<i>Hours</i>
COM 101	3
COM 138	1
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
COM 102 [COMM]	3
COM 105 [HUM]	3
Social Sciences [SSCI]	3
Electives	3
Apply for and Certify in Major	

Second Year

<i>First Term</i>	<i>Hours</i>
COM 210	3
COM 300	3
Major Specialization ²	3

Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	3 or 4
Electives	3

<i>Second Term</i>	<i>Hours</i>
COMSOC 301	3
Creative & Professional Arts [ARTS]	3
Electives	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
COMSOC 321 [DIVR]	3
COMSOC 324 [M]	3
Electives	9

<i>Second Term</i>	<i>Hours</i>
300-400-level Major Elective or COMSOC 495 ²	3
COM 420	3
Electives	9

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-300-level Major Elective or COMSOC 495 ²	3
300-400-level Electives	3
Integrative Capstone [CAPS]	3
Major Specialization ³	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Major Elective or COMSOC 495 ²	3
COM 470	3
Major Specialization ³	3
Electives	5

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Select 9 credits of 300-400-level major electives not used above or COMSOC 495 internship credits (max. 6 credits of internship) in consultation with advisor.

³ Major Specialization requirement: Select three courses from the list: COMSOC 421, COM 471, COM 464, COMSOC 235, COMSOC 335, COMSOC 485, COMSOC 476, COMSOC 477, COMSOC 478.

JOURNALISM AND MEDIA PRODUCTION (120 HOURS)

Certification Requirements

To certify a major in communication, a student must meet the following minimum requirements: (1) Complete COM 101, 105, and 138; (2) Sophomore standing (transfer students should have at least 15 graded credits from courses in residence at WSU); (3) Complete the Murrow College Grammar and Writing exam administered by the College of Communication.

Certification in the Murrow College is based on the following: the number of available seats, the applicant's cumulative WSU gpa, the number of credits completed at the time of application, and the applicant's performance on the Murrow College Grammar and Writing Exam. The top students are

certified based on the number of seats available that semester. Transfer course grades will NOT be used to calculate the cumulative WSU gpa. Students transferring into the College with 55 or more hours should complete the certification requirements with in two semesters. All students should certify before earning 90 credit hours.

All majors require a minimum of 48 semester hours in communication.

First Year

<i>First Term</i>	<i>Hours</i>
COM 101	3
COM 138	1
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
COM 102 [COMM]	3
COM 105 [HUM]	3
Social Sciences [SSCI]	3
Electives	3
Apply for and Certify in Major	

Second Year

<i>First Term</i>	<i>Hours</i>
COM 210	3
COM 300	3
Creative & Professional Arts [ARTS]	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
COMJOUR 350	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	3 or 4
Electives	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level Electives	3
COMJOUR 333 [M]	3
COMJOUR 390 or COMJOUR 355	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
300-400-level Major Elective or COMJOUR 495 ²	3
COM 415	3
COMJOUR 335	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Major Elective or COMJOUR 495 ²	3
COM 440	3
COMJOUR 425 [M]	3
Integrative Capstone [CAPS]	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Major Elective or COMJOUR 495 ²	3
COMJOUR 475	3

Specialization course ³	3
Electives	5

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Select 9 credits of 300-400-level major electives not used above or COMSOC 495 internship credits (max. 6 credits of internship) in consultation with advisor.

³ Select one specialization course: COMJOUR 433 - Radio News and Production, COMJOUR 455- Advanced TV Production, or COMJOUR 465 – Advanced TV News.

STRATEGIC COMMUNICATION (120 HOURS)

Certification Requirements

To certify a major in communication, a student must meet the following minimum requirements: (1) Complete COM 101, 105, and 138; (2) Sophomore standing (transfer students should have at least 15 graded credits from courses in residence at WSU); (3) Complete the Murrow College Grammar and Writing exam administered by the College of Communication.

Certification in the Murrow College is based on the following: the number of available seats, the applicant’s cumulative WSU gpa, the number of credits completed at the time of application, and the applicant’s performance on the Murrow College Grammar and Writing Exam. The top students are certified based on the number of seats available that semester. Transfer course grades will NOT be used to calculate the cumulative WSU gpa. Students transferring into the College with 55 or more hours should complete the certification requirements with in two semesters. All students should certify before earning 90 credit hours.

All majors require a minimum of 48 semester hours in communication.

First Year

<i>First Term</i>	<i>Hours</i>
COM 101	3
COM 138	1
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
COM 102 [COMM]	3
COM 105 [HUM]	3
Social Sciences [SSCI]	3
Electives	3
Apply for and Certify in Major	

Second Year

<i>First Term</i>	<i>Hours</i>
COM 210	3
COM 300	3
Creative & Professional Arts [ARTS]	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	3 or 4
Electives	3

<i>Second Term</i>	<i>Hours</i>
COMSTRAT 310	3
MKTG 360	3
Electives	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level Electives	3
300-400-level Major Elective or COMSTRAT 495 ²	3
COMSTRAT 381 [M]	3
Specialization Course ³	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Major Elective or COMSTRAT 495 ²	3
Specialization Course ³	3
Electives	9

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Major Elective or COMSTRAT 495 ²	3
Integrative Capstone [CAPS]	3
Specialization Course ³	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
300-400-level Major Elective or COMSTRAT 495 ²	3
Specialization Course ³	3
Electives	8

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Select 12 credits of 300-400-level major electives not used above or COMSTRAT 495 internship credits (max. 6 credits of internship) in consultation with advisor.

³ Students select a specialization and complete the courses required for the specialty. Public Relations Specialization: COMJOUR 333, COMSTRAT 312, COMSTRAT 412 [M], and COMSTRAT 475. Advertising Specialization: COMSTRAT 380, COMSTRAT 382, COMSTRAT 480 [M], and COMSTRAT 476.

Minors

Communication

The minor in communication requires a minimum of 18 hours, 9 of which must be at the 300-400 level and selected from the following courses: COMSTRAT 380, 409, COMJOUR 333, 351, 466, 481, COM 101, 102, 105, 210, 230, 245, 295, 410, 415, 420, 440, 460, 470, 471, COMSOC 235, 302, 321, 324, 421. Nine hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Students may apply to certify in the minor after they have certified in a major outside the Murrow College of Communication. Students must apply to enroll in select courses. Check with the Murrow College Student Services Office for additional information.

Description of Courses

COMMUNICATION

COM

- 101 Media and Society** 3 Mass media's influence in contemporary society.
- 102 [COMM] Communication in an Information Society** 3 Face-to-face and mediated communication in group and professional settings.
- 105 [HUM] Communication in Global Contexts** 3 Communication processes and how they influence human behavior and construction of social reality across global contexts.
- 138 Communication Overview** 1 May be repeated for credit; cumulative maximum 2 hours. Introduces new students to the major, advising, and strategies for academic and personal success. S, F grading.
- 210 [COMM] Multimedia Content Creation** 3 Applied multimedia content creation and evaluation in graphic design, audio, and video production through communication theory and practice.
- 245 Language and Human Behavior** 3 Course Prerequisite: Sophomore standing. Theories of language as it influences human behavior in meaning production, problem solving and construction of social reality.
- 300 [M] Writing in Communication** 3 (2-3) Course Prerequisite: Certified major in Communication. Writing for a variety of communication professions, including advertising, broadcasting, print journalism, public relations, and science communication.
- 320 Visual Communication** 3 Course Prerequisite: COM 210; certified major in Communication. Visual communication in today's print, electronic, and broadcast media to inform, educate, and persuade.
- 395 Science Writing** 3 Course Prerequisite: COM 300; certified major in Communication. Writing about science and technology for print, online, public relations, and broadcast formats.
- 410 History of Mass Communications** 3 Course Prerequisite: Certified major or minor in Communication; junior standing.
- 415 Media Law** 3 Course Prerequisite: Certified major or minor in Communication; junior standing. Basic concepts and theories of the First Amendment's protection of speech and press.
- 420 New Communication Technologies** 3 Course Prerequisite: Certified major or minor in Communication; junior standing. New communication technologies, their impact on communication processes, access, regulation, and communication in organization/professional contexts.
- 440 Media Ethics** 3 Course Prerequisite: Certified major or minor in Communication; junior standing. Foundations and frameworks of media ethics; case studies in assessing media performance.
- 460 Mass Media Criticism** 3 Course Prerequisite: Certified major or minor in Communication; junior standing. Theoretical and philosophical basis for critical analysis of mass communication.
- 464 Gender and the Media** 3 Course Prerequisite: COM 101, WOMEN ST 101, or WOMEN ST 201; certified major or minor in communication. How news and entertainment media shape and reinforce societal expectations of gender; consideration of race, age, class, and sexual orientation. (Crosslisted course offered as COM 464, WOMEN ST 464).
- 470 Mass Communications Theories and Theory Construction** 3 Course Prerequisite: Certified major or minor in Communication; senior standing. Theories of mass communication and the process of theory construction.
- 471 Stereotypes in Communication** 3 Course Prerequisite: Certified in any major. Examines portrayals of social groups in the media and the impact portrayals have on perceptions, expectations, and aspirations of members of portrayed groups and nonmembers. (Crosslisted course offered as COM 471, CES 404).
- 478 Health Communication** 3 Course Prerequisite: Certified in any major; junior standing. Mediated communication in disease prevention and health intervention.
- 479 Youth and the Media** 3 Course Prerequisite: Certified in any major; junior standing. Effects of media messages on children and adolescents, and developing responsible and effective programming for youth.
- 481 Mobile Media** 3 Course Prerequisite: COMSTRAT 310 or COM 320; junior standing. Theories, strategies, practices for strategic communication via mobile platforms.
- 482 Computer Mediated Communication** 3 Course Prerequisite: Certified major or minor in Communication; junior standing. Social and psychological implications of computer mediated communication and differences from face-to-face communication.
- 483 Special Topics** 3 By permission only. S, F grading.
- 490 Web Design and Usability** 3 Course Prerequisite: COM 320; COM 420; COMSOC 324; COMSTRAT 309; certified major in Communication. Web design with an emphasis on user-centered design and usability.
- 495 Communication Professional Internship** V 2-12 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By application only. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Course Prerequisite: By interview only. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 500 Communication Colloquium** 1 May be repeated for credit; cumulative maximum 8 hours. Written and oral presentation of research topics in Communication; college colloquium. S, F grading.
- 501 Theory Building in Communication** 3 Relationship of research to theory development; evaluation of current theory and research; planning and executing research within specified theoretical frameworks.
- 502 Consumer Analysis and Brand Development** 3 Consumer analysis and brand development; skills to make strategic communication campaigns successful.
- 504 Instructional Practicum** 1 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By interview only. S, F grading.
- 506 Persuasion and Social Influence** 3 Theories, concepts strategies and processes of persuasion and social influence.
- 507 Communication Ethics Seminar** 3 Topics in communication ethics.
- 509 Quantitative Research** 3 Introduction to quantitative research in communication; hypothesis development, testing; basic statistics, interpretation; field surveys, laboratory and field experiments, content analysis.
- 514 Health Communication Theories and Campaigns** 3 Health communication theories with a focus on campaign construction and evaluation.
- 516 Health Communication and Society** 3 3 Reviews, critiques and applications of research regarding the impact of social and cultural environments on health communication.
- 517 Health Communication and Social Development** 3 Explores and tests role of mediated communication in the causes of and solutions for health problems, particularly among young people.
- 521 Foundational Perspectives in Intercultural Communication** 3 Overview of three current foundational research perspectives in intercultural communication; functionalist (post-positivist), interpretive and critical.
- 522 Theoretical Perspectives on Intercultural Communication** 3 Advanced readings in intercultural communication theory and methods; paradigms in current theorizing.
- 524 Intercultural/International Communication and Social Change** 3 Application of communication theory, research and technologies aimed at fostering social change in intercultural and international contexts.
- 526 Current Topics in Intercultural Communication** 3 Topics in current intercultural communication research.
- 535 Organizational Communication Theory** 3 May be repeated for credit; cumulative maximum 6 hours. Traditional and emerging theories in organizational communication.

- 537 Organization and Society 3** Historical foundations, theoretical developments, contemporary issues and practical implications of communicative processes of organizations within society.
- 540 Risk Communication 3** Research and practice in risk communication.
- 550 Media Processes and Effects: Theory and Practice 3** Physiological, psychological and social effects of media messages and technologies upon individuals and societies.
- 552 Current Issues in Media Processes and Effects 3** Current issues in media processes and effects.
- 561 Multimedia Content Creation 3** Exploration and application of strategies to communicate ideas clearly, concisely, and effectively through multimedia content.
- 562 Crisis Communication in Global Contexts 3** Prepare, plan, and execute crisis communication and management to protect the continuity of an organization's image and mission.
- 563 Ethics for Professionals 3** The understanding, discussion, and application of key theories of individual and institutional ethics; the articulation and defense of ethical reasoning.
- 564 Research Methods for Professionals 3** Understanding the role of research in media and related organizations and its application to organizational decision making through quantitative and qualitative research methods including research design, questionnaire construction, sampling, data collection techniques, and variable measurement.
- 570 Communication Theory 3** Relevant theories and research from mass and interpersonal communication.
- 571 Theoretical Perspectives on Media and Society 3** Theories explaining the social and cultural environments of communication processes emphasizing in mass communication.
- 572 Mass Media, Social Control, and Social Change 3** Study of the forces that influence the media's role as an agent of social control or social change.
- 573 Media and Public Discourse 3** Historical and contemporary concepts, questions and dynamics constituting the role of media and discourse among various publics.
- 580 Topics in Communication 3** May be repeated for credit; cumulative maximum 12 hours. Contemporary, specialized, or technical topics in communication.
- 591 Qualitative Research Methods 3** Historical, textual, and legal methodologies for theory-based evaluative and discourse studies in 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 V 1-18** May be repeated for credit. Course Prerequisite: By interview only. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V 1-18** May be repeated for credit. Course Prerequisite: By interview only. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V 1-18** May be repeated for credit. Course Prerequisite: By interview only. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V 1-18** May be repeated for credit. Course Prerequisite: By interview only. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.
- JOURNALISM AND MEDIA PRODUCTION**
- COMJOUR**
- 150 Introduction to Broadcast Equipment 1** Orientation to broadcast equipment; audio, studio television, and field television, as applied to various functions. S, F grading.
- 333 [M] Reporting Across Platforms 3** Course Prerequisite: Certified major in Communication. Instruction in reporting, writing and editing news stories that are suitable for publication and on-air presentation.
- 335 Broadcast News Reporting 3 (2-3)** Course Prerequisite: COMJOUR 333; certified major in communication. Fundamentals of broadcast reporting; development of editorial and news judgment, writing skills, and proficiency in field camera production and editing.
- 350 News and Society 3 (2-3)** Course Prerequisite: Certified major or minor in Communication. Fundamentals of historic, contemporary, and emerging models of news production; social contexts and effects, alternative sources, and critiques of news.
- 351 Broadcast Performance/Interpretation 3** Course Prerequisite: Certified major or minor in Communication. Voice and diction, interpretation of copy for broadcast.
- 355 Beginning Television Production 3 (1-6)** Course Prerequisite: COMJOUR 333; certified major in Communication. Beginning television studio production, directing, lighting, graphic design, editing, video/audio compression.
- 360 Writing for Television 3 (2-3)** Course Prerequisite: Certified major in Communication. Theory and practice of writing scripts: analysis of dramatic, comedic, commercial, documentary scripts; writing scripts for each genre.
- 390 Multimedia Content Creation 3 (2-3)** Course Prerequisite: COM 210; certified major in communication. Capture, design, edit, and compress quality video and audio; basic lighting techniques.
- 425 [M] Reporting of Public Affairs 3** Course Prerequisite: COMJOUR 333 or JOUR 305; certified major in Communication. Research covering public and private sectors.
- 433 Advanced Radio News and Production 3 (2-3)** Course Prerequisite: COMJOUR 333 or JOUR 305; certified major in Communication. Intense radio news and production course designed to refine radio news writing, reporting, and on-air presentation skills.
- 455 Advanced Television Production 3 (1-6)** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: COMJOUR 355; certified major in Communication. Field production; editing; advanced studio production.
- 465 [M] Advanced Television News 3 (2-3)** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: COMJOUR 333; certified major in Communication. Writing, reporting, and editing broadcast news; development and production of broadcast quality news.
- 466 Digital Video Editing for News Reporting and Documentary 3 (2-3)** Course Prerequisite: Certified major or minor in Communication. Video editing for news reporting; feature-length editing for news and public affairs topics; documentaries; visual storytelling.
- 475 Murrow News Service 3** May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: COMJOUR 425, 455, or 465; certified major in Communication. Advanced journalism and media production to produce investigative, watchdog news reports for media outlets and public.
- 481 Broadcast Management 3** Course Prerequisite: Certified major or minor in Communication; senior standing.
- 495 Broadcasting Professional Internship V 2-12** May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: COMJOUR 333 and COMJOUR 350; COMJOUR 355 or 425; certified major in communication; by interview only. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

COMMUNICATION AND SOCIETY

COMSOC

230 Principles of Group Communication 3 Theoretical and practical aspects of communication in groups; classroom exercises and films demonstrate principles and develop skills.

235 Organizational Communication 3 Course Prerequisite: Certified major or minor in Communication. Effective workplace communication principles and practices associated with managers and employees across a variety of industries.

301 Foundations of Persuasion 3 Course Prerequisite: Certified major in Communication. Theories of persuasion and social action; study of strategies and techniques for the persuasive use of language and other symbols.

302 Advanced Public Speaking 3 Course Prerequisite: COM 102; certified in major. Advanced principles of public speaking and their practical implementation for effective communication.

321 [DIVR] Intercultural Communication 3 Course Prerequisite: Certified in any major. Culture and cultural differences, race and ethnicity, stereotypes, and intercultural communication in contexts.

324 [M] Reasoning and Writing 3 Course Prerequisite: COM 210; certified major in Communication. Theories of persuasion and social action; study of strategies and techniques for the persuasive use of language and other symbols.

335 Communication and Leadership in Contemporary Organizations 3 Course Prerequisite: COMSOC 235; COMSOC 324; certified major in Communication. Advanced concepts, models and methods for in-depth analysis of contemporary organizations.

421 [DIVR] Intercultural Communication and Globalization 3 Course Prerequisite: Junior standing. How global processes shape intercultural communication and how globalization is understood, advanced, and opposed by different groups. (Crosslisted course offered as COMSOC 421, CES 421).

476 Environmental Communication 3 Course Prerequisite: Certified in any major; junior standing. How communication shapes human understanding and decision making concerning the natural environment in local, national, and global contexts.

477 Risk Communication 3 Course Prerequisite: Certified in any major; junior standing. Research on perceptions of risk among stakeholders about complex environmental and natural resource issues.

478 Organizing for Social Change 3 Course Prerequisite: COMSOC 324; certified major in Communication. Models of social change campaigns, social movements, and organizing grassroots organizations.

480 Science Communication Campaigns 3 Course Prerequisite: COMSOC 324; COMSTRAT 309; COMSTRAT 310; certified major in Communication. Develop an effective communication campaign to address a science communication challenge.

485 Organizational Training and Consulting 3 Course Prerequisite: COMSOC 335; certified major in Communication. Develop and practice consulting and training skills relevant to a practical situation and apply organizational literature to a client.

495 Communication and Society Professional Internship V 2-12 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By application only. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Course Prerequisite: certified major in communication; by interview only. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

STRATEGIC COMMUNICATION

COMSTRAT

309 Quantitative Research Methods 3 Course Prerequisite: Certified major or minor in Communication. Measurement, questionnaire construction, sampling, data collection techniques, analysis and hypothesis testing in communication research.

310 Digital Content Promotion 3 Course Prerequisite: COM 210; certified major in Communication. Practice and promotion of public relations and advertising through digital and social media.

312 Principles of Public Relations 3 Course Prerequisite: Certified major or minor in communication. Principles, theories, methods and objectives of public relations; public relations problems and practices.

370 Crisis Communication 3 Course Prerequisite: Certified major in Communication. Preparation to lead in crisis communication occupations.

380 Advertising Principles and Practices 3 Advertising history, theory and practice by advertising agencies and organizations.

381 [M] Creative Media Strategies and Techniques 3 Course Prerequisite: COM 210; certified major in Communication. Development of creative content for persuasive campaigns through different media.

382 Media Planning 3 Course Prerequisite: COMSTRAT 380; certified major in Communication. Media planning theories, strategies, and practices.

412 [M] Public Relations Management and Campaigns 3 Course Prerequisite: COMSTRAT 309; COMSTRAT 312; certified major in Communication. Application of public relations principles, management, persuasion theory and research methods to public relations issues.

475 Strategic Communication Seminar in Public Relations 3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Certified major in Communication; junior standing. Theory, methods, and applications of communication and campaign management; political communication, health communication, freedom of expression, special audiences.

476 Consumer Insights and Branding 3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Certified in any major; junior standing. Advertising account planning based on a thorough understanding of target audiences and consumer research; linking client objectives, account management, creative and media planning.

477 Message Design for Communication Campaigns 3 Course Prerequisite: Certified major in Communication; junior standing. Theory-based design, market testing, and evaluation of messages for health and positive social outcomes.

478 Crisis Communication 3 Course Prerequisite: Certified major in Communication; junior standing. Crisis communication in health, environment, public safety, animal health, and other topics. Case studies and application of principles to in-class practice cases.

480 [M] Advertising Agency Operation and Campaigns 3 Course Prerequisite: COMSTRAT 380; COMSTRAT 381; COMSTRAT 382; certified major in Communication. Principles and functions of advertising management: campaign planning, execution, presentation and evaluation.

495 Strategic Communication Professional Internship V 2-12 May be repeated for credit; cumulative maximum 12 hours. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Course Prerequisite: certified major in communication; by interview only. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

561 Persuasion for Professional Communicators 3 Introduction to theories, concepts, strategies, and processes of persuasion and social influence.

562 Creative Media Strategies and Techniques 3 The strategies, processes, procedures and steps involved in creating marketing communications materials for a variety of different media.

563 Professional Digital Content Promotion

3 The application of writing, critical thinking, and persuasion skills to the practice and promotion of PR and advertising in both digital and social media outlets.

564 Consumer Behavior and Brand Development

3 Tactics and strategies for consumer analysis and brand development; skills necessary for uncovering consumer insights to link client objectives, account management, creative development, and media planning

565 Professional Marketing Communication Management and Campaigns

3 An overview of behavior change theories with a focus on strategic marketing campaign design and evaluation; learning to use theory and research to more effectively plan, design, execute and evaluate strategic communication campaigns.

566 Masters Capstone Course

3 Tying together key learning objectives that faculty expect the student to have learned during the program.

Community and Rural Sociology

Description of Courses

COMMUNITY AND RURAL SOCIOLOGY

CRS

435 Resolving Environmental Conflicts

4 (3-3) Course Prerequisite: 6 credits [S] or [K] GER, or [SSCI] UCORE; junior standing. Introduction to environmental conflict resolution via readings, discussions, simulation role plays and required papers; emphasis on interest-based approaches.

535 Resolving Environmental Conflicts

4 (3-3) Introduction to environmental conflict resolution via readings, discussions, simulation role plays and required papers; emphasis on interest-based approaches.

590 Sociology of Agriculture and Food Systems

3 Theories, concepts, debates and methods associated with the sociology of agriculture and food systems.

Program in Creative Media and Digital Culture - Vancouver

cla.vancouver.wsu.edu/cmdc/
Multimedia Classroom Building, Room 211A
360-546-9188

Academic Director, A. Wharton; Program Director and Associate Professor, D. Grigar; Assistant Professor, B. Oppegaard; Clinical Assistant Professor, J. Barber; Visiting Assistant Professors, W. Luers, M. Rabby, B.

Grell; contributing faculty from a variety of academic departments. Academic Coordinator: K. McClraith.

The Creative Media & Digital Culture (CMDC) is an academic program, unique to Washington State University Vancouver, that houses the B.A. in Digital Technology and Culture. Anchored within the field of digital media with emphasis on the intersection of art, technology and the humanities, the Program features a strong interdisciplinary and transdisciplinary focus across the College of Arts and Sciences, as well as the Colleges of Business, Communication, Science, and Engineering and Computer Science and emphasizes critical thinking, creativity, and technological expertise. The goal of the Program is to offer a broad-based degree that prepares students for the media-rich, technologically complex 21st Century.

The DTC degree of the CMDC offers two programs of study: 1) Media Authoring and 2) Knowledge of Management and Production. In addition to course work in DTC, students also take classes in Anthropology, Communication, Computer Science, English, Fine Arts, History, Management Information Systems, Political Science, Psychology, and Sociology. Directed studies and internships encourage students to gain real world experience and engage in projects aimed at serving the community, both of which help students with professional career networking and developing a commitment to public service.

Along the way, the DTC program provides an intellectual environment comprised of special events like lectures, residency programs, performances by internationally known artists, and field trips to media arts shows and exhibits, and it offers its students state-of-the-art computer labs and studios in which to work and learn. Class sizes are kept small to assure one-on-one contact with faculty.

Option in Digital Technology and Culture

Students may also select Digital Technology and Culture as a primary or secondary concentration within the Bachelor of Arts in Humanities or the Bachelor of Arts in Social Sciences.

The Primary Concentration option requires the completion of at least 24 semester hours of approved DTC course work, including at least 15 upper-division semester credits.

The Secondary Concentration option requires the completion of at least 15 semester hours of approved DTC course work, including at least six upper-division semester credits.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

DIGITAL TECHNOLOGY & CULTURE, CREATIVE MEDIA & DIGITAL CULTURE OPTION (VANCOUVER ONLY) (120 HOURS)

First Year

First Term	Hours
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3

Quantitative Reasoning [QUAN]	3
Electives	3

Second Term Hours

Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
FINE ART 102 ¹	3
Electives	3

Second Year

First Term Hours

Diversity [DIVR]	3
Social Sciences [SSCI]	3
Electives	9

Second Term Hours

Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives	7
Complete Writing Portfolio	

Third Year

First Term Hours

DTC 355 [M]	3
DTC 356	3
DTC Concentration ²	3
MIS 250	3
Electives	3

Second Term Hours

DTC 375	3
FINE ART 332 or 333	3
DTC Concentration ²	3
DTC Core Option ²	6

Fourth Year

First Term Hours

DTC Concentration ²	6
DTC Core Option ²	3
Integrated Capstone [CAPS]	3
Electives	3

Second Term Hours

DTC 475	3-6
Senior Seminar or Internship	3
Electives	9

¹ Prerequisite to FINE ART 331.

² At least 18 hours must be 300-400-level; consult with an advisor for a list of approved courses.

Description of Courses

DIGITAL TECHNOLOGY AND CULTURE

DTC

101 [ARTS] Introduction to Digital Technology & Culture

3 Inquiry into digital media, including origins, theories, forms, applications, and impact with a focus on authoring and critiquing multimodal texts.

- 335 Digital Animation: Story, Narration and Production 3 (2-2)** 3-D digital animation for creative and professional presentations using Maya software, art skills, story-telling and team problem-solving techniques.
- 336 Composition and Design 3** Design practices and process for composing for a multimedia environment including color, pattern and shape. (Crosslisted course offered as DTC 336, ENGLISH 336).
- 338 Special Topics in Digital Technology and Culture 3** May be repeated for credit; cumulative maximum 6 hours. Major trends or artists in digital technology and culture.
- 354 Digital Storytelling 3** Nonlinear, multi-linear, and interactive narrative using elements of creative writing such as character, dialog, setting, plot and image. (Crosslisted course offered as DTC 354, ENGLISH 354).
- 355 [M] Multimedia Authoring: Exploring New Rhetorics 3** Writing for new computer-based media; multimedia authoring project; examination of new rhetorics of information technology. (Crosslisted course offered as DTC 355, ENGLISH 355).
- 356 Electronic Research and the Rhetoric of Information 3** Social and cultural role of information; research with electronic sources; production, validation, storage, retrieval, evaluation, use, impact of electronic information. (Crosslisted course offered as DTC 356, ENGLISH 356).
- 375 [M] Language, Texts and Technology 3** Relationship between technology and communication; writing practices from a historical point of view. (Crosslisted course offered as DTC 375, ENGLISH 375).
- 475 Digital Diversity 3** Course Prerequisite: Junior standing. Cultural impact of electronic media, especially the World-Wide Web; issues of race, class, gender, sexuality online. (Crosslisted course offered as AMER ST 475, DTC 475, ENGLISH 475).
- 476 Digital Literacies 3** Course Prerequisite: DTC 375. Development and use of new literacies as they affect communication through technology. (Crosslisted course offered as DTC 476, ENGLISH 476).
- 477 Advanced Multimedia Authoring 3** Course Prerequisite: DTC or ENGLISH 355. Advanced writing, imaging and teamwork skills for authoring in new computer-based media; website project in client-oriented context. (Crosslisted course offered as DTC 477, ENGLISH 477).
- 478 Usability and Interface Design 3 (0-6)** Course Prerequisite: DTC or ENGLISH 355. Design of websites using best practices of visual literacy, interface architecture and usability. (Crosslisted course offered as DTC 478, ENGLISH 478).
- 497 Senior Seminar 3** Course Prerequisite: Senior standing; certified major in Digital Technology and Culture. Major multimedia project for nonprofit organization or small business with special focus on project management, planning, and execution.

498 Internship V 2-9 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: DTC 355; senior standing; certified major in Digital Technology and Culture. Direct professional learning experiences in the area of digital media, technology, and culture. S, F grading.

499 Special Problems V 1-4 Course Prerequisite: Certified major in Digital Technology and Culture; junior standing. Advanced understanding of the various tools, design approaches, and scripting languages for creating dynamic multimedia objects for a variety of platforms, including mobile phones and tablets. S, F grading.

Department of Criminal Justice and Criminology

libarts.wsu.edu/crimj/
Johnson Tower, 701
509-335-8611

Associate Professor and Chair, D. Brody; Professors, O. Marenin, B. Vila; Associate Professors, L. Drapela, F. Lutze, D. Wood; Assistant Professors, Z. Hamilton, Z. Hays, M. Neuilly, A. Roussel, J. VanWormer; Clinical Assistant Professor, D. Makin. Faculty from other Departments and Programs who have an interest in teaching or researching criminal justice topics will be affiliated with the Program.

The Department of Criminal Justice and Criminology offers substantive studies in Criminal Justice in conjunction with a liberal arts education. It prepares students for a broad range of careers in criminal justice institutions, government agencies at local, state, and federal levels, private support and welfare organizations, private security work, and domestic and international corporations, as well as for the pursuit of graduate study or law school; develops leadership qualities; and promotes the ideal of professional achievement in public service.

Criminal Justice is the interdisciplinary study of the problem of crime and of the institutions, policies and practices by which society responds to the problem of crime, as well as theories of human behavior and normative philosophies directly related to the maintenance of social order, the control of crime and the achievement of a just society. Specific courses in the program focus on social control issues and policies, substantive and procedural criminal law, the organization and workings of criminal justice institutions (police, courts, corrections, juvenile), issues relevant to groups in American society (gender, minorities), research and evaluation skills, theories of crime and delinquency, practical ethics, and the evaluation of management, programs, and policies conducted by justice system institutions.

Students are also required to complete collateral courses on the larger political, legal, economic and social environments in which crime and the criminal justice system operate. Taught by a multi-disciplinary faculty, courses cover such areas as public administration, American public policy, constitutional law, gender and politics, and political psychology. Additional elective courses are offered by departments within the College of Arts and

Sciences.

We expect that graduating students will have an understanding of: 1) the causes of crime, 2) the components, processes, and programs of the criminal justice system, 3) the interconnectedness of theory, research, and practice, 4) the complexities of achieving justice in a multi-cultural society, 5) the intricacies of policy formation and implementation, and 6) the ability to understand and interpret social science research.

The course of study leads to the Bachelor of Arts in Criminal Justice, and the Master Degree and Ph.D. Degree in Criminal Justice.

Transfer Students

Students planning to transfer to Washington State University at the end of the first or second year should follow as closely as possible the general and core course requirements set forth in the schedule of studies. 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.

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 schedule of studies.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

CRIMINAL JUSTICE DEGREE PROGRAM (120 HOURS)

Students who major in criminal justice must complete the 15 hour criminal justice core (CRM J 101, 201, 330, 450, and either 320 or 420); 6 hours in research methods and quantitative analysis (selected from an approved list); 6 hour in criminal justice institutions courses (CRM J 365, 370, 380, 385); 9 hours in criminal justice electives; 9 hours from specified political science courses; and 3 hours in specified College of Arts and Sciences electives. Students must also pass a writing proficiency test.

First Year

<i>First Term</i>	<i>Hours</i>
CRM J 101	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
CRM J 201	3
Social Sciences [SSCI]	3
Electives	4

Second Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4

CRM J 330	3
Diversity [DIVR]	3
Quantitative Reasoning [QUAN]	3 or 4
Electives	3

<i>Second Term</i>	<i>Hours</i>
300-400-level POL S collateral course	3
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
CRM J Institution course	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
SOC 320 or Approved Statistics Course	3 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level CRM J Electives	3
300-400-level POL S collateral course	3
CRM J 320 or 420	3
CRM J institution course	3
Quantitative methods course	3
<i>Second Term</i>	<i>Hours</i>
300-400-level CRM J Electives	6
300-400-level POL S collateral course	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
Foreign Language, if necessary, or Electives	4
300-400-level CRM J Elective	3
CLA Elective	3
CRM J 450 [M]	3
<i>Second Term</i>	<i>Hours</i>
Foreign Language, if necessary, or Electives	4
Integrated Capstone [CAPS]	3
Electives	7

Minors

Criminal Justice

The minor in Criminal Justice requires 18 credits of course work in criminal justice, including CRM J 101, 201, 205, and 330. Half of the courses must be taken at the 300-400 level and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Students wishing to minor in criminal justice should contact the Criminal Justice Program for details.

Description of Courses

CRIMINAL JUSTICE

CRM J

- 101 Introduction to the Administration of Criminal Justice** 3 Agencies and processes in the administration of criminal justice. Cooperative: Open to UI degree-seeking students.
- 201 Introduction to Criminological Theory** 3 Analysis of conceptions of crime and seriousness as determined by societal factors.
- 205 Realizing Justice in a Multicultural Society** 3 Critical analyses of criminal justice policies related to race, class, gender, immigration and sexual orientation.

311 Research Methods for Criminal Justice 3 Discussion of research methods appropriate for the study of crime and criminal justice policies and institutions.

320 Criminal Law 3 Substantive criminal law; principles, functions, and limits; basic crime categories, state and national legal research materials. Cooperative: Open to UI degree-seeking students.

321 Quantitative Methods for Criminal Justice 3 Critical discussion of skills and methods needed for the analysis of implementation and impact of criminal justice policies.

330 Crime Control Policies 3 Analysis of ideologies, assumptions, and performance of crime control policies. Cooperative: Open to UI degree-seeking students.

365 Juvenile Justice and Corrections 3 History, philosophy, legal process, performance, and outcomes of the juvenile justice and corrections systems. (Crosslisted course offered as CRM J 365, SOC 367). Cooperative: Open to UI degree-seeking students.

370 Introduction to Policing in America 3 Development, organization, policies, and performance of the police. Cooperative: Open to UI degree-seeking students.

380 Criminal Courts in America 3 Structure and process of the prosecution and adjudication of individuals charged with crimes in the criminal court system.

381 Crime and Justice in the Movies 3 (2-2) Mass media as both reflector and shaper of public attitudes and opinions about crime, criminals, law, order, and justice; using films. (Crosslisted course offered as CRM J 381, POL S 381).

385 Institutional Corrections 3 Ideologies of punishment and correction, intermediary sanctioning and reintegration policies in the criminal justice system.

400 [M] Issues in the Administration of Criminal Justice 3 May be repeated for credit; cumulative maximum 6 hours. Selected topics in criminal justice. Cooperative: Open to UI degree-seeking students.

403 Violence Toward Women 3 Course Prerequisite: Junior standing. Violence toward women and its relationship to broader social issues such as sexism and social control. (Crosslisted course offered as CRM J 403, WOMEN ST 403).

405 [M] Comparative Criminal Justice Systems 3 Comparative study of criminal justice systems in the US and selected foreign countries. (Crosslisted course offered as CRM J 405, POL S 405). Cooperative: Open to UI degree-seeking students.

420 [M] Criminal Procedure 3 Principal court decisions concerning standards of conduct and rights in the criminal process. Cooperative: Open to UI degree-seeking students.

424 Community Corrections 3 Theory practice and human impact of treating criminal offenders in the community. Cooperative: Open to UI degree-seeking students.

426 Victimology and Public Policy 3 Examination of victimization; policy responses to victims; victim's rights.

427 Crime Prevention Strategies 3 Personal, environmental, community-based and government crime prevention strategies and issues.

428 Drug and Alcohol Use and Abuse 3 Drug use, impact on behavior and drug control policies.

450 [M] Senior Seminar: Ethical Issues in Criminal Justice 3 Examination of ethical issues in decision making in criminal justice.

468 Addictive Behavior Across the Demographic Spectrum 3 Course Prerequisite: Junior standing. Overview of social, cultural and historical perspectives on dealing with addictive behavior. (Crosslisted course offered as SOC 468, CRM J 468, PSYCH 468). Recommended preparation: SOC 101, PSYCH 105, or CRM J 101.

490 Criminal Justice Internship V 2-12 May be repeated for credit; cumulative maximum 12 hours. On/off-campus internship in criminal justice institutions (police, FBI, jails, law firms, etc.); written assignments and readings will be required. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

505 Comparative Criminal Justice 3 Comparative study of crime laws and criminal justice systems in selected foreign countries. (Crosslisted course offered as CRM J 505, POL S 505). Cooperative: Open to UI degree-seeking students.

510 Leadership in Criminal Justice 3 Study of leadership models and theories as they apply to criminal justice institutions.

511 Criminal Justice Management 3 Examines the theoretical framework for understanding criminal justice organizations through examining management theory, organizational dynamics, and administration research.

512 Juvenile Justice 3 Examination of the major theories and contemporary issues related to juvenile delinquency, the juvenile justice system, gangs, and juvenile corrections.

513 Multicultural Issues in Criminal Justice 3 Critical examination of race, gender, and other diversity and cultural issues within the U.S. criminal justice system.

514 Professional Development in Criminal Justice and Criminology 1 Professional aspects of research, teaching, and service activities in criminal justice and criminology. S, F grading.

520 Criminal Justice Research Methods 3 The design and execution of criminal justice research; critical examination of current research methods in criminal justice.

- 521 Advanced Topics in Criminal Justice Research Methods** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: CRM J 520. Exploration of specialized topics in research methodology; topics may include qualitative methods, GIS, ethnography, and survey design.
- 522 Foundations of Quantitative Methods** 3 Application of foundational quantitative methods utilized in the field of Criminal Justice and Criminology.
- 523 Intermediate Quantitative Methods** 3 Course Prerequisite: CRM J 522. Intermediate-level quantitative methods including logistic regression, factor analysis, propensity scoring and model building.
- 524 Advanced Topics in Quantitative Methods** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: CRM J 523. Advanced quantitative methods used in criminal justice, including time series, HLM, multi-level modeling, spatial analysis, and repeated measures analysis.
- 530 Criminal Justice: Process and Institutions** 3 Processes of criminal justice in the context of the social, political, and economic environments. Cooperative: Open to UI degree-seeking students.
- 531 Drugs, Alcohol, and Crime** 3 Examination of the research and theory surrounding the relationship between alcohol, drugs, crime, and the criminal justice system.
- 540 Seminar in Evaluation Research** 3 Interrelationship of ideology, data, policy development, and policy implementation in public policy analysis. (Crosslisted course offered as CRM J 540, POL S 541). Cooperative: Open to UI degree-seeking students.
- 541 Seminar in Corrections** 3 Current issues related to the control, management, and sanctioning of criminal offenders. Cooperative: Open to UI degree-seeking students.
- 542 Community Corrections** 3 Examines correctional processes in a community setting, including probation, parole, and innovative community-based strategies for dealing with the offender.
- 555 Seminar in Criminological Theory** 3 Individual, situational and ecological correlates of criminal behavior; data sources and empirical research.
- 560 Prosecution and Adjudication** 3 The function of courts and the behavior of prosecutors, defense attorneys and judges within the criminal justice system.
- 570 The Police and Society** 3 Community and selected social institutional factors as related to their influence on police systems. Cooperative: Open to UI degree-seeking students.
- 572 Seminar in Comparative Policing** 3 Study of the history, organization, and policies of policing systems in selected countries and of transnational policing. Cooperative: Open to UI degree-seeking students.
- 580 Gender and Justice** 3 Criminal justice system's treatment of women offenders, victims, and professionals.
- 590 PRACTICUM** V 1-6 May be repeated for credit; cumulative maximum 6 hours. S,F Grading. S, F grading.
- 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: Open to UI degree-seeking students.
- 592 Proseminar in Administration, Justice, and Applied Policy Studies** 3 May be repeated for credit; cumulative maximum 6 hours. Same as POL S 542.
- 593 Special Topics in Criminological Theory** 3 May be repeated for credit; cumulative maximum 6 hours. Intense examination of a contemporary criminological theory, school, or paradigm.
- 594 Special Topics in Comparative Criminology and Criminal Justice** 3 May be repeated for credit; cumulative maximum 6 hours. Intensive study of specific topics in comparative criminal justice or criminology.
- 595 Advanced Topics in Criminal Justice Institutions and Processes** 3 May be repeated for credit; cumulative maximum 6 hours. In-depth study of issues associated with criminal justice institutions and processes.
- 596 Special Topics: Criminal Justice and Public Health** 3 May be repeated for credit; cumulative maximum 6 hours. Examination of public health ramifications of criminal justice policy and practice; public health approaches to violence and substance abuse prevention.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Critical Culture, Gender, and Race Studies

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Wilson Hall 111
509-335-2605

Chair and Associate Professor, D. Leonard; Professors, M. Bloodworth-Lugo, C.R. King; Associate Professors, K. Christen, L. Gordillo, L. Guerrero, L. Heidenreich; D. Leonard, C. Lugo-Lugo, R. Ong, N. Shahani, J. Streamas, P. Thoma; Clinical Associate Professor, M. Sciachitano. Affiliated Faculty, P. Ericsson, T. Lewis, P. Groves Price, W. Johnson, L. Mercier, P. Narayanan, W. Olson, T.V. Reed, C. Siegel.

The Department of Critical Culture, Gender, and Race Studies (CCGRS) brings together leading scholars, committed to teaching and research, who have created an intellectual community at the forefront of critical cultural studies in the Pacific Northwest. The Department offers majors and minors in Comparative Ethnic Studies and Women's Studies as well as Master of Arts and Doctor of Philosophy degrees in American Studies. CCGRS provides interdisciplinary analyses of race, gender, and culture, encouraging students to understand systems of inequality in local, national, and global contexts. The Department equips students for lifelong learning and critical engagement, preparing them for careers in a range of occupations, including business, social service, law, education, research, and public policy.

CCGRS Mission

The Department of Critical Culture, Gender, and Race Studies (CCGRS) is a dynamic community of scholars and students committed to the interdisciplinary and intersectional analyses of social identities, political ideologies, and institutional arrangements. CCGRS emerges out of social movements and intellectual currents that interrogate and unsettle political and ideological models. It also brings marginalized perspectives and experiences into dialogue with dominant narratives. With an emphasis on student-centered, active learning, the curriculum nurtures rounded understandings of power structures, historical conditions, and social locations, underscoring the interconnections of race, class, gender, sexuality, and cultural practices. Conducting research at the leading edges of their fields, the faculty of CCGRS advance transformative knowledge through collaborative, creative, and critical inquiry.

CCGRS Vision

Through teaching, research, and outreach, CCGRS strives to communicate emergent and established

understandings of culture, race, indigeneity, gender, and sexuality to students and society at large, seeking to foster understanding, action, and hope in an unequal and increasingly interconnected world. Its faculty, students, and staff work together to cultivate a community that fosters and respects difference, laying the foundation to question and change the status quo locally and globally. Through the creation and distribution of transdisciplinary, transnational, and transformative knowledge, CCGRS endeavors to illuminate existing racial, gender, and sexual inequities, while empowering its constituencies to envision and realize new futures.

BA in Comparative Ethnic Studies

Comparative Ethnic Studies embraces interdisciplinary, comparative, and transnational approaches to studying race relations and the intersectionality of race, gender, class, sexuality, and globalization. The course work fosters an in-depth understanding of the complexities of formations of race and culture. The major in comparative ethnic studies prepares students to work and function in the multiracial and multicultural world in which we live. Students majoring in comparative ethnic studies must complete 33 hours in CES, as outlined below. Students interested in declaring a major in should contact the Department.

BA in Women’s Studies

Women’s Studies is an interdisciplinary field of research and teaching that places gender at the center of inquiry. Central to the consideration of gender are the ways class, race, ethnicity, nationality, sexual orientation, age, and ability shape the female and male experience. Students learn how female and male social roles affect personal lives, artistic expression, work, social relationships, institutional structures, the production of knowledge, and national and international political and economic relations. A major in women’s studies requires a minimum of 33 credit hours. Students interested in declaring a major in should contact the Department.

Undergraduate Minors

CCGRS offers minors in Comparative Ethnic Studies, Queer Studies, and Women’s Studies. Courses for the minor may not be taken pass, fail. Students interested in declaring a minor in should contact the Department.

Graduate Program

The American studies M.A. and Ph.D. degrees offer interdisciplinary approaches to the study of the United States as a multiethnic, multiracial, and multicultural society, embedded in transnational forces. In addition to the American studies curriculum, students can take courses from other departments across the campus. The program offers a broad array of intellectual possibilities, with strengths in critical race/ethnicity studies, gender and sexuality studies, multicultural American West, cultural studies of race, class, gender, sexuality, as well as the critical study of colonialism and empire, critical analysis of popular culture and sport, global indigenous studies, social movements and labor history, social action research, and critical cyber-culture studies. For more information, contact Rose Smetana, Washington State University, PO Box 644010, Pullman, WA 99164-4010, 509-335-2605, rsmetana@wsu.edu.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

COMPARATIVE ETHNIC STUDIES (120 HOURS)

Students majoring in Comparative Ethnic Studies complete 33 hours in CES, which must include CES 201, 300, WST 201, and two of the following sub-core courses: CES 301, 446, 491.

First Year

<i>First Term</i>	<i>Hours</i>
CES 201	3
Creative & Professional Arts [ARTS]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Communication [COMM] or Written Communication [WRTG]	3
Humanities [HUM]	3
Social Sciences [SSCI]	3
WOMEN ST 201	3

Second Year

<i>First Term</i>	<i>Hours</i>
CES 300	3
CES Elective ¹	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Quantitative Reasoning [QUAN]	3 or 4
Electives	3

<i>Second Term</i>	<i>Hours</i>
CES Elective ¹	3
CES Sub-core	3
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Diversity [DIVR]	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level CES Elective ¹	3
CES Sub-core	3
Writing in the Major Elective [M]	3
Electives	7

<i>Second Term</i>	<i>Hours</i>
300-400-level CES Electives ¹	6
Writing in the Major Elective [M]	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level CES Elective	3
Electives	12

<i>Second Term</i>	<i>Hours</i>
300-400-level Electives	9
Integrative Capstone [CAPS]	3
Electives	3

¹ Please see CES Website, <http://libarts.wsu.edu/ccgrs/undergraduate/ces-major.asp>, for elective courses requirements and list of CES electives.

WOMEN’S STUDIES DEGREE PROGRAM (120 HOURS)

The major requires a minimum of 33 credit hours which must include WOMEN ST 201, 300, CES 201, and two of the following sub-core courses: WOMEN ST 332, 369, 406, 481, or 484.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
WOMEN ST 201	3
Electives	4

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
CES 201	3
Humanities [HUM]	3
Social Sciences [SSCI]	3
WOMEN ST Elective ¹	3

Second Year

<i>First Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Quantitative Reasoning [QUAN]	3 or 4
WOMEN ST 300 [M]	3
WOMEN ST Elective ¹	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
WOMEN ST Sub-core	3
Electives ¹	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level WOMEN ST Elective ¹	3
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
WOMEN ST Sub-core	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Electives	9
300-400-level WOMEN ST Elective ¹	3
WOMEN ST [M]	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level WOMEN ST Elective ¹	3
Electives	6
300-400-level Electives	6

<i>Second Term</i>	<i>Hours</i>
300-400-level Electives	9
Integrative Capstone [CAPS]	3
Elective	3

¹ Consult advisor and see Women's Studies website <http://libarts.wsu.edu/ccgrs/undergraduate/wst-majors.asp> for elective courses requirements and list of WOMEN ST electives.

Minors

Comparative Ethnic Studies

Students may complete a minor in Comparative Ethnic Studies (CES). For the minor, students are expected to fulfill all the university's requirements for graduation, CES 201, as well as 18 hours of coursework in CES, nine hours of which must be 300-400 level courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Queer Studies

A minimum of 16 hours including a core of WOMEN ST 201, 369, 484, and 485. In addition, four elective hours selected from WOMEN ST 211, 300, 317, 410, 481, 499. At least 9 hours must be in upper-division work and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Women's Studies

The minor requires a minimum of 16 credit hours, of which 9 hours must be upper-division work and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Coursework must include WOMEN ST 201, 300, and either 481 or 485.

Description of Courses

AMERICAN STUDIES

AMER ST

- 216 American Cultures** 3 Introduction to the interdisciplinary study of American cultures and the field of American studies. (Crosslisted course offered as AMER ST 216, ENGLISH 216, HISTORY 216, WOMEN ST 216).
- 470 Literature and Culture of the American West** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Junior standing. Cultural exploration of American West in written texts; outsider and insider versions of reality and imagination of its diverse peoples. (Crosslisted course offered as ENGLISH 470, AMER ST 470).
- 471 Cultural Politics Since World War II** 3 American popular culture, politics and culture of the 1960s, or topics in recent cultural politics.
- 472 Ecological Issues and American Nature Writing** 3 Course Prerequisite: Junior standing. Representation of nature in American fiction and nonfiction; role of culture in shaping environmental problems and solutions. (Crosslisted course offered as AMER ST 472, ENGLISH 472).

- 473 Arts in American Cultures** 3 Course Prerequisite: Junior standing. Exploration of visual culture?from fine arts to advertising?as a political, sociological, psychological, and philosophical influence in 20th-century American cultures.
- 474 Social Movements and US Culture** 3 Course Prerequisite: Junior standing. Cultural impact of selected social movements such as abolition, populism, labor, women's, ethnic power, gay/lesbian and anti-globalization.
- 475 Digital Diversity** 3 Course Prerequisite: Junior standing. Cultural impact of electronic media, especially the World-Wide Web; issues of race, class, gender, sexuality online. (Crosslisted course offered as AMER ST 475, DTC 475, ENGLISH 475).
- 500 Colloquium** 1 May be repeated for credit; cumulative maximum 12 hours. Current research in American studies. 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, beginnings to 1865.
- 502 Readings in American Studies II** 3 May be repeated for credit; cumulative maximum 9 hours. Readings in key texts in American culture, 1865 to present.
- 503 Contemporary Theories of Race and Ethnicity** 3 Major theoretical readings and key recent texts in U.S. and transnational ethnic studies scholarship.
- 505 Pro Seminar in American Cultural Studies** 3 Critical theoretical engagement within an interdisciplinary field; emphasis on professionalism.
- 506 Frameworks in American Cultural Studies** 3 Critical framework for intellectual, theoretical, and political genealogies within American Studies.
- 507 Contemporary Practices in American Cultural Studies** 3 Overview of contemporary practices in American cultural studies; important concepts and major insights within the field.
- 513 Theory and Method in American Studies** 3 Major theories and methods currently used by American studies scholars; key concepts in cultural analysis. (Crosslisted course offered as AMER ST 513, ENGLISH 513, HISTORY 513).
- 514 Interdisciplinary Research Methods** 3 Major methods used in interdisciplinary cultural analysis including critical ethnography, oral history, rhetorical and textual analysis and other qualitative approaches.
- 520 Colonization, Globalization and Decolonization** 3 Topics in the critical study of colonialism, neo-colonialism, imperialism, globalization and resistance to these forces.
- 521 Critical Studies in Sexuality** 3 Topics in the critical analysis of normative sexualities and forces shaping US and global cultures.
- 522 Digital Cultures, Digital Divides** 3 Critical analysis of the social and cultural dimensions of the digital divide and use of digital technologies by dominant and subaltern communities.

- 523 Environmental Justice Cultural Studies** 3 Critical analysis of the cultural dimensions of environmental justice and injustice.
- 524 Critical Studies in Popular Culture** 3 Interdisciplinary approaches to historical and contemporary trends and issues in US popular culture.
- 525 Social Movements in American Studies** 3 Theoretical and historical study of the role of social movement in United States culture.
- 526 Contemporary Theories of Race and Ethnicity** 3 Major theoretical readings and key recent texts in U.S. and transnational ethnic studies scholarship.
- 527 Contemporary Feminist Theories and Practices** 3 Major theoretical readings and key recent texts in U.S. and transnational feminist scholarship.
- 590 Seminar in American Studies** 3 May be repeated for credit; cumulative maximum 9 hours. Interdisciplinary topics in American culture.
- 596 Topics in American Studies** 3 May be repeated for credit; cumulative maximum 9 hours. American Studies Summer Institute. (Crosslisted course offered as AMER ST 596, HISTORY 596). Credit not granted for both HISTORY 496 and HISTORY 596.
- 600 Special Projects or Independent Study V** 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V** 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V** 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V** 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

COMPARATIVE ETHNIC STUDIES

CES

- 101 [DIVR] Introduction to Comparative Ethnic Studies 3** Comparative issues in Asian American, African American, Chicana/o, and Native American cultures in the United States.
- 111 [HUM] Introduction to Asian Pacific American Studies 3** Examination of the social, political, economic, and cultural experiences of Asian/Pacific Americans in the historical and contemporary period.
- 131 [SSCI] Introduction to Black Studies 3** An introduction to general knowledge concerning African Americans in the US.
- 151 [HUM] Introduction to Chicano/Latino Studies 3** Examination of the history, culture, political and economic status of Chicano/as and Latino/as in the US.
- 171 [SSCI] Introduction to Indigenous Studies 3** Introduction to indigenous studies; introductory course to contemporary indigenous cultures and politics.
- 201 Foundations of Comparative Ethnic Studies 3** Critical examination of the history, methodology and theoretical concepts of ethnic studies.
- 204 Critical Studies in Whiteness 3** Political and cultural practices that define whiteness through history, popular culture and everyday life.
- 209 [HUM] [HUM Hip Hop Around the Globe 3** Diversity and complexity of hip hop at a local, national and global level.
- 211 Asian Pacific American History 3** Historical experience of Asian/Pacific Americans since the 19th century. (Crosslisted course offered as CES 211, HISTORY 201).
- 220 [HUM] Introduction to Multicultural Literature 3** Survey of multicultural literature including European American, African American, Asian American, Chicana/o, and Native American authors. (Crosslisted course offered as CES 220, ENGLISH 220).
- 222 Race in Sport Films 3 (2-2)** Examination of racial politics through critical discussions of sport film.
- 235 African American History 3** History of African Americans in the US with emphasis upon major themes of the Black experience. (Crosslisted course offered as CES 235, HISTORY 205, WOMEN ST 235).
- 240 Global Indigenous Issues 3** Critical examination of global indigenous politics in a historical perspective.
- 244 [SSCI] Critical Globalizations 3** Critical examination of the historical trajectory and contemporary practices, institutions and policies that make up globalization.
- 254 Comparative Latino/a Cultures 3** Comparison of the contemporary and historical experiences of Latinos and Latinas in the United States, and their relations with other ethnic minority groups and the majority populations.
- 255 Chicana/o History 3** The historical development of the Chicano/a community in relation to the dynamics of race relations, class structure, ethnic identity, gender, and sexuality in American society from 1521 to the 20th century.
- 260 [HUM] Race and Racism in US Popular Culture 3** Examines images, ideologies, and identities; introduces key concepts and methods; focuses on race, gender, sexuality and class.
- 271 [HUM] Native Music of North America 3** Music and ceremonialism as a reflection of realities in North American native cultures, past and present. (Crosslisted course offered as MUS 265, CES 271).
- 280 Race and the Law in American History 3** Introduction to the role of the law in American race-relations since 1750. (Crosslisted course offered as CES 280, HISTORY 280).
- 300 [M] Intersections of Race, Class, Gender and Sexuality 3** Course Prerequisite: 3 hours CES, WOMEN ST, or SOC 101. Intersections between race, class and gender through case studies; experiences in interdisciplinary methods. (Crosslisted course offered as WOMEN ST 300, CES 300, SOC 300).
- 301 [M] Race and Global Inequality 3** Examination of nationalism, colonization, empire-building, racism, ethnic conflict, and class inequality in a global context.
- 302 Social Psychology of Prejudice 3** Causes and nature of prejudice from social, psychological, and cultural theoretical perspectives.
- 304 [DIVR] American Roots: Immigration, Migration, and Ethnic Identity 3** An analysis of immigration to migration within the US including political and social consequences and the experiences of ethnic groups since the early 19th century. (Crosslisted course offered as HISTORY 314, CES 304).
- 305 Contemporary Masculinity and Men's Issues 3** Analysis of the development of masculinity in its biological and cultural forms. (Crosslisted course offered as WOMEN ST 302, CES 305, SOC 302).
- 308 [M] Cultural Politics of Sport 3** A critical examination of US sports through class, race, gender, sexuality, nationalism and criminality.
- 309 [ARTS] Queer Identities in Contemporary Cultures 3** Analysis of roots/legacies of creative resistance writing by Queer communities of color; students learn to produce creative resistance work. (Crosslisted course offered as WOMEN ST 369, CES 309).
- 311 Asian Diaspora Across the Americas 3** Migration of Asian populations across the Pacific, North and South America and the Caribbean.
- 313 [HUM] Asian Pacific American Literature 3** Asian American fiction, drama, poetry, and other arts, 1900 to present; impact of Asian/Pacific American culture and experience upon these works. (Crosslisted course offered as CES 313, ENGLISH 311).
- 314 [M] Topics in Asian Pacific American Literature 3** May be repeated for credit; cumulative maximum 6 hours. Trends, themes, major writers. (Crosslisted course offered as CES 314, ENGLISH 314).
- 315 [M] Asian Pacific American Autobiography 3** Critical readings of the autobiographical works, memoirs, and life writings by Asian Pacific Americans. (Crosslisted course offered as CES 315, ENGLISH 315).
- 325 [DIVR] Traveling Cultures: Tourism in Global Perspective 3** Social relations and cultural practices central to tourism with examples from around the world.
- 330 From Malcolm X to the Black Panthers 3** Complex understanding of the history of black politics in the 1960's.
- 331 African American Literature 3** Introduction to major issues and major works in the African American literary tradition. (Crosslisted course offered as CES 331, ENGLISH 321).
- 332 [M] Topics in African American Literature 3** May be repeated for credit; cumulative maximum 6 hours. Trends and major writers. (Crosslisted course offered as ENGLISH 322, CES 332).
- 335 Black Freedom Struggle 3** Historic exploration of black resistance focusing on nationwide movement that developed following World War II. (Crosslisted course offered as CES 335, HISTORY 313).
- 336 Black Popular Culture 3** Histories of African American pop culture; examines how African American cultural specificities emerge and transform American popular imaginations.
- 338 Cinematic Images of Blackness 3** Critical perspectives on the history of cinematic images of blackness; traces experiences of blacks within Hollywood as actor or artist, subject or image.
- 340 Empire and Race 3** Analysis of historical and contemporary manifestations of Empire and their effect on race and the international racialized division of labor.
- 353 [M] Chicana/o - Latina/o Literature 3** Chicana/o and Latina/o literature, narrative, novel, autobiography, poetry, short story, and drama. (Crosslisted course offered as CES 353, ENGLISH 345).
- 357 Chicana/os and Popular Culture 3** Representation of Chicanos in US popular culture.
- 358 [M] US Latino/as in Film 3 (2-3)** Critical analysis of Latinas and Latinos in contemporary US mainstream movies and independent films.
- 359 Chicana/o and Latina/o Politics 3** Character, role, and goals of Chicano/Latino politics; contemporary Chicano/Latino issues. (Crosslisted course offered as CES 359, POL S 375).

- 372 Indigenous Women in Traditional and Contemporary Societies** 3 Course Prerequisite: One of ANTH 101, 214, CES 101, 171, or WOMEN ST 101, or WOMEN ST 201. Exploration of roles and activities of women in indigenous societies; how traditional gender roles have developed and changed. (Crosslisted course offered as CES 372, ANTH 312, WOMEN ST 372).
- 373 [M] Native American Literature** 3 Native American literature, by and about the original inhabitants, image and counter-image, with emphasis on the 20th century. (Crosslisted course offered as CES 373, ENGLISH 341).
- 375 North American Indian History, Precontact to Present** 3 History of North American Indian peoples from circa 1350 to present. (Crosslisted course offered as HISTORY 308, CES 375).
- 376 America Before Columbus** 3 Cultures and environments of North/Middle America from the arrival of the earliest hunter-gatherers to the complex Mayan and Aztec civilizations. (Crosslisted course offered as ANTH 331, CES 376). Recommended preparation: ANTH 101.
- 377 Native Peoples of North America** 3 A culture history/culture area study of native North America. (Crosslisted course offered as ANTH 320, CES 377).
- 378 Contemporary Native Peoples of the Americas** 3 Contemporary cultures of Native American communities emphasizing North America. (Crosslisted course offered as ANTH 327, CES 378). Recommended preparation: ANTH 101 or CES 171.
- 379 Indigenous Film** 3 Critical examination of films and videos featuring and by indigenous peoples; traces the history of the indigenous peoples as subjects of films and as filmmakers.
- 380 Immigration and Citizenship in the Global Economy** 3 Examination of past and current notions of immigration and citizenship in North American, Asian, and European countries as defined by government officials, political organizations, community groups, and popular culture.
- 401 Seminar in Culture and Power** 3 Complex power relations that develop among competing local, regional, national, and global culture(s).
- 403 Cultural Issues in Psychology** 3 Multidisciplinary analyses of the relationship between social-ecological and political contexts and individual and collective psychology. (Crosslisted course offered as CES 403, PSYCH 403).
- 404 Stereotypes in Communication** 3 Course Prerequisite: Certified in any major. Examines portrayals of social groups in the media and the impact portrayals have on perceptions, expectations, and aspirations of members of portrayed groups and nonmembers. (Crosslisted course offered as COM 471, CES 404).
- 405 [CAPS] Cultural Criticism and Theory** 3 Course Prerequisite: Junior standing. Major critiques and theories of colonialist and imperialist formations of culture. (Crosslisted course offered as CES 405, ENGLISH 410).
- 406 Philosophy and Race** 3 Course Prerequisite: 3 hours in PHIL or CES 201. Examination of race within western philosophy including work of philosophers of color and analysis of the category race. (Crosslisted course offered as CES 406, PHIL 406).
- 407 Race, Gender and the Prison Industrial Complex** 3 Race, gender and nationality and how they affect the organization and maintenance of the prison industrial complex.
- 408 Introduction to Critical Race Feminism** 3 Studies structural inequalities in the US through historically grounded analysis of social systems, race, gender, and the law. (Crosslisted course offered as WOMEN ST 408, CES 408).
- 411 Asian Pacific American Women** 3 Course Prerequisite: CES or WOMEN ST course; junior standing. Intersection of ethnicity, race, class, gender and sexuality in the lives of Asian Pacific American women. (Crosslisted course offered as CES 411, WOMEN ST 411).
- 413 Asian Pacific Americans and Popular Culture** 3 Course Prerequisite: CES 101 or 111. Examines the racial politics that have developed around the representation of Asian Pacific Americans in US popular culture.
- 421 [DIVR] Intercultural Communication and Globalization** 3 How global processes shape intercultural communication and how globalization is understood, advanced, and opposed by different groups. (Crosslisted course offered as COMSOC 421, CES 421).
- 426 Workers Across North America** 3 Course Prerequisite: Junior standing. International interactions between workers and labor unions in Mexico, Canada and the US. (Crosslisted course offered as CES 426, HISTORY 426).
- 435 African American Women in US Society** 3 Course Prerequisite: Junior standing. Critical terms and models for understanding the experiences of African American women in antebellum America to the present; an interdisciplinary forum concerned with the national experience of the African American woman experience. (Crosslisted course offered as CES 435, WOMEN ST 435).
- 436 Black Masculinities** 3 Historical, political and cultural constructions of images of black manhood and the effects on black male subjectivity.
- 440 Social Justice and American Culture** 3 Course Prerequisite: Junior standing. Social justice issues in relation to diverse American cultures in both an historical and contemporary context.
- 442 Nation, Ethnicity, and Modernity** 3 Relationship between modernity and nation-making in relation to dominant constructions of race and ethnicity and histories of colonialism.
- 444 White Power Movements and Ideologies** 3 Course Prerequisite: Junior standing. Critical assessment of white supremacist and nationalist movements and ideologies around the globe.
- 446 Racism and Anti-Racism in Global Context** 3 Theory and practice of anti-racism; history and scope; strategies to transform racist systems.
- 454 La Chicana in US Society** 3 Course Prerequisite: Junior standing. Intersections of race, class, gender and sexual orientation in the experience of a marginalized group - Chicanas. (Crosslisted course offered as CES 454, WOMEN ST 454).
- 465 Race, Science, and Society** 3 Course Prerequisite: Junior standing. Racial thinking in science tracing the impact of scientific racism on policy, popular thought and social movements.
- 470 Indigenous Politics** 3 Course Prerequisite: Junior standing. An overview of the struggles of indigenous people; issues include rights, recognition, identity, natural resources, intellectual property, and repatriation globally.
- 475 Indians of the Northwest** 3 Course Prerequisite: ANTH 320, CES 171, 375, 377, or HIST 308; junior standing. History and ethnography of Native Americans of the Coast and Plateau; historic relationship with Europeans and Euro-Americans, and other Native Americans, Asian Americans, and Chicanas/os.
- 485 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 491 [M] Theories of Racism and Ethnic Conflicts** 3 Provides general knowledge of the history of racist ideas and the social, political, and cultural contexts underlying ethnic conflicts.
- 494 Advanced Topics in Ethnic Studies** 3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: 3 credits in CES. A reading and discussion course that explores special topics in ethnic studies.
- 495 Special Topics in Comparative Ethnic Studies** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: 3 credits in CES. Cross-cultural studies on Asian Pacific Americans, Blacks, Chicanas/os, and Native Americans.
- 498 Internship in Comparative Ethnic Studies** V 1-3 Course Prerequisite: 12 hours of CES; junior standing. Internship component for CES majors and minors. S, F grading.
- 499 Directed Independent Study** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

WOMEN'S STUDIES**WOMEN ST**

- 101 [DIVR] Gender and Power: Introduction to Women's Studies** 3 Analysis of gender and power in contemporary society from perspectives of different racial, ethnic and socioeconomic groups.
- 201 Critical Frameworks in Gender Studies** 3 Critical frameworks that interrogate gender discrimination and explore gender justice from an intersectional and interdisciplinary perspective.
- 204 [SSCI] Family Systems: Understanding Family Interaction** 3 Introduction to the study of family processes: family generational, emotional, boundary, rule, and ritualistic systems. (Crosslisted course offered as H D 204, WOMEN ST 204).
- 211 [HUM] Sex Matters: Introduction to Queer Culture and Literature** 3 Introduction to Lesbian/queer cultural production focusing on popular culture, fiction, and film; work from various queer communities in its cultural/historical context. (Crosslisted course offered as WOMEN ST 211, ENGLISH 211).
- 214 [SSCI] Gender and Culture in America** 3 Exploration or variation in gender roles, relationships, values, and institutions among men and women in US, ethnic, and other subcultures. (Crosslisted course offered as ANTH 214, WOMEN ST 214).
- 216 American Cultures** 3 Introduction to the interdisciplinary study of American cultures and the field of American studies. (Crosslisted course offered as AMER ST 216, ENGLISH 216, HISTORY 216, WOMEN ST 216).
- 220 [DIVR] Gender, Culture and Science** 3 Analysis of intersections of gender, sexuality, race, and culture with science and technology.
- 230 Human Sexuality** 3 Sexuality in personal development; personal, cultural, biological influences on sexual identification and behavior; fertility, reproduction, sexual functioning, sexuality and personality. (Crosslisted course offered as PSYCH 230, WOMEN ST 230). Recommended preparation: PSYCH 105.
- 235 African American History** 3 History of African Americans in the US with emphasis upon major themes of the Black experience. (Crosslisted course offered as CES 235, HISTORY 205, WOMEN ST 235).
- 251 The Sociology of Sex, Relationships, and Marriage** 3 Social and personal factors in mate selection; the sociology of sexuality; development of gender roles; and intimate relationships and marriage. (Crosslisted course offered as SOC 251, WOMEN ST 251).
- 277 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 298 [DIVR] History of Women in American Society** 3 Exploration of the many roles women have played in American society from the Colonial period through the twentieth century. (Crosslisted course offered as HISTORY 298, WOMEN ST 298).
- 300 [M] Intersections of Race, Class, Gender and Sexuality** 3 Course Prerequisite: 3 hours CES, WOMEN ST, or SOC 101. Intersections between race, class and gender through case studies; experiences in interdisciplinary methods. (Crosslisted course offered as WOMEN ST 300, CES 300, SOC 300).
- 302 Contemporary Masculinity and Men's Issues** 3 Analysis of the development of masculinity in its biological and cultural forms. (Crosslisted course offered as WOMEN ST 302, CES 305, SOC 302).
- 305 Gender and Politics** 3 Role of gender in political behavior; voting and political participation; women as subjects and objects of political systems. (Crosslisted course offered as POL S 305, WOMEN ST 305).
- 306 [M] Introduction to Literary Criticism** 3 Introduction to the systematic study of critical and theoretical approaches to literature; emphasis on problems of interpretation. (Crosslisted course offered as ENGLISH 308, WOMEN ST 306).
- 308 [M] Women Artists I** 3 Middle Ages through the 18th century. (Crosslisted course offered as FINE ART 308, WOMEN ST 308).
- 309 Women Writers** 3 Women's artistic and intellectual contributions to prose, fiction, drama, and poetry. (Crosslisted course offered as ENGLISH 309, WOMEN ST 309).
- 310 [M] Women Artists II** 3 19th to 20th century. (Crosslisted course offered as FINE ART 310, WOMEN ST 310).
- 315 Women in Management and Leadership** 3 Analysis of women's historical and contemporary role in American management. (Crosslisted course offered as WOMEN ST 315, MGMT 315).
- 316 [DIVR] Gender in Cross Cultural Perspective** 3 Cross-cultural examination of the status and roles of women and men, sexuality and marriage, and folk concepts of sexual anatomy in traditional cultures in Western science; concepts of nature and culture are explored through a variety of perspectives. (Crosslisted course offered as ANTH 316, WOMEN ST 316). Recommended preparation: Sophomore standing; ANTH 101, PSYCH 105, SOC 101, or WOMEN ST 101 or 201.
- 317 Gay and Lesbian Literature** 3 Gay and lesbian literature with focus on the history of homosexual literature and exploration of current authors. (Crosslisted course offered as ENGLISH 317, WOMEN ST 317).
- 320 [M] Resource Management, Consumerism, and Problem Solving** 3 Course Prerequisite: Sophomore standing. Styles of managing material, human and environmental resources with families; analysis of consumer role; interaction of consumers, government, market: various approaches to problem solving with individuals and families; effects on communities, families, and individuals. (Crosslisted course offered as H D 320, WOMEN ST 320).
- 321 Topics in Women's Studies** V 1-3 May be repeated for credit; cumulative maximum 9 hours. Focused study of subjects/issues relating to women.
- 322 [M] Gender and Love in East Asian Culture** 3 The theme of gender with respect to love, courage, self-sacrifice, and vulnerability in traditional Chinese and Japanese literature and culture. (Crosslisted course offered as CHINESE 321, ASIA 321, JAPANESE 321, WOMEN ST 322).
- 324 Psychology of Women** 3 Socialization and sex roles of women; a psychological perspective. (Crosslisted course offered as PSYCH 324, WOMEN ST 324). Recommended preparation: PSYCH 105.
- 332 Global Feminisms** 3 Course Prerequisite: ANTH 101, WOMEN ST 101, or WOMEN ST 201. An interdisciplinary approach to examining women's roles and experiences throughout the world and different approaches to feminism/feminisms. (Crosslisted course offered as WOMEN ST 332, ANTH 317).
- 335 Women in Latin American History** 3 Survey of women's changing roles throughout Latin America from pre colonial to present. (Crosslisted course offered as HISTORY 335, WOMEN ST 335).
- 336 History of Sexualities** 3 Historical analysis of the social construction of sexualities in intersection with race and class within national and transnational contexts. (Crosslisted course offered as WOMEN ST 336, HISTORY 336).
- 337 Women in the Ancient World** 3 Role of women in ancient Egypt, Mesopotamia, Israel, Greece, and Rome; focus on the formation of western attitudes toward women. (Crosslisted course offered as HISTORY 337, WOMEN ST 337).
- 338 [HUM] Women and Popular Culture** 3 Intersections of gender, race, class and sexuality through popular film, television, art, literature and performance.
- 340 Third World Women and Film** 3 Focus on the intersections of race, gender, class, sexuality, and nation in third world women's films.
- 350 European Women's History, 1400-1800** 3 Women's experiences in Europe from the Renaissance to the Enlightenment and the ideas and roles that shaped their opportunities. (Crosslisted course offered as HISTORY 350, WOMEN ST 350).
- 351 [DIVR] The Family** 3 Family system and its interaction patterns; family formation and dissolution; marital and partner relations, divorce, sexuality, parenting, work-family balance. (Crosslisted course offered as SOC 351, WOMEN ST 351). Recommended preparation: SOC 101.
- 363 [DIVR] Women in Music** 3 Intersections of gender, class, race, and culture with popular and country music. (Crosslisted course offered as MUS 363, WOMEN ST 363).

- 369 [ARTS] Queer Identities in Contemporary Cultures** 3 Course Prerequisite: CES 101, CES 201, WOMEN ST 101, or WOMEN ST 201. Analysis of roots/legacies of creative resistance writing by Queer communities of color; students learn to produce creative resistance work. (Crosslisted course offered as WOMEN ST 369, CES 309).
- 372 Indigenous Women in Traditional and Contemporary Societies** 3 Course Prerequisite: One of ANTH 101, 214, CES 101, 171, or WOMEN ST 101, or WOMEN ST 201. Exploration of roles and activities of women in indigenous societies; how traditional gender roles have developed and changed. (Crosslisted course offered as CES 372, ANTH 312, WOMEN ST 372).
- 382 American Literature: 1940-Present** 3 Course Prerequisite: ENGLISH 302. Advanced study of major authors and movements from the period including O'Connor, Bellow, Salinger, Baldwin, Pynchon, Morrison, Tan, and Alexie. (Crosslisted course offered as ENGLISH 482, WOMEN ST 382).
- 384 Sociology of Gender** 3 Construction and maintenance of gender and gender inequality in American society. (Crosslisted course offered as SOC 384, WOMEN ST 384). Recommended preparation: SOC 101.
- 390 Gender and Work** 3 Gender and inequality at work including occupational segregation, wage inequality and balancing work and family. (Crosslisted course offered as SOC 390, WOMEN ST 390).
- 398 [DIVR] History of Women in the American West** 3 The multicultural history of women in the west through women's literature, archives, and oral history. (Crosslisted course offered as HISTORY 398, WOMEN ST 398).
- 399 [DIVR] Lesbian and Gay History: Culture, Politics and Social Change in the US** 3 Course Prerequisite: HISTORY 110, HISTORY 111, WOMEN ST 101, or WOMEN ST 201. History and theory of same-sex sexuality in the United States including identity formation, community development, politics and culture. (Crosslisted course offered as HISTORY 399, WOMEN ST 399).
- 403 Violence Toward Women** 3 Violence toward women and its relationship to broader social issues such as sexism and social control. (Crosslisted course offered as CRM J 403, WOMEN ST 403).
- 405 [M] Contemporary Art: Theory and Practice** 3 Contemporary theories of art and how those theories are developed. (Crosslisted course offered as FINE ART 405, WOMEN ST 405).
- 406 Women and Work In Global Contexts** 3 Course Prerequisite: Junior standing. An interdisciplinary approach to women's labor in global contexts that analyzes differences among women as well as possible shared interests.
- 407 [BSCI] Biology of Women** 3 Course Prerequisite: BIOLOGY 102 or 106; junior standing. Biological basis of sex and its relationship to body function, women and health care, and the impact of social and cultural perspectives on the experience of being female. (Crosslisted course offered as BIOLOGY 407, WOMEN ST 407).
- 408 Introduction to Critical Race Feminism** 3 Course Prerequisite: Junior standing. Studies structural inequalities in the US through historically grounded analysis of social systems, race, gender, and the law. (Crosslisted course offered as WOMEN ST 408, CES 408).
- 409 Women Writers in the American West** 3 Course Prerequisite: Junior standing. Diversity of writings by women in the trans-Missouri West from the 1890s to the present. (Crosslisted course offered as ENGLISH 409, WOMEN ST 409).
- 410 Internship** V 1-12 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: WOMEN ST 101 or 201; WOMEN ST 300 with a B or better, or 481 with a B or better; by interview only. Supervised experience in approved campus or community agencies or projects focusing on women's issues.
- 411 Asian Pacific American Women** 3 Intersection of ethnicity, race, class, gender and sexuality in the lives of Asian Pacific American women. (Crosslisted course offered as CES 411, WOMEN ST 411).
- 421 The American West** 3 Multicultural exploration of the frontier experience and western America; environment, economic development, gender, class and race emphasized. (Crosslisted course offered as HISTORY 421, WOMEN ST 421).
- 425 Philosophy and Feminism** 3 Course Prerequisite: 3 hours PHIL, WOMEN ST 101, or WOMEN ST 201. Feminist philosophy as critique of Western philosophical tradition and as alternate framework for thought. (Crosslisted course offered as PHIL 425, WOMEN ST 425).
- 435 African American Women in US Society** 3 Critical terms and models for understanding the experiences of African American women in antebellum America to the present; an interdisciplinary forum concerned with the national experience of the African American woman experience. (Crosslisted course offered as CES 435, WOMEN ST 435).
- 454 La Chicana in US Society** 3 Course Prerequisite: Junior standing. Intersections of race, class, gender and sexual orientation in the experience of a marginalized group - Chicanas. (Crosslisted course offered as CES 454, WOMEN ST 454).
- 460 Gender, Race, and Nature in American Culture** 3 Course Prerequisite: WOMEN ST 101, 201, or 300; junior standing. Exploration of American culture through examination of cultural representations of nature in mainstream and environmental politics.
- 462 [M] Women and Ethics** 3 Course Prerequisite: PHIL 101, WOMEN ST 101, or WOMEN ST 201. Study of gender and feminism and their effect on contemporary ethical theories and issues. (Crosslisted course offered as WOMEN ST 462, PHIL 462). Cooperative: Open to UI degree-seeking students.
- 464 Gender and the Media** 3 Course Prerequisite: COM 101, WOMEN ST 101, or WOMEN ST 201; certified major or minor in communication. How news and entertainment media shape and reinforce societal expectations of gender; consideration of race, age, class, and sexual orientation. (Crosslisted course offered as COM 464, WOMEN ST 464).
- 477 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 481 [M] Theoretical Issues in Women's Studies** 3 Course Prerequisite: WOMEN ST 101, 201, or 300. Introduction to the field of feminist theory, including classic interdisciplinary methods, and applications of this scholarship to contemporary women's issues.
- 484 [DIVR] Lesbian and Gay Studies** 3 Course Prerequisite: Junior standing. Interdisciplinary exploration of issues related to gender and sexuality, explored transhistorically and cross-culturally, including race, class and age differences. (Crosslisted course offered as WOMEN ST 484, SOC 484).
- 485 [M] Theoretical Issues in Gay and Lesbian Studies** 3 Course Prerequisite: WOMEN ST 484 or 300-400-level WOMEN ST course. Theoretical construction and interpretation of sexualities, gender, and identity.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

Department of Crop and Soil Sciences

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Professor and Department Chair, J.B. Harsh. CROP SCIENCE: Professors, K. S. Gill, S. O. Guy, S. Hulbert, W. J. Johnston, S. S. Jones, K. K. Kidwell, D. Lyon, W. F. Schillinger, D. VonWettstein; Associate Professors, I. C. Burke, S. C. Fransen, J. Goldberger, T. W. Miller, M. M. Neff, G. K. Stahnke; Assistant Professors, A. H. Carter, M. O. Pumphrey; Assistant Research Professors, K. M. Murphy, S. Rustgi, Z. Shi; Research Intern, R. D. Roe. SOIL SCIENCE: Regents Professor, J. Reganold; Professors, C. G. Cogger, J. R. Davenport, M. Flury, J. B. Harsh, R. T. Koenig, W. L. Pan; Associate Professor, D. Brown, L. Carpenter-Boggs; Assistant Professor, K. Desta; Instructors, R. Abi-Ghanem. AGRICULTURE AND FOOD SYSTEMS: Senior Instructor, J. Durfey; Instructors, J. D. Baser. Adjunct Faculty: S. Albrecht, R. Allan, O. Badini, B. Baik, V. Bailey, B. Benbrook,

C. Benedict, H. Bolton, R. A. Boydston, V. Bradley, C. Campbell, K. Campbell, P. Castiglione, W. Chen, D. Cobos, D. Collins, H. Collins, C. Coyne, Z. A. Daryabegi, N. Embertson, A. Esser, G. Feng, A. Fortuna, J. C. Gardner, H. Gollany, S. Greene, J. Hu, D. Huggins, D. Jarvis, A. C. Kennedy, T. Kisha, T. Knappenberger, K. Mashal, M. Mazzola, P. N. Miklas, A. Morgounov, C. F. Morris, O. S. Norberg, X. Ochoa-Espinoza, C. D. Pannkuk, L. J. Patzek, J. G. Payumo, C. Reardon, D. Roberts, R. D. Roe, M. Sanad, B. Sharratt, D. Z. Skinner, J. L. Smith, M. Stannard, C. Steber, J. D. Streubel, M. Swanson, J. Ullman, S. Vanvleet, M. W. Williams, J. Yenish, F. L. Young. Professors Emeriti: B. E. Frazier, A. Kleinhofs, S. Kuo, R. Parker, F. Pierce, R. G. Stevens, M. K. Swan, S. E. Ullrich.

The Department of Crop and Soil Sciences supports undergraduate programs of study leading to the Bachelor of Science interdisciplinary degrees in Integrated Plant Sciences and Agricultural and Food Systems. 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 student club activities. Students planning to transfer to Washington State University should take courses which meet general university and Integrated Plant Sciences or Agricultural and Food Systems core requirements.

Undergraduate minors in Crop Science, Soil Science, Geospatial Analysis, and Agricultural and Food Systems, as well as an undergraduate certificate program in Organic Agriculture, are also available.

We also offer graduate programs of study leading to the degrees of Master of Science in Crop Science, Master of Science in Soil Science, Doctor of Philosophy (Crop Science), and Doctor of Philosophy (Soil Science). A graduate certificate in Sustainable Agriculture is also available.

INTEGRATED PLANT SCIENCES

The science of plant life from molecule to market is the focus of the new Integrated Plant Sciences (IPS) Degree program. Delivered collaboratively by departments within the College of Agricultural, Human, and Natural Resource Sciences, the IPS degree provides students with an exciting depth and breadth of knowledge that crosses a variety of plant science disciplines, including crop and soil sciences, horticulture and landscape architecture, entomology, plant pathology, and food science. Students pursuing a Bachelor of Science degree in Integrated Plant Sciences may choose among seven majors. More information regarding IPS is available under the Integrated Plant Sciences catalog section and <http://ips.wsu.edu>.

Agricultural Biotechnology

The Integrated Plant Sciences degree, Agricultural Biotechnology major is a designed for students interested in careers such as laboratory or research technicians in plant biotechnology, breeding, genetics, entomology, plant pathology, molecular biology, or physiology, as well as for students preparing for advanced degrees in these areas. The program emphasizes the development and application of new technology to ensure a safe and abundant food and fiber supply. Students may find employment in industry, government, or university labs.

Field Crop Management

The Integrated Plant Sciences degree, Field Crop Management major is ideal for students interested in agronomy, crop production, and plant, soil, and pest management. Crop scientists (or agronomists) are involved in improving food, feed, and fiber production. Graduates qualify for careers in agribusiness, corporate and technical farm management, professional consulting, research, and sales positions.

Turfgrass Management

The Integrated Plant Sciences degree, Turfgrass Management major is geared toward students interested in pursuing careers as golf course managers, athletic field managers, or personnel managers in those venues. Students will take courses in turf management, turf production, plant pathology, entomology, soil fertility, and plant breeding to learn how to maintain healthy turfgrass systems. Additionally, students gain hands-on experience at the Palouse Ridge Golf Course, a new 18-hole championship golfing facility at the Pullman campus.

AGRICULTURAL FOOD SYSTEMS

The Agricultural and Food Systems (AFS) program is an exciting, college-wide, interdisciplinary program that offers a Bachelor of Science degree with five majors and a Master of Science degree. Majors regarding AFS are available at <http://afs.wsu.edu>.

Agricultural Education

Combining the best of both agriculture and teaching, the Agricultural and Food Systems degree, Agricultural Education major prepares students to educate the next generation of agricultural leaders and consumers. Highly sought after by employers, they teach high school and middle school agricultural science classes, as well as serve as FFA advisors, adult education instructors, community outreach coordinators, university extension agents, etc.

Agricultural Technology and Production Management

Students in this Agricultural and Food Systems degree, Agricultural Technology and Production Management hands-on major gain a science-based overview of agriculture and food systems, with an emphasis on the practical application of technology to agricultural production systems. The program combines students' inherent creativity and interest in physical and biological sciences, technology, mathematics, business, and related subjects with their desire to develop innovative solutions to a variety of agricultural problems.

Organic Agricultural Systems

Significantly different than conventional agriculture, organic food production is one of the fastest growing segments of agriculture, with retail sales increasing by 20 percent annually since 1991. In many ways, Washington State has been a leader in this burgeoning new industry. This revolutionary new major is the first of its kind to be offered in the United States. Students in the Agricultural and Food Systems degree, Organic Agricultural Systems major take a diverse array of courses in the natural, environmental, economic, and social sciences, as

well as a number of courses focused on organic production practices.

PREPARATION FOR GRADUATE STUDENTS IN CROP AND SOIL SCIENCES

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 crop science includes course work with a strong emphasis in plant sciences, chemistry, computer science, mathematics, and statistics. Preparation for an advanced degree in soil science includes course work in upper-division organic chemistry, statistics, and soil science.

Minors

Crop Science

A minor in crop science may be obtained by students from this and other departments. A minimum of 16 credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. See crop science advisor.

Geospatial Analysis

The minor requires a minimum of 16 semester hours including the following core: SOIL SCI 368, 374 and SOIL SCI/NATRS 468/568; and 6 hours from the following: AGTM 405, LND ARCH 525, NATRS 464/564, SOIL SCI 451, 508. Exceptional students may take graduate-level courses with instructor permission. Courses used for the minor in geospatial analysis may not be used for the minor in soils sciences. At least 9 hours must be 300-400-level work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Soil Science

A minor in soil science may be obtained by students from this and other departments. Sixteen semester hours in soils is required, at least 9 of which must be in 300-400-level courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. See soil science advisor.

Description of Courses

CROP SCIENCE

CROP SCI

102 Introduction to Cultivated Plants 3

Exploring cultivated plant classification and morphology, crop reproduction, basic plant processes, and the biotic and abiotic factors which can influence these processes. (Crosslisted course offered as HORT 102, CROP SCI 102).

104 Introduction of Turfgrass Science and Industry 1 (0-3)

Introduction to turfgrass science and industry including golf, sports, lawn, sod and related facilities. Field trip required.

- 202 Crop Growth and Development 4** (3-3) Morphology, anatomy, growth and development of agronomic and horticultural crops. (Crosslisted course offered as HORT 202, CROP SCI 202). Recommended preparation: HORT 102; BIOLOGY 106, 107, or 120.
- 301 [M] Turfgrass Management 3** (2-3) Course Prerequisite: BIOLOGY 102, 106, 107, or 120. Principles of establishment and management of turf for lawns, parks, and golf courses. Field trip required. Cooperative: Open to UI degree-seeking students.
- 302 Forage Crops 3** (2-3) Course Prerequisite: BIOLOGY 102, 106, 107, 120, or 135. Adaptation, production, and utilization of forage crops. Field trip required.
- 305 Ecology and Management of Weeds 3** (2-3) Course Prerequisite: HORT 202 or AFS 201. Weed ecology/management in crop and non-crop systems; weed growth/development, identification, weed control (chemical, mechanical, biological), and environmental issues
- 317 Turfgrass Management Environmental Issues 3** Turfgrass management and practices relating to environmental issues and concerns for golf courses, athletic fields and other public areas. Recommended preparation: CROP SCI 301.
- 360 World Agricultural Systems 3** Course Prerequisite: 3 units of [B] or [BSCI] GER or UCORE categories. Study of agro-environmental characteristics of world agriculture; historical and contemporary features of world food production. (Crosslisted course offered as CROP SCI 360, SOIL SCI 360). Cooperative: Open to UI degree-seeking students.
- 401 Turfgrass Science 3** Course Prerequisite: CROP SCI 301. Integration of the principles of turfgrass science into turf management for environmental stewardship of turfgrass systems.
- 403 Advanced Cropping Systems 3** Course Prerequisite: HORT 202. Understanding the management of constraints to crop production and quality; biological, physical, and chemical approaches to crop health management. Field trips required. (Crosslisted course offered as CROP SCI 403, PL P 403). Recommended preparation: CROP SCI 305; PL P 429. Cooperative: Open to UI degree-seeking students.
- 411 [M] Crop Environment Interactions 3** Course Prerequisite: HORT 202. Effects of environment and management on crop growth and development.
- 412 Seminar 1** May be repeated for credit. Current literature and reports on research or special topics. (Crosslisted course offered as CROP SCI 412, SOIL SCI 412).
- 443 Plant Breeding for Organic Agriculture 3** Course Prerequisite: HORT 202; BIOLOGY 106 or 120. Concepts and practice of breeding in and for organic agriculture with an emphasis on field-based, on-farm techniques.
- 444 Plant Breeding I 2** Genetic principles underlying plant breeding and an introduction to plant breeding. (Crosslisted course offered as CROP SCI 444, HORT 444).
- 445 [M] Plant Breeding 4** Course Prerequisite: MBIOS 301. Genetic principles underlying plant breeding and an introduction to the principles and practices of plant breeding. (Crosslisted course offered as CROP SCI 445, HORT 445).
- 480 Plant Genomics and Biotechnology 3** Course Prerequisite: BIOLOGY 420. Advanced concepts in plant genomics and biotechnology with emphasis on approaches, techniques, and application. (Crosslisted course offered as HORT 480 and CROP SCI 480). Recommended preparation: MBIOS 301 or CROP SCI 444.
- 495 Research Experience V 1-4** May be repeated for credit; cumulative maximum 12 hours. Planned and supervised undergraduate research experience. (Crosslisted course offered as CROP SCI 495, HORT 495, SOIL SCI 495).
- 497 Special Topics: Study Abroad V 1-15** May be repeated for credit. S, F grading.
- 498 Professional Internship V 1-6** May be repeated for credit; cumulative maximum 9 hours. Planned and supervised professional work experience. S, F grading.
- 499 Special Problems V 1-4** May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 503 Advanced Cropping Systems 3** Understanding the management of constraints to crop production and quality; biological, physical, and chemical approaches to crop health management. Field trips required. (Crosslisted course offered as CROP SCI 403, PL P 403). Recommended preparation: CROP SCI 305; PL P 429. Cooperative: Open to UI degree-seeking students.
- 504 Plant Transmission Genetics 3** Transmission of genes across generations; detailed study of the basic laws of genetics to predict and describe inheritance. Cooperative: Open to UI degree-seeking students.
- 505 Advanced Classical and Molecular Breeding 3** Characterization and principles of improving crop quality and adaptation traits with emphasis on molecular breeding strategies. Required preparation must include upper-division course in biology, genetics, or plant breeding. Cooperative: Open to UI degree-seeking students.
- 510 Seminar 1** May be repeated for credit. Literature review; preparation and presentation of reports in crop science.
- 511 Research Proposal and Development 2** Develop research proposal and give oral presentation to demonstrate ability to employ strategy and procedures to address objectives. (Crosslisted course offered as CROP SCI 511, SOIL SCI 511). S, F grading.
- 512 Topics in Crop Science V 1-2** May be repeated for credit. Concepts of plant breeding, seed physiology, and technology; crop physiology and management.
- 545 Quantitative Trait Improvement 3** Concepts and applications in modern plant breeding programs.
- 554 Chromosome Structure and Function 3** Structural and functional organization of eukaryotic chromosomes. Required preparation must include upper-division course in biology, genetics, or plant breeding. Cooperative: Open to UI degree-seeking students.
- 600 Special Projects or Independent Study V 1-18** May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V 1-18** Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

SOIL SCIENCE

SOIL SCI

- 101 Organic Gardening and Farming 3** Principles and production practices of organic gardening and farming. Cooperative: Open to UI degree-seeking students.
- 201 [BSCI] Soil: A Living System 3** Biological, chemical, and physical properties of soils; fundamentals of soil ecology, soil-water-plant relations, soil fertility, and soil genesis.
- 301 [M] Ecological Soil Management 3** Soil and water conservation and management; land classification and reclamation; soils and environmental quality; sustainable agroecosystems.

- 302 [M] Introduction to Agroecology 3** Agroecological crop production through case study analyses and applications of ecological principles in traditional and modern farming systems. (Crosslisted course offered as SOIL SCI 302, AFS 302). Recommended preparation: SOIL SCI 201.
- 360 World Agricultural Systems 3** Course Prerequisite: 3 units of [B] or [BSCI] GER or UCORE categories. Study of agro-environmental characteristics of world agriculture; historical and contemporary features of world food production. (Crosslisted course offered as CROP SCI 360, SOIL SCI 360). Cooperative: Open to UI degree-seeking students.
- 368 Introduction to Geographic Information Systems 3 (2-3)** Course Prerequisite: 3 credits in the GER category Sciences Introduction to geographic information systems applied to landscape data; geographic coordinate systems and projections, make maps and use geodatabases.
- 374 Remote Sensing and Airphoto Interpretation 3 (2-3)** Course Prerequisite: 3 credits in the GER category Sciences Remote Sensing and Airphoto Interpretation 3 (2-3) Physical basis of remote sensing, fundamentals of aerial photography and image analysis applied to agriculture, forestry, wildland management problems.
- 412 Seminar 1** May be repeated for credit. Current literature and reports on research or special topics. (Crosslisted course offered as CROP SCI 412, SOIL SCI 412).
- 414 Environmental Biophysics 2** Physical environment of living organisms (temperature, humidity, radiation, wind); heat and mass exchange and balance in plant and animal systems. Recommended preparation: Introductory biology, physics, and calculus. Cooperative: Open to UI degree-seeking students.
- 415 Environmental Biophysics Laboratory 1 (0-3)** Course Prerequisite: SOIL SCI 414 or concurrent enrollment. Experimental methods and procedures in environmental measurements; temperature, wind, radiation, and humidity measurements in biological environments. Cooperative: Open to UI degree-seeking students.
- 441 Soil Fertility 3** Course Prerequisite: SOIL SCI 201. Nutrient management impacts on crop productivity, soil and water quality; mineral requirements; soil testing; plant analysis; inorganic and organic fertilizers.
- 442 Soil Fertility Laboratory 2 (1-3)** Course Prerequisite: SOIL SCI 441 or concurrent enrollment. Laboratory exercises and methodology for characterization of soil fertility and chemistry including CEC, acidity, carbon, nitrogen, and plant nutrients. Recommended preparation: CHEM 220.
- 451 [M] Soil Geography 3 (2-3)** Study the geographic distribution of soil features and properties at hillslope to global scales. Field trips required.
- 468 ArcGIS and Geospatial Analysis 4 (2-6)** Geographic information systems applied to analysis of landscape data; maps, geographic coordinate systems and projections, geodatabases. (Crosslisted course offered as SOIL SCI 468, ENVR SCI 486, ENVR SCI 586).
- 480 Practicum in Organic Agriculture V 1-6** May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By permission only. Applied principles and practices of organic agriculture; immersion and participation in all required farming/gardening activities.
- 495 Research Experience V 1-4** May be repeated for credit; cumulative maximum 12 hours. Planned and supervised undergraduate research experience. (Crosslisted course offered as CROP SCI 495, HORT 495, SOIL SCI 495).
- 498 Professional Internship V 1-6** May be repeated for credit; cumulative maximum 9 hours. Planned and supervised professional work experience. S, F grading.
- 499 Special Problems V 1-4** May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Seminar 1** May be repeated for credit. Presentation of research information.
- 502 Advanced Topics in Soils V 1-3** May be repeated for credit; cumulative maximum 6 hours. Interpretation, presentation, and discussion of current research on soils, uses, and management.
- 503 Advanced Soil Analysis V 1-3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By permission only. Soil research techniques; application of modern instrumentation to soil analysis.
- 505 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.
- 508 Environmental Spatial Statistics 3** Theoretical introduction and practical training in spatial data analysis for graduate students in the environmental sciences. (Crosslisted course offered as SOIL SCI 508, STAT 508). Required preparation must include undergraduate statistics through applied multiple regression. Cooperative: Open to UI degree-seeking students.
- 511 Research Proposal and Development 2** Develop research proposal and give oral presentation to demonstrate ability to employ strategy and procedures to address objectives. (Crosslisted course offered as CROP SCI 511, SOIL SCI 511). S, F grading.
- 513 Environmental Soil Physics 3 (2-3)** Physical properties of soils and their relationships to moisture, aeration, and temperature; plant-soil-atmospheric relationships; solute transport and soil salinity. Recommended preparation: SOIL SCI 201 and general physics.
- 514 Environmental Biophysics 2** Physical environment of living organisms (temperature, humidity, radiation, wind); heat and mass exchange and balance in plant and animal systems. Recommended preparation: Introductory biology, physics, and calculus. Cooperative: Open to UI degree-seeking students.
- 515 Environmental Biophysics Laboratory 1 (0-3)** Course Prerequisite: Soil Sci 514 or concurrent enrollment. Experimental methods and procedures in environmental measurements; temperature, wind, radiation, and humidity measurements in biological environments. Cooperative: Open to UI degree-seeking students.
- 521 Physical Chemistry of Soils 3** Chemical equilibrium and kinetics of soil solution speciation, mineral precipitation and dissolution, adsorption and partitioning reactions, and ion exchange. Soil constituents; soil solutions: mineral equilibria; absorption reactions; acid/base reactions; oxidation-reduction; soil contaminants. Cooperative: Open to UI degree-seeking students.
- 531 Soil Microbiology 3 (2-3)** Biology and significance of organisms inhabiting soil and their role in nutrient cycling, ecosystem function, agriculture, and bioremediation.
- 533 Advanced Vadose Processes 2** Methods and models for water, heat, vapor and solute transport in the vadose zone; transfer functions to describe solute transport; non-linear parameter estimation; fate and transport of water, heat, and solutes in the vadose zone; hydrological and geochemical processes in unsaturated subsurface materials. Recommended preparation: upper division or graduate course in soil physics or chemistry.
- 541 Soil-Plant-Microbial Interactions 3** Soil-plant-microbial relationships to plant nutrition, plant health, and environmental cleanup; rhizosphere chemistry and microbial ecology. Required preparation must include two upper-division courses in biology, microbiology or soils.
- 544 Nitrogen Cycling in the Earth's Systems 3** Nitrogen dynamics in terrestrial, aquatic, and atmospheric systems; nitrogen transformations in natural and managed systems and responses to human activities. (Crosslisted course offered as BIOLOGY 544, SOIL SCI 544).
- 547 Soil Fertility Management 3** Philosophy of fertilizer recommendations based on soil and plant tissue testing; principles of fertilizer manufacture, placement and use. Required preparation must include introductory soils and upper-division soil fertility courses.
- 568 ArcGIS and Geospatial Analysis 4 (2-6)** Geographic information systems applied to analysis of landscape data; maps, geographic coordinate systems and projections, geodatabases. (Crosslisted course offered as SOIL SCI 468, ENVR SCI 486, ENVR SCI 586).

574 Remote Sensing and Geospatial Analysis

3 (1-4) Digital image processing theory and geographic information systems applied to landscape analysis. Cooperative: Open to UI degree-seeking students.

600 Special Projects or Independent Study V

1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V

1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V

1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V

1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Dance Courses

Description of Courses

DANCE**DANCE**

210 Jazz Dance I 1 (0-3) May be repeated for credit; cumulative maximum 6 hours. Basic jazz dance techniques, stage choreography, and performance.

211 Modern Dance I 1 (0-3) May be repeated for credit; cumulative maximum 6 hours. Basic modern dance techniques, stage choreography, and performance.

310 Jazz Dance II 1 (0-3) May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By audition only. Advanced jazz dance techniques, stage choreography, and performance.

School of Design and Construction

sd.c.wsu.edu
Carpenter Hall
509-335-5539

Architecture + Interior Design + Landscape Architecture + Construction Management

ARCHITECTURE and CONSTRUCTION MANAGEMENT: Interim Director and Associate Professor, W. M. Kirk; Professors, P. F. Hirzel, B. A. Kazimee, G. A. Kessler, M. R. Samizay, D. C. Wang; Associate Professors, J. H. Abell, M. Cohen, J. P. Gruen, D. E. Gunderson, T. Heustis, T. Miyasaka, A. B. Rahmani; Assistant Professors, J. J. Burnett, R. Cherf, J. B. Peschel. INTERIOR DESIGN: Associate Professors, R. Krikac, J. M. Melcher; Assistant Professors, K. Ryan, J. Theodorson. LANDSCAPE ARCHITECTURE: Associate Professors, K. Brooks, J. B. Kaytes; Clinical Assistant Professor, Ole R. Sleipness

The School of Design and Construction integrates the disciplines of architecture, interior design, landscape architecture, and construction management. The School recognizes that design and construction professionals work collaboratively to design and construct places in our environment. The integrated model teaches students the skill sets required for their chosen design major while offering a series of collaborative learning experiences that give students a substantial advantage when entering the job market.

Programs of study in the school lead to the following degrees: a Bachelor of Science in Architectural Studies (a four-year degree) followed by a 1.5, 2.5, or 3.5 year Master of Architecture degree that is accredited by the National Architectural Accreditation Board (NAAB), a Bachelor of Science in Construction Management (a four-year degree) that is accredited by the American Council for Construction Education (ACCE), a Bachelor of Arts in Interior Design accredited by the Council for Interior Design Accreditation (CIDA), and a Bachelor of Landscape Architecture accredited by the American Society of Landscape Architects (ASLA). The school also offers a Master of Arts in Interior Design and a Master of Science in Landscape Architecture.

Study tours and study abroad opportunities are an integral component of the curriculum in the School of Design and Construction. It is important that students in the design and construction professions be able to visit and experience the places, ideas and cultures that are presented in the classroom. Students are required to participate in a variety of discipline specific and collaborative tours over the course of their education. Appropriate course fees are charged to cover the costs for each experience. More information can be found at <http://sd.c.wsu.edu/school-of-design-construction/study-abroad> and in the requirements section of the catalog for each program.

Students in the School should also expect to participate in a senior portfolio review prior to graduation. The senior portfolio review is a unique networking experience for graduating students where they are afforded the opportunity to see major design firms, interact with top designers, and receive feedback on their existing portfolio.

ARCHITECTURE AND CONSTRUCTION MANAGEMENT

Students graduating in Architecture and Construction Management are able to: 1) understand the role of architecture and construction management within current cultural and global conditions, 2) understand the role of architecture and construction management in the enhancement and preservation of natural resources, 3) understand the role of history and its transformations over time, 4) develop a desire and passion for life-long learning, and 5) develop intellectual and analytical skills that will be the foundation for future leaders.

The School is a member of the Association of Collegiate Schools of Architecture (ACSA) and the Associated Schools of Construction (ASC). Student chapters of the American Institute of Architects (AIA) and the Associated General Contractors (ASCM) provide linkages with their professional counterparts. Other student organizations include: Builders Without Borders, Alpha Rho Chi, Sigma Lambda Chi, and Design Build International (DBIA).

ARCHITECTURE

The School offers as its professional degree in Architecture the Master of Architecture. This degree is the professional degree accredited by the National Architectural Accrediting Board (NAAB) which allows students to take state exams and become licensed architects. Students must successfully complete a four-year undergraduate degree in architecture or a previous five-year Bachelor of Architecture degree to be eligible for the 1.5 or 2.5 year Master of Architecture program. Students with Baccalaureate degrees in disciplines other than architecture are eligible to apply for the 3.5 year Master of Architecture program. Please consult the WSU Graduate Catalog and/or <http://sd.c.wsu.edu/> for specific information regarding this degree as well as admission requirements and course descriptions.

Most states require that an individual intending to become licensed as an architect hold an accredited degree. There are three types of degrees that are accredited by NAAB: (1) the Bachelor of Architecture, which requires a minimum of five years of study, (2) the Master of Architecture and (3) the Arch.D degree. As stated above WSU offers the Master of Architecture as the professional accredited degree.

The four-year, pre-professional degree at WSU is not accredited by NAAB. This degree provides a thorough foundation in the field of architecture, as preparation for either continued education in a professional degree program or for employment in the architecture profession with a licensed architect and employment options in fields related to architecture.

The architecture curriculum is planned so that foreign study and other off-campus programs can be incorporated in the fourth year of study or during the summer. Foreign studies options include WSU sponsored programs, and programs offered by other institutions. Coordination is through the WSU Education Abroad Office.

CONSTRUCTION MANAGEMENT

The management of construction projects has become more complex due to the shortage of resources, specialized materials, sophisticated delivery methods and the financial and legal responsibili-

ties encountered during the project life cycle. From construction management to project management and program management, the needs of the industry and the built environment are expanding at an unprecedented rate. At the heart of the building process is the construction professional.

The Construction Management Program provides students with the tools and skills necessary to develop strong administrative, leadership and management expertise to be successful in today's construction industry. Students pursuing a degree in Construction Management will be expected to understand a wide variety of topics that make up the built environment. This expertise includes understanding properties of materials and construction systems required for the construction professional. Concepts regarding contract administration, sustainability, risk management, estimating and scheduling are critical skills. Students in this program are encouraged to develop an inquisitive and inventive mind in order to understand the management techniques, methods and sequencing. 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. The Bachelor of Science in Construction Management degree program is accredited by the American Council for Construction Education (ACCE).

Transfer Students

Students planning to transfer into the Architecture or Construction Management disciplines at Washington State University are subject to the same requirements as all other non-certified students. Transfer students must fulfill all first year course requirements and apply for certification before admittance into either program.

INTERIOR DESIGN

Accredited by the Council for Interior Design Accreditation (CIDA), the Bachelor of Arts in Interior Design is a professional degree program that provides the common body of knowledge related to interior design as recognized by CIDA. The interior design program is based on a concern for human beings and the creation of interior settings that support human activities and values. The curriculum is structured to create unique learning experiences each semester. Studios focus on a multitude of design theories rooted in a variety of relevant disciplines. Lecture course content is integrated into the studio experience to reinforce specified skills and knowledge. With increasing challenge and complexity, multidisciplinary exposure and experiences continue throughout the curriculum to inform design solutions as well as prepare students to work with a myriad of professionals upon graduation.

Professional/Global Experience

The WSU Interior Design program values experiential learning as an important component of a student's education. Third-year students will be required to participate in an off-campus study tour during the fall semester. All students must present their portfolio of creative work at an off-campus review to graduate.

In the fall semester of the senior year students will participate in a professional and/or global experience, choosing one of the following options. Option 1: Internship—students are required to

complete a 5-credit internship and encouraged to seek opportunities beyond the inland northwest. Option 2: Study Abroad—students can choose to participate in the department's study abroad program providing them an opportunity to experience design within the context of another culture. Remaining credits for Option 1 and 2 will be offered through online courses. Option 3: Community Studio—students can work with faculty on actual community-based projects.

Student Outcomes

A graduate of the Interior Design program is a creative thinker and problem solver. An education in interior design develops intellectual curiosity, which supports continued professional development throughout life. Students develop skills that allow them to analyze information, evaluate issues, and set priorities while generating creative design solutions for projects of a complex scale. As graduates of WSU's Interior Design program, students have the ability to take the initiative, make critical judgments of their own designs, as well as others, and operate within a team context; all of which contributes to their future success as professionals.

Student Performance Expectations

Students must earn a C or better in all interior design courses required for the degree of Bachelor of Arts in Interior Design. Students wishing to certify into the Bachelor of Arts in Interior Design program must apply for certification during the spring semester of their first year in the program. Certification requirements include completion of a minimum of 24 semester hours and earning a C or better grade in the following required courses: SDC 100, SDC 120 and SDC 140. Additional required courses are HISTORY 105, MATH 105 (or higher), ENGLISH 101, COM 102, and one Fine Arts class (FINE ARTS 101, 201 or 202). Transfer equivalents may be approved by the program. While students must have a minimum cumulative WSU GPA of 2.5 to apply for certification, the process is competitive due to limited space in upper division courses. Students' overall WSU GPA and major specific GPA from the courses listed above are considered.

All students admitted into the second year will be required to purchase laptop computers. Details and specifications can be found on the school website: <http://sdc.wsu.edu>.

Transfer Students

Students wishing to transfer from another institution into the second, third, or fourth year of interior design must submit a portfolio and academic transcripts for consideration. Contact the interior design program for portfolio requirements.

Graduate Studies

The Master of Arts in Interior Design (MA) program increases students' understanding of the relationship between human behavior and interior environments through advanced study and hands-on research. Students gain knowledge and skills that prepare them to analyze information and relationships, evaluate issues, and set priorities, while creating functional and high quality design solutions for complex projects.

The Master of Arts in Interior Design is offered in three tracks. Qualified students currently enrolled in the BA Interior Design program at WSU may

apply for entry into an articulated BA/MA degree program (1-year program) during their last year of undergraduate study that leads to a master's degree completed in one year of graduate study.

Candidates who have earned a 4-year interior design degree (or design degree from a closely related field) may apply for the 2-year program. Post professional graduate studies culminate in a Master's Thesis. The 2-year program is appropriate for students who are interested in advanced design research and/or preparation for teaching.

The 3-year program is geared towards candidates without a prior degree in interior design. The 3-year program requires completion of foundation courses building integral skills in design; graduate core classes; electives in support of design skills and interdisciplinary research interests; and independent work towards completion of the Master's Project. The 3-year curriculum is designed to accelerate a person toward meeting professional standards in preparation for practice, as well as to challenge the student in areas of advanced research and critical thinking.

LANDSCAPE ARCHITECTURE

Landscape architecture involves designing and implementing opportunities for people to engage with their environment. It is an interdisciplinary field dedicated to crafting meaningful places across diverse scales and contexts. The Landscape Architecture program is located within the newly established School of Design and Construction. As part of the curriculum, students will have the opportunity to work in collaborative studios with students and faculty from the disciplines of Architecture, Interior Design, and Construction Management.

Bachelor of Landscape Architecture (BLA)

Accredited by the Landscape Architectural Accreditation Board (LAAB), the Bachelor of Landscape Architecture is a professional degree program that provides students with the common body of knowledge related to landscape architecture. The Landscape Architecture program is based on a concern for human beings and the environment. The program teaches students to create outdoor spaces that support human activities and that positively affect the environment.

The BLA curriculum is structured to create unique learning experiences each semester. Broadly speaking, the curriculum emphasizes practical and applied experiential learning, draws from courses across campus, and provides students with opportunities to think critically and integrate diverse bodies of knowledge. Landscape architecture design studios focus on a multitude of design theories rooted in a variety of relevant disciplines. Lecture course content is integrated into the studio experience to reinforce specified skills and knowledge. With increasing challenge and complexity, multidisciplinary exposure and experiences continue throughout the curriculum to inform design solutions and prepare students to work with a myriad of professionals upon graduation.

The professional course of study is divided into two segments: pre-landscape architecture and the second – fourth year professional landscape architecture program (BLA). Completion of the program leads to the degree of Bachelor of Landscape

Architecture and allows the graduate to enter the profession. 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.

Pre-landscape architecture (pre-LA) is a one-year, non-degree course of study that is intended to prepare undergraduate students for the advanced professional curriculum. The pre-LA curriculum concentrates on University Common Requirements (UCORE) and basic professional courses. UCORE courses should be selected with the assistance of a landscape architecture advisor. Transfer students who have not completed the equivalent of the pre-LA course work will be accepted directly into pre-LA.

To be admitted to the major of landscape architecture, a student should have completed at least 24 semester hours and the pre-LA curriculum. Students must submit a certification application in the spring semester of their first year. Application forms and instructions are available in the School of Design and Construction main office and on the web site: <http://sdc.wsu.edu>. 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 three courses (or approved equivalents) must be completed with a grade of C or better for students to be admitted into the professional program: SDC 100, SDC 120 and SDC 140. Additional courses required for certification are HISTORY 105, ENGLISH 101, MATH 105 (or higher), COM 102, and one Fine Arts course (FINE ART 101, 201 or 202). A minimum 2.5 WSU cumulative GPA is required for certification. Students must earn a C or better in all landscape architecture, horticulture, and biology courses required for the degree of Bachelor of Landscape Architecture.

All students admitted into the second year will be required to purchase a laptop computer. Details and specifications can be found on the school website: <http://sdc.wsu.edu>.

Transfer Students

Transfer students who have completed the equivalent of the pre-LA curriculum may apply to the professional program.

Outcomes

Graduates of the BLA program develop skills to think critically and creatively about human habitats and landuse. Through the program, students learn to understand the complex nature of problems and questions associated with people and landscapes, as well as how to craft and communicate design and planning solutions in response to these problems and questions. Upon completing the degree, graduates can perform as entry level practitioners of landscape architecture. Additionally, they are able to take initiative, make critical judgments of designs, and operate within a team context; all of which contributes to their future success as landscape architectural design professionals.

Master of Science in Landscape Architecture

The Master of Science in Landscape Architecture provides students with a foundation in the theory and practice of landscape architecture.

The MSLA program also provides students with the opportunity to focus on a particular area of landscape architectural investigation. The MSLA prepares students to achieve their professional goals in the private sector, academic settings, government, and other design and planning venues. The program emphasizes advanced studies in landscape architecture and landscape planning within the geographical context of the Interior Northwest and the Northern Rocky Mountain regions. Please consult the WSU Graduate Catalog and/or <http://sdc.wsu.edu> for specific information regarding this degree as well as admission requirements and course descriptions.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

ARCHITECTURE (PRE-PROFESSIONAL PROGRAM)

General Requirements - BS in Architectural Studies

1. Due to limitations of space and faculty, enrollment in second-year courses and certification as a major in architecture can be granted to only the most qualified students. Prospective applicants for these programs are responsible for familiarizing themselves with the school's requirements and procedures.

2. Students who wish to transfer from another institution may find it possible to transfer University Common Requirement (UCORE) course work from these institutions. While this may reduce the amount of time required at WSU to complete UCORE requirements, it is very difficult to transfer appropriate architecture course work to compress the four-year time period. Please consult the WSU Transfer Guide and contact the School of Architecture and Construction Management for information regarding transfer requirements.

3. Transfer students and former WSU students must submit an application for admission to the university, a supplemental application, and current academic records to the School by the dates listed in this catalog.

4. Students wishing to transfer from another institution into the second, third, or fourth year of architecture must submit a portfolio in order for the School to evaluate their potential for success in the program. Contact the School for portfolio requirements.

5. A student may not enroll in 300- or 400-level Arch courses without being certified in architecture.

6. A student may not take courses required by the School on a pass, fail basis.

7. Third-year, fourth-year and graduate students will be required to participate in one short off-campus study tour each year.

8. Beginning Fall 2006, all students admitted into the second year will be required to purchase laptop computers. Please contact the school for details and specifications.

Students who enter WSU and have an interest in architecture should contact the academic coordinator for the school for specific advising.

First Year

<i>First Term</i>	<i>Hours</i>
ARCH 101	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
HISTORY 121 [HUM]	3
MATH 107, if necessary, or Electives	3

<i>Second Term</i>	<i>Hours</i>
ARCH 103	3
ARCH 202	3
HISTORY 120 [DIVR]	3
MATH 171 [QUAN] ¹	4
Social Sciences [SSCI]	3

¹ Students who are not adequately prepared for MATH 171 should take MATH 107 as needed during the fall semester of their first year. All first-year students must take the math placement exam.

BACHELOR OF SCIENCE IN ARCHITECTURAL STUDIES (2ND THROUGH 4TH YEARS) (123 TOTAL HOURS)

The Bachelor of Science in Architectural Studies is a program primarily for those who want a foundation in the study of architecture. This degree was designed for students who want to pursue a career in architecture or to work in an architecturally related discipline such as planning, technology, project and community development or within government agencies. On successful completion of the B.S. Architectural Studies program, an individual can work as an unlicensed architect in a professional architecture practice. In order to be eligible to license as an architect, a professional Master of Architecture program must also be completed. This degree may also be used as a preparation for professional, accredited graduate education. Students who pursue this option at WSU must complete all university requirements in addition to School requirements listed below.

Pre-Architecture

Students who enter WSU and have an interest in architecture will be assigned an advisor in the School of Architecture and Construction Management. Students interested in architecture should enroll in ARCH 101 fall of their first year, as this is the first prerequisite in an eight-semester sequence.

Certified Program

The School of Architecture and Construction Management accepts 50-55 students into the second year. WSU students who wish to enroll in second year must submit an application to the School of Architecture and Construction Management during the first-year spring semester. To be considered, a student must have completed at least 26 semester credit hours of architectural program requirements, including the following courses, or their equivalents from other institutions: ARCH 101, 103, 202, ENGLISH 101, HISTORY 105; HISTORY 120 or 121; MATH 171 or PHYSICS 101 or 201; 7-8 credits of UCORES. A grade of C or better must be achieved in Arch 101 and 103. Selection is based on the student's gpa in the 26+ semester credit hours of required course work. If students do not complete Arch 101, 103 and 202 at WSU, they will be required to submit visual evidence of their architectural

graphic and design work for review by the Admissions Committee. Most of the students will be selected at the end of the WSU spring semester but some positions will be held open until summer for transfer students.

Transfer Students

Students who wish to transfer into the second year must demonstrate equivalent course work from another institution. Transfer students must make application to Washington State University, the School of Architecture and Construction Management, and submit a portfolio of design work (see schedule below). Transfer students will be evaluated based upon grades from coursework that is equivalent to first year requirements at WSU. Portfolios will be judged relative to content that is equated to Architecture 101 and 103.

Application/Portfolio/Notification Deadlines:

May 1 All second-year applications due.

May 1 Portfolios due from applicants who did not complete Arch 101, 103, 202 at WSU.

June 1 Screening complete: Applicants will be classified as accepted or denied. Applicants will be notified by mail in June.

Students offered positions in the second-year courses 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 lose their position.

Second Year

<i>First Term</i>	<i>Hours</i>
ARCH 201	4
ARCH 220	3
ARCH 330	3
Creative & Professional Arts [ARTS]	3
PHYSICS 101 [PSCI] or 201 [PSCI]	4
<i>Second Term</i>	<i>Hours</i>
ARCH 203	4
ARCH 209	3
ARCH 324 [M]	3
Communication [COMM] or Written Communication [WRTG]	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	3 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ARCH 301	5
ARCH 309	3
ARCH 351	3
ARCH 353	1
ARCH 432	3
<i>Second Term</i>	<i>Hours</i>
ARCH 303	5
ARCH 352	3
ARCH 354	1
ARCH 433	3
Biological Sciences [BSCI] or SCIENCE 101 [SCI]	4 or 3

Fourth Year

<i>First Term</i>	<i>Hours</i>
ARCH 401	5
ARCH 409 [M]	3

ARCH 463	3
ARCH 472	3
<i>Second Term</i>	<i>Hours</i>
ARCH 403	5
ARCH Emphasis Electives ²	6
Integrative Capstone [CAPS]	3

¹ At least 3 hours of Physical Science Electives from the school's approved list are required for graduation.

² At least 8 hours of Architectural Emphasis Electives from the school's approved list are required for graduation.

CONSTRUCTION MANAGEMENT (PRE-PROFESSIONAL PROGRAM)

Construction management is a four-year program structured into one year of preconstruction management and three years of construction education.

The degree of Bachelor of Science in Construction Management is for those students who wish to work in the profession of construction management or in a management capacity in other facets of the construction industry.

Upon completion of the preconstruction management program requirements, or their equivalent for transfer students, application must be made for certification into the Construction Management program at the end of the first year.

Beginning Fall 2006, all students admitted into the second year will be required to purchase laptop computers. Please contact the school for details and specifications.

Certification Requirements:

The School of Architecture and Construction Management has separate admissions and certification policies and procedures for its different degree programs. Admission to the Construction Management program will be considered for those who have qualified for admission to WSU and fulfill the requirements outlined below.

The undergraduate Construction Management program has a one-step screening process leading to certification. The screening process takes place between the first and second year. Qualified students will be certified at this time and allowed to take upper-level coursework as well as construction management courses. This limitation is imposed because of limited space, equipment and faculty resources. Students may transfer to the school during the two-year process or apply directly for second-year certification.

Application Requirements and Deadlines:

All second-year applications due by May 1.

Grade records for transfer students for the semester or quarter must be available to the construction management coordinator before June.

The construction management coordinator reviews all applications and makes recommendation to the School of Architecture's Admissions and Academic Affairs committee regarding applicants. Selection will be made on or about June 15; all applicants will be notified of their status by letter mailed from the school.

Course and gpa Requirements for Screening:

Because the school receives more applications from qualified students than can be accommodated,

screening for entry into the second year is based on the applicant fulfilling the minimum requirements listed and the applicant's overall gpa. To be considered for admission, an applicant must:

1. Qualify for admission into Washington State University.
2. Complete the first year as listed herein under preconstruction management.
3. Earn a grade of C or better in COM 102 or H D 205, CST M 102, HISTORY 105, 120, 121, ECONS 101, 102, ENGLISH 101, GEOLOGY 101, MATH 171, and another course that meets a University Common Requirement (UCORE) other than those previously listed. For applicant screening, the highest grade will be used.
4. Complete and submit an application to the Construction Management program by May 1.
5. Maintain an overall minimum gpa of 2.5.

First Year

<i>First Term</i>	<i>Hours</i>
COM 102 [COMM] or H D 205 [COMM]	3 or 4
ENGLISH 101 [WRTG]	3
GEOLOGY 101 [PSCI]	4
HISTORY 105 [ROOT]	3
HISTORY 121 [HUM]	3

<i>Second Term</i>	<i>Hours</i>
CST M 102	2
ECONS 101 [SSCI]	3
ECONS 102	3
HISTORY 120 [DIVR]	3
MATH 171 [QUAN]	4

CONSTRUCTION MANAGEMENT (2ND THROUGH 4TH YEARS) (122 TOTAL HOURS)

Second Year

<i>First Term</i>	<i>Hours</i>
ARCH 351	3
B LAW 210	3
CST M 201	3
CST M 254	2
PHYSICS 101	4

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
ACCTG 230	3
ARCH 352	3
CST M 202	3
CST M 252	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ARCH 432	3
C E 301	3
CST M 356	3
CST M 370	3
CST M 451	3

<i>Second Term</i>	<i>Hours</i>
ARCH 433	3
Biological Sciences [BSCI]	3 or 4
CST M 357	3
CST M 362 [M]	3
CST M 371	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
ARCH 463	3
CST M 460	3
CST M 462	3
CST M Elective	3
MGMT 301	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Business Elective	3
CST M 473	3
CST M 475 [M]	3
CST M Elective	3
Integrative Capstone [CAPS]	3

**INTERIOR DESIGN
(120 HOURS)**

The interior design program offers a balanced exposure to art, architecture, and humanities. All studio projects are informed by relevant theoretical frameworks in order to advance design solutions. Students are required to complete one of three options during the fall of the fourth year: internship, study abroad, or community studio. Third-year students will be required to participate in an off-campus study tour during the fall semester.

Students are required to earn a C or better in all courses required for the degree of Bachelor of Arts in Interior Design. All students must present their portfolio of creative work at an off-campus review to graduate.

Certification Requirements

Students wishing to certify into the Bachelor of Arts in Interior Design program must apply for certification during the spring semester of their first year in the program. Certification requirements include completion of a minimum of 24 semester hours and earning a C or better grade in the following required courses: SDC 100, SDC 120, and SDC 140. Additional required courses are HISTORY 105, MATH 105 (or higher), ENGLISH 101, COM 102, and one fine arts class (FINE ART 101, 201, or 202). Transfer equivalents may be approved by the program. While students must have a minimum cumulative WSU gpa of 2.5 to apply for certification, the process is competitive due to limited space in upper division courses. Students' overall WSU gpa and major specific gpa from the courses listed above are considered.

Students wishing to transfer from another institution into the second, third, or fourth year of interior design must submit a portfolio and academic transcripts for consideration. Contact the interior design program for portfolio requirements.

All students admitted into the second year will be required to purchase laptop computers. Details and specifications can be found on the school website: <http://sdc.wsu.edu>.

First Year

<i>First Term</i>	<i>Hours</i>
HISTORY 105 [ROOT]	3
MATH 105 or higher [QUAN]	3
SDC 100	3
SDC 120	3
Social Sciences [SSCI] ¹	3

<i>Second Term</i>	<i>Hours</i>
COM 102 [COMM]	3
Creative & Professional Arts [ARTS] ²	3
ENGLISH 101 [WRTG]	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI]	4
SDC 140	3
Apply for Certification	

Second Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ³	
I D 197	3
I D 201	4
I D 205	3
I D 277	1
SDC 250	3

<i>Second Term</i>	<i>Hours</i>
Humanities [HUM] ²	
I D 203	4
I D 215	3
I D 297	3
SDC 350 [M]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ARCH 472	3
DESIGN 397	3
I D 321	4
I D 325	3
SDC 444	1

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
I D 333	4
I D 392 [M]	3
I D 415	3
Supportive Electives ³	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
I D 425 or 490	5
Supportive Electives ³	9

<i>Second Term</i>	<i>Hours</i>
I D 426	5
I D 460	3
Integrative Capstone [CAPS]	3
Elective	1
Portfolio Review	

¹ SOC 101 or PSYCH 105 is suggested.

² See advisor for a list of approved courses.

³ Supportive electives as listed or approved by faculty advisor; transfer interior design hours as approved by the department: FINE ART 201, 202 (if not used as a certification course); ARCH 220, 409, 492; SOC 343, 350, 351; I D 278, 279, 305, 490 (if not used to fulfill a requirement in program of study), 498, 499; upper division ARCH, LND ARCH, and CST M.

**LANDSCAPE ARCHITECTURE
(120 HOURS)**

The professional course of study is divided into two segments: pre-landscape architecture and the second – fourth year professional landscape

architecture program (BLA). Completion of the program leads to the degree of Bachelor of Landscape Architecture and allows the graduate to enter the profession. 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.

Pre-landscape architecture (pre-LA) is a one-year, non-degree course of study that is intended to prepare undergraduate students for the advanced professional curriculum. The pre-LA curriculum concentrates on University Common Requirements (UCORE) and basic professional courses. UCORE courses should be selected with the assistance of a landscape architecture advisor. Transfer students who have not completed the equivalent of the pre-LA course work will be accepted directly into pre-LA.

To be admitted to the major of landscape architecture, a student should have completed at least 24 semester hours and the pre-LA curriculum. Students must submit a certification application in the spring semester of their first year. Application forms and instructions are available in the School of Design and Construction main office and on the web site: sdc.wsu.edu. 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 three courses (or approved equivalents) must be completed with a grade of C or better for students to be admitted into the professional program: SDC 100, SDC 120 and SDC 140. Additional courses required for certification are HISTORY 105, ENGLISH 101, MATH 105 (or higher), COM 102, and one fine arts course (FINE ART 101, 201 or 202). A minimum 2.5 WSU cumulative GPA is required for certification.

Transfer students who have completed the equivalent of the pre-LA curriculum may apply to the professional program.

All students admitted into the second year will be required to purchase a laptop computer. Details and specifications can be found on the school website: <http://sdc.wsu.edu>.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 120 [BSCI] ¹	4
HISTORY 105 [ROOT]	3
MATH 105 or higher [QUAN]	3
SDC 100	3
SDC 120	3

<i>Second Term</i>	<i>Hours</i>
COM 102 [COMM]	3
Creative & Professional Arts [ARTS] ²	3
ENGLISH 101 [WRTG]	3
GEOLOGY 101 [PSCI]	4
SDC 140	3
Apply for Certification	

Second Year

<i>First Term</i>	<i>Hours</i>
HORT 231	3
LND ARCH 102	3
LND ARCH 222	1
LND ARCH 262	3
SDC 250	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Hours</i>	
HORT 232	3	
LND ARCH 263	3	
LND ARCH 365	4	
SDC 350 [M]	3	
SOIL SCI 201	3	
Complete Writing Portfolio		

Third Year

<i>First Term</i>	<i>Hours</i>	
HORT 499	1	
LND ARCH 327	3	
LND ARCH 362	4	
LND ARCH 366	4	
LND ARCH 467	4	

<i>Second Term</i>	<i>Hours</i>	
Ecology Requirement ³	3	
HORT 331	3	
Humanities [HUM] ²	3	
LND ARCH 363	4	
LND ARCH 367	3	

Fourth Year

<i>First Term</i>	<i>Hours</i>	
LND ARCH 450 [M]	3	
LND ARCH 470	4	
LND ARCH 475	2	
SDC 444	1	
Electives	2	

<i>Second Term</i>	<i>Hours</i>	
Diversity [DIVR]	3	
Integrative Capstone [CAPS]	3	
LND ARCH 480	2	
LND ARCH 485 [M]	4	

¹ If BIOLOGY 120 is not taken in Fall, BIOLOGY 106 can be substituted in the Spring.

² See advisor for list of approved courses.

³ If LND ARCH 380 is not available, may use BIOLOGY 372, 462, NATRS 300, 454, or 464.

Minors

Architectural Studies

The minor in architectural studies requires a minimum of 18 hours of which at least 9 must be upper-division and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. To be eligible to apply for the minor a student must have ARCH 101 and minimum gpa of 2.50. The minor is limited to 10 students per year. The required courses are ARCH 103, 209, 309, 201 or 324, and 6 hours of upper-division architectural emphasis coursework.

Construction Management

The minor in construction management requires a minimum of 17 hours, 9 of which must be upper-division and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. To be eligible to apply for the minor a student must have ARCH 101 or approved drawing course, certification in any major, and minimum gpa of 2.70. The minor is limited to 10 students per year. The required courses are CST M 102, 252, 360, 370 and 6 hours of business or

construction emphasis electives. One business elective may be 200-level. Construction emphasis electives must be upper-division.

Description of Courses

ARCHITECTURE

ARCH

101 Graphics Communication 3 (1-6) Drawing to perceive three-dimensional space; freehand (architectural) drawing, drafting, isometric and orthographic drawing; perspective, shades and shadows, lettering, and rendering techniques.

103 Visual Design 3 (0-6) Course Prerequisite: ARCH 101. Two- and three-dimensional design and spatial studies; abstract studies in form, color and texture; introduction to architectural design processes.

201 Architectural Design I 4 (0-8) Course Prerequisite: ARCH 103. Introduction to architectural design focusing on composition, conceptual design and principles of organization, scale, proportion, rhythm and 3-D development.

202 The Built Environment 3 Design and planning of the built environment: products, interiors, structures, landscapes, cities, regions, earth; human-environmental interactions, sustainability, and quality. (Crosslisted course offered as ARCH 202, I D 202).

203 Architectural Design II 4 (0-8) Course Prerequisite: ARCH 201. Introduction to architectural design focusing on the art and aesthetics of structural expression and principles of structure as an ordering system.

209 Design Theory I 3 Course Prerequisite: Certified Architecture major; concurrent enrollment in ARCH 203. Design theory relating to building technology, systems and crafts which influence design decisions.

210 Digital Analysis and Representation 3 (2-3) Course Prerequisite: Certified major in Architecture. Introduction to analysis and representation with a focus on the use of digital tools.

215 Issues in Sustainable Architecture 3 Course Prerequisite: Certified major in Architecture. Introduction to analysis and representation with a focus on the use of digital tools.

220 Architectural History I 3 Course Prerequisite: Certified major in Architecture with concurrent enrollment in ARCH 201, or certified majors pursuing non-Architecture degrees. Historic development of world architecture from prehistory to late medieval; social, technical and scientific influences.

301 Architectural Design III 5 (0-10) Course Prerequisite: Certified major in Architecture; ARCH 203. Introduction of architectural design focusing on environmental and social issues.

303 Architectural Design IV 5 (0-10) Course Prerequisite: Certified major in Architecture; ARCH 301. Continuation of study of architectural design/form as influenced by cultural, spiritual and symbolic issues.

309 Modern Architecture and Theory 3 Course Prerequisite: SDC 250; SDC 350; concurrent enrollment in ARCH 301; certified major in Architecture. Built and theoretical developments in architecture from the nineteenth century to present; content may be linked to study tour.

324 [M] Renaissance to Baroque Architecture 3 Course Prerequisite: Certified major in Architecture; ARCH 220. Western architecture from the Renaissance to Baroque to pioneers of modern architecture.

330 Materials and Construction I 3 Course Prerequisite: Certified major in Architecture or Construction Management. Wood, steel, concrete, and masonry systems materials; introduction of materials related to building systems; frame bearing wall and roof systems, skin systems.

351 Architectural Structures I 3 Course Prerequisite: Certified major in Architecture or Construction Management. Introduction to statics and mechanics; analysis and design of statically determinate architectural structures using timber, steel, and reinforced concrete systems.

352 Architectural Structures II 3 Course Prerequisite: Certified major in Architecture or Construction Management; ARCH 351. Continuation of ARCH 351.

353 Structures Studio I 1 (0-2) Design principles of architectural structures systems; available systems for spanning and enclosing architectural space.

354 Structures Studio II 1 (0-2) Continuation of ARCH 353.

401 Architectural Design V 5 (0-10) Course Prerequisite: Certified major in Architecture; ARCH 303. Advanced architectural design focusing on technology, systems and crafts of buildings.

403 Architectural Design VI 5 (0-10) Course Prerequisite: Certified major in Architecture; ARCH 401. Advanced study of architectural design/form as influenced by social and environmental issues applied to large-scale developments.

409 [M] Design Theory VI 3 Course Prerequisite: Certified major in Architecture. Advanced design theory relating to social and environmental issues which influence housing design for the urban environment.

428 Architecture and Culture in the Islamic World 3 Course Prerequisite: Junior standing. A thematic course exploring the relationship between architecture and culture in the context of Islamic civilization.

432 Environmental Control of Buildings I 3 Course Prerequisite: Certified major in Architecture or Construction Management. Mechanical systems for buildings; building heating, ventilating, and air conditioning systems, heat flow concepts.

433 Environmental Control of Buildings II 3 Course Prerequisite: Certified major in Architecture or Construction Management; ARCH 432. Water supply, drainage, electrical and lighting systems for buildings.

- 436 Contemporary Furniture Design 3** (1-4) Course Prerequisite: Certified major in Architecture or Construction Management. Investigation of issues related to the design and fabrication of furniture; students design and fabricate projects in the school shop.
- 440 Architectural Acoustics for Construction Management 2** Introduction to the art and science of architectural acoustics with emphasis on understanding construction performance specifications. (Crosslisted course offered as ARCH 440, CST M 440).
- 446 Computer Animation I 3** (1-4) Introduction to computer animation production and building simulation; applicable for all majors.
- 451 Computer-aided Design I 3** (2-2) Course Prerequisite: Certified major in Architecture or Construction Management. Computer-aided design related to 3D modeling and construction documents.
- 452 Computer-aided Design II 2** (1-2) Course Prerequisite: Certified major in Architecture or Construction Management. Continuation of ARCH 451. Computer-aided design related to 3D modeling and construction documents.
- 456 Field Sketching/Journal Keeping 3** (2-2) Course Prerequisite: Certified major in Architecture or Construction Management. Field-sketching/journal-keeping strategies to facilitate investigation and comprehension of the built environment.
- 463 Architectural Structures III 3** Course Prerequisite: Certified major in Architecture or Construction Management; ARCH 352. Wind and seismic loads on architectural structures; high-rise systems; reinforced concrete and masonry structures. Credit not granted for both ARCH 463 and ARCH 563.
- 464 Architectural Structures IV 3** Course Prerequisite: Certified major in Architecture or Construction Management; ARCH 352. Deflection theory; classical and computer analysis for statically indeterminate architectural structure systems. Credit not granted for both ARCH 464 and ARCH 564.
- 472 Codes and Acoustics 3** Course Prerequisite: Certified major in Architecture or Construction Management. Building codes and specifications; sound theory, control, and acoustic systems applied to buildings.
- 480 Architecture Internship V** 1-16 May be repeated for credit; cumulative maximum 16 hours. Course Prerequisite: Certified major in Architecture or Construction Management. Placement in an approved industrial, professional, or governmental situation for specialized or general experience.
- 490 Seminar in Architectural Design V** 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Certified major in Architecture. Advanced study in architectural design. Cooperative: Open to UI degree-seeking students.
- 491 Seminar in Architectural Communications V** 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Certified major in Architecture. Advanced study in graphic communication.
- 492 Seminar in Architectural History V** 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Certified major in Architecture. Advanced study in architectural history.
- 493 Seminar in Environmental Control V** 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Certified major in Architecture or Construction Management. Advanced study in environmental control of buildings.
- 494 Seminar in Urban and Regional Planning V** 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Certified major in Architecture. Advanced study in urban and regional planning.
- 495 Seminar in Construction Management V** 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Certified major in Architecture. Advanced study in construction practice management.
- 496 Seminar in Computer Applications V** 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Certified major in Architecture. Architectural and construction applications of computer graphics, management, computer-aided design.
- 499 Special Problems V** 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 510 Architectural Design Studio 6** (0-12) Graduate studio experience researching a single topic of architectural relevance (i.e. geology, material science, biological systems engineering). Field trip required.
- 511 Design VIII/Graduate Design Project 6** (0-12) Course Prerequisite: ARCH 403. Studio course divided between urban design and preliminary design on graduate project.
- 513 Graduate Design Project 6** (0-12) Course Prerequisite: ARCH 511; ARCH 515. Final graduate design studio focusing on individualized topics.
- 515 Research Methods and Programming 3** Exploration of traditional research methods and investigations for architects.
- 520 Directed Topics in Architecture V** 1-3 May be repeated for credit; cumulative maximum 6 hours. Topics related to areas of emphasis in the program and student specialization.
- 525 History and Theory 3** History and theory of 20th century architecture focusing on cultural and philosophical principles related to design.
- 527 Site and Landscape Design 3** Exploration of issues of site context analysis, topography, planning, and landscape design.
- 530 Philosophies and Theories of the Built Environment 3** Course Prerequisite: Graduate standing in Architecture, Interior Design, or Landscape Architecture. Focus on systematic thought which may describe behavior of the built environment. (Crosslisted course offered as ARCH 530, I D 530, LND ARCH 530).
- 531 Advanced Tectonics 3** Tectonic theory of concrete and metal construction with focus on skin design and technology as formative elements in architecture.
- 540 Research Methods 3** Research methods, from quantitative to technical to philosophical, directed toward qualitative research. (Crosslisted course offered as ARCH 540, I D 540, LND ARCH 540).
- 542 Issues in Architecture 3** Course Prerequisite: ARCH 525. Examination of issues in architecture related to society, culture, environment, politics, and philosophy.
- 560 Interdisciplinary Seminar 3** Explores approaches to design thinking in the topic areas of people and place, history, theory and criticism, and physical design. (Crosslisted course offered as ARCH 560, I D 560, LND ARCH 560).
- 563 Architectural Structures III 3** Course Prerequisite: ARCH 515 or concurrent enrollment. Wind and seismic loads on architectural structures; high-rise systems; reinforced concrete and masonry structures. Credit not granted for both ARCH 463 and ARCH 563.
- 564 Architectural Structures IV 3** Course Prerequisite: ARCH 511 or concurrent enrollment. Deflection theory; classical and computer analysis for statically indeterminate architectural structure systems. Credit not granted for both ARCH 464 and ARCH 564.
- 570 Advanced Architectural Studio/Laboratory 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.
- 571 Advanced Architectural Studio II 6** (0-12) Course Prerequisite: ARCH 570. Drawing from architectural historical and theoretical research, urban architectural design case study, research in the arts, humanities and social sciences.
- 573 Ethics and Practice 3** Ethical and professional practice issues related to the business and practice of architecture; investigations into marketing client and business orientation.
- 577 Theories and Methods of Urban Construction 3** Morphology, theoretical concepts, planning and spatial structure of cities and analysis of the transformation of the city core in Europe and America.
- 580 Architecture Internship V** 1-4 May be repeated for credit. Course Prerequisite: Graduate student in M Architecture degree program. Placement in an approved industrial, professional, or governmental situation for specialized or general experience.

- 600 Special Projects or Independent Study V** 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination.** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V** 1-6 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- CONSTRUCTION MANAGEMENT**
- CST M**
- 102 Introduction to the Built Environment** 2 Introduction to the construction industry; reviewing contract documents, methods of project management and current issues pertaining to the industry.
- 201 Materials I** 3 Course Prerequisite: Certified major in Construction Management. Introduction to construction materials; primary materials used in below-grade substructures and above-grade superstructures using Construction Specification Institute (CSI) format.
- 202 Materials II** 3 Course Prerequisite: CST M 201; certified major in Construction Management. Introduction to primary materials in construction of building envelopes, interiors, interior surfaces and finishes using Construction Specification Institute (CSI) format.
- 252 Construction Administration and Documentation** 4 (3-2) Course Prerequisite: CST M 102; certified major in Construction Management. Study and understanding of administrative procedures found within construction projects and respective documentation.
- 254 Construction Graphics** 2 (1-2) Course Prerequisite: Certified major in Construction Management or Civil Engineering. Visual literacy and details in construction documents using drawing techniques.
- 301 Management and Organization** 3 Course Prerequisite: Certified major in Construction Management. Principles of management, administration, and organization with an emphasis on their relationship to the construction management profession.
- 356 Earthwork and Equipment** 3 Course Prerequisite: CE 322; certified major in Construction Management or Civil Engineering. Methods and procedures for site work, excavation, dewatering, building foundation and equipment, productivity, finance and safety requirements.
- 362 [M] Legal Aspects of Construction and Design** 3 Course Prerequisite: CST M 252; certified major in Construction Management. Statutory and common law governing the practice of design and construction in the US; emphasis in architecture and construction project contract administration.
- 368 Safety and Health** 3 Course Prerequisite: Certified major in Construction Management; junior standing. Role and function of safety and health in the construction industry including OSHA compliance, requirements and regulations.
- 370 Estimating I** 3 (2-1) Course Prerequisite: CST M 252; certified major in Construction Management. Certified civil engineering majors may take by permission. Applications of quantity survey, techniques in creation of unit costs, introduction of job expenses and bid presentation.
- 371 Estimating II** 3 (2-3) Course Prerequisite: CST M 370; certified major in Construction Management. Bidding application, advance concepts in the creation of imot cpst and computer software applications.
- 440 Architectural Acoustics for Construction Management** 2 Introduction to the art and science of architectural acoustics with emphasis on understanding construction performance specifications. (Crosslisted course offered as ARCH 440, CST M 440).
- 451 Delivery Systems** 3 Course Prerequisite: CST M 371; certified major in Construction Management. Design/construction process and project delivery systems/approaches; analysis of construction management: the construction management process.
- 458 Methods and Procedures of Heavy Construction** 3 Course Prerequisite: Certified major in Construction Management; junior standing. Methods and procedures for site work, heavy equipment, cranes, productivity; finance and safety requirements.
- 460 Construction Cost Accounting** 3 (2-3) Course Prerequisite: CST M 451; certified major in Construction Management. Examination of cost accounting utilized for specific project control as well as overall company control.
- 462 Planning and Scheduling** 3 (2-3) Course Prerequisite: CST M 371, or CE 322 and 317; certified major in Construction Management or Civil Engineering. Methods, principles, and concepts required to plan and schedule construction projects; introduction to scheduling software.
- 466 Heavy/Civil Estimating** 3 Course Prerequisite: Certified major in Construction Management, or junior standing and certified major in Civil Engineering. Estimating in quantity survey, price extension and bidding in civil projects.
- 467 Ethics and Construction Management** 3 Course Prerequisite: CST M 252; CST M 370; senior standing; certified major in Construction Management. Ethics and morality relating to the construction profession including common decisions.
- 469 Residential Green Building** 3 Course Prerequisite: Certified major in Construction Management; senior standing. Residential construction segments; sustainable products and practices applicable to residential construction.
- 473 Human Productivity in Construction** 3 Course Prerequisite: MGMT 301; certified major in Construction Management. Leadership and management concepts and methods applied to human behavior to enhance motivation, productivity and safety in construction.
- 475 [M] Senior Capstone Project** 3 Course Prerequisite: CST M 460, MGMT 301; certified major in Construction Management. Simulation of real world competition for CM at Risk (CM/GC) format.
- 482 Conceptual Estimating for Architects** 3 Course Prerequisite: Certified major in Architecture or Construction Management; junior standing. Quantity survey, price extension and bidding as applied to architecture; concepts of pricing, value engineering, and ethics.
- 495 Seminar in Construction Management** V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Certified major in Construction Management. Advanced study in construction practice management. May be repeated for credit; cumulative maximum 4 hours.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- DESIGN**
- DESIGN**
- 396 Introduction to Digital Modeling** 3 Course Prerequisite: Certified major in Interior Design. Computer-aided drafting (CAD) fundamentals and basic theoretical concepts related to its use in professional design practice.
- 397 3-D Digital Modeling and Project Information Management I** 3 3-D digital modeling as a medium to support design visualization, investigation and communication including project information management; emphasis on Revit suite software. Recommended preparation: ID 297 or graduate standing.
- 497 3-D Digital Modeling and Project Information Management II** 3 Integration of advanced building information modeling (BIM) techniques utilizing complex applications within the Revit software suite. Recommended preparation: DESIGN 397.

- 498 Advanced Digital Modeling** 3 Broad integration of Non-Uniform Rational B-spline (NURBS) modeling techniques including practical fundamentals and theoretical concepts of modeling, rendering and animation. Recommended preparation: DESIGN 497.
- 550 Applications: Using Research in the Inquiry Process** 3 Application of scientific research in the advanced design process.
- 561 Seminar in Design Thinking** 3 Course Prerequisite: Doctoral standing in Design. Understanding design thinking or design knowing and translating research and theory into practice.
- 562 Area Readings** 3 Course Prerequisite: DESIGN 561. Forum for the advancement of understanding and discussion of readings related to interdisciplinary design.
- 563 Directed Readings** 3 Course Prerequisite: DESIGN 562. Advanced critical and comprehensive reviews of literature pertinent to student's focus area; development of specialization and expertise in identified area.
- 564 Design Research Methods** 4 Course Prerequisite: DESIGN 562. Development and preparation of research proposals; identification of theories, exploration of research methods and strategies; development of thesis statement and literature review. Recommended preparation: Concurrent enrollment in DESIGN 563; DESIGN 565.
- 565 Dissertation Proposal Planning** 2 Course Prerequisite: DESIGN 562. Write and present independent research proposal based on work in DESIGN 564 to prospective doctoral committee members. Recommended preparation: Concurrent enrollment in DESIGN 563; DESIGN 564. S, F grading.
- 570 Research Practicum** 3 Course Prerequisite: DESIGN 564; DESIGN 565. Interdisciplinary research in design; focus on development and application of individual research.
- 590 Teaching Practicum** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Doctoral standing in Design. Supervised teaching experience integrating application of design knowledge and approaches. S, F grading.
- 598 Topics in Design** V 1-3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Doctoral standing in Design. Topical issues in design responding to the shifting demands and needs of the design professions.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.
- ## INTERIOR DESIGN
- ### ID
- 101 Design Issues** 3 Sensory awareness as a design determinant; introduction to basic design elements in problem identification and solving processes.
- 102 Interior Design Studio I** 3 (0-6) Course Prerequisite: ID 101. Interior design problem-solving grounded in aesthetic theories.
- 103 Transfer Studio** 6 (3-6) An intensive studio introducing basic elements and principles of design; basic technical skills (drafting, sketching, rendering, model building).
- 197 Design Communication I** 3 (2-2) Beginning design communication skills, including manual and digital methods. Recommended preparation: ID 101.
- 201 Interior Design Studio II** 4 (1-9) Course Prerequisite: ID 102; ID 197 or ID 103. Interior design problem-solving grounded in theories of human behavior.
- 202 The Built Environment** 3 Design and planning of the built environment: products, interiors, structures, landscapes, cities, regions, earth; human-environmental interactions, sustainability, and quality. (Crosslisted course offered as ARCH 202, ID 202).
- 203 Interior Design Studio III** 4 (1-9) Course Prerequisite: ID 201. Interior design problem-solving grounded in theories of spatial organization.
- 205 Visual Communication** 3 (2-2) Course Prerequisite: ID 197 or ID 103. Course focuses on the various methods in which the interior designer may choose to visually communicate design concepts.
- 215 Materials and Components of Interior Design** 3 Characteristics and properties of structural and non-structural interior materials.
- 250 History of Interiors** 3 A survey of interior environments, spatial distributions, furnishings, and related design elements from ancient Egypt to the 18th century.
- 277 Interior Design Field Trip** 1 May be repeated for credit; cumulative maximum 2 hours. Selected issues in the field of interior design in connection with an organized field trip.
- 278 Special Topics** V 1-3 May be repeated for credit; cumulative maximum 6 hours. S, F grading.
- 279 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 297 Design Communication II** 3 (2-2) Course Prerequisite: ID 201. Manual and digital design communication skills for 2D/3D design problem solving; integration of current technology and software applications.
- 303 Immersion Studio** 6 (1-10) Course Prerequisite: By permission only. Intense and concentrated experience in design of interior spaces from abstraction and concept to complex interiors of larger scale.
- 305 Freehand Sketching** 3 (2-2) Development of knowledge and skills in freehand sketching to facilitate design exploration and further understanding of the built environment.
- 312 [M] Interior Design Theory** 2 Theory, principles, and determinants of interior design applied to current practice.
- 321 Interior Design Studio IV** 4 (1-9) Course Prerequisite: Certified major in Interior Design. Interior design problem-solving grounded in place theories.
- 325 Interior Building Systems** 3 Course Prerequisite: Certified major in Interior Design. Analysis, planning, and application of interior lighting; introduction to HVAC and plumbing systems.
- 326 Codes for Interior Designers** 3 Course Prerequisite: Certified major in Interior Design. Codes and specifications related to the design of the interior environment, including fire protection standards, accessibility, universal design and acoustics.
- 333 Interior Design Studio V** 4 (1-9) Course Prerequisite: ID 321. Interior design problem-solving grounded in organizational theories.
- 350 [M] History of Interiors II** 3 A survey of interior environments, spatial distributions, furnishings, and related design elements in the 19th and 20th centuries.
- 392 [M] Professional Procedures** 3 Course Prerequisite: Certified major in Interior Design. Business practices and procedures as related to interior design; contract documentation and specification writing.
- 415 Advanced Interior Construction and Detailing** 3 Course Prerequisite: Certified major in Interior Design. Analysis of building construction and detailing which impacts interior space design.
- 425 Interior Design Studio VI** 5 (0-10) Course Prerequisite: ID 333 or ID 303. Interior design problem-solving integrating multidisciplinary theories within a community and/or global context.
- 426 Interior Design Studio VII** 5 (0-10) Course Prerequisite: ID 425. Interior design problem-solving grounded in selected theories.
- 460 Portfolio and Representation** 3 Develop communication skills and produce documents necessary to professionally present oneself to prospective employers within the fields of design.

- 477 Interior Design Field Trip** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Certified major in Interior Design. Selected issues in the field of interior design in connection with an organized field trip.
- 490 Cooperative Education Internship** V 2 (0-6) to 12 (0-36) May be repeated for credit; cumulative maximum 12 hours. Off-campus cooperative education internship with business, industry, or government unit.
- 498 Special Topics in Interior Design** V 1-3 May be repeated for credit; cumulative maximum 6 hours.
- 520 Historical Perspectives of Interior Space** 3 Historical perspectives of interior environments, spatial distributions, furnishings, and related design elements from ancient Egypt to the 18th century.
- 525 Interior Design Graduate Studio I** 5 (0-10) Graduate studio: application of advanced design theories, philosophies and research methodologies to enhance undergraduate design foundations through interdisciplinary studio experiences.
- 526 Interior Design Graduate Studio II** 5 (0-10) Graduate studio: individual thesis topics and the application of advanced design theories, philosophies, and research methodologies to student's focus topic.
- 530 Philosophies and Theories of the Built Environment** 3 Course Prerequisite: Graduate standing in Architecture, Interior Design, or Landscape Architecture. Focus on systematic thought which may describe behavior of the built environment. (Crosslisted course offered as ARCH 530, I D 530, LND ARCH 530).
- 540 Research Methods** 3 Research methods, from quantitative to technical to philosophical, directed toward qualitative research. (Crosslisted course offered as ARCH 540, I D 540, LND ARCH 540).
- 560 Interdisciplinary Seminar** 3 Explores approaches to design thinking in the topic areas of people and place, history, theory and criticism, and physical design. (Crosslisted course offered as ARCH 560, I D 560, LND ARCH 560).
- 594 Readings in Interior Design** 3 Exploration of current topics through readings in interior design.
- 598 Topics in Interior Design** V 1-3 May be repeated for credit; cumulative maximum 6 hours.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study and/or Examination** V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- LANDSCAPE ARCHITECTURE**
- LND ARCH**
- 101 Landscape Architecture Graphics** 3 (1-6) Basic mechanical and freehand drawing; use of various drafting media, two- and three-D drawing, lettering, and rendering techniques.
- 102 Introduction to Computer Graphics in Landscape Architecture** 3 (2-3) Use of digital media applied to analysis, drafting and rendering skills; introduction to Photoshop, AutoCAD, and Illustrator.
- 222 Landscape Architecture Field Experience I** 1 (0-2) May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Senior standing. Field study of landscapes, designers and design firms through travel experiences.
- 260 History of Landscape Architecture** 3 (2-2) Historical development in the practice and profession of landscape architecture throughout the world, circa BC to present. Cooperative: Open to UI degree-seeking students.
- 262 Landscape Architectural Design I** 3 (2-3) Course Prerequisite: ARCH 102 or LND ARCH 101. Basic design principles and design processes at local regional scales; integration of design graphics and verbal/visual presentations. Field trip required.
- 263 Landscape Architectural Design II** 3 (0-6) Course Prerequisite: Lnd Arch 262. Basic design and graphic techniques related to solving of elementary design problems.
- 327 Theory in Landscape Architecture** 3 Course Prerequisite: Lnd Arch 263; certified major in Landscape Architecture. Theories and frameworks that inform and emerge from the practices and outcomes of landscape architecture.
- 333 Landscape Architecture Field Experience II** 1 (0-2) May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Junior standing or certified major in Landscape Architecture. Field study of landscapes, designers and design firms through travel experiences.
- 362 Landscape Architectural Design III** 4 (2-6) Course Prerequisite: Lnd Arch 263. Professional site design processes; concentration on planting and site planning, design with urban community, ecological, and open-space projects.
- 363 Landscape Architectural Design IV** 4 (2-6) 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) Basic site planning and construction operations including grading, drainage, storm water management, and construction document techniques.
- 366 Landscape Architectural Construction II** 4 (2-6) Course Prerequisite: Lnd Arch 365. Construction materials and methods, specifications, cost estimating, and construction document preparation.
- 367 Landscape Architectural Construction III** 3 (2-3) Course Prerequisite: Lnd Arch 366. Supplemental projects in cost estimating, specifications, construction detailing, and landscape architectural design/build.
- 380 Ecological Applications in Design** 3 (2-3) Course Prerequisite: Lnd Arch 263. Fundamental concepts of ecology as a philosophy and a science; emphasis on community, landscape restoration, and historical ecology as they relate to design. Field trip required.
- 399 Professional Work Experience: Office Practice** V 1-2 May be repeated for credit; cumulative maximum 4 hours. Planned professional work experience in design and office practice as approved by faculty; written report and presentation to faculty required. S, F grading.
- 450 [M] Principles and Practice of Planning** 3 Course Prerequisite: Lnd Arch 363. History, theory, methods, and processes in regional planning; contemporary issues and professional practice.
- 467 Regional Landscape Inventory and Analysis** 4 (2-6) Course Prerequisite: Geol 101 or Soil Sci 201. Application of ecological planning process for landscape inventory and analysis.
- 470 Landscape Architectural Design V** 4 (1-9) Course Prerequisite: Lnd Arch 363. Advanced group and individual landscape architectural design and planning projects; professional applications of site design theory and design processes.
- 475 Senior Project Proposal** 2 Course Prerequisite: Lnd Arch 363. Program planning for senior project. S, F grading.
- 477 Landscape Applications of Geographic Information Systems** 3 (1-6) Course Prerequisite: Lnd Arch 467. GIS-based spatial data development and analysis skills in an applied, real-world context.
- 480 Professional Practice** 2 Course Prerequisite: Lnd Arch 363. Current office practices, design and construction management techniques; introduction to construction contract legal requirements within the practice of landscape architecture. Cooperative: Open to UI degree-seeking students.
- 485 [M] Senior Creative Project I** 4 (0-8) Course Prerequisite: Lnd Arch 475. Individually developed studio or scholarly project conducted with faculty advisor; collection, analysis, and interpretation of project information.
- 491 Topics in Design** 3 Course Prerequisite: Lnd Arch 263.

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

520 The Northern Rocky Mountain Regional Landscape 4 (2-4) Biophysical characteristics of the Northern Rocky Mountain regional landscape. Cooperative: Open to UI degree-seeking students.

521 Cultural Interpretation of the Regional Landscape 4 (2-4) Cultural characteristics of the Northern Rocky Mountain regional landscape. Cooperative: Open to UI degree-seeking students.

525 Landscape Modeling 3 (1-6) Visual and cartographic landscape modeling through application of GIS and visualization technologies to landscape changes.

530 Philosophies and Theories of the Built Environment 3 Course Prerequisite: Graduate standing in Architecture, Interior Design, or Landscape Architecture. Focus on systematic thought which may describe behavior of the built environment. (Crosslisted course offered as ARCH 530, I D 530, LND ARCH 530).

540 Research Methods 3 Research methods, from quantitative to technical to philosophical, directed toward qualitative research. (Crosslisted course offered as ARCH 540, I D 540, LND ARCH 540).

560 Interdisciplinary Seminar 3 Explores approaches to design thinking in the topic areas of people and place, history, theory and criticism, and physical design. (Crosslisted course offered as ARCH 560, I D 560, LND ARCH 560).

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

SCHOOL OF DESIGN AND CONSTRUCTION

SDC

100 World of Design and Construction 3 Exploration of architecture, interior design, landscape architecture, and construction management through equity, environment, and economy; careers in the built environment considered.

120 Foundational Drawing 3 (0-6) Development of skills relating to drawing 2D and 3D objects, one and two point perspective as well as orthographic projection.

140 Foundation Studio I 3 (0-6) Course Prerequisite: SDC 120 or concurrent enrollment Exploration and communication of theories and concepts related to basic 2-dimensional and 3-dimensional principles of built space.

250 Global History of Design I 3 Course Prerequisite: ARCH 201 or concurrent enrollment, I D 201 or concurrent enrollment, or LND ARCH 262 or concurrent enrollment; certified major in Architectural Studies, Interior Design, or Landscape Architecture. Global developments in design through the seventeenth century CE.

350 Global History of Design II 3 Course Prerequisite: ARCH 203 or concurrent enrollment, I D 203 or concurrent enrollment, or LND ARCH 263 or concurrent enrollment; certified major in Architectural Studies, Interior Design, or Landscape Architecture. Global developments in design from the seventeenth century CE to the present day.

444 Integrated Study Tour 1 Course Prerequisite: ARCH 309, I D 277, or LND ARCH 222; certified major in Architecture, Interior Design, Landscape Architecture, or Construction Management. Selected issues in the field of design and construction in connection with an organized field trip.

Department of Interior Design

id.wsu.edu
Daggy 330
509-335-4118

Please see the School of Design and Construction Management in this catalog for information about Interior Design.

Program in Digital Technology and Culture

libarts.wsu.edu/dtc/
Avery Hall 202
509-335-2581

Professors, B. Condon, T. V. Reed, S. Ross; Associate Professors, K. Arola, K. Christen, P. Ericsson; Assistant Professors, M. Edwards, A. Davis (Tri-Cities), R. Whitson; Instructors, S. Anderson, R. Goodrich, L. Hunter; Coordinators, K. Arola (Pullman), D. Gast (Tri-Cities).

Digital Technology and Culture is an interdisciplinary degree program that combines the creative production and critical exploration of digital media. DTC emphasizes a historical, rhetorical, and cultural understanding of digital media so as to prepare students for problem solving and communicating both locally and globally.

In completing this degree, students:

- Work individually and in teams to design, compose, and complete digital products, including animation, video, graphic design, and web design.
- Acquire a historically and culturally grounded understanding of digital technology.
- Learn to develop persuasive, culturally appropriate content for digital environments.
- Develop a sophisticated understanding of digital rhetoric.
- Understand how information is understood and circulated in the digital age.
- Master the skills of invention, analysis, synthesis, organization, and delivery.

The DTC major requires 39 credits composed of a 24-credit core, a concentration of 12 additional credits, and an internship of at least 3 credits.

The DTC core includes five courses that introduce digital rhetoric, research and information technology, the relationship between language and technology, art and technology, and digital diversity. The core also includes three interdisciplinary courses in Anthropology, Computer Science, English, Fine Arts, or Sociology. The 12-credit DTC concentration is designed to meet individual interests and strengths. Concentrations are available in Technology and Culture, Media Authoring, and Digital Information Management.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

DIGITAL TECHNOLOGY AND CULTURE (120 HOURS)

DTC Certification Requirements, Pullman Campus

Certification will take place each semester approximately one month before registration for the following semester begins. To apply for certification a student must have the following: 24 hours; a minimum 2.2 gpa; one credit of ENGLISH 300 with evidence of projects OR sufficient evidence of facility in web authoring, animation, video production, and/or graphic design; and a written statement of purpose (approximately 500-750 words) explaining how the DTC major supports the student's career goals. Certification applications will be reviewed by a committee that includes the DTC Coordinator, one DTC faculty member, the Director of Undergraduates Studies, and one DTC instructor or a graduate student teaching DTC courses. Students will be placed in rank order and the top students will be certified based on how many spots are available. Transfer students with 55 or more hours should complete the certification requirements within two semesters. All students should certify before earning 90 hours.

First Year

First Term	Hours
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS] FINE ART 102 ¹	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
DTC 355 [M]	3
Social Sciences [SSCI]	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
DTC 356	3
DTC 375	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
DTC Concentration Elective ²	3
DTC Core Option ²	3
FINE ART 331	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
DTC 475	3
DTC Concentration Elective ²	3
DTC Core Option ²	3
Elective	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
DTC Concentration ²	6
Integrated Capstone [CAPS]	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
Senior Seminar, Thesis, or Internship	3
Electives	12

¹ Prerequisite to FINE ART 331.

² Consult with an advisor for a list of approved 300-400-level courses.

Minors

Digital Technology and Culture

A student may certify in a DTC minor after the completion of 60 semester hours. A minimum of 18 semester hours of approved, upper-division is required for the minor from the following: DTC/ENGLISH 355 and 375, FINE ART 331 and three from ANTH 350, AMER ST/ENGLISH/DTC 475, DTC/ENGLISH 356, 478, ENGLISH 301, 336, 402, 405, FINE ART 332, 363, 434, SOC 373 or 430. 9 hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Description of Courses

DIGITAL TECHNOLOGY AND CULTURE

DTC

101 [ARTS] Introduction to Digital Technology & Culture 3 Inquiry into digital media, including origins, theories, forms, applications, and impact with a focus on authoring and critiquing multimodal texts.

335 Digital Animation: Story, Narration and Production 3 (2-2) 3-D digital animation for creative and professional presentations using Maya software, art skills, story-telling and team problem-solving techniques.

336 Composition and Design 3 Design practices and process for composing for a multimedia environment including color, pattern and shape. (Crosslisted course offered as DTC 336, ENGLISH 336).

338 Special Topics in Digital Technology and Culture 3 May be repeated for credit; cumulative maximum 6 hours. Major trends or artists in digital technology and culture.

354 Digital Storytelling 3 Nonlinear, multi-linear, and interactive narrative using elements of creative writing such as character, dialog, setting, plot and image. (Crosslisted course offered as DTC 354, ENGLISH 354).

355 [M] Multimedia Authoring: Exploring New Rhetorics 3 Writing for new computer-based media; multimedia authoring project; examination of new rhetorics of information technology. (Crosslisted course offered as DTC 355, ENGLISH 355).

356 Electronic Research and the Rhetoric of Information 3 Social and cultural role of information; research with electronic sources; production, validation, storage, retrieval, evaluation, use, impact of electronic information. (Crosslisted course offered as DTC 356, ENGLISH 356).

375 [M] Language, Texts and Technology 3 Relationship between technology and communication; writing practices from a historical point of view. (Crosslisted course offered as DTC 375, ENGLISH 375).

475 Digital Diversity 3 Course Prerequisite: Junior standing. Cultural impact of electronic media, especially the World-Wide Web; issues of race, class, gender, sexuality online. (Crosslisted course offered as AMER ST 475, DTC 475, ENGLISH 475).

476 Digital Literacies 3 Course Prerequisite: DTC 375. Development and use of new literacies as they affect communication through technology. (Crosslisted course offered as DTC 476, ENGLISH 476).

477 Advanced Multimedia Authoring 3 Course Prerequisite: DTC or ENGLISH 355. Advanced writing, imaging and teamwork skills for authoring in new computer-based media; website project in client-oriented context. (Crosslisted course offered as DTC 477, ENGLISH 477).

478 Usability and Interface Design 3 (0-6) Course Prerequisite: DTC or ENGLISH 355. Design of websites using best practices of visual literacy, interface architecture and usability. (Crosslisted course offered as DTC 478, ENGLISH 478).

497 Senior Seminar 3 Course Prerequisite: Senior standing; certified major in Digital Technology and Culture. Major multimedia project for nonprofit organization or small business with special focus on project management, planning, and execution.

498 Internship V 2-9 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: DTC 355; senior standing; certified major in Digital Technology and Culture. Direct professional learning experiences in the area of digital media, technology, and culture. S, F grading.

499 Special Problems V 1-4 Course Prerequisite: Certified major in Digital Technology and Culture; junior standing. Advanced understanding of the various tools, design approaches, and scripting languages for creating dynamic multimedia objects for a variety of platforms, including mobile phones and tablets. S, F grading.

School of Economic Sciences

ses.wsu.edu
Hulbert 101
509-335-5555

Professor and Director, H.A. Love; Professor and Associate Director, V.A. McCracken; Regents Professors, R. Mittelhammer, C. R. Shumway; Professors, R. Batina, K. L. Casavant, R. Fortenberry, T. L. Marsh, J. J. McCluskey, R. Rosenman, P. R. Wandschneider, J. K. Yoder; Associate Professors, H. H. Chouinard, G. Galinato, B. Mandal, J. Neibergs, J. Yan; Assistant Professors, M. Brady, A. Cassey, B. Cowan, A. Espinola, K. Gallardo, M. Gibson, M. Halova, P. Kuzyk, M. Ma, F. Munoz, J. Sage.

The School of Economic Sciences (SES) offers programs leading to the degree of Bachelor of Science in Economic Sciences with options in Economics, Policy and Law; Quantitative Economics; Economic Development; Financial Markets; Environmental and Resource Economics; Business Economics; and Agricultural Economics. Graduate degrees offered include the Master of Science in Applied Economics, Doctor of Philosophy (Economics and Agricultural Economics).

The School also advises the Bachelor of Science in Agricultural and Food Systems, the Agricultural and Food Business Economics major.

Undergraduate Program

The course of study for the Bachelor of Science in Economic Sciences is sufficiently broad to accommodate students with a variety of interests and career goals. It provides training for students interested in business, law, finance, agricultural markets, environmental policy and natural resources, and international trade and development. The program also gives students the preparation needed for graduate study in business, law, agricultural

economics, and general economics. The program provides students the flexibility to choose courses outside the school of economic sciences while still meeting degree requirements and allows students to pursue double majors in such fields as business or political science.

The degree requires a set of core courses taken by all School of Economic Sciences undergraduate students. These courses develop a deep understanding of the basic principles of economics and the research methods needed for economic analysis in any field of economic sciences. Students then branch out to further apply the core tools in one of seven option areas:

- The *agricultural economics* option deals with economic issues related to food and fiber supply and demand and the natural resource base that supports agricultural production and societal needs. Applications to public decision making and private decisions of farms, ranches, and agribusinesses are considered.
- The *environmental and resource economics* option trains students to make decisions while carefully weighing the trade-offs between protecting, restoring, developing, and allocating natural resources.
- The *business economics* option trains students to use economic concepts to better understand the management, marketing, and finance problems faced by businesses operating in a market system.
- The *financial markets* option provides students with a solid, analytical training in the substantial overlap between economics and finance. The option requires coursework that focuses on the analysis of financial markets.
- The *economic development* option provides students an understanding of how policies, institutions and endowments influence physical, human, and natural capital accumulation which leads to the emergence of poor and rich communities and countries.
- The *economics, policy and law* option provides students with the analytical skills used in law school and policy-making including those used in tax, law, regulation, program, policy and project arenas.
- The *quantitative economics* option provides students with the skills to understand and use more advanced statistical and mathematical models, preparing them for careers involving data analysis or for advanced education -- such as a PhD in economics or related field.

In all options students combine course work in economic sciences with courses outside the school of economic sciences. According to their individual interests, students supplement their economic sciences training with elective coursework in the areas of business, agriculture, mathematics, history, and/or political science.

The School of Economic Sciences also advises the college-wide Agricultural and Food Business Economics major. This major focuses on agricultural business with an emphasis in economics. Please visit <http://afs.wsu.edu> for more information.

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 economics, agribusiness economics, business economics, environmental and resource economics and management, or sustainable development (see below).

The school advises for the interdisciplinary sustainable development minor that addresses how economic and social systems interact with major resource and environmental issues, both internationally and domestically. This is an interdisciplinary program with participation by the departments such as Architecture, Economics, International Business, the School of the Environment, and Sociology. The program is built on the premise that as a society we have a responsibility to ourselves and to future generations to steward resources in ways that foster long-term environmental and socio-cultural health and economic viability for all peoples.

Transfer Students

Students planning to transfer to Washington State University from other institutions should take courses that meet the 100- and 200-level course requirements in economics, mathematics, accounting, English, speech, and General Education/University Common Requirements. Students planning to transfer into economic sciences by the end of their sophomore year should have satisfactorily completed the introductory economics courses and 200-level mathematics courses if they plan to complete the required work for a degree in two additional years.

Preparation for Graduate Study

Students planning to pursue graduate study in economics or agricultural economics are urged to select the quantitative economic option and consult with a faculty member in the School of Economic Sciences. All options, however, prepare students for graduate school but are less quantitatively focused.

Students planning graduate study are advised to develop strong skills through courses in English composition, and additional work in statistics and mathematics. Recommendations for specific graduate areas include:

- Law School: ACCTG 230; B LAW 210; POLS 300; and, depending on legal interests, elective Econ courses from the following: ECONS 322, 324, 327, 425, 451; B LAW 411 suggested.
- Business School: ACCTG 230, 231; MIS 250. Additional courses in business are not required for admission to most graduate schools of business. It might be useful, however, to take introductory courses in the major areas of business: B LAW 210, FIN 325, MGTOP 340, MKTG 360, ECONS 352 and ECONS 452.
- Economics and Agricultural Economics: MATH 171 and 220 are recommended to satisfy the major's math requirements. Calculus through MATH 273 is also useful.
- Public Administration: ACCTG 230 and POL S 340; MIS 250 and POL S 443, 446 recommended. Elective: ECONS 322.

Employment Opportunities

The undergraduate program provides the basic knowledge and tools necessary to secure professional positions in a wide range of industries and public organizations. A number of students take graduate work to broaden their career opportunities. School of Economic Sciences graduates compete favorably for jobs in government, business and charitable organizations, using their strong analytical skills to offer a different perspective for problem-solving

and decision-making. Recent graduates have been employed in banking, agribusiness, finance, industry, non-profit organizations, government agencies, and at universities. Many are working in foreign countries.

Graduate Program

The Master of Sciences in Applied Economics provides specialization and research experience appropriate for positions in private corporations and government service as management specialists, policy analysts, forecasters or economic consultants. Students can focus their studies in general economics, business economics or agribusiness, or environmental and resource economics by selecting supporting and elective courses.

The School of Economic Sciences offers two doctoral programs – the Ph.D. in economics and the Ph.D. in agricultural economics. Both degrees prepare students for careers as professional economists in academic, government, international organizations, or the private sector. The program provides students with an excellent foundation in the theory and methods of economics along with applications in their choice of at least two Ph.D. fields. To further strengthen their quantitative training, students may simultaneously pursue a Master of Science in statistics.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

AGRICULTURAL ECONOMICS (120 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 201 ¹	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI]	3 or 4
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 202 [QUAN] ¹	3
Concentrated Area Course ²	3

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 101 [PSCI] OR CHEM 105 [PSCI]	4
COM 102 [COMM], COM 210 [COMM], or H D 205 [COMM]	3 or 4
Diversity [DIVR]	3
ECONS 301	3
Concentrated Area Course ²	3

<i>Second Term</i>	<i>Hours</i>
ACCTG 230	3
BLAW 210	3
Creative & Professional Arts [ARTS]	3
ECONS 302	3
STAT 212 or MGTOP 215	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ACCTG 231	3
Concentrated Area Course ²	3
ECONS 311 [M]	3
Sequence Course ³	3
Electives	1
<i>Second Term</i>	<i>Hours</i>
Concentrated Area Course ²	3
ECONS 335 OR FIN 325	3
Sequence Course ³	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
ECONS 431	3
ECONS 483, 495, 497, 499, or HONORS 450	3
ECONS 490 [M]	3
ENGLISH 402	3
Sequence Course ³	3
<i>Second Term</i>	<i>Hours</i>
ECONS 400-level Elective	3
Integrative Capstone [CAPS]	3
Sequence Course ³	3
Electives	6

¹ Alternative to MATH 201 and 202 is MATH 171 and 220.

² Four courses from any one of the following concentration areas: (1) Agricultural Production: ANIM 101, CROP SCI 102 or ENTOM 150, CROP SCI 360, MGTOP 340; (2) Real Estate & Land Mgmt: FIN 325, FIN 345 & 346, FIN 445, MGTOP 215, MIS 250; (3) Food Safety & Policy: FS 110, FS 201, FS 220, FS 303; (4) Globalization (4 of the following courses): two semesters foreign lang, ECONS 428, 430, 327, SOC 415; (5) Sustainability: CROP SCI 360, ECONS 326, ENVR SCI 101, ENVR SCI 285; (6) Independent Concentration - upon approval of advisor.

³ Two sequences (4 courses): ECONS 350 + 450; or ECONS 351 + 451; or ECONS 352 + 452.

BUSINESS ECONOMICS (120 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 201 ¹	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ²	3 or 4
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 202 [QUAN] ¹	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
COM 102 [COMM], COM 210 [COMM], or H D 205 [COMM]	3 or 4
Diversity [DIVR]	3

ECONS 301	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ²	3 or 4
Electives	3

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
ECONS 300-400-level Elective	3
ECONS 302	3
STAT 212 or MGTOP 215	4
Electives	2
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
ECONS 300-400-level Elective	3
ECONS 311 [M]	3
ECONS 323	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ECONS 320	3
ECONS 335	3
ECONS 352	3
ECONS 400-level Elective	3
Concentrated Area Course ³	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
ECONS 452	3
ECONS 483, 495, 497, 499, or HONORS 450	3
ENGLISH 402	3
Concentrated Area Course ³	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ECONS 400-level Elective	3
ECONS 425	3
ECONS 490 [M]	3
Integrative Capstone [CAPS]	3
Concentrated Area Course ³	3

¹ Alternative to MATH 201 and 202 is MATH 171 and 220.

² For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

³ Completion of one of the following concentration areas: (1) Commodity Marketing: ECONS 351, 451, 426; (2) Consumer Marketing: MKTG 360, 300/400 level MKTG course, 300/400 level MKTG course; (3) Management: MGMT 301, 300/400 level MGMT course, 300/400 level MGMT course; (5) Logistics: MGTOP 340, MGTOP 452, ECONS 426.

ECONOMIC DEVELOPMENT (120 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
ECONS 101 [SSCI] OR 102 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 201 ¹	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ²	3 or 4
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 202 [QUAN] ¹	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
COM 102 [COMM], COM 210 [COMM], or H D 205 [COMM]	3 or 4
Diversity [DIVR]	3
ECONS 302	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ²	3 or 4
Electives	3

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
ECONS 300-400-level Elective	3
ECONS 301	3
STAT 212 or MGTOP 215	4
Electives	2
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ECONS 300-400-level Elective	3
ECONS 311 [M]	3
ECONS 322	3
ECONS 324	3
ECONS 327	3

<i>Second Term</i>	<i>Hours</i>
ECONS 300-400-level Elective	3
ECONS 320	3
ECONS 323	3
ECONS 326	3
ECONS 420	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
ECONS 400-level Elective	3
ECONS 427	3
ECONS 431	3
ECONS 483, 495, 497, 499, or HONORS 450	3
ECONS Option Requirement ³	3

<i>Second Term</i>	<i>Hours</i>
ECONS 490 [M]	3
ECONS Option Requirement ³	3
ENGLISH 402	3
Integrative Capstone [CAPS]	3
Electives	3

¹ Alternative to MATH 201 and 202 is MATH 171 and 220.

² For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

³ Two courses from the following option requirements: IBUS 380, ECONS 330, ECONS 428, ECONS 430, POL S 435, SOC 340.

**ECONOMICS, POLICY AND LAW OPTION
(120 HOURS)****First Year**

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 201 ¹	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ²	3 or 4
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 202 [QUAN] ¹	3
PHIL 103 [HUM]	3

Second Year

<i>First Term</i>	<i>Hours</i>
Communication [COMM]	3 or 4
ECONS 301	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ²	3 or 4
Policy or Law Emphasis Course ³	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ECONS 300-400-level Electives	6
ECONS 302	3
STAT 212 or MGTOP 215	4
Electives	2
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ECONS 311 [M]	3
ECONS 320	3
ECONS 322	3
ECONS 323, 324, or 330	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
Policy or Law Emphasis Courses ³	6
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
ECONS 431	3
ECONS 483, 495, 497, 499, or HONORS 450	3
ECONS Option Course ⁴	3
ENGLISH 402	3
Policy or Law Emphasis Course ³	3

<i>Second Term</i>	<i>Hours</i>
ECONS 400-level Elective	3
ECONS 420	3
ECONS 490	3
ECONS Option Course ⁴	3
Integrative Capstone [CAPS]	3

¹ Alternative to MATH 201 and 202 is MATH 171 and 220.² For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

³ Policy or Law Emphasis course selection: (1) Policy: ECONS 430, POL S 316, POL S 416, and PHIL 472; (2) Law: POL S 300; and one of PHIL 360, PHIL 365, or PHIL 370; and two of PHIL 201, POL S 101, POL S 206, POL S 402, POL S 404, or CRM J 320

⁴ ECONS Option Courses: ECONS 324, 425, 427, or 451

**ENVIRONMENTAL AND RESOURCE
ECONOMICS
(120 HOURS)****First Year**

<i>First Term</i>	<i>Hours</i>
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 201 ¹	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ²	3 or 4
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 202 [QUAN] ¹	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
COM 102 [COMM], COM 210 [COMM], or H D 205 [COMM]	3 or 4
Diversity [DIVR]	3
ECONS 301	3
ECONS 322 [M]	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ²	3 or 4

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
ECONS 302	3
STAT 212 or MGTOP 215	4
Concentrated Area Course ³	3
Electives	2
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ECONS 300-400-level Elective	3
ECONS 311 [M]	3
ECONS 330	3
Concentrated Area Course ³	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ECONS 300-400-level Elective	3
ECONS 326	3
Concentrated Area Course ³	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
ECONS 427	3
ECONS 430	3
ECONS 431	3
ECONS 483, 495, 497, 499, or HONORS 450	3
Environmental Option Course ⁴	3

<i>Second Term</i>	<i>Hours</i>
ECONS 490 [M]	3

ENGLISH 402	3
Environmental Option Course ⁴	3
Integrative Capstone [CAPS]	3
Electives	3

¹ Alternative to MATH 201 and 202 is MATH 171 and 220.² For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].³ Three courses from any one of the following concentration areas: (1) Human Health & the Environment: ANTH 405, CE 341, ENVR SCI 402, ENVR SCI 445, IPM 452, PHIL 370; (2) Global Environment: CROP SCI 360, ENVR SCI 285, ENVR SCI 335, GEOLOGY 315, HISTORY 494, PHIL 370, SOC 332; (3) Renewable Resources: Forest, Wildlife & Biosystems: BIOLOGY 330, BIOLOGY 401, CROP SCI 411, NATRS 300, NATRS 301, NATRS 312, PHIL 370; (4) Non-Renewable Resources: Energy & Minerals: GEOLOGY 340, GEOLOGY 350, GEOLOGY 470, PHIL 370, PHYSICS 408; (5) Independent Concentration - upon approval of advisor (choose 3 courses).⁴ Environmental Option courses: ENVR SCI 310, ENVR SCI 444, NATRS 204, SOIL SCI 368**FINANCIAL MARKETS
(120 HOURS)****First Year**

<i>First Term</i>	<i>Hours</i>
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 201 ¹	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ²	3 or 4
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 202 [QUAN] ¹	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
COM 102 [COMM], COM 210 [COMM], or H D 205 [COMM]	3 or 4
ECONS 301	3
MIS 250	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ²	3 or 4

<i>Second Term</i>	<i>Hours</i>
ACCTG 231	3
Creative & Professional Arts [ARTS]	3
ECONS 302	3
MGTOP 215	4
Electives	2

Third Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
ECONS 311 [M]	3
ECONS 320	3

ECONS 322	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ECONS 300-400-level Elective	3
ECONS 420	3
FIN 325	3
Financial Markets Option Required Course	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
ECONS 300-400-level Elective	3
ECONS 483, 495, 497, 499, or HONORS 450	3
ENGLISH 402	3
FIN 421 OR 427	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ECONS 400-level Elective	3
ECONS 425	3
ECONS 490 [M]	3
Financial Markets Option Required Course	3
Integrative Capstone [CAPS]	3

¹ Alternative to MATH 201 and 202 is MATH 171 and 220.

² For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

QUANTITATIVE ECONOMICS (120 HOURS)**First Year**

<i>First Term</i>	<i>Hours</i>
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 171 [QUAN] ¹	4
Electives	2

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ²	3 or 4
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 172	4
Electives	2

Second Year

<i>First Term</i>	<i>Hours</i>
COM 102 [COMM] or H D 205 [COMM]	3 or 4
Diversity [DIVR]	3
ECONS 301	3
ECONS Emphasis Course ³	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ²	3 or 4

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
ECONS 302	3
ECONS Emphasis Course ³	3
MATH 220 ¹	2
STAT 212 or MGTOP 215	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ECONS 300-400-level Elective	3
ECONS 311 [M]	3
ECONS Emphasis Course ³	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
ECONS 300-400-level Elective	3
ECONS 420	3
ECONS 424	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
ECONS 400-500-level Elective	3
ECONS 483, 495, 497, 499, or HONORS 450	3
ECONS 526	3
ECONS 527 or MATH 420	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ECONS 400-500-level Elective	3
ECONS 490 [M]	3
ECONS 525, STAT 360, or STAT 443	3
ENGLISH 402	3
Integrative Capstone [CAPS]	3

¹ MATH 171 and 220 are required.

² For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

³ Economics Emphasis Courses (3 courses required from one area): (1) Math: MATH 273, MATH 301, and MATH 315; (2) Management Operations: MGTOP 340, MGTOP 412, MGTOP 452; (3) Computer Science: CPT S 121, CPT S 122, CPT S 224

Minors**Business Economics**

To be eligible to certify in a business economics minor, students must have a cumulative 2.0 gpa. A minor in economics requires 18 hours of ECONS courses, nine of which must be at the 300-400 level with an overall 2.0 gpa in the required courses and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. ECONS 101 and 102 (or 198 and a 300/00-level ECONS course), 320, 321 or 305, 327 or 326, and 404 are required.

Economics

To be eligible to certify in an economics minor, students must have a cumulative 2.0 gpa. A minor in economics requires 18 hours of ECONS courses, nine of which must be at the 300-400-level with an overall 2.0 gpa in the required courses and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. ECONS 101 and 102 (or 198 and a 300/400-level ECONS courses), and 302 or 320 are required. In addition, ECONS 301 or 305, and two 300-level or higher ECONS electives are required (only three hours of ECONS 497 or 499 may be used to fulfill the upper-division ECONS electives requirement).

Environmental and Resource Economics and Management

The minor in Environmental and Resource Economics and Management requires 16 hours. The following courses are required: ECONS 330, 431, 432 or 433; ECONS 301 or 305 or 326; and 4 elective credits in ECONS. 9 hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. A student wishing to declare a minor should consult with an advisor as early as possible to develop the required program.

Sustainable Development

The program offers a minor in sustainable development. The minor is comprised of ECONS 326, one course from each of the following four aspect areas: policy, history, theory (ARCG/I D 202, CRS 435, ENVR SCI 335, HISTORY 409, HISTORY 494, NATRS 438, PHIL 370, POL S 430, or PSYCH 466); environmental (ARCH 490, ARCH 494, BIOLOGY 330, BIOLOGY 372, CE 401, CROPS SCI 360, ENVR SCI 101, ENVR SCI 285, ENVR SCI/ GEOLOGY 303, ENVR SCI 444, NATRS 300, or SOIL SCI 301); social/cultural (ANTH 203, ANTH 309, ANTH/SOC 418, NATRS 312, SOC 331, SOC 332, SOC 415, SOC 430, WOMEN ST 332, or WOMEN ST 460); economic (ECONS 330, ECONS 427, ECONS 428, ECONS 430, ECONS 431, I BUS 380, or I BUS 496); and one additional course from any of the aspect areas. The minor requires 18 credit hours, with at least 9 hours at the 300-400 level taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. All coursework for the minor must be graded and a minimum gpa of 2.0 shall be maintained. Students wishing to apply for the minor may do so with the Department of Economics.

Description of Courses**ECONOMIC SCIENCES****ECONS****101 [SSCI] Fundamentals of Microeconomics**

3 Course Prerequisite: MATH 101, 103, 105, 106, 107, 108, 171, 201, 202, STAT 205, or 212; or concurrent enrollment in Math 106, 107, 108, 171, 201, 202, or STAT 212; or ALEKS placement score of 40% or higher. Theory and policy of human responses to scarcity; how this affects business competition, international trade, industrial organization, investment, and income distribution.

102 [SSCI] Fundamentals of Macroeconomics

3 Course Prerequisite: MATH 101, 103, 105, 106, 107, 108, 171, 201, 202, STAT 205, or 212; or concurrent enrollment in Math 106, 107, 108, 171, 201, 202, or STAT 212; or ALEKS placement score of 40% or higher. Theory and policy related to unemployment, inflation, foreign trade, government spending, taxation, and banking.

198 Economics Honors 3 Course Prerequisite: Admitted to the Honors College. Introduction to economic theory and policy issues.

- 301 Intermediate Microeconomic Theory with Calculus** 3 Course Prerequisite: ECONS 101 or 198; MATH 171 or 202. Calculus-based intermediate microeconomic theory for majors in the School of Economic Sciences.
- 302 Intermediate Macroeconomic Analysis** 3 Course Prerequisite: ECONS 102 or 198; MATH 171 or 202. Income, employment, and inflation theory with policy implications. Recommended preparation: ECONS 101 as required background.
- 305 Intermediate Microeconomics without Calculus** 3 Course Prerequisite: ECONS 101 or 198. Price determination and market behavior under different market structures and the problems posed for public policy; not calculus-based.
- 311 [M] Introductory Econometrics** 3 Course Prerequisite: ECONS 101, 102, or 198; STAT 212 or MGTOP 215; MATH 171 or 202. Methods of empirical analysis in the context of economic analysis and forecasting problems.
- 320 Money and Banking** 3 Course Prerequisite: ECONS 101 or 198; ECONS 102 or 198. Analysis of banking institutions and monetary policy in the US, with comparison to abroad.
- 321 Economics of Sports in America** 3 Course Prerequisite: ECONS 101 or 198. Economic aspects of American sports; fan demand; advertising; team output decisions; league/conference organization; government and sports.
- 322 [M] Public Economics** 3 Course Prerequisite: ECONS 101 or 198. Theory and practice of the public sector; taxes, expenditures, and administration at local, state, and federal levels.
- 323 Labor Economics** 3 Course Prerequisite: ECONS 101 or 198. Functioning of labor markets; introduction to collective bargaining and labor law.
- 324 The Economics of Health Care** 3 Course Prerequisite: ECONS 101 or 198. The economics of allocating, financing and delivering medical care services. Cooperative: Open to UI degree-seeking students.
- 325 [M] The Economics of Organization, Contracting, and Law** 3 Course Prerequisite: ECONS 101 or 198. Examination of the economic and legal aspects of contractual and non-contractual ways of organizing transactions by business.
- 326 Aspects of Sustainable Development** 3 Course Prerequisite: ECONS 101 or 198. Ecological, economical, and sociological aspects of sustainable development. (Crosslisted course offered as ECONS 326, SOC 375).
- 327 International Trade and Finance** 3 Course Prerequisite: ECONS 101 or 198; ECONS 102 or 198. Analysis and description of international trade flows; commercial policy; multinational firms, foreign exchange markets; open economy macroeconomics; international monetary systems. (Crosslisted course offered as ECONS 327, I BUS 470).
- 330 Natural Resource Economics** 3 Course Prerequisite: ECONS 101 or 198. The role of economics in natural resource management and policy. Course equivalent to OSU's AREC 351.
- 335 Business Finance Economics** 3 Course Prerequisite: ACCTG 230; ECONS 101 or 198; MATH 107 or 201; STAT 212 or MGTOP 215. Financial management, decision making, and analysis for small businesses; capital market institutions and valuation processes.
- 350 Introduction to Farm and Ranch Management** 3 Course Prerequisite: ECONS 101 or 198. Decision making, planning, implementation and control of farms and ranches using economic principles, records, financial reports, budgeting and investment analysis.
- 351 Introduction to Food and Agricultural Markets** 3 Course Prerequisite: ECONS 101 or 198. Introduction to futures and options; selected topics related to markets for and the marketing of food and agricultural products.
- 352 Business Management Economics** 3 Course Prerequisite: ECONS 101 or 198. Introduction to the economic concepts, techniques and applications of organizational, marketing, financial, operations, and resource management in a firm.
- 391 Special Topics in Economics** V 1-3 Course Prerequisite: ECONS 101 or 198; ECONS 102 or 198. Current topics in economics.
- 404 Economics for Managers** 3 Topics in the application of economics for business decision making with an introduction to calculus. Credit not granted to graduate students in the School of Economic Sciences.
- 420 Monetary Theory and Policy** 3 Course Prerequisite: ECONS 301; ECONS 302. Current issues in monetary economics with a special emphasis on policy.
- 424 Strategy and Game Theory** 3 Course Prerequisite: ECONS 301. Strategic behavior of firms, consumers, and political parties in everyday interaction. Cooperative: Open to UI degree-seeking students.
- 425 Industrial Organization** 3 Course Prerequisite: ECONS 301; ECONS 311. Economic theories of firm behavior and the influence of market industry parameters; buyer/seller concentration, information asymmetries, product differentiation, and entry conditions.
- 426 Transportation Economics** 3 Course Prerequisite: ECONS 301; ECONS 311. Transportation economics and relevant transportation modeling; policy issues and concerns.
- 427 Economic Development and Underdevelopment** 3 Course Prerequisite: ECONS 301; ECONS 302. Development theories, policies, and performance of Third World economies; population, land reform, foreign trade, aid, investment, debt, dependency.
- 428 Global Capitalism Today: Perspectives and Issues** 3 Course Prerequisite: ECONS 101 or 102. Logic and consequences of capitalism as global system; multinational corporations; underdevelopment and overdevelopment; external debt, population, and environmental crisis.
- 430 Managing the Global Environment** 3 Study of policy and management tools to address environmental issues of global significance.
- 431 Economic Analysis of Environmental and Natural Resource Policies** 3 Course Prerequisite: ECONS 301. Nature and practice of environmental policy analysis using economics concepts and the analysis of models applied to natural resource problems and issues.
- 433 Topics in International Environmental Law, Policy and Institutions** 3 Interdisciplinary study of the political development of the European Union and its impact on modern Italy; natural resource, environmental and agricultural policy and law.
- 450 [M] Advanced Farm and Ranch Management** 3 Course Prerequisite: ECONS 101 or 198; ECONS 350. Business and financial principles applied to organization and operation of farms and ranches.
- 451 Advanced Food Economics and Marketing** 3 Course Prerequisite: ECONS 301, 305, or 351; ECONS 311. Institutions, practices, policies, problems, and empirical analysis of food economics and marketing.
- 452 [M] Advanced Business Management Economics** 3 Course Prerequisite: ECONS 301; MATH 171 or MATH 202; MGTOP 215 or STAT 212. Topics in business management economics and strategy, from demand and supply to bargaining, contracting, pricing strategies, and market structure. Recommended preparation: ECONS 350 or ECONS 352 as required background.
- 453 International Trade and Marketing** 3 Course Prerequisite: ECONS 301; ECONS 311. Application of economic theory to the analysis of international trade and marketing.
- 483 Special Topics: Study Abroad** V 1-15 May be repeated for credit.
- 490 [M] Economics Capstone** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: ECONS 301; ECONS 302; ECONS 311; average of these three courses needs to be a 2.0 GPA or better. Integration of economic theory and field courses; assessment.
- 491 Advanced Topics in Economics** V 1-3 Course Prerequisite: ECONS 301; ECONS 302; ECONS 311. Advanced topics in economics.
- 495 Instructional Practicum** V 1-3 Academic experience in teaching and tutoring undergraduate courses in economics. 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. May be repeated for credit; cumulative maximum 12 hours. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 500 Macroeconomic Theory I** 3 Introduction to dynamics, growth and investment, overlapping generations models, Ramsey model, consumption and investment. (Crosslisted course offered as ECONS 500, FIN 500). Required preparation must include intermediate macroeconomics and one year of calculus. Required preparation must include intermediate macroeconomics and one year of calculus.
- 501 Microeconomic Theory I** 3 Microeconomic theory, multivariate optimization, consumer and producer theory, competitive partial equilibrium, introduction to imperfect competition. (Crosslisted course offered as ECONS 501, FIN 501). Required preparation must include intermediate microeconomics and one year of calculus. Required preparation must include intermediate microeconomics and one year of calculus.
- 502 Macroeconomic Theory II** 3 Course Prerequisite: ECONS 500. Macroeconomic theory, short-run fluctuations and nominal rigidities, monetary economics and inflation, real business cycle models, unemployment international macroeconomics. (Crosslisted course offered as ECONS 502, FIN 502).
- 503 Microeconomic Theory II** 3 Course Prerequisite: ECONS 501. General equilibrium, welfare economics and social choice, market failure, game theory, economics of information. (Crosslisted course offered as ECONS 503, FIN 503).
- 504 Production and Consumption Economics** 3 Course Prerequisite: ECONS 502; ECONS 503. Advanced duality topics, demand and supply system modeling, financial economics and risk. (Crosslisted course offered as ECONS 504, FIN 504).
- 505 Economics for Agricultural Decision Making** 3 Managerial economics with specific applications to agricultural issues.
- 510 Statistics for Economists** 3 Statistical theory underlying econometric techniques utilized in quantitative analysis of problems in economics and finance. (Crosslisted course offered as ECONS 510, FIN 510). Required preparation must include college calculus and matrix algebra. Required preparation must include college calculus and matrix algebra.
- 511 Econometrics I** 3 Course Prerequisite: ECONS 510. Single equation linear and nonlinear models; estimation, inference, finite and asymptotic properties, effects and mitigation of violations of classical assumptions. (Crosslisted course offered as ECONS 511, FIN 511).
- 512 Econometrics II** 3 Course Prerequisite: ECONS 501; ECONS 511. Econometric methods for systems estimation; simultaneous equations, discrete and limited dependent variable, panel data, and time series data. (Crosslisted course offered as ECONS 512, FIN 512).
- 513 Econometrics III** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 512. Linear and non-linear models and maximum likelihood estimation and inference; semi-parametric and parametric methods; limited dependent variable models.
- 514 Econometrics IV** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 512. Constrained estimation, testing hypotheses, bootstrap resampling, BMM estimation and inference, nonparametric regression analysis, and an introduction to Bayesian econometrics.
- 521 Topics in Economic Sciences** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Current topics in the development and application of the economic sciences. Required preparation must include intermediate micro- and macro-economics, and econometrics course work.
- 525 Master's Econometrics** 3 Theory and practice of multiple regression methods; applications to the study of economic and other phenomena; use of computer regression programs. Required preparation must include introductory statistics course. Cooperative: Open to UI degree-seeking students.
- 526 Master's Microeconomic Analysis I** 3 Masters-level, calculus-based analysis of consumer and producer behavior, partial and general equilibrium, and strategic behavior. Required preparation must include intermediate microeconomics and calculus course work. Cooperative: Open to UI degree-seeking students.
- 527 Master's Microeconomic Analysis II** 3 Master's-level, linear algebra-based analysis of consumer and producer theory, comparative statics and constrained optimization. Required preparation must include intermediate microeconomics and calculus course work. Cooperative: Open to UI degree-seeking students.
- 529 Research Methods** V 1-2 May be repeated for credit; cumulative maximum 3 hours. Prepare and communicate professional-quality research with an emphasis on learning how to identify, develop, write, and present research. Cooperative: Open to UI degree-seeking students.
- 532 Environmental and Natural Resource Economics** 3 Economic principles and models applied to natural resource and environmental problems, issues, and policies.
- 533 International Trade and Policy** 3 International trade theories, policies, and research issues related to world trade with emphasis on agricultural commodity markets. Cooperative: Open to UI degree-seeking students.
- 534 Production Economics** 3 Course Prerequisite: ECONS 526. Production economics theory and methods applied to problems of production response, economic optimization, technology, policy, risk and dynamics. Cooperative: Open to UI degree-seeking students.
- 555 Managerial Economics for Decision Making** 3 Course Prerequisite: Admission to the MBA program. Optimal economic decision making for business in a global environment. Not open to economics graduate students.
- 571 International Trade** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 511. Recent developments in trade theory and policy, including international factor movements, empirical analysis of trade flows and strategic trade policies.
- 572 International Development** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 511. Structural and two-sector growth models of developing countries and countries in transition; empirical estimation of sources of growth.
- 581 Natural Resource Economics** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 511. Economic dynamics of natural resource systems.
- 582 Environmental Economics** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 511. Economic theory for environmental issues; externalities, property rights, and welfare analysis; policy design and implementation; non-market valuation and cost/benefit analysis.
- 583 Public Sector Economics** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 511. Public sector and public choice economics, including government debt and tax policy, public decision making, bureaucratic behavior and rent-seeking, with applications.
- 593 Applications in Microeconomic Topics** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 511. Applied topics in healthcare, sports, transportation and other markets. (Crosslisted course offered as ECONS 593, FIN 593).
- 594 Theory of Industrial Organization** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 511. Theory of market structure and firm behavior, including price and non-price competition, information and strategic behavior, and technological change. (Crosslisted course offered as ECONS 594, FIN 594).
- 596 Advanced Topics in Financial Economics** V 1-6 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Admission to PhD programs in business. Topics may include financial theory and empirical methods as applied to financial management, investments, international finance, and markets/institutions. (Crosslisted course offered as FIN 596, ECONS 596).
- 598 PhD Research Seminar** 1 May be repeated for credit; cumulative maximum 4 hours. Seminar focusing on PhD students presenting their own research and critically assessing the research of other PhD students. S, F grading.

599 Special Topics in Economics 3

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Educational Leadership, Sport Studies, And Educational/Counseling Psychology

education.wsu.edu/ELCP/
Cleveland 351

Chair and Professor, K. Ward; Professors, A. Barabasz, M. Barabasz, L. Bruya, T. Church, C. Claussen, P. Erdman, B. French, G. Furman, G. Gates, B. McNeill, F. Parkay, M. Trevisan; Associate Professors, M. Acker-Hocevar, J. Beller, A. Cox, K. Hildenbrand, L. McCubbin, J. Wong; Assistant Professors, O. Adesope, K. Huggins, S. Licen, Y. Rhee, S. Ullrich-French; Clinical Faculty, Z. Bozer, T. Crawford, K. Holmstrom, J. Kingrey, P. Morgan, X. Neider, K. Pietz, J. Schultz, G. Selby, D. Talbot; Instructor, C. Zweifel.

The department offers courses of study leading to a Bachelor of Arts in Sport Management, Bachelor of Science in Athletic Training, or Bachelor of Science in Kinesiology (with majors in sport science, and health and fitness education); and an undergraduate minor in Sport Management. Masters degrees (Master of Education, Master of Arts in Education) are offered in the areas of educational leadership, counseling, educational psychology, and sport management.

The Doctor of Philosophy (Education) is offered with specializations in educational leadership and counseling psychology. The Doctor of Education is offered with a specialization in educational leadership.

The Department of Educational Leadership, Sport Studies, and Educational/Counseling Psychology, housed in the College of Education, has excellent facilities for undergraduate/graduate study and research. The department sponsors and hosts a number of state, national, and international programs. The Learning and Performance Research Center serves school districts and state agencies by providing high-quality assessment and evaluation services through grant and contract agreements. Programs for superintendent, principal and program administrator certification are available at the Pullman, Spokane, Tri-Cities and Vancouver campuses. A state-wide cohort-based superintendent program is also available.

Application for Graduate Study

Students who plan to work toward an advanced degree should contact the Office of Graduate Studies in the College of Education. Individuals applying for admission to do graduate work must make application to the WSU Graduate School, and submit the following materials to the Department's Office of Graduate Studies: Departmental Application form; a statement of professional objectives; official college transcripts; three (3) letters of recommendation from individuals qualified to comment on the applicant's academic and professional abilities; and see the program web page to determine if the desired graduate program requires completion of the Graduate Record Examination (GRE). Interested students should directly contact the Office of Graduate Studies for specific requirements of each program area.

Bachelor of Arts in Sport Management

The Department of Educational Leadership, Sport Studies, and Educational/Counseling Psychology offers a major in Sport Management which leads to a Bachelor of Arts in Sport Management. The Sport Management major provides professional preparation for those students wishing to pursue a management career with sport organizations or in sport businesses. Students must complete a core program in sport management and must select an area of specialization from business or communication. Additional information on the areas of specialization can be obtained from the department. A minimum cumulative gpa of 2.5 is required for certification as a major.

The Sport Management curriculum is designed to enable our graduating students to: 1) incorporate an understanding of ethical, legal, and socio-cultural issues in managerial decision making and policy determinations in sport; 2) employ sound principles of strategic planning, financial management, risk management, and human resource management in sport; 3) apply a fundamental knowledge and practical understanding of sport marketing, communication, and event management principles; 4) utilize critical thinking and abstract reasoning skills in analyzing sport management issues and in managerial planning and decision making; and 5) demonstrate information literacy and oral, written, and group communication skills.

Practical application of theory and knowledge is obtained through enrollment in practicum hours during the sophomore, junior, and senior years and through the completion of a 10-12 credit internship at the end of the required coursework. The internship serves as the bridge between the student's college career and opportunities for employment in sport management.

The general prerequisite for enrollment in 300 and 400-level sport management courses is 60 hours of coursework and certification as a Sport Management major or Sport Management minor. Additional prerequisites for specific courses are listed in the course descriptions. The program director must approve any exceptions to these requirements.

Bachelor of Science in Kinesiology

Two kinesiology majors lead to the Bachelor of Science in Kinesiology (sport science and health and fitness education) and share kinesiology and health courses. Kinesiology majors are composed of a broad spectrum of courses designed to expose students to a variety of experiences, concepts, and philosophies centered on human movement. A grade of C or better must be obtained in all departmental core courses and in GER courses used as prerequisites for departmental courses. All letter-graded courses specifically required for each major must be taken for letter grade (i.e., not pass, fail). In addition, each major has a specialized curriculum designed to meet the requirements of the appropriate professional experience in which the student is interested. Students interested in health and fitness education must be admitted to the teacher preparation program (see admission requirements under Teaching and Learning).

Graduates in the kinesiology program will be able to: 1) use knowledge of evidence and context to reason and reach conclusions as well as to innovate in imaginative ways; 2) analyze and communicate appropriately with mathematical and symbolic concepts; 3) use a disciplined and systematic approach to accessing, evaluating, and using information; 4) write, speak, and listen to achieve intended and meaningful understanding; 5) employ self-understanding and interact effectively with others of similar and diverse cultures, values, perspectives, and realities; and 6) hone a specialty for the benefit of themselves, their communities, their employers, and for society at large.

Practical application of theory and knowledge is obtained through enrollment in practicum hours during the sophomore, junior, and senior years and through the completion of a 10-12 credit internship at the end of the required coursework. The internship serves as the bridge between the student's college career and opportunities for employment in sport science.

The general prerequisite for enrollment in 300 and 400-level movement studies courses is 60 hours of coursework and certification as an athletic training or kinesiology major. Students of junior or senior status in a certified major who require a 300- or 400-level movement studies course for their program will be allowed to enroll in the required course. Additional prerequisites for specific courses are listed in the course descriptions. The program director must approve any exceptions to these requirements.

Bachelor of Science in Athletic Training

The department offers the Bachelor of Science in Athletic Training, which is a competitive admission program with an application process. The athletic training education program at WSU is a rigorous three-year program beginning with a highly competitive admissions policy. Upon acceptance into the program students have access to some of the highest quality learning opportunities available.

Athletic training education uses a competency-based approach both in the classroom and clinical setting. Educational content is based on cognitive (knowledge), psychomotor (skill), and affective (professional behaviors) competencies and clinical proficiencies. Given the availability of clinical experiences, students may ¬not be a varsity athlete and an athletic training student.

Certification for athletic training requires the successful completion of a bachelor's degree in athletic training from an institution that has been accredited by the Commission on Accreditation of Athletic Training Education and successful completion of the national exam given by the Board of Certification.

Undergraduate Minor

The Department of Educational Leadership, Sport Studies, and Educational/Counseling Psychology offers an undergraduate minor in Sport Management. Courses for the minor may not be taken pass, fail. Students interested in declaring a minor in Sport Management should contact the Department of Educational Leadership, Sport Studies, and Educational/Counseling Psychology.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

ATHLETIC TRAINING (126 HOURS)

The athletic training education program is currently accredited by the Commission on Accreditation of Athletic Training Education (CAATE). The athletic training major is designed to provide students with the necessary academic and clinical competencies required to be eligible for certification by the Board of Certification. All students majoring in athletic training will complete the kinesiology core, the athletic training major course work and a minimum of 1200 hours of clinical experience. Due to the intensity and availability of the clinical internship, the program admits a limited number of students. Acceptance into the athletic training education program (ATEP) is required to certify athletic training as a major and to complete the degree requirements for graduation.

Academic requirements for this application process include but are not limited to 1) a grade of C or better in KINES 262, KINES 266, KINES 267 and KINES 263; 2) a minimum cumulative collegiate GPA of 2.75 or better including the current semester; and 3) current credentialing in CPR/AED for the Professional Rescuer. Students are advised to consult with athletic training advisors early in their academic careers for specific application procedures. Transfer students are welcome to apply for admission into the clinical internship prior to their attendance

at WSU. Transfer students desiring admission into the clinical internship program must have been accepted to WSU, have completed the prerequisite course work, meet academic requirements and be of sophomore standing. Applicants who do not meet the required 2.75 cumulative GPA requirement but have had a semester 2.75 GPA the last two semesters at WSU may complete the application process and be provisionally admitted into the ATEP. Transfer students will also have to show one spring semester at WSU with a 2.75 GPA to be eligible. Clinical internship experiences combine the theory and management of sport-related injury/illness under the direct supervision of certified athletic trainers. The clinical experience is guided by progressive clinical competencies and technical standards that assess the student's progress. A minimum of 1200 hands-on clinical experience hours are arranged over six consecutive semesters with a parallel educational cooperative partnership involving the Department of Intercollegiate Athletics and several off-campus sites including clinical experiences at high school and sport medicine facilities. Students are expected to maintain high academic standards and demonstrate progressive clinical competence to remain a part of the ATEP. Please refer to the ATEP Handbook for additional policies and procedures governing the program experience.

Kinesiology Core courses required for athletic training, health and fitness teaching, and movement studies include: KINES 199, 262, 264, 311, 361, 362, 380, 461, 484, BIOLOGY 251.

First Year

<i>First Term</i>	<i>Hours</i>
HISTORY 105 [ROOT]	3
KINES 199	3
KINES 262	4
PSYCH 105 [SSCI]	3
STATS 212 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 102 [BSCI] or 106 [BSCI]	4
KINES 263	2
KINES 264	3
KINES 266	3
KINES 267	2
Apply to Clinical Internship	

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 101 [PSCI] or 105 [PSCI] or Physical Science	4
COM 102 [COMM]	3
ENGLISH 101 [WRTG]	3
KINES 270	3
KINES 291	2

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 140	4
KINES 271	3
KINES 275	3
KINES 291	3
KINES 311	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 251	4
KINES 305	3

KINES 364	3
KINES 392	3
KINES 462	3

<i>Second Term</i>	<i>Hours</i>
KINES 312	3
KINES 361	3
KINES 365	3
KINES 380	3
KINES 392	2
SOC 101 [SSCI]	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
Humanities [HUM]	3
KINES 313	3
KINES 469 [M]	3
KINES 493	2
PSYCH 265	3

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
Integrative Capstone [CAPS]	3
KINES 461	3
KINES 484	3
KINES 493	2

HEALTH AND FITNESS TEACHER CERTIFICATE (BS KINESIOLOGY) (143 HOURS)

This major program prepares individuals to teach physical education, health and fitness at the elementary and/or secondary levels. At all levels of instruction, individuals will acquire knowledge and skills necessary to maintain an active life involving movement, physical fitness and proper nutrition. Students will participate in activities that are designed to help them understand and value important health and fitness concepts and the contributions they make to a healthy lifestyle. Course work includes a kinesiology core with additional course work from Teaching and Learning, and the university core requirements.

Minimum Criteria for Certification

Because of the intensity and limited availability of the practicum teaching, the program admits a limited number of students. Acceptance into the teacher certification program (see Teaching and Learning) is required to certify in health and fitness and to complete the degree requirements for graduation. Additional academic requirements for the health and fitness application process include:

1. Minimum WSU cumulative gpa of 2.75.
2. Complete BIOLOGY 102, BIOLOGY 251, CHEM 101 and KINES 262 with a grade of C or better.

3. Completion of the minimum criteria for admission to the undergraduate teacher preparation program (see Teaching and Learning for admission requirements). Students are advised to consult with College of Education Student Services advisors early in their academic careers for application procedures. The health and fitness teacher certificate is offered at the Pullman campus only.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 101 [PSCI] or 105 [PSCI] or Physical Science	4

ENGLISH 101 [WRTG]	3
KINES 199	3
PEACT 112	1
PSYCH 105 [SSCI]	3
MATH requirement, if needed	

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 102 [BSCI] or 106 [BSCI]	4
BIOLOGY 140	4
HISTORY 105 [ROOT]	3
KINES 264	3
PEACT Elective	1
TCH LRN 300	1

Second Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 201 [WRTG]	3
KINES 262	4
PEACT Elective	1
STATS 212 [QUAN]	4
TCH LRN 301	2
Certify in Education and Major	

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 251	4
Humanities [HUM]	3
KINES 361	3
PEACT Elective	1
PSYCH 230	3
TCH LRN 317	2
Complete May Practicum	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
KINES 266	3
KINES 312	3
KINES 393	1
KINES 484	3
PEACT Elective	1

<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
KINES 461	3
KINES 462	3
KINES 483	3
PEACT Elective	1
SOC 101	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
KINES 311	3
KINES 380	3
KINES 481	3
TCH LRN Block I	8

<i>Second Term</i>	<i>Hours</i>
KINES 313	3
KINES 314	3
TCH LRN Block II	11

Fifth Year

<i>First Term</i>	<i>Hours</i>
Block III: TCH LRN 415 (student teaching)	16

**SPORT MANAGEMENT
(121 HOURS)**

WSU seeks to prepare the best possible sport management professionals and therefore seeks highly qualified individuals. Admission to, or continued enrollment in the sport management program may be denied to any candidate who does not meet the minimum criteria.

Applicants who meet the minimum requirements are eligible for consideration, but not assured admission. Enrollment is limited and admission competitive. Admission application deadlines are October 15, March 15, and August 5, with certification effective the following term. Candidates must complete formal admission procedures and be certified in the Sport Management major prior to taking any 300- or 400-level Sport Management coursework. The following minimum criteria must be met for consideration for admission:

Minimum Criteria for Certification

1. Completion of at least 30 semester hours of coursework.
2. Minimum WSU cumulative gpa of 2.50.
3. A grade of C or better in each of the following courses: COM 102, ENGLISH 101, MATH [QUAN] UCORE, and SPMGT 276.
4. A written statement (maximum of two pages) describing relevant work experience/involvement in extracurricular activities. This statement will be evaluated on the basis of the breadth and depth of the experiences, as well as for clarity of expression.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Social Sciences [SSCI]	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
COM 102 [COMM]	3
Diversity [DIVR]	3
MATH 205 [QUAN]	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
Creative & Professional Arts [ARTS]	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	4 or 3
SPMGT 276	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Area of Specialization	6
SPMGT 290	3
SPMGT 394	2
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Area of Specialization	6
SPMGT 365 or 367	3
SPMGT 374	3

SPMGT 377	3
SPMGT 394	1

<i>Second Term</i>	<i>Hours</i>
Area of Specialization	6
ENGLISH 402	3
SPMGT 365 or 367	3
SPMGT 394	1
SPMGT 489	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
SPMGT 464	3
SPMGT 468	3
SPMGT 488	2
SPMGT 490	1
Electives	4

<i>Second Term</i>	<i>Hours</i>
SPMGT 491	10-12

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

**SPORTS SCIENCE
(121 HOURS)**

The Sports Science major leads to the Bachelor of Science in Kinesiology. The major provides an interdisciplinary understanding of human movement through the study of anatomy, physiology, movement analysis, biomechanics, motor learning, exercise physiology, and sport psychology and ethics. In addition, students gain proficiency in four of five sport activity areas. Movement studies provides a foundation for personal training certification, health and fitness club employment, teaching, coaching, physical therapy, dance therapy, and sports medicine.

Because of the high demand for this program, students must meet minimum certification requirements, as listed below, in order to be admitted to the Movement Studies program. Applicants who meet the minimum requirements are eligible for consideration, but not assured admission. Enrollment is limited and admission competitive. Admission application dates are October 15, March 15, and August 5, with certification effective the following term. Candidates must complete formal admission procedures and be certified in the Sports Science major prior to taking any 300- or 400-level courses. The following minimum criteria must be met for consideration for admission:

Minimum Criteria

1. Completion of at least 30 semester hours of coursework.
2. A cumulative gpa of 2.75.
3. A grade of C or better in each of the following courses: COM 102, ENGLISH 101, and MATH [QUAN] UCORE.
4. A written statement (maximum of two pages) describing relevant work experience/involvement in extracurricular activities related to Sport Science. This statement will be evaluated on the basis of the breadth and depth of the experiences, as well as for clarity of expression.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
KINES 138	1
KINES 199	3
PSYCH 105 [SSCI]	3
Elective Core	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 140 [BSCI]	3
KINES 262	4
KINES 264	3
SOC 101	3
Elective Core	3

Second Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 102 or 106	4
H D course	3
KINES 266	3
SOC 245	3
STATS 212 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
CHEM 101 [PSCI] or 105 [PSCI] or Physical Science	4
COM 102 [COMM]	3
H D course	3
KINES 361	3
Elective Core	3

Third Year

<i>First Term</i>	<i>Hours</i>
BIOL 251	4
Creative & Professional Arts [ARTS]	3
KINES 311	3
KINES 312	3
KINES 462	3
Complete Writing Portfolio	

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
Humanities [HUM]	3
KINES 313	3
KINES 314	3
KINES 380	3
KINES 390	1

Fourth Year

<i>First Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
KINES 415	3
KINES 461	3
KINES 484	3
Elective Core	2-4

<i>Second Term</i>	<i>Hours</i>
KINES 485	10-12

Minors**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, law, and social sciences. To be eligible to certify as a sport management minor a student must have earned at least 60 credit hours, have a minimum cumulative gpa of at least 2.5 and be certified in a major. Graded courses in the minor may not be taken pass/fail. The program director must approve any exceptions to these requirements. Required courses include SPMGT 276, 290, 365, and 377; and 6 hours from SPMGT 367 or SOC 245, SPMGT 394, 496, 497, 498. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Strength and Conditioning

The minor in strength and conditioning requires 22 semester hours of course work and practical experience. The minor is designed for students with an interest in pursuing a profession as strength and conditioning coach, personal trainer, coach or athletic trainer.

To be eligible to certify as a strength and conditioning minor, a student must have earned at least 60 credit hours, have a minimum cumulative gpa of at least 2.75 and be certified in a major. Graded courses in the minor may not be taken pass/fail. Admission to the major requires KINES 262, 264 and 311 as prerequisites coursework along with an interview.

Required courses include KINES 262, 264, 311, 411, 412, 413 and 414. Recommended courses for the minor include KINES 266 and 305.

Description of Courses**COUNSELING PSYCHOLOGY****COUN PSY**

457 [DIVR] Chicano/a Latino/a Psychology 3 Course Prerequisite: AMER ST 216, CES 101, 151, 254, 255, or HISTORY 150. Current psychosocial research and literature relevant to the mental health and psychological wellbeing of Chicana/o Latina/o populations.

501 Historical and Philosophical Foundations of Counseling Psychology 3 Course Prerequisite: Admission to Counseling Psychology PhD program. History of counseling psychology; philosophical and psychological systems; current identity of counseling psychology as an academic discipline and a profession.

502 Social Psychology Foundations in Educational and Counseling Psychology 3 Social psychology with a special emphasis on the relevance to education and counseling psychology.

503 Community Counseling 3 Course Prerequisite: Graduate student in Community Counseling program. Counseling in community settings.

511 Theories, Research, and Techniques in Counseling Psychology I 3 Philosophical assumptions, theory of personality, counseling process, techniques and relevant research in the major theories of counseling and personality. Cooperative: Open to UI degree-seeking students.

512 Counseling Techniques and Microskills 3 Course Prerequisite: COUN PSY 511. Foundation course for all clinical experiences in counseling; communication and interpersonal skills under faculty supervision will be emphasized. Cooperative: Open to UI degree-seeking students.

513 Career Counseling: Theories and Methods 3 Theories, concepts, methods and findings in career counseling; vocational assessment and prediction.

515 Ethics and Professional Problems in Counseling Psychology 3 Professional problems; ethical, legal, and training issues, practices, and new issues. Cooperative: Open to UI degree-seeking students.

516 Life Span Development and Counseling Issues 3 Major theories and issues in human development and their application to counseling practice including case conceptualization, treatment and intervention planning and psychological assessment and research.

517 Diagnoses, Psychopathology and Counseling Psychology 3 Course Prerequisite: COUN PSY 511. Psychopathology and the application of counseling theories to diagnoses, case conceptualization, assessments, treatment plans and research.

518 Theoretical Foundations of Group Counseling 3 Course Prerequisite: COUN PSY 512 or concurrent enrollment. History, philosophy and theoretical foundations; the group counselor, members, and issues in group counseling. Cooperative: Open to UI degree-seeking students.

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 3 Course Prerequisite: COUN PSY 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 Course Prerequisite: ED PSYCH 508; ED PSYCH 509. Cognitive assessment of individuals, with an emphasis on the theoretical background and practical skills needed to administer, score, and interpret individual intelligence tests; assessment of learning disabilities, AD/HD, and individual achievement.

528 Individual Appraisal II 3 Course Prerequisite: ED PSYCH 508; ED PSYCH 509. Interpretation of representative personality assessment inventories and symptom checklists used in counseling practice; integration of results in psychological reports.

529 Counselor Supervision: Theory, Research, and Practice 3 Course Prerequisite: Admission to Counseling Psychology PhD program. Survey of major theoretical approaches, techniques, and research in models of counselor supervision and training.

- 531 Current Issues in School Counseling I 3** Course Prerequisite: Admission to MA program in School Counseling. Issues of immediate concern to school counselors: drug abuse, family violence, adolescent suicide, sexual orientation, crisis intervention, consultation and referral.
- 532 Current Issues in School Counseling II 3** Course Prerequisite: COUN PSY 531. Additional coverage of contemporary issues of concern to school counselors; comprehensive developmental school programs, school community dynamics, parental involvement, consultation.
- 533 Master's Internship in Community Counseling 4** May be repeated for credit; cumulative maximum 16 hours. Course Prerequisite: COUN PSY 512; COUN PSY 513 or concurrent enrollment; COUN PSY 515 or concurrent enrollment. Supervised experience in the application of counseling theory and techniques in an agency setting. S, F grading.
- 535 Master's Internship in School Counseling 4** May be repeated for credit; cumulative maximum 16 hours. Course Prerequisite: COUN PSY 512; COUN PSY 513 or concurrent enrollment; COUN PSY 515 or concurrent enrollment. 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 3** Course Prerequisite: Student in counseling, educational, experimental, or clinical psychology. Clinical and experimental hypnosis, emphasizing applied research and clinical methods. Cooperative: Open to UI degree-seeking students.
- 542 Cross-cultural Research in Counseling and Assessment 3** Cross-cultural research methods, concepts, and findings in counseling and assessment.
- 551 Doctoral Practicum in Counseling Psychology I 4 (2-6)** Course Prerequisite: Admission to Counseling Psychology PhD program; COUN PSY 512; COUN PSY 513 or concurrent enrollment; COUN PSY 515 or concurrent enrollment; COUN PSY 517 or concurrent enrollment. Supervised experiences in the application of counseling psychology theory and techniques. S, F grading.
- 552 Doctoral Practicum in Counseling Psychology II 4 (2-6)** Course Prerequisite: COUN PSY 551. Supervised experiences in the application of counseling psychology theory and techniques. S, F grading.
- 553 Doctoral Practicum in Counseling Psychology III 4 (3-3)** May be repeated for credit; cumulative maximum 16 hours. Course Prerequisite: COUN PSY 552. Supervised experiences in the application of counseling psychology theory and techniques. S, F grading.
- 561 Continuing Counseling ESA Certification V 2-6** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Initial Counselor Certification; equivalent of 180 full days of school counselor experience; by department consent only. Peer review requirements for continuing level ESA Counselor Certification.
- 590 Seminar in Research in Counseling Psychology 3** Course Prerequisite: By interview only. Recent developments in counseling psychology research and design applied to PhD dissertation proposals. S, F grading.
- 596 Pet Loss and Human Bereavement 1** Addresses human bereavement and grief in the context of the human/animal relationship.
- 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 V 1-18** May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V 1-18** May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.
- EDUCATIONAL ADMINISTRATION AND SUPERVISION**
- ED AD**
- 501 Philosophy of Education 3** Development of American educational philosophy.
- 503 Values and Ethics for Educational Leaders 3** Study of ethical theories, the moral dilemmas of public schooling, and the skills of ethical reasoning; professional code of ethics.
- 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** Educational adaptations to the economic and social trends and forces.
- 510 Improvement of Instruction 3** Analysis and evaluation of instructional models with emphasis on information processing; implications for changing teaching style.
- 512 Leadership Studies for Social Justice 3** Leadership theories and approaches including present educational problems, leadership theories, and perspectives.
- 513 Organizational Behavior 3** Human behavior within various social and cultural organizational settings.
- 514 Basic Principles of Curriculum Design V 2-3** The application of theoretical concepts and approaches in the planning and design of curricula.
- 515 Curriculum Implementation 3** Research and practice; innovation and change in curricular organization emphasizing implementation.
- 516 Instructional and Curricular Leadership V 2-3** Theory, research, and practice of providing instructional and curricular leadership in schools and other educational settings.
- 518 Media Literacy and Educational Technology 3** Relates research and theory of media literacy to instructional resources and current leadership practices; problems of planning and administering programs.
- 520 Seminar in Curriculum and Instruction V 2-3** 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 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.
- 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.
- 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.

- 536 Introduction to Qualitative Research in Education** 3 Course Prerequisite: ED PSYCH 505 or ED RES 563. 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 Course Prerequisite: ED RES 564 or 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. Course Prerequisite: ED RES 564 or ED AD 536.
- 539 Applied Research for Educational Leaders** 3 Integrates the principles, skills, and tools of research into the leadership and managerial practices of educational leaders.
- 560 Student Personnel Services in Higher Education** V 2-3 Philosophy, structure, functions, and organization of student affairs administration.
- 561 Introduction to College Student Development** 3 Student development theory, related research and the application of theory to practice in student affairs work.
- 562 Professional Issues in Student Affairs Administration** 3 Course Prerequisite: ED AD 560; ED AD 561. The organization, programs and professional issues related to selected student affairs programs and units.
- 563 Research in College Student Development** 3 Course Prerequisite: ED AD 561; admission to EdD program. Critique, understand, and apply college social identity models as they relate to teaching, advising, and working with diverse student populations.
- 565 Practicum in Higher Education** 3 (0-9) Course Prerequisite: Graduate student with 15 hours of completed course work in TCH LRN, ED AD, ED PSYCH, or ED RES courses. Selected supervised experiences in general higher education and student affairs settings provide for the investigation/application of theory/methods gained through formal course work.
- 567 Diversity in Higher Education** 3 Reflection on experience and examination of the theory of practice or organizational leadership in the context of diversity.
- 568 Finance and Budgeting in Higher Education** 3 Course Prerequisite: By instructor permission. Exposes students to the fundamentals of higher education budgeting and finance.
- 570 Community and Technical Colleges** 3 For teachers and administrators. Development and function of community and technical colleges.
- 571 College Teaching** 3 Concepts, principles, issues, and procedures in college curriculum development, and college teaching.
- 572 History of Higher Education** 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.
- 578 Higher Education Law and Ethics** 3 Legal and ethical aspects of higher education with special reference to administrators, faculty, and students in higher education institutions.
- 579 Administration of Higher Education** 3 Organization, administration and leadership of universities, colleges, and community colleges.
- 580 School Organization and Administration** 3 Readings and discussions on the theories and practices of school organization and administration. Cooperative: Open to UI degree-seeking students.
- 581 Politics in Education** 3 Examining the intrapersonal, organizational politics and political dilemma, particularly as they pertain to marginalized groups.
- 582 Policy Formation and Analysis in Education** 3 Political and organizational policy formation processes in educational organizations; policy analysis in education.
- 583 Community and Communications** 3 Social, political, and economic relationships between education and the community; methods of public polling and campaign strategy techniques.
- 584 Human Resource Management** 3 Human relations in education; problems involved and practical solutions considered.
- 585 Financial Management in Education** 3 Economics and financing of education; financial planning, budget development, investment analysis, bonding, cost effectiveness; current trends in educational finance. Cooperative: Open to UI degree-seeking students.
- 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.
- 589 Leadership Development Seminar** 3 Improving knowledge and skills in strategic planning, decision making, leadership issues, conflict, motivation, staff development, productivity, and stress.
- 590 Internship** V 1-6 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By interview only. Internship in professional positions. S, F grading.
- 596 Preparing Grant Proposals** 3 Identification of funding sources; analysis, evaluation, and production of grant proposals.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
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- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

EDUCATIONAL PSYCHOLOGY

ED PSYCH

- 401 Classroom Assessment, Elementary** V 2-3 Course Prerequisite: TCH LRN 301. Principles and practice of high-quality classroom assessment in the elementary schools.
- 468 Classroom Assessment, Secondary** 3 Principles and practice of high-quality classroom assessment in secondary schools.
- 502 Theoretical Foundations of Learning and Instruction** 3 Historical and contemporary theories of learning and instruction: application of theory in counseling and teaching settings.
- 503 Advanced Educational Psychology** 3 Contemporary theories, models, and empirical research in educational psychology.
- 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** 3 Introductory course for graduate students in applied statistics for the behavioral sciences. Recommended preparation: ED PSYCH 505. Cooperative: Open to UI degree-seeking students.
- 509 Educational Measurements: Test Development and Assessment** V 2-3 Theory and use of standardized educational measurement instruments; intelligence, aptitude, and achievement tests; measurement of outcomes.
- 510 Assessment of Learning** 3 Assessment of student learning, school and district evaluation; particularly appropriate for school administrators.

- 511 Classical and Modern Test Theory 3** Course Prerequisite: ED PSYCH 508; ED PSYCH 509. Large-scale educational assessment and test development and evaluation; history and policy uses of achievement tests.
- 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.
- 563 Principles of Research 3** The centrality of literature review and the understanding of methods used in educational research; practice in designing research questions. (Crosslisted course offered as ED RES 563, ED PSYCH 563).
- 564 Qualitative Research 3** Course Prerequisite: ED RES 563. Theoretical underpinnings of qualitative research; familiarity with published qualitative research in education; practical research skills. (Crosslisted course offered as ED RES 564, ED PSYCH 564).
- 565 Quantitative Research 3** Course Prerequisite: ED PSYCH 508; ED RES 563. Statistical literacy in educational research; parametric and non-parametric methods. (Crosslisted course offered as ED RES 565, ED PSYCH 565).
- 568 Quasi-Experimental Design 3** Course Prerequisite: ED PSYCH 505; ED RES 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 V** 2-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: ED RES 565. Application of parametric and nonparametric statistics, data processing using computer packages in educational research.
- 570 Introduction to Program Evaluation 3** Course Prerequisite: ED PSYCH 505 or ED RES 563. Introduction to strategies and techniques for evaluation of educational and social programs.
- 571 Advanced Program Evaluation 3** Course Prerequisite: ED PSYCH 570. Advanced methods and techniques of program evaluation.
- 572 Introduction to Systematic Literature Reviews and Meta-Analyses 3** Introduction to the steps involved in conducting systematic reviews and meta-analyses.
- 573 Motivation Theories 3** Antecedents, consequences, and processes of motivated behavior examined from theoretical, empirical, and applied perspectives.
- 574 Seminar in Educational Psychology 1** May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Graduate student in Educational Psychology. Reading and discussion of papers in the educational psychology literature and the presentation of student's work.
- 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 V** 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V** 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V** 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V** 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

EDUCATIONAL RESEARCH

ED RES

- 562 Epistemology, Inquiry, and Representation 3** Course Prerequisite: Doctoral standing in education; ED PSYCH 505 or concurrent enrollment. Epistemological assumptions and methodological strategies of research.
- 563 Principles of Research 3** Course Prerequisite: COUN PSY 501, ED RES 562, or admission to EdD program. The centrality of literature review and the understanding of methods used in educational research; practice in designing research questions. (Crosslisted course offered as ED RES 563, ED PSYCH 563).
- 564 Qualitative Research 3** Course Prerequisite: ED RES 563. Theoretical underpinnings of qualitative research; familiarity with published qualitative research in education; practical research skills. (Crosslisted course offered as ED RES 564, ED PSYCH 564).
- 565 Quantitative Research 3** Course Prerequisite: ED PSYCH 508; ED RES 563. Statistical literacy in educational research; parametric and non-parametric methods. (Crosslisted course offered as ED RES 565, ED PSYCH 565).
- 566 Research Seminar 1** May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Doctoral standing in Education. Presentation and analysis of research; professional development in research presentation. S, F grading.

- 567 Discourse Analysis 3** Course Prerequisite: ED RES 562; ED RES 564. Examination of and preparation for discourse analysis research approach.
- 568 Critical Ethnography 3** Course Prerequisite: ED RES 562; ED RES 564. In-depth focus on issues in qualitative research and ethnography and critical ethnography.
- 569 Arts-Informed Perspectives in Educational Research 3** Course Prerequisite: ED RES 562; ED RES 564. Exploration and application of alternative forms of qualitative research and representation through the arts.
- 570 Action Research 3** Philosophical assumptions and methodological strategies of action research; theoretical and practical foundations for conducting action research studies in schools and other organizations. S, F grading.
- 571 Doctoral Dissertation Preparation 3** Conceptualization and development of a structured dissertation prospectus; socializes students to academic culture.

KINESIOLOGY

KINES

- 138 Introduction to Kinesiology 1** Introduces new students to individual faculty research interests and help students link personal interests to academic majors. S, F grading.
- 199 Human Motor Development 3** Development and performance of human motor patterns; understanding of motor development; observation and analysis of foundations of movement.
- 262 Human Anatomy 4 (3-3)** Comprehensive survey of the structure and organization of the human body; emphasis on skeletomuscular, cardiovascular, nervous, and respiratory systems. Cooperative: Open to UI degree-seeking students.
- 263 Emergency Response 2 (1-3)** First aid and safety procedures, including CPR for the Professional Rescuer, AED training and prevention training.
- 264 Fitness Concepts 3 (2-3)** Physiological, mechanical, and health-related basis of fitness practices.
- 266 Care and Prevention of Athletic Injuries 3** Course Prerequisite: MVTST 262 or KINES 262 or concurrent enrollment. Prevention, recognition, and management of common sport related injuries and illnesses.
- 267 Techniques in Athletic Injuries 2** Applied clinical approach to basic skills commonly used in the field of athletic training.
- 270 Examination for Lower Extremity in Athletic Training 3** Course Prerequisite: Certified major in Athletic Training. In-depth study of the lower extremities including physical examination, injury recognition, treatment, taping, bracing and rehabilitation.

- 271 Examination for Upper Extremity in Athletic Training** 3 Course Prerequisite: Certified major in Athletic Training. In-depth study of the upper extremities including physical examination, injury recognition, treatment, taping, bracing and rehabilitation.
- 275 Athletic Training Modalities** 3 Course Prerequisite: Certified major in Athletic Training. Advanced theory and techniques of modality use in athletic training.
- 291 Athletic Training Clinical Internship I** 2 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Certified major in Athletic Training. Beginning techniques in management of sport injury/illness under supervision of a certified athletic trainer.
- 305 Nutrition Related to Fitness and Sport** 3 Course Prerequisite: Certified major in Athletic Training, Health and Fitness, or Movement Studies. Identification of energy, macro/micro nutrient and fluid requirements during exercise; evaluation of dietary regimens and ergogenic aids for pre and post competition, weight maintenance, and wellness.
- 311 Strength Training** 3 Course Prerequisite: Certified major in Athletic Training, Health and Fitness, or Movement Studies. Basic information and guidelines for enhancement of athletic performance, injury prevention, rehabilitation and general fitness.
- 312 [M] Research and Assessment in Kinesiology** 3 (2-3) Course Prerequisite: Certified major in Athletic Training, Health and Fitness, or Movement Studies. Introduction to common quantitative and qualitative research methods used in the discipline; research project.
- 313 Behavioral Aspects of Human Movement** 3 Course Prerequisite: PSYCH 105 or SOC 101. Psychological, sociological, and anthropological concepts which relate to human movement and human performance.
- 314 Philosophy of Human Movement** 3 The philosophical dimensions of physical education, sport, and dance.
- 361 Health and Wellness** 3 Knowledge of the multi-dimensional aspects of wellness and concepts necessary for a positive lifestyle through self-assessment.
- 364 Athletic Training Rehabilitation** 3 Course Prerequisite: Certified major in Athletic Training. Advanced injury rehabilitation theory and techniques in athletic training.
- 365 General Medical Aspects in Athletic Training** 3 Course Prerequisite: Certified major in Athletic Training. Current medical issues pertaining to athletic training including sport pharmacology, physiological considerations, common illnesses and special concerns.
- 380 Introduction to Exercise Physiology** 3 Introduction to exercise physiology as it relates to sport, physical training, and performance.
- 390 Practicum in Fitness Facility or Fitness Research** V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Certified major in Athletic Training, Health and Fitness, or Movement Studies. Supervised practicum or research. S, F grading.
- 391 Practicum in Physical Education** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By interview only. Supervised practicum. Combined maximum for KINES 300-level practicum courses 8 hours. S, F grading.
- 392 Athletic Training Clinical Internship II** 2 (1-3) May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Certified major in Athletic Training. Intermediate techniques in management of sport injury/illness under supervision of a certified athletic trainer.
- 393 Practicum in Special Populations** V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Supervised practicum. S, F grading.
- 411 Advanced Strength Training** 3 Course Prerequisite: Certified Strength and Conditioning minor; KINES 262; KINES 264; KINES 311; CPR/First Aid certification. Advanced strength training, including an in-depth look at programming of strength and fitness programs.
- 412 Strength Training Practicum I** 3 (1-8) Course Prerequisite: Certified Strength and Conditioning minor; KINES 262; KINES 264; KINES 311; CPR/First Aid certification. Clinical experience within the Strength and Conditioning minor, focusing on the basics of lifting and spotting techniques.
- 413 Strength Training Practicum II** 3 (1-3) Course Prerequisite: KINES 412. Clinical experience within the Strength and Conditioning minor, focusing on cardiovascular fitness/programming for clients needing alterations in workouts.
- 414 Strength Training Practicum III** 3 (1-8) Clinical experience within the Strength and Conditioning minor focusing on preparation for the NSCA certification exam.
- 415 Kinesiology Capstone** 3 Course Prerequisite: Certified major in Athletic Training, Health and Fitness, or Movement Studies. Culminating experience for Kinesiology students to integrate and apply content methods through a research/practical project or experience.
- 461 [M] Motor Skill Acquisition** 3 Course Prerequisite: Certified major in Athletic Training, Health and Fitness, or Movement Studies. Motor learning and motor control areas; neural mechanisms, practice, feedback, retention, and transfer application of theoretical concepts.
- 462 Biomechanics** 3 Anatomical and mechanical influences on human movement.
- 469 [M] Athletic Training Organization and Administration** 3 Course Prerequisite: Certified major in Athletic Training. The organization and administration of athletic training programs.
- 481 Health Education Methods** 3 Course Prerequisite: Certified major in Athletic Training, Health and Fitness, or Movement Studies. Basic principles, theory, and practices of public school health education teaching methods for K-12 public school pre-service teachers.
- 483 Fitness Education Methods** 3 (2-3) Course Prerequisite: Certified major in Athletic Training, Health and Fitness, or Movement Studies. Basic principles, theory, and practices of public school physical education teaching methods for K-12 public school pre-service teachers.
- 484 Exercise Prescription and Medical Conditions** 3 Course Prerequisite: Certified major in Athletic Training, Health and Fitness, or Movement Studies. Knowledge, understanding, and skills for teaching movement activities to individuals with disabilities.
- 485 Kinesiology Internship** V 10-12 Course Prerequisite: Certified major in Athletic Training, Health and Fitness, or Movement Studies; by interview only. Supervised practicum in fitness or health agency or business. S, F grading.
- 490 Instructional Practicum** V 1-4 May be repeated for credit; cumulative maximum 6 hours. S, F grading.
- 493 Athletic Training Clinical Internship III** 2 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Certified major in Athletic Training. Advanced techniques in management of sport injury/illness under supervision of a certified athletic trainer.
- 496 Special Topics** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Special topics in physical education, health, fitness, or sport.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 586 Methods of Health and Physical Education** 2 Physical activity and health promotion for school programs, and educational/legal issues on physical and sexual abuse, K-8.

SPORT MANAGEMENT

The general prerequisite for enrollment in 300 and 400-level sport management courses is 60 hours of coursework and certification as a sport management major or sport management minor. Students of junior or senior status in a certified major who require a 300 or 400-level sports management course for their program will be allowed to enroll in the required course. Additional prerequisites for specific courses are listed in the course descriptions. The program director must approve any exceptions to these requirements.

SPMGT

- 276 Introduction of Sport Management 3**
Course Course Prerequisite: ENGLISH 101 or 298 with a C or better; COMST 102 with a C or better; MATH [N] GER or [QUAN] UCORE with a C or better; 2.5 cumulative gpa. Principles and concepts in sport management; overview of sport industries and career opportunities. Not open to seniors or first-year students during their first semester.
- 290 Sport Programs 3 (2-3)** Course Course Prerequisite: ENGLISH 101 or 298 with a C or better; COMST 102 with a C or better; MATH [N] GER or [QUAN] UCORE with a C or better; 2.5 cumulative gpa. Philosophies and program content of public/private sport programs; laboratory experiences in school, college, and community sport programs.
- 365 Ethics and Moral Reasoning in Sport 3**
Course Prerequisite: Certified major or minor in Sport Management; SPMGT 276; junior standing. Understanding and application of ethical theory and principles of moral reasoning to the analysis of issues and dilemmas in sport.
- 367 [M] Sport in American Society 3** Course Prerequisite: Certified major or minor in Sport Management; SPMGT 276; junior standing. Examination of the role of sport in contemporary American society as well as the relationship between sport and other social institutions.
- 374 Sport Finance 3** Course Prerequisite: Certified major or minor in Sport Management; SPMGT 276; junior standing. Introduction to financial analysis, budgeting and revenue acquisition for both for profit and not for profit sport organizations.
- 377 Legal Aspects of Sport 3** Course Prerequisite: Certified major or minor in Sport Management; SPMGT 276; junior standing. Legal aspects of the supervision, management and business of sport.
- 394 Practicum in Sport Management V** 1-4 May be repeated for credit; cumulative maximum 8 hours. Supervised practicum. S, F grading.
- 399 Professional Work Experience V** 1-6 Course Course Prerequisite: Sophomore standing; by interview only. Paid or volunteer, off-campus work experience with a sport organization. S, F grading.
- 464 Sport Marketing 3** Course Prerequisite: Certified major or minor in Sport Management; SPMGT 365. An examination of sport as a consumer product and as a medium by which to sell consumer products.
- 468 [M] Managing Sport Organizations 3** Course Prerequisite: Certified major in Sport Management; SPMGT 367. Analysis of management processes and structures of sport organizations.
- 488 Current Trends in Sport Management 2**
Course Prerequisite: Certified major in Sport Management; SPMGT 367; SPMGT 377; senior standing. Current trends and issues; research resources; professional presentations.

- 489 Theory and Application in Sports Event Management 3** Course Prerequisite: Certified major in Sport Management; SPMGT 468 or concurrent enrollment; senior standing. Investigation and application of the components of the sport management profession.
- 490 Internship Seminar 1** Course Prerequisite: Certified major in Sport Management; SPMGT 365; SPMGT 367; SPMGT 377; senior standing. Overview of policies and requirements; guidance through site selection and application process; communication skills for the business/sport environment. S, F grading.
- 491 Internship V** 10-12 Course Prerequisite: Certified major in Sport Management; SPMGT 488; SPMGT 490. Supervised practicum in agency or business. S, F grading.
- 496 Special Topics V** 1-3 May be repeated for credit; cumulative maximum 6 hours. Special topics in sports studies.
- 497 Special Topics V** 1-3 May be repeated for credit; cumulative maximum 6 hours. Special topics in sport studies.
- 499 Special Problems V** 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 521 Special Topics in Sport Management V** 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the Sport Management Graduate program. Recent research, developments, issues, and /or applications in selected areas of Sport Management.
- 540 Current Issues in Sport Management 3**
Solutions-oriented investigation of current issues faced by sport managers/administrators; interpretation of research literature; procedures for issue resolution.
- 564 Marketing of Sport Events and Programs 3**
Principles of sport marketing including public relations, corporate sponsorship, and service quality for sport organizations.
- 565 Ethical Perspectives of Sport and Physical Activity 3**
Ontological, ethical, aesthetic views of physical activity. Required preparation must include SPMGT 365 or equivalent.
- 567 Social and Cultural Issues of Physical Activity and Sport 3**
Sport and physical activity as cultural forms, including the examination of subcultures, stratification, socialization and power relations.
- 568 Administrative Concepts in Sport Organizations 3**
Effective management for sport programs. Analysis of dynamic management process necessary for improvement of productivity in sport organizations.
- 569 Sport in Higher Education 3** Course Prerequisite: Admission to the Sport Management Graduate program. The course examines sport in higher education institutions from the historical, cultural, and administrative perspectives.

- 577 Law and Risk Management in the Sport Industry 3**
Use of risk management perspective to explore the law as it applies to the management concerns of sport organizations. Required preparation must include SPMGT 377 or equivalent.
- 578 Sports in Society 3**
The social significance of sports; sociology of sport research. Required preparation must include SPMGT 367 or equivalent.
- 600 Special Projects or Independent Study V** 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
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- 800 Doctoral Research, Dissertation, and/or Examination V** 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

School of Electrical Engineering and Computer Science

school.eecs.wsu.edu

EME 102

509-335-6602

Huie-Rogers Chair in Computer Science, Professor, and Director, B. Shirazi; Huie-Rogers Endowed Chair in Computer Science and Professor, D. Cook; Boeing Centennial Chair in Computer Engineering and Associate Professor, P. Pande; Distinguished Professor in Power, A. Bose; Distinguished Professor in Electromagnetics, R. Olsen; Boeing Distinguished Professor, C. Liu; Professors, D. Bakken, S. Broschat, J. Delgado-Frias, T. Fischer, L. Holder, S. Hudson, M. Osman, J. Ringo, A. Saberi, V. Venkatasubramanian, K. Wang; Associate Professors, B. Belzer, Z. Dang, C.

Hauser, D. Heo, C. Hundhausen, A. Kalyanaraman, G. LaRue, R. Lewis, J. Miller, P. Pedrow, S. Roy, J. Schneider, K. Sivakumar; Assistant Professors, S. Arslan Ay, H. Ghasemzadeh, A. Mehrizi-Sani, A. Srivastava, L. Tan, M. Taylor; Lecturer, C. Cole; Instructors, T. Garlick, T. Hanshaw, A. O'Fallon; Professors Emeriti, C. Mosher, G. Hower.

The School of Electrical Engineering and Computer Science offers courses of study leading to the degrees of Bachelor of Science in Electrical Engineering (BSEE), Computer Engineering (BSCptE), or Computer Science (BSCptS), Bachelor of Arts in Computer Science (BACptS), Master of Science in Electrical Engineering (MSEE), Computer Engineering (MSCptE), or Computer Science (MSCptS), Doctor of Philosophy in Electrical and Computer Engineering, and Doctor of Philosophy in Computer Science. The undergraduate programs are accredited by ABET, 111 Market Pl, Ste. 1050, Baltimore, MD 21202-4012, (410) 347-7700.

Electrical Engineering

The curriculum in electrical engineering is designed to give the student fundamental knowledge in the areas of general interest to all electrical engineers. The course of study is therefore oriented toward the basic theory and concepts which prepare students for entry into any of the many activities open to members of the profession including research, design, development, operations, management, teaching, sales, and consulting. Laboratory experience is emphasized to provide for familiarity with electrical, electronic and computing equipment and with experimental techniques. Modern laboratories are available for electrical circuits, electronics, power systems, wireless communications and computers. Students are exposed to a variety of up-to-date computing environments to aid in their studies.

The curriculum is designed so that the equivalent of the first three to four semesters may be transferred from 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 to select an area of specialty. The program offers a two-semester senior design project that typically involves industry cooperation, and provides students with valuable experience in applying their skills to solve real-world problems.

The educational objectives for the BSEE program are to prepare graduates: 1) for a career in the field of electrical engineering by offering a curriculum based on the principles of mathematics, science, fundamentals of engineering design and analysis, and professional ethics; 2) to use state-of-the-art technologies and tools to solve problems relevant to societal and economic needs; 3) to work and live in a global, diversified society, instilling the value of life-long learning; 4) to meet the needs of industry for electrical engineering or to pursue graduate studies; and 5) to communicate clearly and work effectively in teams.

Students graduating with the BSEE degree in electrical engineering have: a) an ability to apply knowledge of mathematics, science and engineering; b) an ability to design and conduct experiments as well as analyze and interpret data; c) an ability to design a system, component, or

process to meet desired needs; d) an ability to function on multidisciplinary teams; e) an ability to identify, formulate, and solve engineering problems; f) an understanding of professional and ethical responsibility; g) an ability to communicate effectively in written and oral formats; h) a broad education necessary to understand the impact of engineering solutions in global, economic, and societal context; i) a recognition of the need for, and the ability to engage in, life-long learning; j) a broad education and knowledge of contemporary issues; and k) an ability to use techniques, skills and modern engineering tools necessary for engineering practices.

Computer Engineering

Computer engineering is a field of study that encompasses the fundamental principles, methods, and modern tools for the design and implementation of computing systems. Advances in technology are yielding smaller and higher-performing computer systems that appear in various applications, including communication systems, consumer products, and household appliances to name just a few. The computer engineering program provides a balanced perspective of both hardware and software elements of computing systems, and of their relative design trade-offs and applications. Computer engineering builds upon fundamental courses in mathematics, science, and the engineering disciplines to achieve a sound knowledge foundation and to develop breadth. Laboratory experiences are emphasized to provide students with background on experimental design and simulation techniques. Since core course sequences are completed in the junior year, students are able to pursue their career objectives with opportunities to select from a broad range of elective courses. These include computer engineering topics such as hardware design, VLSI design, embedded systems, computer architecture, networking, and operating systems.

The program culminates with a two-semester senior design project. The project involves industry cooperation and provides students with a major design experience addressing a broad range of issues, including technical subjects as well as economics, safety, and ethical and societal considerations.

The educational objectives of the degree program in Computer Engineering are to prepare students: 1) for a career in the field of computer engineering by offering a curriculum based on the principles of mathematics, science, fundamentals of engineering design and analysis, and professional ethics; 2) to use computer systems and state-of-the-art technologies and tools to solve problems relevant to societal and economic needs; 3) to work and live in a global, diversified society, instilling the value of life-long learning; 4) to meet the needs of industry for computer engineering or to pursue graduate studies; and 5) to communicate clearly and work effectively in teams.

In order to achieve the educational objectives our students will have acquired the following skill and knowledge outcomes by the time of graduation: a) an ability to apply knowledge of mathematics, science and engineering; b) an ability to design and conduct experiments as well as analyze and interpret data; c) an ability to design a system, component, or process to meet desired needs; d) an ability to function on multidisciplinary teams; e) an ability to identify, formulate, and solve engineering

problems; f) an understanding of professional and ethical responsibility; g) an ability to communicate effectively in written and oral formats; h) a broad education necessary to understand the impact of engineering solutions in global, economic, and societal context; i) a recognition of the need for, and the ability to engage in, life-long learning; j) a broad education and knowledge of contemporary issues; and k) an ability to use techniques, skills and modern engineering tools necessary for engineering practices.

Computer Science

Computer science is a discipline that provides a scientific foundation for computing expertise and skills. The curriculum is geared to provide the fundamental computing concepts derived from mathematics and sciences, and the practical application of these concepts through substantial hands-on course project experiences. The coursework in computer science prepares students for a variety of careers that involve the extensive use of computers.

There are two major degrees offered within Computer Science: the BS in Computer Science, and the BA in Computer Science. Graduates in both the degree programs will have a solid technical background in mathematics and sciences. The BS degree requires substantial basic and advanced computer science course work and is the traditional computer science degree. The BA degree is designed for multi-disciplinary students who wish to learn the basics of computer science and apply it to a different field. A minor in another area, such as art, biochemistry, music, psychology, architecture, etc., is strongly encouraged.

The program offers courses in a wide variety of topics including theory of computation, design and analysis of algorithms, software engineering, operating systems, computer networks, computer graphics, image processing, distributed systems, and database systems. The coursework is supplemented by several general purpose computing labs dedicated to computer science students, and specialized labs for courses such as operating systems, software engineering, and computer networking. Option area course sequences allow students to specialize in specific areas such as computer graphics, computer networking, computer systems software, software engineering, or computer engineering.

The educational objectives of the degree programs in Computer Science are to prepare students: 1) for computer science or software engineering careers by offering a curriculum based on the principles of mathematics, computer science, and professional ethics, in the case of the BS degree, or, for computer science or software engineering careers in interdisciplinary fields by offering a curriculum based on the principles of mathematics, computer science, and professional ethics as well as the foundations of a minor subject area, in the case of the BA degree; 2) to use computer systems and state-of-the-art tools and techniques to solve problems relevant to societal and economic needs; 3) to work and live in a global, diversified society, instilling the value of life-long learning; 4) to meet the needs of industry for computer scientists or to pursue graduate studies; 5) to communicate clearly in oral and written forms; and 6) to work in teams.

In order to achieve the educational objectives our students will have acquired the following skill and

knowledge outcomes by the time of graduation: a) an ability to apply knowledge of computing and mathematics appropriate to the discipline; b) an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution; c) an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs; d) an ability to function effectively on teams to accomplish a common goal; e) an understanding of professional, ethical, legal, security, and social issues and responsibilities; f) an ability to communicate effectively; g) an ability to analyze the local and global impact of computing on individuals, organizations, and society; h) a recognition of the need for, and an ability to engage in, lifelong learning; i) an ability to use current techniques, skills, and tools necessary for computing practice; j) an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs in design choices; k) an ability to apply design and development principles in the construction of software systems of varying complexity.

Certification

Students interested in majoring in any of the school's bachelor degree programs should apply for certification as early as possible in their studies after completion of the respective courses listed under in the schedule of studies. Applications for certification are accepted prior to December 1 and May 1 for certification effective the following spring and fall, respectively. Qualification for initial certification, as well as continuation of certified status, will be evaluated based on several criteria including academic integrity, overall grade-point-average (gpa), and gpa in mathematics, science, and electrical engineering or computer science courses. Acceptance will be made after the current semester grades are available. Students will be notified of the decision as soon as possible.

Transfer Students

Students planning to transfer from other institutions should carefully note the sequence of courses. Transfers from community colleges should consult the information available on the Undergraduate Admission Web site or should write directly to the School of Electrical Engineering and Computer Science for specific information.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

BACHELOR OF ARTS, COMPUTER SCIENCE REQUIREMENTS (122 HOURS)

Students may apply for certification into the Bachelor of Arts in Computer Science degree program after completion of CPT S 121, 122, 223; MATH 201, 202, 216; PHIL 201. MATH 171, 172 may be substituted for MATH 201, 202.

No courses listed in this schedule of study may be taken on a pass/fail basis. All listed E E and CPT S courses, required electives, and prerequisites to these courses must be completed with a grade of C or better.

First Year

Course	Hours
<i>First Term</i>	
CPT S 121	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 201 ¹	3
PHIL 201 [QUAN]	3

Course	Hours
<i>Second Term</i>	
CPT S 122	4
Creative & Professional Arts [ARTS]	3
MATH 202 ¹	3
MATH 216	3
Social Sciences [SSCI] ²	3

Second Year

Course	Hours
<i>First Term</i>	
Biological Sciences [BSCI] with lab ³	4
CPT S 223	3
CPT S 260	3
MATH 212	4

Course	Hours
<i>Second Term</i>	
CPT S 224	2
MATH Elective ¹	3
Minor Electives ⁴	6
Physical Sciences [PSCI] with lab ³	4
Complete Writing Portfolio	

Third Year

Course	Hours
<i>First Term</i>	
CPT S 322 [M]	3
CPT S 355	3
ENGLISH 402 [WRTG]	3
Minor Elective ⁴	3
Science Elective [BSCI] or [PSCI] ³	4

Course	Hours
<i>Second Term</i>	
Advanced Cpt S Elective ⁵	3
CPT S 323	3
Diversity [DIVR]	3
Minor Elective ⁴	3
Science Elective [BSCI] or [PSCI] ³	3

Fourth Year

Course	Hours
<i>First Term</i>	
300-400-level Minor Elective ⁴	3
Advanced Cpt S Elective ⁵	6
CPT S 422 [M]	3
Humanities [HUM]	3

Course	Hours
<i>Second Term</i>	
300-400-level Minor Elective ⁴	3
Advanced CPT S Electives ⁵	6
CPT S 402	3
Integrative Capstone [CAPS]	3
Complete Cpt S Exit Interview and Survey	

¹ Either math sequence below will satisfy the math requirement for this degree. Sequence B will allow a broader selection of advanced computer science electives. The course work in mathematics must total at least sixteen semester hours (including

MATH 216). Sequence A: MATH 201, 202, 212, and a MATH elective chosen from the following list: MATH 364, 416, or STAT 412. Sequence B: MATH 171, 172, 220, and MATH 212, or MATH 360.

² SOC 101 recommended.

³ Science electives must include a year-long sequence (two semesters including a laboratory in each semester) and two additional science courses, one of which must have a laboratory component.

⁴ Elective credits must include a minor program. Completion of a minor is a graduation requirement. If a minor in a science or engineering discipline is contemplated, Math Sequence B should be taken (see note 1).

⁵ 300-400-level advanced computer science electives must be chosen to contain advanced work in at least three separate computer science areas. Consult with an advisor for course choices.

BACHELOR OF SCIENCE, COMPUTER SCIENCE REQUIREMENTS (120 HOURS)

Students may apply for certification into the Bachelor of Science in Computer Science degree program after completion of CPT S 121, 122, 223; MATH 171, 172, 216; PHIL 201; PHYSICS 201.

No courses listed in this schedule of study may be taken on a pass/fail basis. All listed E E and CPT S courses, required electives, and prerequisites to these courses must be completed with a grade of C or better.

First Year

Course	Hours
<i>First Term</i>	
CPT S 121	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
PHIL 201	3

Course	Hours
<i>Second Term</i>	
CPT S 122	4
HISTORY 105 [ROOT]	3
MATH 172	4
MATH 216	3

Second Year

Course	Hours
<i>First Term</i>	
CPT S 223	3
CPT S 260	3
Humanities [HUM]	3
PHYSICS 201 [PSCI]	4
Social Sciences [SSCI] ¹	3

Course	Hours
<i>Second Term</i>	
Biological Sciences [BSCI]	3 or 4
CPT S 224	2
Creative & Professional Arts [ARTS]	3
MATH 220	2
PHYSICS 202	4
Complete Writing Portfolio	

Third Year

Course	Hours
<i>First Term</i>	
CPT S 322 [M]	3
CPT S 355	3
ENGLISH 402 [WRTG]	3
MATH 273 or 301	2 or 3
STAT 360	3

<i>Second Term</i>	<i>Hours</i>
CPT S 317	3
CPT S 323	3
CPT S 360	4
CPT S Option Courses ²	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
CPT S 421	3
CPT S 422 [M]	3
CPT S 450	3
CPT S Option Courses ²	6
Diversity [DIVR]	3

<i>Second Term</i>	<i>Hours</i>
CPT S 402	3
CPT S 423, or Integrative Capstone [CAPS]	3
CPT S 460	3
CPT S Option Course ²	3
Electives	2
Complete Cpt S Exit Interview and Survey	

¹ ECONS 101 or 102 recommended.
² Fifteen credits (5 courses) of option area classes are required for completion of the degree program. The option courses are chosen from upper-level computer science related courses and must be approved by an advisor.

COMPUTER ENGINEERING REQUIREMENTS (123 HOURS)

Students may apply for certification into the Bachelor of Science in Computer Engineering degree program after completion of CHEM 105; CPT S 121, 122; E E 214; MATH 171, 172, 216; PHYSICS 201, 202.

No courses listed in this schedule of study may be taken on a pass/fail basis. All listed E E and CPT S courses, required electives, and prerequisites to these courses must be completed with a grade of C or better.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
CPT S 121	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
CPT S 122	4
MATH 172	4
MATH 216	3
PHYSICS 201	4

Second Year

<i>First Term</i>	<i>Hours</i>
E E 214	4
HISTORY 105 [ROOT]	3
MATH 220	2
MATH 273	2
PHYSICS 202	4

<i>Second Term</i>	<i>Hours</i>
CPT S 223	3
Creative & Professional Arts [ARTS]	3
E E 234	4

E E 261	3
E E 262	1
MATH 315	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
E E 311	3
E E 321	3
E E 324	4
E E 352	3
ENGLISH 402 [WRTG]	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI]	3 or 4
CPT S 360	4
E E 334	3
Engineering Science Elective ¹	3
STAT 360	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Approved CPT E Technical Electives ²	3
Design I	3
E E 415	2
ECONS 101 [SSCI] or 102 [SSCI]	3
Humanities [HUM]	3

<i>Second Term</i>	<i>Hours</i>
Approved CPT E Technical Electives ²	6
Diversity [DIVR]	3
E E 416 [M]	3
Integrative Capstone [CAPS]	3
Complete Cpt E Exit Interview and Survey	

¹ Choose from E E 331, 341, ME 301, or MSE 302.
² Technical electives must all be 300 or 400 level courses and must be chosen with an advisor's approval.

ELECTRICAL ENGINEERING REQUIREMENTS (123 HOURS)

Students may apply for certification into the Bachelor of Science in Electrical Engineering degree program after completion of the following courses with a grade of C or better: CHEM 105; CPT S 121; CPT S 122; E E 214; ENGLISH 101; MATH 171, 172, 220, 273; PHYSICS 201, 202.

No courses listed in this schedule of study may be taken on a pass/fail basis. All listed E E and CPT S courses, required electives, and prerequisites to these courses must be completed with a grade of C or better.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
ENGR 120	2
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
CPT S 121	4
MATH 172	4
MATH 220	2
PHYSICS 201	4

Second Year

<i>First Term</i>	<i>Hours</i>
CPT S 122	4
E E 214	4
MATH 273	2
PHYSICS 202	4

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
E E 234	4
E E 261	3
E E 262	1
ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 315	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
E E 311	3
E E 321	3
E E 331	3
E E 352	3
Engineering Science Elective I ¹	3

<i>Second Term</i>	<i>Hours</i>
E E 341	3
E E 361	3
Engineering Science II ¹	3
MATH 360	3
Track Elective ²	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI]	3 or 4
Diversity [DIVR]	3
E E 415	2
ENGLISH 402 [WRTG]	3
Track Electives ²	6

<i>Second Term</i>	<i>Hours</i>
300-400-level Track Electives ²	6
E E 416 [M]	3
Humanities [HUM]	3
Integrative Capstone [CAPS]	3
Complete E E Exit Interview and Survey	

¹ Choose from CE 211, ME 212, ME 301, or MSE 302.

² Students follow one of four tracks for an emphasis in their degree program: power, microelectronics, systems or general. See your academic advisor for an approved list.

Minors

Computer Engineering

18 semester hours of computer related courses in electrical engineering are necessary to earn a minor, 9 of which must be 300-400-level taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. E E 214, 234, and 324 are required.

Computer Science

The minor in computer science consists of 20 credits which must include Cpt S 121, 122, 223, and three 300-400-level Cpt S courses excluding computer skills and literacy courses. All prerequisites for minor

courses must be met. The minor program must be approved by the computer science undergraduate coordinator.

Electrical Engineering

18 semester hours of courses in electrical engineering are necessary to earn a minor, 9 of which must be 300-400-level and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Three courses (9 semester hours) in addition to E E 214, 261, and 262 are required.

Description of Courses

COMPUTER SCIENCE

With the exception of the Computer Skills and Literacy courses, enrollment in 300-400-level computer science courses is restricted to certified majors or minors in computer science, computer engineering, or electrical engineering, and to juniors and seniors officially certified into other degree programs requiring these computer science courses.

CPT S

111 Introduction to Algorithmic Problem Solving 3 (2-3) Elementary algorithmic problem solving, computational models, sequential, iterative and conditional operations, parameterized procedures, array and list structures and basic efficiency analysis.

121 Program Design and Development 4 (3-3) Course Prerequisite: MATH 106 with a C or better, or MATH 108, 171, 172, 182, 201, 202, 206, 220, 273, 315, or ALEKS math placement score of 70% or higher. Formulation of problems and top-down design of programs in a modern structured language for their solution on a digital computer.

122 Data Structures 4 (3-3) Course Prerequisite: CPT S 121 with a C or better. Advanced programming techniques: data structures, recursion, sorting and searching, and basics of algorithm analysis.

223 Advanced Data Structures 3 Course Prerequisite: CPT S 122 with a C or better; MATH 216 with a C or better or concurrent enrollment. Advanced data structures, object oriented programming concepts, concurrency, and program design principles.

224 Programming Tools 2 Course Prerequisite: CPT S 122 with a C or better. Debugging tools, scripting languages, UNIX programming tools, introduction to graphical user interface programming.

260 Introduction to Computer Architecture 3 Course Prerequisite: CPT S 223 with a C or better or concurrent enrollment. Computer systems architecture; logic, data representation, assembly language, memory organization and trends.

317 Automata and Formal Languages 3 Course Prerequisite: CPT S 122 with a C or better; MATH 216 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Finite automata, regular sets, pushdown automata, context-free language, Turing machines and the halting problem.

322 [M] Software Engineering Principles I 3 Course Prerequisite: CPT S 223 with a C or better or concurrent enrollment; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Introduction to software engineering; requirements analysis, definition, specification including formal methods; prototyping; design including object and function oriented design.

323 Software Design 3 Course Prerequisite: CPT S 223 with a C or better; CPT S 322 with a C or better or concurrent enrollment; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Practical aspects of software design and implementation using object-oriented, aspect-oriented and procedural programming.

355 Programming Language Design 3 Course Prerequisite: CPT S 223 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Design concepts of high-level programming languages; survey of existing languages, experience using some languages.

360 Systems Programming 4 (3-3) Course Prerequisite: CPT S 223 with a C or better; CPT S 260 with a C or better or E E 234 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Implementation of systems programs, concepts of computer operating systems; laboratory experience in using operating system facilities.

401 Computers and Society 3 Course Prerequisite: Junior standing. Skills and literacy course. Ethical and societal issues related to computers and computer networks; computers as enabling technology; computer crime, software theft, privacy, viruses, worms. Credit not granted for both CPT S 401 or 402.

402 [M] Social and Professional Issues in Computer Science 3 Course Prerequisite: CPT S 121 with a C or better; certified in Computer Science. Social, legal, ethical and professional issues that arise in the context of computing. Credit not granted for both CPT S 401 or 402.

421 Software Design Project I 3 (0-9) Course Prerequisite: CPT S 322 with a C or better; CPT S 323 with a C or better or concurrent enrollment; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Large-scale software development including requirements analysis, estimation, design, verification and project management.

422 [M] Software Engineering Principles II 3 Course Prerequisite: CPT S 322 with a C or better; CPT S 323 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Dependable software systems; software verification and validation, testing; CASE environments; software management and evolution.

423 Software Design Project II 3 (1-6) Course Prerequisite: CPT S 421 with a C or better; CPT S 422 with a C or better or concurrent enrollment; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Laboratory/group design project for large-scale software development, requirements analysis, estimation, design, verification techniques.

427 Computer Security 3 Course Prerequisite: CPT S 360 with a C or better; MATH 216 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Computer security concepts, models and mechanism; encryption technology, formal models, policy and ethical implications. Credit not granted for both CPT S 427 and CPT S 527.

430 Numerical Analysis 3 Course Prerequisite: MATH 315; CPT S 121, CPT S 251, or MATH 300. Fundamentals of numerical computation; finding zeroes of functions, approximation and interpolation; numerical integration (quadrature); numerical solution of ordinary differential equations. (Crosslisted course offered as MATH 448, CPT S 430, CPT S 530). Required preparation must include differential equations and a programming course.

434 Neural Network Design and Application 3 Course Prerequisite: CPT S 122 with a C or better; STAT 360 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Hands-on experience with neural network modeling of nonlinear phenomena; application to classification, forecasting, identification and control. Credit not granted for both CPT S 434 and CPT S 534.

438 Scientific Visualization 3 Course Prerequisite: CPT S 223 with a C or better; CPT S 224 with a C or better; MATH 172 or 182 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Data taxonomy, sampling, plotting, using and extending a visualization package, designing visualization and domain-specific techniques.

440 Artificial Intelligence 3 Course Prerequisite: CPT S 122 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. An introduction to the field of artificial intelligence including heuristic search, knowledge representation, deduction, uncertainty reasoning, learning, and symbolic programming languages. Credit not granted for both CPT S 440 and CPT S 540.

442 Computer Graphics 3 Course Prerequisite: CPT S 223 with a C or better; CPT S 224 with a C or better; MATH 220 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Raster operations; transformations and viewing; geometric modeling; visibility and shading; color. Credit not granted for both CPT S 442 and CPT S 542. Cooperative: Open to UI degree-seeking students.

- 443 Human-Computer Interaction** 3 Course Prerequisite: Junior standing; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Concepts and methodologies of engineering, social and behavioral sciences to address ergonomic, cognitive, social and cultural factors in the design and evaluation of human-computer systems. Credit not granted for both CPT S 443 and CPT S 543.
- 450 Design and Analysis of Algorithms** 3 Course Prerequisite: CPT S 223 with a C or better; CPT S 317 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Analysis of data structures and algorithms; computational complexity and design of efficient data-handling procedures.
- 451 Introduction to Database Systems** 3 Course Prerequisite: CPT S 223 with a C or better; CPT S 224 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Introduction to database concepts, data models, database languages, database design, implementation issues.
- 452 Compiler Design** 3 Course Prerequisite: CPT S 317 with a C or better; CPT S 355 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Design of lexical analyzers, syntactic analyzers, intermediate code generators, code optimizers and object code generators.
- 453 Graph Theory** 3 Course Prerequisite: MATH 220 or MATH 230. Graphs and their applications, directed graphs, trees, networks, Eulerian and Hamiltonian paths, matrix representations, construction of algorithms. (Crosslisted course offered as MATH 453, CPT S 453). Required preparation must include linear algebra. Required preparation must include linear algebra.
- 455 Introduction to Computer Networks** 3 Course Prerequisite: CPT S 360 with a C or better or EE 234 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Concepts and implementation of computer networks; architectures, protocol layers, internetworking and addressing case studies. (Crosslisted course offered as CPT S 455, E E 455).
- 460 Operating Systems and Computer Architecture** 3 Course Prerequisite: CPT S 360 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Operating systems, computer architectures, and their interrelationships in micro, mini, and large computer systems.
- 464 Distributed Systems Concepts and Programming** 3 Course Prerequisite: CPT S 360 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Concepts of distributed systems; naming, security, networking, replication, synchronization, quality of service; programming middleware. Credit not granted for both CPT S 464 and CPT S 564. Cooperative: Open to UI degree-seeking students.
- 466 Embedded Systems** 3 (2-3) Course Prerequisite: CPT S 360 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. The design and development of real-time and dedicated software systems with an introduction to sensors and actuators. Credit not granted for both CPT S 466 and CPT S 566. Cooperative: Open to UI degree-seeking students.
- 470 Concepts in Biotechnology** 3 Course Prerequisite: [B] GER with a C or better; concurrent enrollment in E E 415, E E 416, CPT S 421, CPT S 423, ENTRP 496, ENGR 420, or ENGR 421; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Fundamentals of biological sciences and biotechnology for engineers and computer scientists. (Crosslisted course offered as E E 470, CPT S 470).
- 471 Computational Genomics** 3 Course Prerequisite: CPT S 450 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Fundamental algorithms, techniques and applications. Credit not granted for both CPT S 471 and CPT S 571.
- 481 Python Software Construction** 3 Course Prerequisite: CPT S 223 with a C or better; CPT S 224 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Intensive introduction to the python language; user interface, building and using extension modules; C interfacing; construction of a major project.
- 483 Topics in Computer Science** V 1-4 May be repeated for credit. Course Prerequisite: Certified major in Computer Science, Computer Engineering, or Electrical Engineering. Required background preparation varies with course offering, see instructor. Current topics in computer science or software engineering. Required preparation: Varies with course offering, see instructor.
- 490 Work Study Internship** V 1-9 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Computer Science major; by permission only. Experience in programming and systems analysis in a working environment under supervision of industrial or governmental professionals and faculty. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 500 Proseminar** 1 Faculty research interests, departmental computer systems, computer science research, report preparation. S, F grading.
- 516 Algorithmics** 3 Discrete structures, automata, formal languages, recursive functions, algorithms, and computability.
- 527 Computer Security** 3 Computer security concepts, models and mechanism; encryption technology, formal models, policy and ethical implications. Credit not granted for both CPT S 427 and CPT S 527.
- 530 Numerical Analysis** 3 Fundamentals of numerical computation; finding zeroes of functions, approximation and interpolation; numerical integration (quadrature); numerical solution of ordinary differential equations. (Crosslisted course offered as MATH 448, CPT S 430, CPT S 530). Required preparation must include differential equations and a programming course.
- 531 Advanced Matrix Computations** 3 Advanced topics in the solution of linear systems and eigenvalue problems, including parallel matrix computations. (Crosslisted course offered as MATH 544, CPT S 531). Required preparation must include numerical analysis. Cooperative: Open to UI degree-seeking students.
- 534 Neural Network Design and Application** 3 Hands-on experience with neural network modeling of nonlinear phenomena; application to classification, forecasting, identification and control. Credit not granted for both CPT S 434 and CPT S 534.
- 538 Scientific Visualization** 3 Data taxonomy; sampling; plotting; using and extending a visualization package; designing visualizations; domain-specific techniques.
- 540 Artificial Intelligence** 3 An introduction to the field of artificial intelligence including heuristic search, knowledge representation, deduction, uncertainty reasoning, learning, and symbolic programming languages. Credit not granted for both CPT S 440 and CPT S 540.
- 542 Computer Graphics** 3 Raster operations; transformations and viewing; geometric modeling; visibility and shading; color. Credit not granted for both CPT S 442 and CPT S 542. Cooperative: Open to UI degree-seeking students.
- 543 Human-Computer Interaction** 3 Concepts and methodologies of engineering, social and behavioral sciences to address ergonomic, cognitive, social and cultural factors in the design and evaluation of human-computer systems. Credit not granted for both CPT S 443 and CPT S 543.
- 548 Advanced Computer Graphics** 3 Solid modeling, visual realism, light and color models, advanced surface generation techniques.
- 550 Parallel Computation** 3 Parallel machine models, principles for the design of parallel algorithms, interconnection networks, systolic arrays, computational aspects to VLSI. Required preparation must include differential equations and a programming course.

- 553 Graph Theory 3** Graphs and their applications, directed graphs, trees, networks, Eulerian and Hamiltonian paths, matrix representations, construction of algorithms. (Crosslisted course offered as MATH 453, CPT S 453). Required preparation must include linear algebra. Required preparation must include linear algebra.
- 555 Computer Communication Networks 3** Packet switching networks; multi-access and local-area networks; delay models in data networks; routing and flow control. (Crosslisted course offered as E E 555, CPT S 555).
- 557 Advanced Computer Networks 3** ATM networks, optical WDM networks, and wireless/mobile networks; access, transport, and routing protocols.
- 560 Operating Systems 3** Structure of multiprogramming and multiprocessing; efficient allocation of systems resources; design implementation and performance measurement.
- 561 Computer Architecture 3** Parallel and distributed processors; multiprocessors; interconnection topologies; language-directed architecture; special-purpose architecture.
- 562 Fault Tolerant Computer Systems 3** Fault tolerance aspects involved in design and evaluation of systems; methods of detection and recovery; multicast, middleware, and reconfiguration. (Crosslisted course offered as CPT S 562, E E 562).
- 564 Distributed Systems Concepts and Programming 3** Concepts of distributed systems; naming, security, networking, replication, synchronization, quality of service; programming middleware. Credit not granted for both CPT S 464 and CPT S 564. Cooperative: Open to UI degree-seeking students.
- 566 Embedded Systems 3 (2-3)** The design and development of real-time and dedicated software systems with an introduction to sensors and actuators. Credit not granted for both CPT S 466 and CPT S 566. Cooperative: Open to UI degree-seeking students.
- 570 Machine Learning 3** Introduction to building computer systems that learn from their experience; classification and regression problems; unsupervised and reinforcement learning.
- 571 Computational Genomics 3** Fundamental algorithms, techniques and applications. Credit not granted for both CPT S 471 and CPT S 571.
- 572 Numerical Methods in Computational Biology 3** Computational methods for solving scientific problems related to information processing in biological systems at the molecular and cellular levels.
- 573 Bioinformatics Software Development 3** Provides programming skills needed to address current computational problems in bioinformatics; emphasis on mathematical development and software design.
- 580 Advanced Topics in Computer Science 3** May be repeated for credit.
- 595 Directed Study in Computer Science V 1 (0-3) to 3 (0-9)** May be repeated for credit; cumulative maximum 6 hours. Current topics in computer science.
- 600 Special Projects or Independent Study V 1-18** May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V 1-18** May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

ELECTRICAL ENGINEERING

Enrollment in 300 and 400-level electrical engineering courses is restricted to certified majors or minors in electrical engineering, computer engineering, or computer science, and to juniors and seniors officially certified into other degree programs requiring 400-level engineering courses.

E E

214 Design of Logic Circuits 4 (3-3) Design and application of combinational logic circuits with exposure to modern methods and design tools; introduction to sequential logic circuits. Recommended preparation: Prior programming class.

221 Numerical Computing for Engineers 2 Course Prerequisite: MATH 172 or 182 with a C or better; MATH 220 with a C or better. Solutions to engineering problems using modern software tools such as Matlab.

234 Microprocessor Systems 4 (3-3) Course Prerequisite: CPT S 122 with a C or better; E E 214 with a C or better. Microprocessor system architecture, instruction sets, and interfacing; assembly language programming.

261 Electrical Circuits I 3 Course Prerequisite: MATH 315 with a C or better or concurrent enrollment; PHYSICS 202 with a C or better. Application of fundamental concepts of electrical science in linear circuit analysis; mathematical models of electric components and circuits.

262 Electrical Circuits Laboratory I 1 (0-3) Course Prerequisite: E E 261 with a C or better or concurrent enrollment. Electrical instruments; laboratory applications of electric laws; transient and steady-state responses of electrical circuits.

304 Introduction to Electrical Circuits 2 Course Prerequisite: MATH 315 with a C or better or concurrent enrollment. Basic DC and AC circuits.

311 Electronics 3 Course Prerequisite: E E 214 with a C or better; E E 261 with a C or better; concurrent enrollment in E E 352; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Fundamental device characteristics including diodes, MOSFETs and bipolar transistors; small- and large-signal characteristics and design of linear circuits.

321 Electrical Circuits II 3 Course Prerequisite: E E 261 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. State space analysis, Laplace transforms, network functions, frequency response, Fourier series, two-ports, energy and passivity.

324 [M] Fundamentals of Digital Systems 4 (3-3) Course Prerequisite: E E 214 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Design and analysis of synchronous sequential machines; module and bit-slice devices; alternative architectures; system-level design; asynchronous sequential machines.

331 Electromagnetic Fields and Waves 3 Course Prerequisite: E E 261 with a C or better; E E 262 with a C or better; MATH 315 with a C or better; PHYSICS 202 with a C or better. Certification not required. Fundamentals of transmission lines, electrostatics, magnetostatics, and Maxwell's Equations.

334 Computer Architecture 3 (3-3) Course Prerequisite: E E 234 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Modern developments in digital system design, parallel structures, pipelining, input/output, high speed circuits, laboratory experience in digital system design; emphasis on CPU architecture.

341 Signals and Systems 3 Course Prerequisite: E E 321 with a C or better; STAT 360 with a C or better or concurrent enrollment, or STAT 443 with a C or better or concurrent enrollment; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Discrete and continuous-time signals, LTI systems, convolution, sampling, Fourier transform, Z-transform, filtering, DFT, amplitude and frequency modulation.

- 351 Distributed Parameter Systems** 3 Course
Prerequisite: E E 331 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Maxwell's equations, plane waves, waveguides, resonators, antennas, numerical methods.
- 352 [M] Electrical Engineering Laboratory I** 3 (1-6) Course Prerequisite: Concurrent enrollment in E E 311; E E 321 with a C or better or concurrent enrollment; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Experiments in electrical circuits, measurements and electronics; principles of measurements and measuring instruments.
- 361 Electrical Power Systems** 3 Course
Prerequisite: E E 321 with a C or better; E E 331 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Power system hardware; transformers, and electromechanical machinery; introduction to power system operation.
- 362 [M] Power System Laboratory I** 3 (1-6) Course Prerequisite: E E 262 with a C or better; E E 352 with a C or better; concurrent enrollment in E E 361; concurrent enrollment in E E 341; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Experiments in simulation, modeling, transformers, rotating machines, and transmission lines.
- 415 Design Project Management** 2 (1-2) Course
Prerequisite: E E 341 with a C or better and E E 361 with a C or better; or E E 334 with a C or better and Cpt S 360 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Project scheduling/planning, technical writing, oral presentation skills, working in teams, TQC, TQM, market-driven organizations.
- 416 [M] Electrical Engineering Design** 3 (1-6) Course Prerequisite: E E 415 with a C or better; ENGLISH 402 with a C or better, or concurrent enrollment, or ENGLISH 403 with a C or better, or concurrent enrollment; certified major in E E, CptS, CptE or CptA. Electrical engineering design of specific projects including design specification; written and oral presentations and reports.
- 431 RF and Microwave Circuits and Systems** 4 (3-3) Course Prerequisite: Certified major in Electrical Engineering, Computer Science, or Computer Engineering. Design and implementation of RF/microwave modules and systems for telecommunications; microstrip, filters, mixers, amplifiers, frequency synthesizers and transceivers.
- 432 RF Engineering for Telecommunications** 4 (3-3) Course Prerequisite: E E 341 with a C or better; E E 351 with a C or better; STAT 360 with a C or better or STAT 443 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. System and propagation issues for wireless telecommunications; cellular, PCS, microwave, and satellite system analysis, design, measurement, and testing.
- 434 ASIC and Digital Systems Design** 3 (2-3) Course Prerequisite: E E 234 with a C or better; E E 321 with a C or better; E E 324 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Application Specific Integrated Circuit and Digital System Design methods, semi-custom, full-custom, and field-programmable devices; digital system architectures, electronics, and tests.
- 451 Digital Communication Systems** 3 Course Prerequisite: E E 341 with a C or better, STAT 360 with a C or better, or STAT 443 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Digital communication techniques; performance of digital communication systems in noise; matched filter detection; quantization. Cooperative: Open to UI degree-seeking students.
- 455 Introduction to Computer Networks** 3 Course Prerequisite: CptS 360 with a C or better or EE 234 with a C or better; certified major in Computer Science, Computer Engineering, or Electrical Engineering. Concepts and implementation of computer networks; architectures, protocol layers, internetworking and addressing case studies. (Crosslisted course offered as CPT S 455, E E 455).
- 464 Digital Signal Processing I** 3 Course Prerequisite: E E 341 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Discrete and fast Fourier transforms; Z-transform; sampling; discrete convolution; digital filter design; effects of quantization.
- 466 VLSI Design** 3 (2-3) Course Prerequisite: E E 234 with a C or better; E E 311 with a C or better; E E 324 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Very Large Scale Integrated circuit, system and physical design using CAD software; project specification, modeling, implementation, documentation and reporting.
- 470 Concepts in Biotechnology** 3 Course Prerequisite: [B] GER with a C or better; concurrent enrollment in E E 415, E E 416, CPT S 421, CPT S 423, ENTRP 496, ENGR 420, or ENGR 421; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Fundamentals of biological sciences and biotechnology for engineers and computer scientists. (Crosslisted course offered as E E 470, CPT S 470).
- 476 Analog Integrated Circuits** 3 Course Prerequisite: E E 311 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Analysis and design of analog integrated circuits in CMOS and BiCMOS technologies; current mirrors, gain stages, operational amplifiers, frequency response, and compensation.
- 477 Analog Integrated Circuits Laboratory** 2 (1-3) Course Prerequisite: concurrent enrollment in E E 476; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Laboratory applications of E E 476 including the computer-aided design of analog integrated circuits; emphasis on design documentation and reporting.
- 483 Topics in Electrical and Computer Engineering** V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 6 hours. Current topics in electrical engineering and computer engineering.
- 486 Power Electronics** 3 Course Prerequisite: E E 311 with a C or better; E E 321 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. High power semiconductor devices; analysis and design of linear and switching power supplies, high frequency magnetics, controller design. Cooperative: Open to UI degree-seeking students.
- 489 Introduction to Control Systems** 3 Course Prerequisite: E E 341 with a C or better or concurrent enrollment; certified major in Electrical Engineering, Computer Science, or Computer Engineering. State variable models, system response, stability analysis, root locus analysis and design; frequency-response and state-space analysis and design.
- 491 Performance of Power Systems** 3 Course Prerequisite: E E 361 with a C or better; E E 362 with a C or better; STAT 360 with a C or better or STAT 443 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Static and dynamic behavior of power systems, powerflow, and economic considerations.
- 492 Renewable Energy Sources** 3 (2-3) Course Prerequisite: E E 361 with a C or better; E E 362 with a C or better; STAT 360 with a C or better or STAT 443 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Design of electrical generation plants using wind, solar and other renewable energy sources including technical, environmental and economic aspects.
- 493 Protection of Power Systems I** 3 Course Prerequisite: E E 361 with a C or better; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Analysis and equipment fundamentals of power system protection; symmetrical components, fault calculations; fuses; and relays including burden calculations.
- 494 Protective Relay Labs** 2 (0-6) Course Prerequisite: E E 361 with a C or better; E E 493 with a C or better or concurrent enrollment; certified major in Electrical Engineering, Computer Science, or Computer Engineering. Experiments and measurements of protective relay equipment under test, simulated fault and fault conditions.
- 495 Internship in Electrical Industry** V 2-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Electrical Engineering major; by permission only. Students work full time on engineering assignments in approved industries. S, F grading.

- 496 Semiconductor Devices** 3 Course
Prerequisite: Certified major in Electrical Engineering, Computer Science, or Computer Engineering. Equilibrium statistics of electrons and holes; carrier dynamics; p-n junctions, metal-semiconductor junctions, BJTs, Mosfets, solar cells, and LEDs.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Linear System Theory** 3 Dynamic systems from the state variable approach; observability, controllability, stability, and sensitivity of differential and nondifferential systems. Cooperative: Open to UI degree-seeking students.
- 502 Linear Multivariable Control** 3 Course
Prerequisite: E E 501. Optimal linear feedback control, optimal stochastic observers, LQG/LTR design methodology, modern Wiener-Hopf design, robust controllers. Cooperative: Open to UI degree-seeking students.
- 503 Structure, Dynamics and Control of Large-scale Networks** 3 Course Prerequisite: E E 501; E E 507. Introduction and development of computational and analytical methods required to characterize large-scale networks.
- 504 Modern Optics** 3 Diffraction theory, Fourier transforming and imaging properties of lenses, spatial filtering, holography, temporal and spatial coherence, imaging through random media. Cooperative: Open to UI degree-seeking students.
- 505 Nonlinear System Theory** 3 Course
Prerequisite: E E 501. Overview of nonlinear phenomena, Lyapunov stability, input-output stability, periodic orbits, singular perturbation, differential geometric methods, bifurcations and complex behaviors.
- 507 Random Processes in Engineering** 3 Functions of random variables; random sequences; stochastic processes; mean-square stochastic calculus; ergodicity; spectral density; linear transformations, filtering, dynamic systems. Cooperative: Open to UI degree-seeking students.
- 508 Estimation Theory for Signal Processing, Communications, and Control** 3 Course
Prerequisite: E E 501; E E 507. Principles of statistical estimation; LLSE; Kalman filtering; smoothing; prediction; maximum-likelihood and Bayesian estimation.
- 509 Adaptive Control** 3 Course Prerequisite: E E 501. Model reference adaptive systems (MRAS), adaptive observers, adaptive control, on-line identification, robustness issues, self-tuning regulators.
- 511 Protection of Power Systems II** 3 Protection of electrical equipment as related to electric power systems with emphasis on digital algorithms. Cooperative: Open to UI degree-seeking students.
- 518 Advanced Electromagnetic Theory I** 3 Electromagnetic waves, electromagnetic theorems and concepts, solutions to the wave equation in rectangular, cylindrical and spherical coordinates. Cooperative: Open to UI degree-seeking students.
- 520 Plasma Engineering** 3 Electromagnetics, kinetic theory, and fluid mechanics of plasmas in space, arcs, plasma processing, coronas, and fusion reactors.
- 521 Analysis of Power Systems** 3 Concepts and practices of modern power engineering, including steady-state and dynamic analysis, economics and control design.
- 523 Power Systems Stability and Control** 3 Dynamic analysis of interconnected electric power system; modeling of synchronous generators, loads and transmission network; small-signal stability and transient stability analysis; dynamic stability controls.
- 524 Advanced Computer Architecture** 3 Instruction set architectures, pipelining and super pipelining, instruction level parallelism, superscalar and VLIW processors, cache memory, thread-level parallelism and VLSI.
- 525 Power System Applications of Power Electronics** 3 Course Prerequisite: E E 521. Power electronic converters in modern power systems, FACTS devices, HVDC, compensation; microgrids and integration renewable energy resources; modeling and control.
- 527 Antenna Theory and Design** 3 Antenna fundamentals, analytical techniques, characteristics and design procedures for selected types of wire, broadband, and aperture antennas. Cooperative: Open to UI degree-seeking students.
- 528 Advanced Topics in Electromagnetics** 3 May be repeated for credit; cumulative maximum 6 hours. Advanced topics of current interest in wave propagation (electromagnetics, acoustics, or optics).
- 530 Digital Signal Processing II** 3 Course
Prerequisite: E E 507. Frequency selective digital filtering, least-squares filtering, adaptive filtering, multirate signal processing.
- 535 Numerical Solutions to EM Problems** 3 Theory and use of finite-difference time-domain; numeric dispersion; absorbing boundary conditions; scattering; radiation; time-domain vs. frequency-domain.
- 536 Power Systems Economics and Electricity Markets** 3 Economic dispatch and optimal power flow; electricity market; short-term load forecasting; electricity price forecasting; price-based unit commitment; arbitrage in electricity markets; market power analysis.
- 545 Data Compression** 3 Course Prerequisite: E E 507. Source coding with a fidelity criterion; quantization theory; predictive, transform and subband coding; noiseless source codes.
- 548 Information Theory and Channel Coding** 3 Course Prerequisite: E E 507. Information theory; entropy, mutual information, source and channel coding theorems, channel capacity, Gaussian channels; channel coding: block and convolutional codes.
- 551 Data Communication Systems** 3 Course
Prerequisite: E E 507. Digital communications; multi-amplitude/phase signal constellations; probability of error performance; cutoff rate; Viterbi algorithm; trellis coded modulation.
- 555 Computer Communication Networks** 3 Packet switching networks; multi-access and local-area networks; delay models in data networks; routing and flow control. (Crosslisted course offered as E E 555, CPT S 555).
- 562 Fault Tolerant Computer Systems** 3 Fault tolerance aspects involved in design and evaluation of systems; methods of detection and recovery; multicast, middleware, and reconfiguration. (Crosslisted course offered as CPT S 562, E E 562).
- 571 Advanced Wireless Integrated Circuits and Systems** 3 Analysis and design methodologies of state-of-the-art wireless integrated circuits and systems.
- 576 Analog Integrated Circuits** 3 Analysis and design of analog integrated circuits in CMOS and BiCMOS technologies; current mirrors, gain stages, operational amplifiers, frequency response, and compensation.
- 581 Advanced Topics in Power Systems** V 2-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: E E 521. Power system operations including AGC, economic dispatch and security; power system dynamics; intelligent systems applications. Cooperative: Open to UI degree-seeking students.
- 582 Advanced Topics** V 1-3 May be repeated for credit.
- 586 VLSI Systems Design** 3 VLSI models, layout algorithms, design methodologies, simulation and layout tools, algorithm design for VLSI implementation.
- 587 System on Chip (SoC) Design and Test** 3 System on Chip (SoC) and sub-micron integrated circuit design and testing.
- 595 Directed Study in Electrical Engineering** V 1 (0-3) to 3 (0-9) May be repeated for credit. Current topics in electrical engineering.
- 596 Advanced Analog Integrated Circuits** 3 MOS and BiCMOS technologies; MOS and BiCMOS operational amplifiers; A/D, D/A converters; switched-capacitor filters; continuous-time filters.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

College of Engineering and Architecture

www.cea.wsu.edu
Dana Hall 146
509-335-5593

Dean, C. S. Claiborn.

The College of Engineering and Architecture offers degree programs through its School of Design and Construction, The Gene and Linda Voiland School of Chemical Engineering and Bioengineering, Department of Civil and Environmental Engineering, School of Electrical Engineering and Computer Science and School of Mechanical and Materials Engineering. These degree programs are described under each unit's separate description in the catalog. In addition, the college offers courses common to several degree program curricula and a minor that is available to all non-engineering majors at the university. The minor provides students with a background about how engineering can be applied to real-world problems.

Minors

Engineering

The College of Engineering and Architecture offers a minor in engineering. The minor in engineering requires 17 hours, 9 of which must be upper-division taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Students must complete MATH 172 and PHYSICS 201 to certify for a minor in Engineering and enrolling in any upper-division engineering courses. Courses must be selected from the following prefixes: BIO ENG, CHE, CE, ENGR, E E, ME, and MSE. With the approval of the Associate Dean for Undergraduate Programs and Student Services, up to 3 credits from the ARCH or CST M prefix may be used to fulfill a lower division course requirement for the Engineering minor. For a current list of approved courses, consult an engineering advisor or contact the Associate Dean for Undergraduate Programs and Student Services office at ceainfo@wsu.edu or 509-335-0348.

Description of Courses

ENGINEERING

ENGR

107 [QUAN] Introductory Mathematics for Engineering Applications 3 (2-3) Course

Prerequisite: MATH 101 or 103 with a grade of C or better or ALEKS math placement score of 40% or higher. Application of mathematics principles to engineering problems across engineering disciplines; concepts from trigonometry to differential equations necessary for sophomore engineering courses.

120 Innovation in Design 2 Introduction to engineering disciplines, problem solving, design teamwork and ethics.

201 Metal Fabrication 3 (1-6) Theory, applications, and practices of welding, machining, and associated techniques in fabricating with metals. (Crosslisted course offered as AGTM 201, ENGR 201).

401 Technology Ventures 3 Course Prerequisite: Junior standing. Focus on commercializing ideas, modifying existing products, exploiting market opportunities, and creating new enterprises.

420 Multidisciplinary Engineering Design I 3 (1-4) Course Prerequisite: Certified engineering major; senior standing. Needs analysis and conceptualization of technological products and business plan for target market; multidisciplinary team development. Credit not granted for both ENGR 420 and ENGR 520.

421 [M] Multidisciplinary Engineering Design II 3 (1-4) Course Prerequisite: Certified engineering major; senior standing. Prototype solution developed and evaluated and business plan completed; presentation to stake holders; team development and assessment. Credit not granted for both ENGR 421 and ENGR 521.

520 Multidisciplinary Engineering Design I 3 (1-4) Needs analysis and conceptualization of technological products and business plan for target market; multidisciplinary team development. Credit not granted for both ENGR 420 and ENGR 520.

521 [M] Multidisciplinary Engineering Design II 3 (1-4) Prototype solution developed and evaluated and business plan completed; presentation to stake holders; team development and assessment. Credit not granted for both ENGR 421 and ENGR 521.

School of Engineering and Computer Science - Vancouver

ecs.vancouver.wsu.edu
VECS 201, Vancouver Campus
360-546-9639

Director, H. Gurocak; Associate Professors, X. Chen, D. Kim, S. Solovitz, S. Wallace; Assistant Professors,

D. Chiu, T. Dang, T. Karacolak, Y. J. Kim, X. Liang, P. Sekhar, J. Xu, W. Xue, F. Zhao, X. Zhao; Clinical Associate Professors, D. Lang, J. Lynch; Clinical Assistant Professors, W. Cochran, H. Rad; Adjunct Faculty, T. Afentakis, K. Raol, A. Scheible, H. Talley, K. Wade, S. Wreggit; Instructors, S. Mocas. Academic Coordinator, E. Walla.

The School of Engineering and Computer Science (ENCS) is an academic unit of the WSU College of Engineering and Architecture that houses the engineering and computer science programs located at WSU Vancouver.

The undergraduate curricula provide students with a solid foundation upon which they can build to meet the challenges associated with their individual career paths and to adapt to rapidly changing technologies. We emphasize the fundamentals and give students significant choice in designing their academic course of study to meet their career goals. In Computer Science, students can choose from a variety of courses in areas such as intelligent systems, software and hardware systems, graphics and data-intensive computation. In Mechanical Engineering, students can customize their study through three option areas: (1) Micro/nanotechnology; (2) Design and Manufacturing; and (3) Mechatronics (robotics and automation). In addition, an interdisciplinary option area in Renewable Energy—available to CS, ECE and Mech students—incorporates elements of all three disciplines. In Electrical Engineering, students can choose upper division elective courses in computer architecture, integrated circuit design and test, electronic devices and materials, and others. Effective writing, speaking and presentation skills, and ethics are also emphasized as important attributes of our graduates.

The School of ENCS is located at Washington State University's campus in Vancouver Washington and is intended to directly serve students in the southwest Washington region. The programs were established and designed to prepare students to satisfy the needs of regional companies and organizations for engineering and computing professionals. The curricula also prepare students for continued education at the graduate level in computer science, electrical engineering, and mechanical engineering.

The School offers courses of study leading to the degrees of Bachelor of Science in Mechanical Engineering (BSME), Bachelor of Science in Computer Science (BSCS), Bachelor of Science in Electrical Engineering (BSEE), Master of Science in Mechanical Engineering (MSME) and Master of Science in Computer Science (MSCS).

COMPUTER SCIENCE PROGRAM

It is the objective of the computer science program to provide a broad education in the science and application of computing. Students are expected to gain proficiency in the design and implementation of software systems, as well as the application of the theory of computing to that process. In addition, all students will develop a background in the hardware architectures that underlie software systems and the mathematics that provide the basis for science and computing. The degree program also requires students to obtain a background in other scientific disciplines and to develop effective communication skills.

Educational Objectives

The goal of our program is to prepare our graduates for successful professional practice and advanced studies by providing a broad education in computer science and by offering the opportunity to deepen their technical understanding in particular areas of computer science through technical electives. As a graduate of the WSU Vancouver Computer Science program:

- You will be a knowledgeable and skilled computer scientist. Each graduate's knowledge will span the fundamental principles of computer science and include an understanding of several advanced specialty areas. Graduates will have practical experience with tools, languages and systems which are representative of those used by regional industries. Analytical problem solving and well-crafted software solutions will be hallmarks of our graduates.
- You will exhibit the workplace behaviors expected by employers. Employers can expect our graduates to communicate clearly, through writing and speech, to a wide range of audiences. Graduates will maintain task commitment, stay organized, and overcome obstacles. Graduates will demonstrate effectiveness as team members or as team leaders in their jobs and careers.
- You will be committed to high standards of professionalism. Graduates will embrace a professional code of ethics in their practice of computer science. They will recognize the social impact of their work and respect the intellectual property of others.
- You will adapt to the changing landscape of computer science. Effective computer scientists must regularly update their knowledge and skills. WSU Vancouver graduates augment their knowledge and develop new skills with individual study, classes and other techniques. Some graduates will pursue advanced degrees; others will take advantage of professional development opportunities.

Student Outcomes

Graduates of the WSU Vancouver Computer Science program will possess:

- An ability to apply knowledge of computing and mathematics appropriate to the discipline.
- An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
- An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
- An ability to function effectively on teams to accomplish a common goal.
- An understanding of professional, ethical, legal, security and social issues and responsibilities.
- An ability to communicate effectively with a range of audiences.
- An ability to analyze the local and global impact of computing on individuals, organizations, and society.
- Recognition of the need for and an ability to engage in continuing professional development.
- An ability to use current techniques, skills, and tools necessary for computing practice.
- An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- An ability to apply design and development principles in the construction of software systems of varying complexity.

ELECTRICAL ENGINEERING PROGRAM

Electrical Engineering is a diverse field of engineering study encompassing much of the underlying technology of our modern world. Electrical engineers lead the design of microelectronics, computers, tablets, smartphones, communication networks, control systems and power generation and distribution. Aerospace and military systems include major subsystems conceived and designed by electrical engineers.

The lower division electrical engineering curriculum covers the fundamental aspects of the field, emphasizing the theory, principles and knowledge expected of all electrical engineers. The upper division curriculum includes elective courses in topics such as computer architecture, integrated circuit design, electronic devices and materials, and others.

The curriculum incorporates extensive hands-on experiences through laboratory work and design projects. All electrical engineering students participate in a senior design project with a team of students, usually spanning multiple engineering disciplines.

Educational Objectives

The goal of the program is to prepare our graduates for successful professional practice and advanced studies by providing a broad education in electrical engineering and by offering the opportunity to deepen their technical understanding in a particular concentration area of related technical electives. Our graduates will:

- Apply technical knowledge and skills as electrical engineers to provide effective solutions in industrial and governmental organizations.
- Utilize effective communication, team, and project management skills to work productively within their professions and communities.
- Conduct themselves as responsible professionals contributing to the greater benefit of society through technology.
- Pursue professional development and/or graduate studies to meet the emerging and evolving demands and increasing responsibilities of a successful career.

Student Outcomes

Our students will have:

- Knowledge of mathematics, science, and engineering and the ability to apply this knowledge in solving problems.
- An ability to design and conduct experiments, as well as to analyze and interpret data.
- Ability to design and realize electrical and electronic components and systems to meet desired needs within realistic constraints such as economical, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
- Ability to function on multi-disciplinary teams.
- Ability to identify, formulate, and solve problems encountered in the practice of electrical engineering.
- Understanding of professional and ethical responsibility.
- Ability to communicate effectively.
- Ability to understand the impact of engineering solutions in a global, economic, environmental and societal context.
- Recognition of the need for and an ability to engage in life-long learning.

- Knowledge of contemporary issues.
- Ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.

MECHANICAL ENGINEERING PROGRAM

Mechanical Engineering provides an excellent education for today's technological world. Mechanical engineers are the backbone of the engineering profession and work in every industry—from transportation, communications, and electronics to bioengineering, commerce, and manufacturing—in business, government, and universities. Mechanical engineers work with motion, energy, and force, and they are involved with manufacturing the products they design. They develop robotic systems, design products, computer control systems for machinery, commercial jets, instruments for medicine, high performance sporting equipment, and supervise manufacturing operations.

Our undergraduate curriculum covers the fundamental aspects of the field, emphasizes basic principles and their use in solving engineering problems. The upper division course of study focuses on design, manufacturing process, robotics, computer-aided engineering, thermal and fluid systems, mechanics of materials, micro- and nano-device design and manufacturing, and machine integration and automation. The curriculum incorporates hands-on experiences through laboratory work and design projects. The program provides flexibility to students in customizing their study through four option areas:

- Micro/Nano Technology,
- Design and Manufacturing, and
- Mechatronics (robotics and automation)
- Renewable Energy

The micro/nano technology option provides education in micro device fabrication, nano-science and its impact on design of the next generation engineering systems. The design and manufacturing option emphasizes mechanical system design and realization through computer aided engineering, material failure in mechanical design, and lean manufacturing. The mechatronics option concentrates on design of mechanical systems with electronic and computer controls, automation and robotics. The interdisciplinary renewable energy option includes work in Solar Power, Wind Power, as well as enhanced coursework in other option track courses.

Educational Objectives

The goal of our program is to prepare our graduates for successful professional practice and advanced studies by providing a broad education in mechanical engineering and by offering the opportunity to deepen their technical understanding in a particular concentration area of related technical electives. Our graduates will:

- Apply technical knowledge and skills as mechanical engineers to provide optimal solutions in industrial and government organizations.
- Utilize effective communication, team, and project management skills to work productively within their professions and communities.
- Conduct themselves in a responsible, professional, and ethical manner.
- Continue their education through completion of training courses, workshops, seminars, and/or graduate studies relevant to their professional development.

Student Outcomes

Our students will have:

- Knowledge of mathematics, science and engineering and the ability to apply this knowledge in solving problems.
- An ability to design and conduct experiments as well as to analyze and interpret data.
- Ability to design and realize thermal and mechanical components, systems, or processes to meet desired needs and realistic constraints such as economical, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
- Ability to function on multidisciplinary teams.
- Ability to identify, formulate and solve problems encountered in the practice of mechanical engineering.
- Understanding of professional and ethical responsibility.
- Ability to communicate effectively.
- Ability to understand the impact of engineering solutions in a global, economic, environmental and societal context.
- Recognition of the need for and an ability to engage in life-long learning.
- Knowledge of contemporary issues.
- Ability to use the techniques, skills and modern engineering tools necessary for mechanical engineering practice.

Certification in the Major

Certification in a degree program is required by WSU prior to the granting of a baccalaureate degree. Qualification for initial certification, as well as continuation of certified status, will be evaluated based on several criteria including academic integrity, overall grade point average (gpa), and gpa in mathematics, science, and major core courses; computer science, electrical engineering, or mechanical engineering. Certification will be initiated once the required courses have been completed. Students will be notified of the decision as soon as possible following their application for certification.

When it becomes necessary to limit enrollment, the overall gpa as well as the gpa for the prerequisite courses listed, will be important factors. Students who have not completed all of the prerequisite courses will be placed in a pre-engineering or pre-computer science major. Some courses require students to be certified in their major before enrollment is allowed in those courses. Additional details regarding certification in the major are available from the School of ENCS Academic Coordinators.

Students who have completed at least 30 semester hours of course work and who have completed CS 121, CS 122, CS 216, CS 224, CS 260, CS 261; MATH 171, MATH 172; PHYSICS 201 or their equivalents are eligible for certification into the Bachelor of Science in Computer Science program. All courses required for certification must be completed with a grade of C or better. Enrollment in 400-level computer science courses is restricted to certified majors or minors in computer science and to juniors and seniors certified in other degree programs requiring 400-level computer science courses.

Students who have completed at least 30 semester hours of course work and who have completed CHEM 105; MATH 220, 273; MECH 211, 212, 215; and PHYSICS 201; or their equivalents are eligible for certification into the Bachelor of Science in

Mechanical Engineering program. All courses required for certification must be completed with a grade of C or better. Enrollment in many upper-division mechanical engineering courses is restricted to certified majors or minors in mechanical or electrical engineering.

Students who have completed at least 30 semester hours of course work and who have completed CHEM 105; CS 251; ECE 214, ECE 234, ECE 260; MATH 273; and PHYSICS 202 or their equivalents are eligible for certification into the Bachelor of Science in Electrical Engineering program. All courses required for certification must be completed with a grade of C or better. Enrollment in many upper-division electrical engineering courses is restricted to certified majors or minors in electrical or mechanical engineering.

Transfer Students

The School of Engineering and Computer Science cooperates closely with Washington community colleges to facilitate the transfer of students into its computer science, electrical engineering, and mechanical engineering programs. Students planning to transfer into the School of ENCS are strongly encouraged to contact an ENCS academic coordinator to evaluate the transfer course credits and to help plan the continuation of their academic career at Washington State University Vancouver.

Students will note that a number of the courses offered by the School of ENCS have identical course numbers and similar descriptions to courses offered by the School of Electrical Engineering and Computer Science and the School of Mechanical and Materials Engineering on the Pullman campus. The transfer of course credit between these Schools is not automatic or guaranteed. Students intending to take courses in one School for credit in another are advised to consult with the academic advisor for their degree program, in advance, to assess how the courses may fulfill their degree requirements.

Preparation for Graduate Study

The Master of Science in Computer Science program in the School of ENCS is a thesis program and requires 30 credit hours, including 21 hours of graded course work and 9 credits of thesis research (CS 700). The coursework and research are in the general areas of software engineering, artificial intelligence, computer networks, database systems, and computer graphics. Sophisticated facilities are available for instruction and research, including a high performance computing cluster and dedicated high-bandwidth network facilities. Teaching and research assistantships are available for qualified students.

Before undertaking graduate study in computer science, the student should have completed a baccalaureate degree substantially similar to the BSCS degree described below in the BSCS schedule of studies. Students from other academic disciplines are encouraged to apply, however such students will be required to take or have taken the equivalent of the following courses: CS 317, CS 360 and CS 450, including all prerequisites for these courses. An undergraduate grade point average of 3.0 is a minimum for admission to the MS program.

The Master of Science in Mechanical Engineering program in the School of ENCS is a thesis program and requires a minimum of 30 credit hours. This includes 21 hours of graded coursework beyond

the bachelor's degree, plus a minimum of 4 thesis credits. The coursework and research are in the general areas of dynamics, robotics, solid mechanics, manufacturing and design, fluid dynamics, heat and mass transfer and micro and nanotechnology. Our laboratories are equipped with state-of-the-art equipment worth more than \$6 million. Teaching and research assistantships are available for qualified students.

A Bachelor of Science degree from an accredited program in mechanical engineering provides a good background for the MSME graduate program. Students with bachelor degrees in other engineering disciplines, mathematics, and the physical sciences may be admitted, but will be required to make up requisite undergraduate deficiencies. An undergraduate grade point average of 3.0 is a minimum for admission to the MS program.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

BACHELOR OF SCIENCE, COMPUTER SCIENCE REQUIREMENTS (VANCOUVER ONLY) (123 HOURS)

Students who have completed at least 30 semester hours of course work and who have completed CS 121, CS 122, CS 216, CS 224, CS 260, CS 261, MATH 171, MATH 172, and PHYSICS 201, or their equivalents, are eligible for certification into the Bachelor of Science in Computer Science program. All courses required for certification must be completed with a grade of C or better. Enrollment in 400-level computer science courses is restricted to certified majors or minors in computer science and to juniors and seniors certified in other degree programs requiring 400-level computer science courses, with the exception of CS 402.

No courses listed in this schedule of studies may be taken on a pass/fail basis. All listed computer science courses, and their prerequisites, must be completed with a grade of C or better.

First Year

<i>First Term</i>	<i>Hours</i>
CS 121	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
CS 122	4
CS 216	3
Humanities [HUM]	3
MATH 172	4

Second Year

<i>First Term</i>	<i>Hours</i>
CS 223	3
CS 260	3
ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 273	2
PHYSICS 201 [PSCI]	4

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab	4
CS 224	3
CS 261	3
MATH 220	2
PHYSICS 202	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
CS 317	3
CS 320 [M]	3
CS Option Course ¹	3
ENGLISH 402 [WRTG] ²	3
STAT 360	3

<i>Second Term</i>	<i>Hours</i>
CS 351	3
CS 355	3
CS 360	4
CS Option Course ¹	3
Diversity [DIVR]	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
CS 450	3
CS 460	3
CS Option Course ¹	6

<i>Second Term</i>	<i>Hours</i>
CS 402 [M]	3
CS 420 [CAPS]	3
CS Option Courses ¹	9

¹ 21 credit hours of option area courses are required for completion of the degree program. The option courses are chosen from upper-division computer science and related courses and must be pre-approved by a faculty advisor.

² If approved, ENGLISH 403 may fulfill the UCORE Communication [COMM] or Written Communication [WRTG] requirement.

BACHELOR OF SCIENCE, ELECTRICAL ENGINEERING REQUIREMENTS (VANCOUVER ONLY) (124 HOURS)

Students who have completed at least 30 semester hours of course work and who have completed CHEM 105; CS 251; ECE 214, ECE 234, ECE 260, MATH 273, and PHYSICS 202, or their equivalents, are eligible for certification into the Bachelor of Science in Electrical Engineering program. All courses required for certification must be completed with a grade of C or better. Enrollment in many upper-division electrical engineering courses is restricted to certified majors or minors in electrical or mechanical engineering. No courses listed in this schedule of studies may be taken on a pass/fail basis. All upper-division electrical engineering courses must be completed with a minimum 2.0 average gpa.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
ECE 101	2

ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
CS 251	4
ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 172	4
PHYSICS 201 [PSCI]	4

Second Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI]	3 or 4
ECE 214	3
MATH 220	2
MATH 273	2
PHYSICS 202	4

<i>Second Term</i>	<i>Hours</i>
ECE 234	3
ECE 260	4
ECE Elective ¹	3
Humanities [HUM]	3
MATH 315	3

Third Year

<i>First Term</i>	<i>Hours</i>
ECE 321	3
ECE 325	4
ECE Elective ¹	3
ENGLISH 402 [WRTG] ²	3
STAT 360	3

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
ECE 341	3
ECE 370	3
ECE Electives ¹	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
ECE 405 [M] or CS 402 [M]	3
ECE 451	2
ECE Electives ¹	9

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
ECE 411	3
ECE 452 [M] [CAPS]	3
ECE Electives ¹	6

¹ Please see department for an approved list of elective courses. The electives are chosen from upper-division electrical engineering and related courses and must be pre-approved by a faculty advisor.

² If approved, ENGLISH 403 may fulfill the UCORE Communication [COMM] or Written Communication [WRTG] requirement.

BACHELOR OF SCIENCE, MECHANICAL ENGINEERING REQUIREMENTS (VANCOUVER ONLY) (121 HOURS)

Students who have completed at least 30 semester hours of course work and who have completed Chem 105; Math 220, 273; Mech 211, 212, 215;

and Phys 201 or their equivalents are eligible for certification into the Bachelor of Science in Mechanical Engineering program. All courses required for certification must be completed with a grade of C or better.

Enrollment in many upper-division mechanical engineering courses is restricted to certified majors or minors in mechanical engineering.

No courses listed in this schedule of studies may be taken on a pass/fail basis. All upper-division mechanical engineering courses must be completed with a minimum 2.0 average gpa.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 171 [QUAN]	4
MECH 101	2

<i>Second Term</i>	<i>Hours</i>
CHEM 106	4
Creative & Professional Arts [ARTS]	3
ENGLISH 101 [WRTG]	3
MATH 172	4
MECH 103	2

Second Year

<i>First Term</i>	<i>Hours</i>
ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 220	2
MATH 273	2
MECH 211	3
MECH 251	2
PHYSICS 201 [PSCI]	4

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI]	3 or 4
MATH 315	3
MECH 212	3
MECH 215	3
PHYSICS 202	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
MECH 301	3
MECH 303	3
MECH 304	3
MECH 309	3
MECH 314 [M]	3

<i>Second Term</i>	<i>Hours</i>
ENGLISH 402 [WRTG] ¹	3
MECH 310	4
MECH 348	3
MECH 404	3
400-level MECH Option Course ²	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
MECH 402	3
MECH 414	3
MECH 416	2
400-level MECH Option Course ²	3
400-level MECH Technical Elective ²	3

Second Term	Hours
Diversity [DIVR]	3
MECH 417 [CAPS]	3
400-level MECH Option Course ¹	3
400-level MECH Technical Elective ¹	3

¹ If approved, ENGLISH 403 may fulfill the UCORE Communication [COMM] or Written Communication [WRTG] requirement.

² The program emphasizes fundamentals and provides flexibility in selecting a course of study through five technical electives. Students can either take any five elective courses, provided they meet the prerequisites, or they can choose to take a set of related electives comprising an option area and additional electives of their choice. Students are required to work with their faculty advisor to develop their schedule of studies as they are admitted to the program at the junior level. The following are the technical elective courses and option areas: (Option 1) Micro and Nanotechnology: MECH 431, 438, 450; (Option 2) Design and Manufacturing: MECH 476, 485, 489; (Option 3) Mechatronics: MECH 405, 467, 468.; (Option 4) Renewable Energy: MECH 441, ECE 421, choice of two courses from MECH 405, 468, 431, and 450.

Minors

Computer Science

The minor in computer science consists of 20 credit hours that must include CS 121, 122, 223 and three 300-400 level CS courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses., excluding CS 402. All prerequisites for minor courses must be met. All courses must be completed with a grade of C or better. The minor course of study must be pre-approved by the computer science academic coordinator.

Mechanical Engineering

A mechanical engineering minor requires a minimum of 16 semester hours, 9 of which must be in upper-division course work and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. This minor requires (1) MECH 211 and 212, (2) Four out of the following MECH 431, 438, 450, 467, 468, 441, 309, 314, 215, 303, or 348. At least one of these four courses must be MECH 215, 303, or 348. All prerequisites for minor courses must be met. All courses must be completed with a minimum 2.0 average gpa.

Description of Courses

COMPUTER SCIENCE - VANCOUVER

Enrollment in 400-level computer science courses is restricted to certified majors or minors in computer science and to juniors and seniors officially certified in other degree programs requiring these computer science courses.

CS

121 Program Design and Development 4 (3-3) Course Prerequisite: MATH 106 with a C or better, MATH 107 with a C or better, MATH 171 with a C or better, MATH 172 with a C or better, or ALEKS math placement score of 50% or better. Formulation of problems and top-down design of programs in a modern structured language for their solution on a digital computer.

122 Data Structures 4 (3-3) Course Prerequisite: CS 121 with a C or better, or CS 251 with a C or better. Advanced programming techniques: data structures, recursion, sorting and searching, and basics of algorithm analysis.

216 Discrete Structures 3 Course Prerequisite: MATH 107 with a C or better, MATH 108 with a C or better, or MATH 140, 171, 172, 182, or 202. Discrete mathematics, trees, graphs, elementary logic, and combinatorics with application to computer science. (Crosslisted course offered as MATH 216, CS 216). Recommended preparation: Programming course.

223 Advanced Data Structures 3 Course Prerequisite: CS 122 with a C or better; CS 216 with a C or better. Advanced data structures, object oriented programming concepts, concurrency, and program design principles.

224 Programming Tools 3 Course Prerequisite: CS 122 with a C or better. Debugging tools, scripting languages, UNIX programming tools, introduction to graphical user interface programming.

251 C Programming for Engineers 4 (3-3) Course Prerequisite: MATH 171 with a C or better or concurrent enrollment. Introduction to the C programming language and application to engineering problem solving; introduction to data structures, sorting and searching; laboratory use of integrated development environments and debugging tools.

260 Computer Organization 3 Course Prerequisite: CS 122 with a C or better. Introduction to computer architecture, data representation, design and analysis of instruction sets, implementation of machine instructions, virtual memory and multiprocessing.

261 C and Assembly Language Programming 3 Course Prerequisite: CS 260 with a C or better. C language concepts, professional practices and C programming; module linkage; assembly language concepts and programming.

317 Automata and Formal Languages 3 Course Prerequisite: CS 122 with a C or better; CS 216 with a C or better. Finite automata, regular sets, pushdown automata, context-free language, Turing machines and the halting problem.

320 [M] Fundamentals of Software Engineering 3 Course Prerequisite: CS 224 with a C or better; CS 216 with a C or better; ENGLISH 402 with a C or better or concurrent enrollment. Introduction to software engineering; requirements analysis, definition and specification; software process models; prototyping; architecture; object-oriented design with UML.

330 Numerical Computing 3 Course Prerequisite: CS 251 with a C or better, or CS 261 with a C or better; MATH 172 or 182 with a C or better; MATH 220 with a C or better. Power and limitation of numerical solutions; design, analysis and implementation of numerical algorithms; visualization and rendering.

351 Introduction to Database Systems 3 Course Prerequisite: CS 223 with a C or better; CS 224 with a C or better. Introduction to database concepts, data models, database languages, database design, implementation issues.

355 Programming Language Design 3 Course Prerequisite: CS 223 with a C or better; CS 224 with a C or better. Design concepts of high-level programming languages; survey of existing languages, experience using some languages.

360 Systems Programming 4 (3-3) Course Prerequisite: CS 224 with a C or better; CS 261 with a C or better. Implementation of systems programs, concepts of computer operating systems; laboratory experience in using operating system facilities.

402 [M] Social and Professional Issues in Computer Science 3 Course Prerequisite: ENGLISH 402 or 403; certified major in Computer Science or Electrical Engineering. Social, legal, ethical and professional issues that arise in the context of computing.

420 [CAPS] Software Engineering in Practice 3 Course Prerequisite: CS 320 with a C or better; CS 360 with a C or better; senior standing. Development of software in a team environment; project management; unit and integration testing, bug tracking, configuration management, software process models; object-oriented design with UML.

425 Digital Forensics 3 Course Prerequisite: CS 360 with a C or better. Use of computers in the investigation of criminal and civil incidents in which computers or computer technology play a significant or interesting role.

427 Computer Security 3 Course Prerequisite: CS 216 with a C or better; CS 360 with a C or better. Computer security concepts, models and mechanism; encryption technology, formal models, policy and ethical implications. Credit not granted for both CS 427 and CS 527.

440 Artificial Intelligence 3 Course Prerequisite: CS 320 with a C or better; STAT 360 with a C or better or MATH 212 with a C or better. Knowledge representation and automated problem solving; theory and application of agent programming.

442 Computer Graphics 3 Course Prerequisite: CS 223 with a C or better; CS 320 with a C or better; MATH 220 with a C or better. Raster operations; transformations and viewing; geometric modeling; visibility and shading; color. Credit not granted for both CS 442 and CS 542.

443 Human-Computer Interaction 3 Course Prerequisite: Junior standing. Introduction to the field of human-computer interaction; understanding the system user; user-centered design and evaluation techniques including heuristic evaluation and usability testing.

447 Computer Game Design 3 Course Prerequisite: CS 223 with a C or better; CS 320 with a C or better. Design and implementation of computer games. Credit not granted for both CS 447 and CS 547.

450 Design and Analysis of Algorithms 3

Course Prerequisite: CS 223 with a C or better; STAT 360 with a C or better. Analysis of data structures and algorithms; computational complexity and design of efficient data-handling procedures.

452 Compiler Design 3

Course Prerequisite: CS 317 with a C or better; CS 355 with a C or better. Design of lexical analyzers, syntactic analyzers, intermediate code generators, code optimizers and object code generators.

453 Web Data Management 3

Course Prerequisite: CS 351 with a C or better. Introduction of concepts, data models, query and retrieval languages; implementation issues for management of web data.

455 Introduction to Computer Networks 3

Course Prerequisite: CS 360 with a C or better. Concepts and implementation of computer networks; architectures, protocol layers, internetworking and addressing case studies.

458 Mobile Application Development 3

Course Prerequisite: CS 360 with a C or better. Design and development of mobile applications; introduction to mobile application frameworks, including user interface, sensors, event handling, data management and network communication.

460 Operating Systems 3

Course Prerequisite: CS 360 with a C or better. Role and purpose of operating systems, process and memory management, I/O device management and drivers, file system concepts and design.

466 Embedded Systems 3 (2-3)

Course Prerequisite: CS 360 with a C or better, or ECE 370 with a C or better; senior standing. Design and development of real-time and dedicated software systems with an introduction to sensors and actuators. Credit not granted for both CS 466 and CS 566.

483 Topics in Computer Science V 1-4

May be repeated for credit. Course Prerequisite: Certified major in Computer Science. Current topics in computer science or software engineering.

499 Special Problems V 1-4

May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

516 Theory of Computation 3

Discrete structures, automata, formal languages, recursive functions, algorithms, computability, and complexity. Required preparation must include a strong background in discrete mathematics, automata, and formal languages.

518 Advanced Analysis of Algorithms 3

Advanced Study in design and analysis of algorithms, including randomized and approximation algorithms, linear programming, network flow and string matching.

521 Software Engineering Analysis 3

Research in software engineering; application of quantitative techniques in the software life cycle; current software engineering literature; exploration of techniques of mathematical modeling and solutions to software engineering problems. Required preparation must include a familiarity with the use and theory behind current software engineering practices.

527 Computer Security 3

Computer security concepts, models and mechanism; encryption technology, formal models, policy and ethical implications. Credit not granted for both CS 427 and CS 527.

541 Artificial Intelligence 3

Intelligent computer programs; simulation of cognitive processes. Required preparation must include prior knowledge and experience in artificial intelligence.

542 Computer Graphics 3

Raster operations; transformations and viewing; geometric modeling; visibility and shading; color. Credit not granted for both CS 442 and CS 542.

547 Computer Game Design 3

Design and implementation of computer games. Credit not granted for both CS 447 and CS 547.

548 Advanced Computer Graphics 3

Solid modeling, visual realism, light and color models, advanced surface generation techniques. Required preparation must include a prior knowledge and understanding of linear algebra and the graphics pipeline.

558 Wireless Sensor Networks 3

Design and implementation of sensor networks. Required preparation must include a prior knowledge and understanding of communication protocols such as TCP/IP and experience in network programming.

566 Embedded Systems 3 (2-3)

Design and development of real-time and dedicated software systems with an introduction to sensors and actuators. Credit not granted for both CS 466 and CS 566.

570 Machine Learning 3

Introduction to building computer systems that learn from their experience; classification and regression problems; unsupervised and reinforcement learning.

580 Advanced Topics in Computer Science 3

May be repeated for credit.

595 Directed Study in Computer Science V

1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 3 hours. Current topics in computer science.

700 Master's Research, Thesis, and/or Examination V 1-18

May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

ELECTRICAL ENGINEERING - VANCOUVER

Enrollment in many upper-level electrical engineering courses is restricted to certified majors or minors in electrical engineering.

ECE**101 Introduction to Electrical Engineering 2**

(1-3) Course Prerequisite: MATH 106 or concurrent enrollment. Introduction to the field of electrical engineering and the fundamental concepts behind electronic devices and systems.

214 Design of Logic Circuits 3 (2-3)

Course Prerequisite: ECE 101; MATH 106. Design and application of combinational logic circuits with exposure to modern methods and design tools; introduction to sequential logic circuits.

234 Microprocessor Systems 3 (2-3)

Course Prerequisite: CS 251 or CS 261; ECE 214. Microprocessor system architecture, instruction sets and interfacing; assembly language programming.

260 Circuit Modeling and Analysis I 4 (3-3)

Course Prerequisite: ECE 101; MATH 315 or concurrent enrollment. Circuit modeling, analysis, component models, theory and simulation tools; application of network theory to solve linear and nonlinear circuits under static and dynamic operation.

295 Digital Communications I 3

Course Prerequisite: ECE 214; ECE 260 or concurrent enrollment. Hardware and protocols for digital communications systems; Ethernet, ATM, physical and media access layer; encoding and modulation techniques.

302 Properties of Electronic Materials 3

Course Prerequisite: CHEM 105; PHYS 202. Schrodinger's wave equation, potential barrier problems, crystal structure and bonds, band theory of solids, semiconductors, super conductor, dielectric and magnetic material properties.

316 Nanotechnology for Semiconductor and Renewable Energy Applications 3

Course Prerequisite: CHEM 105; PHYSICS 202. Scaling laws, nanofabrication, nanomaterials, nanoscale characterization; nanotechnology in semiconductor industry, critical dimension, solar cells, fuel cells, energy storage, batteries, energy efficiency and energy savings.

321 Circuit Modeling and Analysis II 3

Course Prerequisite: ECE 260; MATH 315. Laplace transforms, Fourier analysis, state space analysis, two port networks.

324 Digital Systems Design 3 (2-3)

Course Prerequisite: ECE 214. Implementation of datapaths and controllers, use of hardware description languages and automated synthesis tools, field programmable gate arrays and simulation; integrated circuit layout.

325 Electronic Devices and Applications 4

(3-3) Course Prerequisite: ECE 214; ECE 260. MOS small and large signal models, bipolar transistors, biasing and parasitics, amplifier design and feedback, frequency response; circuit simulation and device models.

- 341 Signals and Systems 3** Course Prerequisite: ECE 321; MATH 315. Discrete and continuous systems, sampling, convolution, Fourier and Z transforms, modulation; introduction to distributed parameter systems.
- 345 Digital Communications II 3** Course Prerequisite: ECE 295; STAT 360 or concurrent enrollment. Digitally modulated signals and their spectral characteristics, modulation/demodulation techniques, coherent/non-coherent detection methods; source and channel coding, spread-spectrum and multiple access techniques.
- 349 Principles of Solid State Devices 3** Course Prerequisite: ECE 325 or concurrent enrollment; CHEM 105; PHYSICS 202. Semiconductor theory; carrier diffusion and drift, direct and indirect energy materials, homo and heterojunctions, operations principles of bipolar junctions and MOS field effect transistors, metal-semiconductor contacts.
- 366 Introduction to VLSI Design 3 (2-3)** Course Prerequisite: ECE 214; ECE 349. CMOS devices and deep-submicron fabrication technology; interconnect modeling, power and clock distribution, area, power and speed optimization.
- 370 Electromagnetic Fields and Waves 3** Course Prerequisite: ECE 260; MATH 315. Electrostatic and magnetostatic fields; Faraday's laws, Maxwell's equations, electromagnetic properties of matter, uniform plane waves and transmission lines.
- 405 [M] Professional Issues and Ethics in Electrical Engineering 3** Course Prerequisite: ENGLISH 402; certified major in Electrical Engineering. Social, legal and professional issues that arise in the context of electrical engineering.
- 411 Energy Systems 3 (2-3)** Course Prerequisite: ECE 321. Investigation and analysis of the design, tradeoffs and efficiency of conventional and alternative energy sources; energy transmission, storage and conversion systems.
- 414 Introduction to Digital Signal Processing 3 (2-3)** Course Prerequisite: ECE 341. Discrete and fast Fourier Transforms, Z-Transform, sampling, discrete convolution, digital filter design and effects of quantization.
- 421 Microsystems in Renewable Energy 3 (2-3)** Course Prerequisite: PHYSICS 202. Materials, structures, and devices used in renewable energy systems with the focus on solar cells.
- 424 Computer Architecture and Design 3** Course Prerequisite: ECE 234. Architecture, organization and design of modern digital computers; instruction sets, computer arithmetic, pipelining, memory hierarchy, storage and input/output topics.
- 425 RF Devices and Circuits 3 (2-3)** Course Prerequisite: ECE 341; ECE 370. Semiconductor devices and circuit design targeting wireless applications.
- 451 Capstone Design I 2** Course Prerequisite: ECE 325; ENGLISH 402; senior standing; certified major in Electrical Engineering. First of a two-course senior design project sequence; design for manufacture, schedule estimation and tracking, costing, ethics and proposal writing.
- 452 [CAPS] [M] Capstone Design II 3** Course Prerequisite: ECE 451; senior standing. Execution phase of the senior design project course sequence; independent or team project proposed in ECE 451 is designed and implemented.
- 466 Semiconductor Material and Device Characterization 3** Course Prerequisite: ECE 349. Modern semiconductor material and device characterization techniques; electrical, optical, and physical characterization methods commonly used in semiconductor industry.
- 471 Antenna Design and Analysis 3 (2-3)** Course Prerequisite: ECE 370. Antenna types and radiation, wire antennas, antenna arrays broadband and aperture antennas; theory and simulation of antenna performance, laboratory testing and measurement.
- 475 Electro-optical Devices and Systems 3** Course Prerequisite: ECE 370; STAT 360. Electromagnetic reflection and refraction, waveguide theory; theory and application of optical source and sensor devices; coupling, dispersion and loss in waveguides and optical fiber.
- 476 Computer-aided Design for VLSI 3 (2-3)** Course Prerequisite: ECE 324; ECE 366. Algorithms and design flows for VLSI design synthesis and verification.
- 477 VLSI Testing and Design for Test 3 (2-3)** Course Prerequisite: ECE 324; ECE 366. Test pattern generation for digital devices, controllability and observability; tester characteristics and capabilities; fault modeling and analysis of test coverage; built-in self-test techniques.
- 483 Topics in Electrical Engineering V 1-4** May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Junior standing; certified major in Electrical Engineering. Current topics in electrical engineering.
- 486 Solid State Device Design and Modeling 3 (2-3)** Course Prerequisite: ECE 349 or concurrent enrollment, or MECH 431. Cross-sectional design of CMOS devices; simulation and optimization of device design using CAD tools for process integration; devicemodel extraction for circuit simulation and parametric testing.
- 495 Wireless and Mobile Communications Systems 3 (2-3)** Course Prerequisite: ECE 345; ECE 414; ECE 425. Wireless communication emphasizing cellular and multiple access communication; RF environment, duplexing and multiple access, cellular, mobile systems, standards and applications; wireless ad hoc networks.
- 496 Silicon Integrated Circuit Design Technology 3 (2-3)** Course Prerequisite: ECE 349. Hands-on experience in design, fabrication, characterization, and testing of monolithic silicon devices and integrated circuits; completion of a design project.
- 499 Special Problems V 1-4** May be repeated for credit. Course Prerequisite: By permission only. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

MECHANICAL ENGINEERING - VANCOUVER

Enrollment in many upper-level mechanical engineering courses is restricted to certified majors or minors in mechanical engineering.

MECH

101 Introduction to Mechanical Engineering 2 Introduction to mechanical engineering profession, engineering problem solving, computers in engineering design methods.

103 Engineering Graphics 2 (1-3) Orthographic theory, conventions, and visualization; isometric and oblique pictorials; geometric dimensioning and tolerancing, computer-aided drafting and solid modeling.

211 Statics 3 Course Prerequisite: MATH 172 or 182 or concurrent enrollment; PHYSICS 201 or concurrent enrollment. Static equilibrium analysis of particles and rigid bodies, free-body diagrams, moment diagrams, friction, center of gravity, moments of inertia.

212 Dynamics 3 Course Prerequisite: MECH 211. Kinematics and kinetics of particles and rigid bodies; Newton's second law of motion; work-energy concept; impulse and momentum.

215 Mechanics of Materials 3 Course Prerequisite: MECH 211. Concepts of stress, strain, and their relationships; axial, torsion, bending, and combined stresses; properties of materials; columns and strain energy method.

251 Numerical Computing for Engineers 2 Course Prerequisite: MATH 172 or 182; MATH 220 or concurrent enrollment. Introduction to numerical computing in the context of problem solving including data analysis, data visualization, MATLAB programming and numerical techniques.

301 Thermodynamics 3 Course Prerequisite: PHYSICS 201. Thermodynamic properties of matter, ideal and real gases, work and heat, first and second laws and their application to engineering systems.

303 Fluid Mechanics 3 Course Prerequisite: MECH 212. Physical properties, fluid statics, laminar and turbulent flow, impulse and momentum, similitude, pipe flow, boundary layers, lift, drag and measurement techniques, fluid experimentations. Recommended preparation: MATH 315.

- 304 Instrumentation and Measurement 3** (2-3) Course Prerequisite: MATH 315 or concurrent enrollment; PHYSICS 202. Introduction to DC and AC circuits, analog electronic components, digital circuits, computer data acquisition and engineering measurements.
- 309 Introduction of Engineering Materials 3** (2-3) Course Prerequisite: MECH 215; CHEM 105 or concurrent enrollment; PHYSICS 201 or concurrent enrollment. Structure of materials, phase equilibrium, phase transformations, mechanical failure, and mechanical properties; materials testing laboratory.
- 310 Introduction to Design and Manufacturing 4** (3-3) Course Prerequisite: MECH 103; MECH 309; Certified major in Mechanical Engineering. Basic mechanical engineering drawing; shaping and non-shaping manufacturing processes; exposure to 3D-CAD; manufacturing processes laboratory.
- 314 [M] Design Process 3** Course Prerequisite: MECH 215. Design process, design projects, engineering economics, and ergonomics; extensive use of CAD.
- 348 Dynamics Systems and Control 3** Course Prerequisite: MECH 212; MECH 251; MATH 315; certified major in Mechanical Engineering. Modeling and analysis of dynamic systems, including mechanical, electrical, fluid, and thermal systems. Fundamentals of vibration analysis, control systems.
- 402 Thermal Systems Design 3** (1-6) Course Prerequisite: MECH 404. Design and analysis of thermal-fluid systems using principles of thermodynamics, fluid mechanics, and heat transfer, thermal experimentations.
- 404 Heat Transfer 3** Course Prerequisite: MATH 220; MATH 315; MECH 301; MECH 303; Certified major in Mechanical Engineering. Fundamentals of conduction, convection, and radiation heat transfer; analytical, numerical, and empirical modeling for solids, liquids, and gases.
- 405 Introduction to Microcontrollers 3** Course Prerequisite: MECH 304. Microcontroller architecture, microcontroller programming, mechanical system design with embedded microcontrollers.
- 414 Machine Design 3** Course Prerequisite: MECH 215; MECH 309; MECH 314; Certified major in Mechanical Engineering. Combined stresses, static and fatigue failure theory and analysis, design and selection of machine elements such as shafts, fasteners, springs, gears and bearings.
- 416 [M] Mechanical Systems Design I 2** Course Prerequisite: MECH 310; MECH 404; MECH 414 or concurrent enrollment. First term of the year-long capstone design; integrative design in mechanical engineering; multidisciplinary design project considering technical and nontechnical contexts.
- 417 [CAPS] Mechanical Systems Design II 3** Course Prerequisite: MECH 416; junior standing. Second term of the year-long capstone design; integrative design in mechanical engineering; multidisciplinary design project considering technical and nontechnical contexts.
- 431 Semiconductor Devices 3** Course Prerequisite: CHEM 105; PHYSICS 202. Crystal properties, energy bands, semiconductor charge carriers, p-n junctions, field-effect transistors, bipolar junction transistors, optoelectronic devices, integrated circuits.
- 438 Microfabrication Technology 3** Course Prerequisite: CHEM 105; MATH 315; PHYSICS 202. Microelectronic fabrication technology, semiconductor material, diffusion, thermal oxidation, ion implantation, lithography, etching, thin film deposition, CMOS integration and MEMS. Credit not granted for both MECH 438 and MECH 538.
- 441 Fundamentals of Renewable Energy 3** Course Prerequisite: PHYSICS 202; MATH 273. An examination of the fundamentals and the impact of renewable energy technology, including wind, solar, hydroelectricity, and alternate fuels.
- 442 Advanced Thermal Systems 3** Course Prerequisite: MECH 404. Analysis and design of advanced thermal systems at macro, mini and micro scales; applied design software packages; design projects. Credit not granted for both MECH 442 and MECH 542.
- 450 Advanced Topics in Micro and Nano Technology 3** (2-3) Course Prerequisite: CHEM 106; PHYSICS 202. Microfabrication technology, bulk and surface micromachining, sensors and actuators, microelectromechanical systems (MEMS), nanofabrication technology, micro/nano scale material and device measurements. Credit not granted for both MECH 450 and MECH 550.
- 467 Automation 3** (2-3) Course Prerequisite: MECH 304 or ECE 260; MECH 348. Automation systems, discrete event control using programmable logic controllers (PLC), robot programming, process control. Credit not granted for both MECH 467 and MECH 567.
- 468 Robotics 3** Course Prerequisite: MECH 304 or ECE 260; MECH 348. Industrial robots, kinematics, control, robot programming, interfacing, sensors, actuators, vision systems and mobile robots. Credit not granted for both MECH 468 and MECH 568.
- 476 Advanced Manufacturing Engineering 3** Course Prerequisite: MECH 310. Advanced topics in manufacturing processes, including interrelationships between the properties of the material, the manufacturing process and design of components. Credit not granted for both MECH 476 and MECH 576.
- 483 Topics in Mechanical Engineering V 1-4** Current topics in Mechanical Engineering.
- 485 Computer-aided Engineering 3** Course Prerequisite: MECH 215; MECH 310 or concurrent enrollment. Introduction to the use of finite element techniques in engineering product design and analysis; basic concepts and applications in CAE.
- 489 Material Failure in Mechanical Design 3** Course Prerequisite: MECH 215; MECH 309. Analysis, design and prevention from failure of materials in mechanical design; mechanical behavior of materials such as fatigue, fracture and wear. Credit not granted for both MECH 489 and MECH 589.
- 499 Special Problems V 1-4** May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 509 MEMS Engineering 3** (2-3) Introduction to the design, fabrication and application of microelectromechanical systems.
- 515 Advanced Heat Transfer 3** Energy conservation equations; forced convection with internal and external flow, free convection, boiling and condensation, mass transfer, numerical methods.
- 516 Micro/Nanoscale Thermal Engineering 3** Fundamentals and applications of micro/nanoscale thermal science and engineering.
- 521 Fundamentals of Fluids I 3** Mass and momentum conservation equations, Navier-Stokes equations, compressible flows, inviscid-potential flows, advanced viscous flows including boundary layer numerical methods.
- 529 Experimental Methods for Mechanical Engineering Research 3** Research methods for mechanical engineers, including experimental design, techniques, analysis, and presentation.
- 532 Finite Elements 3** Theory of finite elements; applications to general engineering systems considered as assemblages of discrete elements.
- 538 Microfabrication Technology 3** Microelectronic fabrication technology, semiconductor material, diffusion, thermal oxidation, ion implantation, lithography, etching, thin film deposition, CMOS integration and MEMS. Credit not granted for both MECH 438 and MECH 538.
- 540 Advanced Dynamics 3** Newtonian dynamics, rotating coordinate systems; Lagrangian and Hamiltonian mechanics, gyroscopic mechanics, other applications.
- 542 Advanced Thermal Systems 3** Analysis and design of advanced thermal systems at macro, mini and micro scales; applied design software packages; design projects. Credit not granted for both MECH 442 and MECH 542.
- 550 Advanced Topics in Micro and Nano Technology 3** (2-3) Microfabrication technology, bulk and surface micromachining, sensors and actuators, microelectromechanical systems (MEMS), nanofabrication technology, micro/nano scale material and device measurements. Credit not granted for both MECH 450 and MECH 550.

567 Automation 3 (2-3) Automation systems, discrete event control using programmable logic controllers (PLC), robot programming, process control. Credit not granted for both MECH 467 and MECH 567.

568 Robotics 3 Industrial robots, kinematics, control, robot programming, interfacing, sensors, actuators, vision systems and mobile robots. Credit not granted for both MECH 468 and MECH 568.

576 Advanced Manufacturing Engineering 3 Advanced topics in manufacturing processes, including interrelationships between the properties of the material, the manufacturing process and design of components. Credit not granted for both MECH 476 and MECH 576.

579 Advanced Topics in Design and Manufacturing V 1-3 May be repeated for credit.

585 Computer-aided Engineering 3 Introduction to the use of finite element techniques in engineering product design and analysis; basic concepts and applications in CAE.

589 Material Failure in Mechanical Design 3 Analysis, design and prevention from failure of materials in mechanical design; mechanical behavior of materials such as fatigue, fracture and wear. Credit not granted for both MECH 489 and MECH 589.

598 Seminar 1 May be repeated for credit. Current research interests. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

The Engineering and Technology Management Program

etm.wsu.edu
ETRL 336
509-335-0125

Program Director, J. A. Ringo; Teaching Faculty, W. J. Gray, J. R. Holt, L. Magpili, H. A. Rumsey; Adjunct Instructors; R. Crick, D. Paulus, C. Seidelsen, G. Sudikatus.

Engineering and Technology Management is a graduate program designed to help technical professionals become effective managers. The program is administered by the College of Engineering and Architecture and offered through WSU Global Campus. Management training is integrated with upgraded technical skills to meet industry needs for the management of technology and the management of technical professionals. The program provides an integrated education in technical decision-making and leadership

for industry employees and allows business and engineering employees to learn together in common courses. Students bring a significant amount of experience and diversity into the academic arena from a variety of engineering, technology, and management backgrounds. The program is also offering a specialization in construction management in conjunction with WSU's School of Design and Construction Management.

This interdisciplinary master's degree is offered to individuals, industries and high-tech firms around the country and around the world using a web conferencing classroom system. Classes are offered at times convenient for the working professional. Each ETM course lecture is broadcast over the Internet giving students real-time, full service videoconferencing capability and the ability to interact with all students in the class. Students can participate in class discussions through audio, video, and text chat. Spontaneous file sharing is also possible. This software is also used for student presentations and virtual meetings for team projects. Each class is archived and is available for review during the entire semester. Visit <http://support.blackboardcollaborate.com> to verify that individual computer hardware and network are compatible with Blackboard Collaborate. Courses are presented and managed using Angel, a web-enabled course hosting platform.

The ETM program also offers the following eight graduate level certificates: A newly developed certificate in Facilities Management which focuses on construction Management; Six Sigma Quality Management; Project Management; Manufacturing Leadership; Constraints Management; Logistics and Supply Chain Management; Systems Engineering Management; and Construction Project Management.

Program Requirements

The master's program is a nonthesis degree which consists of 32-34 credit hours including a minimum of 30 credit hours of approved graded course work (10 classes) and 2-4 credit hours of Master's Special Problems. There is both a project and an exam option. The program of studies leads to a Master of Engineering and Technology Management degree. Core Requirements allow students to choose one course from each of the six core areas Managing Organizations and People (E M 501, 522), Managing Financial Resources (E M 505, 545), Managing with Analytical Methods (E M 540, 560), Managing Projects (E M 564, 520), Managing Variability (E M 503, 580, 585), and Managing Strategy (E M 526, 575, 591). Four additional courses can be chosen as electives—from any area, both core and elective. Electives include E M 508, 530, 534, 538, 555, 565, 566, 567, 570, 590, 595.

Each certificate requires 12 credits. If students plan their course of studies carefully, they are able to earn certificates simultaneously while earning the master's degree.

Admission Requirements

Students who apply to the Master of Engineering and Technology Management degree program will have earned a bachelor's degree in engineering or technology from an accredited school with a minimum gpa of 3.0. Applicants with undergraduate degrees in other fields, who are working in technical fields may be accepted for this program, if they have sufficient math and basic statistics, and experience in

the technological professions. Prospective students must provide email addresses for three individuals willing to write letters of recommendation, a resume showing relevant work experience, and a brief personal statement outlining the appropriateness of the program in light of career goals and work history.

For information on the on-line certificates or master's degree program, please contact the Pullman office at (509) 335-0125 or by email: etm@wsu.edu

Description of Courses

ENGINEERING MANAGEMENT

E M

426 Constraints Management 3 Identifies factors that block improvements in any system; effective breakthrough solutions; continual systems improvements for manufacturing, administration, projects. Credit not granted for both E M 426 and E M 526.

430 Applications of Constraints Management 3 Understanding and applying proved solutions developed by the theory of constraints in areas of production, project management, finance, and distribution. Credit not granted for both E M 430 and E M 530.

460 Integrated Supply Chain Management 3 Course Prerequisite: Junior standing. Concepts and techniques for design and managing manufacturing and service, operations intended to develop a world class organization.

464 Project Management 3 Technical tools, Critical Path Method (CPM), Program Evaluation Review Technique (PERT), cost/schedule control systems, behavioral issues and organizational structure. Credit not granted for both E M 464 and E M 564.

480 Quality Control and Reliability 3 Quality analysis, modeling process, product quality, statistical process control, process capability studies; sampling concepts, reality models, predictions, design testing. Credit not granted for both E M 480 and E M 580. Recommended preparation: STAT 430.

485 Quality Improvement Using Design of Experiments 3 Design for quality improved products; processes and services using designed experiments, including robust/parameter design. Credit not granted for both E M 485 and E M 585. Recommended preparation: Undergraduate statistics.

490 Design for Product and Service Realization 3 Course Prerequisite: Junior standing. Techniques and tools to optimize cost, quality, time to market, and to improve comprehensive product design, manufacturability and service components. Credit not granted for both E M 490 and E M 590.

501 Management of Organizations 3 Exploration of issues related to individual behavior in work organizations, including motivation, leadership, team-building, and team management skills.

- 505 Finance for Technical Systems** 3 Time value of money, capital budgeting, accounting principles, cost, valuation, risk, cost accounting and sensitivity analyses: concepts for engineering decision-making.
- 508 Legal Concepts for Engineering and Technical Managers** 3 Basic legal obligations of engineering/technical managers; identify, minimize and recognize risks and liability; contemporary legal environment and business law.
- 520 Construction Project Management** 3 Construction project bids, proposals, contracts, project delivery/organization; estimating, scheduling, resource loading, project monitoring and controls, safety and quality
- 522 Supervision and Leadership for Engineering and Technology Managers** 3 Strategies of supervision with practical application techniques presented to create individual and organizational motivation.
- 526 Constraints Management** 3 Identifies factors that block improvements in any system; effective breakthrough solutions; continual systems improvements for manufacturing, administration, projects. Credit not granted for both E M 426 and E M 526.
- 530 Applications of Constraints Management** 3 Understanding and applying proved solutions developed by the theory of constraints in areas of production, project management, finance, and distribution. Credit not granted for both E M 430 and E M 530.
- 534 Contemporary Topics in Constraints Management** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: E M 526 or 530. Contemporary teaching tools, software packages, current techniques and thought in managing complex systems using the theory of constraints.
- 538 Lean Agility** 3 Integration of the best of Lean, Six Sigma, and Theory of Constraints to accelerate the continuous improvement process.
- 540 Operations Research for Managers** 3 Applying linear, integer, goal programming; network optimization; queuing analysis; dynamic programming; simulation; Markov analysis; and forecasting to engineering management decisions.
- 545 Technical Decision Analysis** 3 Decision analysis provides a structured discipline for describing, analyzing, and finalizing decisions involving uncertainty. Recommended preparation: Basic STAT course.
- 555 Enterprise Resource Management** 3 Focusing the flow of quality, timely products and cooperative supply chain operations and planning using simulation and effective enterprise resource management.
- 560 Integrated Supply Chain Management** 3 How technical managers analyze and manage the flow of materials, services, and information for products from inception to final customer.
- 564 Project Management** 3 Technical tools, Critical Path Method (CPM), Program Evaluation Review Technique (PERT), cost/schedule control systems, behavioral issues and organizational structure. Credit not granted for both E M 464 and E M 564.
- 565 Introduction to Systems Management** 3 Design manufacture, operation of complex system development for engineering managers; project planning, organizing, and controlling tools for engineering system constraints.
- 566 System Engineering Analysis and Practice** 3 Problem-solving methodologies based on system concepts and design applications for complex, large-scale technical systems pertinent to program managers.
- 567 System Supportability and Logistics Management** 3 Supportability and logistics engineering and management in a system life cycle, from concept to retirement.
- 570 Six Sigma Quality Management** 3 Graduate-level counterpart of E M 470; additional requirements.
- 575 Performance Management in Technical Organizations** 3 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** 3 Quality analysis, modeling process, product quality, statistical process control, process capability studies; sampling concepts, reality models, predictions, design testing. Credit not granted for both E M 480 and E M 580. Recommended preparation: STAT 430.
- 585 Quality Improvement Using Design of Experiments** 3 Design for quality improved products; processes and services using designed experiments, including robust/parameter design. Credit not granted for both E M 485 and E M 585. Recommended preparation: Undergraduate statistics.
- 590 Design for Product and Service Realization** 3 Techniques and tools to optimize cost, quality, time to market, and to improve comprehensive product design, manufacturability and service components. Credit not granted for both E M 490 and E M 590.
- 591 Strategic Management of Technology and Innovations in Engineering** 3 Management of technological innovation; integrating strategy, new product development, corporate entrepreneurship, and innovation; features action-oriented cases.
- 595 Advanced Topics in Engineering Management I** V 1-3 May be repeated for credit; cumulative maximum 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 9 hours. A wide range of current high-interest engineering management topics.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

Department of English

libarts.wsu.edu/english/
Avery 202, Pullman campus
509-335-2581

Associate Professor and Chair, T. Butler; Professors, P. Chilson, W. Condon, W. Hamlin, M. Hanly, G. Kennedy, D. Lee, T. Reed, S. Ross, C. Siegel; Associate Professors, K. Arola, N. Bell, D. Campbell, R. Eddy, P. Ericsson, L. Gordon, D. Grigar, J. Hegglund, D. Hellegers, W. Johnson, T. Lewis, B. Monroe, P. Narayanan, W. Olson, A. Rohrbach; Assistant Professors, C. Arigo, M. Edwards, L. McAuley, D. Menchaca, A. Oforlea, R. Whitson; Professors Emeriti, B. Anawalt, P. Brians, J. Burbick, J. Ehrstine, T. Faulkner, D. Gillespie, A. Hammond, D. Hughes, V. Hyde, R. Johnson, N. Kiessling, A. Kuo, R. Law, S. Linden, R. McLean, R. Meldrum, B. Sitko, J. Taylor, A. von Frank.

Majors in English provide students with a broad critical and cultural understanding of literature and literary studies, and emphasize 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 to focus on particular areas of intellectual interest, 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 literature or rhetoric and composition, (3) students who intend to use the background and skills learned in the major as a foundation for careers in writing, editing, law, business, or public service. The curriculum provides majors the opportunity to complete their studies with a small discussion seminar or senior project in their area of emphasis.

Majors in English are expected to learn to read literary and cultural texts carefully and critically; to produce a variety of high-quality creative and critical texts using appropriate technologies that contribute to literary and cultural discourses; to develop abilities in critical reading, writing, and thinking necessary to communicate successfully with audiences both within and outside the

university; and to explore the record of the human experience in language.

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 Teaching and Learning in this catalog, and they should confer with the College of Education 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 (English). 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 (American Studies). Students interested in the Bachelor of Arts in this interdisciplinary field should consult the requirements listed under Program in American Studies. English also participates in the Digital Technology and Culture program, which offers an interdisciplinary course of study leading to the Bachelor of Arts degree. Students interested in this field should consult the requirements listed under Digital Technology and Culture. Students interested in interdisciplinary degrees in areas such as linguistics, humanities, and classical studies should consult the requirements within the Program in General Studies. Students may now also do an English degree consisting primarily of international literature, philosophy, art, architecture, and music courses from the Humanities sequence offered jointly by the departments of Foreign Languages and English, within the Literary Studies option described below.

English Major Options

Four programs are offered for the English major, all leading to the degree of Bachelor of Arts in English.

Option I: Literary Studies is for students who desire a general liberal arts education emphasizing literature, critical thinking, and writing; and for those preparing for graduate education in English or literary studies. English is often selected as a major by students with double majors or minors in other departments.

Option II: Rhetoric and Professional Writing is for students preparing for careers in business, public service, law, or other professions requiring writing and reading skills. It is also suitable for those seeking careers in higher education specializing in rhetoric and composition.

Option III: Teaching is for students who need specific training in the teaching of language and literature at the secondary level; it is coordinated with the Department of Teaching and Learning.

Option IV: Creative Writing is for students interested in creative writing in various forms (poetry, fiction, nonfiction prose), in editing and publishing, and in careers drawing on related creative and professional skills.

Digital Technology and Culture

Digital Technology and Culture is an interdisciplinary degree program that integrates humanities, social sciences, and technology in a critical and creative framework designed to meet individual student interests as well as the needs of contemporary audiences and employers. Digital Technology and Culture majors work at the frontier of today's technology, while learning the importance of technological history and preparing themselves to live in and understand a culture

increasingly influenced by digital technology. If you are interested in mixing art and technology, in language and culture, and in persuasion and effective communication then DTC is the major for you. For further information, consult the separate entry for "Digital Technology and Culture."

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 first three undergraduate programs described above. Students with undergraduate majors in such subjects as philosophy, foreign languages, and history may also be accepted for graduate study in the department. Students preparing for degrees which require a foreign language reading competency should begin studying a qualifying language before entering graduate school. See the "Language Requirements" page on the Department of English Graduate Studies Web site for further details.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

I. ENGLISH - LITERARY STUDIES OPTION (120 HOURS)

Requirements in this degree include fifteen hours of core classes (302, 370, 371, 372, and 373), fifteen hours 300-400 level English literature or Humanities classes, at least six of them at the 400 level, and six hours of electives in English or Humanities at any level, excluding ENGLISH 201. One of these must be an advisor-approved writers-of-color class. Total: 36 hours.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM] ¹	3
Quantitative Reasoning [QUAN]	3
Electives	4

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS]	3
Social Sciences [SSCI]	3
Electives (English or Humanities recommended) ⁶	6

Second Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
ENGLISH 302 [M]	3
ENGLISH or HUMANITY Elective	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
ENGLISH 370, 371, 372, or 373	6

Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 370, 371, 372, or 373	6
300-400-level Literature or Humanities Elective	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
300-400-level Literature or Humanities Electives	6
Electives	12

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Electives	9
300-400-level Literature or Humanities Elective	3
ENGLISH Senior Seminar or 400-level Literature or Humanities Elective	3

<i>Second Term</i>	<i>Hours</i>
ENGLISH Senior Seminar or 400-level Literature or Humanities Elective	3
Integrative Capstone [CAPS]	3
Electives	6

¹ At least one from HUMANITY 101, 103, 302, 303, 304, 335, 350, 410, or 450 is required. Upper-division HUMANITY courses are not recommended for first-year students.

II. ENGLISH - RHETORIC AND PROFESSIONAL WRITING OPTION (120 HOURS)

Requirements in this degree are a core of eighteen hours of 300-400 level classes, twelve to eighteen hours of electives from the list of approved courses, and the option of one or two electives – with the approval of advisor – of any English or Humanities course at any level. Required courses/core (18 hours): 301, 302, 360, 362, and 460 or 461 (Prerequisite of ENGLISH 402 or 403 required for 461). One transnational lit course (chosen in consultation with advisor) from 370, 371, 372, 373, 460, or 461. Electives (18 hours): 308, 336, 354, 355, 358, 361, 363, 375, 401, 402, 405, 410, 458, 461, 475, 476, 495, any creative writing course deemed appropriate by CW faculty, the student, and her or his advisor.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM] ¹	3
Quantitative Reasoning [QUAN]	3
Electives	4

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS]	3
Social Sciences [SSCI]	3
Electives	6

Second Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3

ENGLISH 301 [WRTG]	3
ENGLISH 302 [M]	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives	3
<i>Second Term</i> <i>Hours</i>	
Diversity [DIVR]	3
ENGLISH 360	3
ENGLISH 362	3
ENGLISH 370, 371, 372, or 373	3
Elective	3
Complete Writing Portfolio	

Third Year

<i>First Term</i> <i>Hours</i>	
300-400-level Rhetoric / Professional Writing	
Electives	6
Electives	9
<i>Second Term</i> <i>Hours</i>	
300-400-level Rhetoric / Professional Writing	
Electives	6
Electives	9

Fourth Year

<i>First Term</i> <i>Hours</i>	
300-400-level Rhetoric / Professional Writing	
Electives	6
300-400-level Electives	6
<i>Second Term</i> <i>Hours</i>	
ENGLISH 460 or 461 ²	3
Integrative Capstone [CAPS]	3
Electives	9

¹ At least one from HUMANITY 101, 103, 302, 303, 304, 335, 350, 410, or 450 is required. Upper-division HUMANITY courses are not recommended for first-year students.

² Prerequisite of ENGLISH 402 or 403 required for ENGLISH 461.

III. ENGLISH - CREATIVE WRITING OPTION (120 HOURS)

Requirements in this option involve 39-credit hours, approximately half in creative writing and related professional courses, the remainder in supporting literature courses approved by the advisor. In addition to these requirements, students are urged to elect GER courses in American and world cultures, history, and society to round out the liberal arts education that they will bring to careers in creative writing, editing, publishing, and related fields.

First Year

<i>First Term</i> <i>Hours</i>	
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM] ¹	3
Quantitative Reasoning [QUAN]	3
Electives	4
<i>Second Term</i> <i>Hours</i>	
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS]	3
ENGLISH 251	3

Social Sciences [SSCI]	3
Electives	3

Second Year

<i>First Term</i> <i>Hours</i>	
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
ENGLISH 351 or 353	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives (literature courses recommended)	6
<i>Second Term</i> <i>Hours</i>	
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
ENGLISH 302 [M]	3
ENGLISH 352	3
Literature Elective, ENGLISH or HUMANITY	3
Complete Writing Portfolio	

Third Year

<i>First Term</i> <i>Hours</i>	
Literature Elective (300-400-level ENGLISH or HUMANITY)	3
Electives	12
<i>Second Term</i> <i>Hours</i>	
ENGLISH 451, 452, or 453	3
Writers of Color ²	3
300-400-level Electives	9

Fourth Year

<i>First Term</i> <i>Hours</i>	
Integrative Capstone [CAPS]	3
Literature Elective (400-level ENGLISH or HUMANITY)	3
Literature or Creative Writing Elective (300- or 400-level)	3
300-400-level Electives	6
<i>Second Term</i> <i>Hours</i>	
Creative Writing or Literature Elective, ENGLISH or HUMANITY	3
ENGLISH 451 or 452	3
Electives	6

¹ At least one from HUMANITY 101, 103, 302, 303, 304, 335, 350, 410, or 450 is required. Upper-division courses are not recommended for first-year students.

² See advisor for approved list of courses.

IV. ENGLISH - TEACHING OPTION (120 HOURS)**First Year**

<i>First Term</i> <i>Hours</i>	
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM] ¹	3
Electives	3
<i>Second Term</i> <i>Hours</i>	
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS]	3
PSYCH 105 [SSCI] ²	3
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i> <i>Hours</i>	
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
ENGLISH 302 [M]	3
ENGLISH 326	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
<i>Second Term</i> <i>Hours</i>	
Diversity [DIVR]	3
ENGLISH 205, 305, or 306	3
ENGLISH 370, 371, 372, or 373	6
Complete Writing Portfolio	

Third Year

<i>First Term</i> <i>Hours</i>	
ENGLISH 325	3
ENGLISH 370, 371, 372, or 373	3
English or Humanities Elective ³	3
TCH LRN 301	3

<i>Second Term</i> <i>Hours</i>	
Communication [COMM] or Written Communication [WRTG]	3
ENGLISH 324	3
English or Humanities Elective	3
Integrative Capstone [CAPS]	3
TCH LRN 317	2

Fourth Year

<i>First Term</i> <i>Hours</i>	
ENGLISH 323	3
English or Humanities Elective	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

<i>Second Term</i> <i>Hours</i>	
ED PSYCH 468	3
English or Humanities Elective	3
TCH LRN 467	3
TCH LRN 469	2
TCH LRN 470	3

Fifth Year

<i>First Term</i> <i>Hours</i>	
TCH LRN 415	16

¹ At least one from HUMANITY 101, 103, 302, 303, 304, 335, 350, 410, or 450 is required. Upper-division courses are not recommended for first-year students.

² Required for admission to the certification program.

³ Must include one ENGLISH [M] course.

V. ENGLISH - TEACHING WITHOUT CERTIFICATE OPTION (120 HOURS)

<i>First Year</i> <i>Hours</i>	
<i>First Term</i> <i>Hours</i>	
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM] ¹	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS]	3
Quantitative Reasoning [QUAN]	3
Electives	6

Second Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
ENGLISH 302 [M]	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives	6

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
ENGLISH 205, 305, or 306	3
ENGLISH 326	3
ENGLISH 370, 371, 372, or 373	6
Electives	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
ENGLISH 325	3
English or Humanities Electives	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
ENGLISH 324 [M]	3
English or Humanities Electives	3
Integrative Capstone [CAPS]	3
300-400-level Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 323	3
English or Humanities Electives	3
300-400-level Electives	9

<i>Second Term</i>	<i>Hours</i>
ENGLISH 370, 371, 372, or 373	3
English or Humanities Electives	3
Electives	9

¹ At least one from HUMANITY 101, 103, 302, 303, 304, 335, 350, 410, or 450 is required. Upper-division courses are not recommended for first-year students.

Minors**English**

The student must complete a minimum of 18 hours in English courses (excluding 101 and 198), half of which must be 300-400-level and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses; ENGLISH 302 is required.

Humanities Minor

The Department of English administers the Humanities minor. For details, see the separate entry under "Humanities."

Linguistics

The student must complete 18 hours, half of which must be 300-400-level, in the following courses: For Lang 101 or ENGLISH 256; ENGLISH 255 or PHIL 201; ENGLISH 443 (phonology); ENGLISH 444 (syntax); and two from ENGLISH 454, ENGLISH 456 (language acquisition), ENGLISH 457 (sociolinguistics), ENGLISH 458 (topics in linguistics), ANTH 350, PSYCH 492, or PHIL 443. 9 hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Professional Writing

The professional writing minor requires 18 hours, half of which must be 300-400-level and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses, and include ENGLISH 301, 402 or 403 and 461. In addition, 12 hours from ENGLISH 255, 256, 300, 354, 355, 401, 402, 403, 405, 478 and 498 are required.

Certificates**Professional Science and Technology Writing Certificate**

To earn the Professional Science and Technology Writing Certificate, students must complete ENGLISH 301, 402, and 495, and two electives from ANIM SCI 280, 285, ANTH 260, 309, BIOLOGY 110, 125, 135, 330, 393, 394, 401, BIOLOGY/WOMEN ST 407, CES 465, ENTOM 150, ENVR SCI 275, 285, 335, ENVR SCI/NATRS 438, FS 201, GEOLOGY 210, HISTORY 381, 382, HORT 150, MATH 398, MBIOS 320, NATRS 312, PHIL 350, 365, 370, PSYCH 320, 401, 403, PSYCH/WOMEN ST 324, SOC 333, SOIL SCI 360, or STAT 205. All coursework must be completed with a 3.00 gpa or higher. The certificate can be earned through the Distance Degree Program and/or on-campus offerings. The university undergraduate certificate fee will apply.

Professional Writing Certificate

To earn the Professional Writing Certificate, students must complete the following five courses with a 3.0 gpa or better: Anth 350, Engl 301, 355, 402, and 498. Engl 498 must be taken only after the other four courses have been completed. The certificate can be earned through the Distance Degree Program and/or on-campus offerings. The university undergraduate certificate fee will apply.

Teaching English as a Foreign Language Certificate

To earn the Teaching English as a Foreign Language Certificate, students must complete 18 hours including the following courses: ENGLISH 443, 444, 456, 457, ENGLISH 495 or FOR LANG 440, and ENGLISH 498. ENGLISH 255 is highly recommended.

Description of Courses**ENGLISH****ENGLISH**

100 Basic Writing 3 Course Prerequisite: Appropriate Writing Placement Exam score. Designed to introduce students to writing and reading in the university. S, F grading.

101 [WRTG] Introductory Writing 3 Course Prerequisite: Appropriate Writing Placement Exam score or completion of ENGLISH 100 with an S grade. Designed to develop students' academic writing, critical thinking, rhetorical strategies, reading and library skills. Credit not granted for more than one of ENGLISH 101 and 105.

102 Writing Tutorial 1 (0-3) May be repeated for credit; cumulative maximum 5 hours. Student-centered group tutorial focusing on writing improvement usually connected to the ENGLISH 101 course. S, F grading.

104 Intermediate Grammar and Basic Skills ESL 3 Course Prerequisite: Appropriate Writing Placement Exam score. Designed to introduce non-native speakers of English to writing and reading in the university.

105 [WRTG] Composition for ESL Students 3 Course Prerequisite: Appropriate Writing Placement Exam score, or ENGLISH 104 with a C or better. Designed to develop academic writing, critical thinking, reading, library skills, and rhetorical strategies for non-native speakers of English. Credit not granted for more than one of ENGLISH 101 and 105.

106 [COMM] Communicating in Academic Contexts 3 Designed to help improve listening and speaking skills for better participation in academic interactions across campus. For ESL students.

107 Writing Tutorial for ESL students 1 (0-3) May be repeated for credit; cumulative maximum 5 hours. Student-centered group tutorial focusing on writing improvement usually connected to the ENGLISH 105 course. S, F grading.

108 [HUM] Introduction to Literature 3 Reading short stories, novels, plays, and poetry by diverse voices; role of conventions, culture, history in interpretation of literature. Credit not granted for both ENGLISH 108 and 199.

110 [HUM] Reading Now 3 Contemporary writing including fiction, poetry, creative nonfiction and graphic novels.

150 Introduction of Film as Narrative 3 (2-3) Introduction to analysis of techniques and elements of narrative film and to critical vocabulary for its study as art form.

199 English Composition and Literature Honors 3 Open to students only in the Honors College. Credit not granted for both ENGLISH 108 and 199.

200 Expository Writing V 1-2 Course Prerequisite: Sophomore standing. For transfer students who need to make up writing credits.

- 201 [WRTG] Writing and Research 3 Course** Prerequisite: ENGLISH 101, 105, or 298. Designed to develop students' researching skills for writing across the disciplines.
- 202 Grammar in Context 1** May be repeated for credit; cumulative maximum 5 hours. Tutorial to assist students in mastering conventions of Standard Edited American English. Assigned tutorials in the WSU Writing Center. S, F grading.
- 205 [HUM] Introduction to Shakespeare 3** Shakespeare plays with emphasis on stage productions and film adaptations in various cultural contexts.
- 210 [HUM] Readings in American Literature 3** Selected works by diverse voices from different eras of American literature; importance of conventions, cultural contexts, for interpretation and understanding.
- 211 [HUM] Sex Matters: Introduction to Queer Culture and Literature 3** Introduction to Lesbian/queer cultural production focusing on popular culture, fiction, and film; work from various queer communities in its cultural/historical context. (Crosslisted course offered as WOMEN ST 211, ENGLISH 211).
- 216 American Cultures 3** Introduction to the interdisciplinary study of American cultures and the field of American studies. (Crosslisted course offered as AMER ST 216, ENGLISH 216, HISTORY 216, WOMEN ST 216).
- 220 [HUM] Introduction to Multicultural Literature 3** Survey of multicultural literature including European American, African American, Asian American, Chicana/o, and Native American authors. (Crosslisted course offered as CES 220, ENGLISH 220).
- 251 Introduction to Creative Writing: Exploring the Genres 3** Beginning writer's workshop covering short fiction, creative nonfiction, and poetry with discussion of the elements of each genre; poetic forms.
- 252 Introduction to Creative Writing and Creative Writing Pedagogy 3** Beginning workshop with discussion and development of classroom approaches to three creative writing genres for the preprofessional secondary English teacher.
- 255 English Grammar 3** Introduction to the terms, concepts, and analytical methods of traditional English grammar.
- 256 Introduction to Linguistics 3** Technical introduction to sound, meaning, and structure of words and sentences in natural languages.
- 298 [WRTG] Writing and Research Honors 3 Course** Prerequisite: Appropriate Honors College Writing Diagnostic score. Critical thinking, research, and advanced writing for Honors College students.
- 299 Writing Tutorial for Honors Students 1 (0-3)** May be repeated for credit; cumulative maximum 5 hours. Course Prerequisite: Appropriate Honors College Writing Diagnostic score. Student-centered group tutorial focusing on writing improvement usually connected to the ENGLISH 298 course. S, F grading.
- 300 Computers in English 1 (0-3)** May be repeated for credit; cumulative maximum 6 hours. Use of computers in the writing process and in the analysis of literature. S, F grading.
- 301 [WRTG] Writing and Rhetorical Conventions 3 Course** Prerequisite: ENGLISH 101, 105, or 298. Designed to provide students with advanced practice in and study of style, argument, and other rhetorical/discourse conventions.
- 302 [M] Introduction to English Studies 3 Course** Prerequisite: ENGLISH 101 or 298. Interpretation of texts in several fields of English studies including rhetoric, literary study, creative writing and professional writing.
- 303 Revision Workshop - ESL 3 Course** Prerequisite: Completion of written communication proficiency course [W] or [WRTG]. Appreciation of writing processes and revision for speakers of English as a second or foreign language, including self-assessment, developing rhetorical approaches, diagnosing and solving consistent problems, editing, and proofreading strategies.
- 304 Revision Workshop 3 Course** Prerequisite: By permission only. Appreciation of writing processes and revision, including self-assessment, developing rhetorical approaches; diagnosing and solving consistent problems, editing, and proofreading strategies.
- 305 Shakespeare 3** Shakespearean drama to 1600.
- 306 Shakespeare 3** Shakespearean drama after 1600.
- 307 [M] Historicized Analysis of Literature 3 Course** Prerequisite: ENGLISH 302 or concurrent enrollment. Introduction to analyzing literary texts in relation to literary and cultural history.
- 308 [M] Introduction to Literary Criticism 3** Introduction to the systematic study of critical and theoretical approaches to literature; emphasis on problems of interpretation. (Crosslisted course offered as ENGLISH 308, WOMEN ST 306).
- 309 Women Writers 3** Women's artistic and intellectual contributions to prose, fiction, drama, and poetry. (Crosslisted course offered as ENGLISH 309, WOMEN ST 309).
- 311 [HUM] Asian Pacific American Literature 3** Asian American fiction, drama, poetry, and other arts, 1900 to present; impact of Asian/Pacific American culture and experience upon these works. (Crosslisted course offered as CES 313, ENGLISH 311).
- 314 [M] Topics in Asian Pacific American Literature 3** May be repeated for credit; cumulative maximum 6 hours. Trends, themes, major writers. (Crosslisted course offered as CES 314, ENGLISH 314).
- 315 [M] Asian Pacific American Autobiography 3** Critical readings of the autobiographical works, memoirs, and life writings by Asian Pacific Americans. (Crosslisted course offered as CES 315, ENGLISH 315).
- 316 South Asian Film 3 (2-3)** Exploration of films by directors in South Asia and in the South Asian diaspora.
- 317 Gay and Lesbian Literature 3** Gay and lesbian literature with focus on the history of homosexual literature and exploration of current authors. (Crosslisted course offered as ENGLISH 317, WOMEN ST 317).
- 321 African American Literature 3** Introduction to major issues and major works in the African American literary tradition. (Crosslisted course offered as CES 331, ENGLISH 321).
- 322 [M] Topics in African American Literature 3** May be repeated for credit; cumulative maximum 6 hours. Trends and major writers. (Crosslisted course offered as ENGLISH 322, CES 332).
- 323 Approaches to the Teaching of English 3** Literature and language arts in secondary schools.
- 324 [M] Rhetoric and Composition for Teaching 3 Course** Prerequisite: Junior standing. Rhetoric, composition grammar, and assessment for secondary teaching.
- 325 Young Adult Literature 3** Issues in literature written for young adults and strategies for teaching the genre in secondary schools.
- 326 Applied Grammar for Teachers 3** Application of traditional English grammar for K-12 teachers, with focus on edited, American, African American, vernacular, and Spanish-influenced Englishes.
- 332 [M] Topics in Literature 3** May be repeated for credit; cumulative maximum 6 hours. Special topics in fiction, poetry, drama, or creative nonfiction.
- 336 Composition and Design 3** Design practices and process for composing for a multimedia environment including color, pattern and shape. (Crosslisted course offered as DTC 336, ENGLISH 336).
- 337 Experimental Animation 3 (2-2)** Digital and analog animation techniques; conceptual development of narrative structures. (Crosslisted course offered as ENGLISH 337, FINE ART 337).
- 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 (2-3)** May be repeated for credit; cumulative maximum 6 hours. Analytical study of film as major literary genre.
- 340 Science Fiction Film 3 (2-3)** Major science fiction films and the literature which inspired them.
- 341 [M] Native American Literature 3** Native American literature, by and about the original inhabitants, image and counter-image, with emphasis on the 20th century. (Crosslisted course offered as CES 373, ENGLISH 341).
- 342 Documentary Film Theory and Production 3 (2-2)** Theory of documentary film in social contexts culminating in the creation of actual documentary films by students.

- 345 [M] Chicana/o - Latina/o Literature 3** Chicana/o and Latina/o literature, narrative, novel, autobiography, poetry, short story, and drama. (Crosslisted course offered as CES 353, ENGLISH 345).
- 351 Creative Writing: Prose 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: ENGLISH 251 or 252. Workshop approach to writing prose.
- 352 Creative Writing: Poetry 3** Course Prerequisite: ENGLISH 251 or 252. Workshop approach to poetry writing.
- 353 Creative Writing: Nonfiction 3** Course Prerequisite: ENGLISH 251 or 252. Writing literary nonfiction: practice and theory.
- 354 Digital Storytelling 3** Nonlinear, multi-linear, and interactive narrative using elements of creative writing such as character, dialog, setting, plot and image. (Crosslisted course offered as DTC 354, ENGLISH 354).
- 355 [M] Multimedia Authoring: Exploring New Rhetorics 3** Writing for new computer-based media; multimedia authoring project; examination of new rhetorics of information technology. (Crosslisted course offered as DTC 355, ENGLISH 355).
- 356 Electronic Research and the Rhetoric of Information 3** Social and cultural role of information; research with electronic sources; production, validation, storage, retrieval, evaluation, use, impact of electronic information. (Crosslisted course offered as DTC 356, ENGLISH 356).
- 357 Literary Editing and Publishing 3** May be repeated for credit; cumulative maximum 6 hours. Personal and collaborative editing for literary publication; practices of style; macro- and micro-editing.
- 358 Workshop Topics in Writing, Teaching, Literature 1** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Junior standing. An intensive, time-limited workshop, offered by visiting writers, scholars, and other experts, in topics of special interest. S, F grading.
- 359 Topics in Creative Writing 3** May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: ENGLISH 251 or 252. Specialized topics in creative writing.
- 360 Principles of Rhetoric 3** Basic concepts and approaches to the art of persuasion.
- 361 Everyday Rhetorics 3** Rhetorics as language and image of popular culture.
- 362 Rhetorics of Racism 3** The language of racism since WWII.
- 363 Rhetoric: Literacy, Power and Agency 3** Major discussions on literacy emphasizing the historical, social, linguistic and pedagogical.
- 364 Legal Writing 3** Introduction to the American legal system and the style, arguments and accepted forms of professional writing in this discipline.
- 366 [HUM] The British Novel to 1900 3** Exploration of the diverse themes, social contexts, and intellectual backgrounds of the novel and novel reading in Britain to 1900.
- 368 [HUM] 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.
- 370 The Making of English: Literature, Language and Culture Before 1600 3** Literature before 1600, highlighting the making of English through its interaction with other cultures/languages including Anglo-Saxon.
- 371 17th and 18th Century Transnational Literature in English 3** Literary and cultural texts in English from 1600 to 1800 including British and colonial American literatures within their transnational contexts.
- 372 19th Century Literature of the British Empire and the Americas 3** Literary and cultural texts in English from 1800 to 1900 focusing on global British literature and literatures of the Americas.
- 373 20th and 21st Century Global Literatures in English 3** Literary and cultural texts in English from 1900 to the present focusing on literatures representing the complex processes of globalization.
- 375 [M] Language, Texts and Technology 3** Relationship between technology and communication; writing practices from a historical point of view. (Crosslisted course offered as DTC 375, ENGLISH 375).
- 401 History of Rhetoric 3** Survey of influential theories of rhetoric, ancient to modern.
- 402 [WRTG] [M] Technical and Professional Writing 3** Course Prerequisite: ENGLISH 101 or 298; junior standing. Research writing: defining, proposing, reporting progress; presenting a final product; other professional writing needs. Credit not granted for both ENGLISH 402 and 403.
- 403 [M] Technical and Professional Writing ESL 3** Course Prerequisite: ENGLISH 101 or 105; junior standing; pass University Writing Portfolio. For non-native speakers of English. Special grammatical and rhetorical problems. Credit not granted for both ENGLISH 402 and 403.
- 405 Advanced Professional Writing and Editing 3** Course Prerequisite: ENGLISH 402. Other background may substitute. See department. Professional writing and editing; textual alterations, design, and layout, including internship experience.
- 409 Women Writers in the American West 3** Course Prerequisite: Junior standing. Diversity of writings by women in the trans-Missouri West from the 1890s to the present. (Crosslisted course offered as ENGLISH 409, WOMEN ST 409).
- 410 [CAPS] Cultural Criticism and Theory 3** Course Prerequisite: Junior standing. Major critiques and theories of colonialist and imperialist formations of culture. (Crosslisted course offered as CES 405, ENGLISH 410).
- 415 Traditions of Comedy and Tragedy 3** Course Prerequisite: Junior standing. Study of tragedy and comedy in the Age of Shakespeare.
- 419 The Twentieth Century Novel 3** Course Prerequisite: Junior standing. The novel in English in the literary and cultural context of the modern age.
- 443 Phonology 3** Technical introductions to the analysis of the sound systems of human languages. Credit not granted for both ENGLISH 443 and 543. Cooperative: Open to UI degree-seeking students.
- 444 Syntax 3** Technical introduction to the generative analysis of sentence structure with a focus on English. Credit not granted for both ENGLISH 444 and 544.
- 446 Form and Theory in Creative Writing: Prose and Poetry 3** Course Prerequisite: One of following: English 351, 352, 353, or 359. Formal elements of fiction, creative nonfiction, poetry for creative writing students; analysis of contemporary applications of traditional and experimental techniques.
- 451 [M] Advanced Creative Writing: Fiction 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: One of following: English 351, 352, 353, or 359. Advanced workshop in writing fiction or creative nonfiction prose.
- 452 [M] Advanced Creative Writing: Poetry 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: One of following: English 351, 352, 353, or 359. Workshop approach to poetry writing for the advanced student.
- 453 Advanced Creative Writing: Nonfiction Prose 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: One of following: English 351, 352, 353, or 359. Advanced workshop in writing creative nonfiction prose.
- 454 History of the English Language 3** Language related to the origin, history, and literature of its speakers. Credit not granted for both ENGLISH 454 and ENGLISH 554.
- 456 Language Acquisition 3** Theories and processes of first, second, and bilingual language acquisition.
- 457 Sociolinguistics 3** Study of language in social context and its relationship to social structures.
- 458 Topics in Linguistics 3** May be repeated for credit; cumulative maximum 6 hours. Topics in the structure, use, and function of language.
- 460 [M] The Scope of Rhetoric 3** Major themes in contemporary rhetoric.
- 461 [M] Theory and Practice in Technical and Professional Writing 3** Course Prerequisite: ENGLISH 402 or 403. Practices in technical and professional writing and the theories that challenge and/or legitimize those practices.
- 470 Literature and Culture of the American West 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Junior standing. Cultural exploration of American West in written texts; outsider and insider versions of reality and imagination of its diverse peoples. (Crosslisted course offered as ENGLISH 470, AMER ST 470).

- 472 Ecological Issues and American Nature Writing** 3 Course Prerequisite: Junior standing. Representation of nature in American fiction and nonfiction; role of culture in shaping environmental problems and solutions. (Crosslisted course offered as AMER ST 472, ENGLISH 472).
- 475 Digital Diversity** 3 Course Prerequisite: Junior standing. Cultural impact of electronic media, especially the World-Wide Web; issues of race, class, gender, sexuality online. (Crosslisted course offered as AMER ST 475, DTC 475, ENGLISH 475).
- 476 Digital Literacies** 3 Course Prerequisite: DTC 375. Development and use of new literacies as they affect communication through technology. (Crosslisted course offered as DTC 476, ENGLISH 476).
- 477 Advanced Multimedia Authoring** 3 Course Prerequisite: DTC or ENGLISH 355. Advanced writing, imaging and teamwork skills for authoring in new computer-based media; website project in client-oriented context. (Crosslisted course offered as DTC 477, ENGLISH 477).
- 478 Usability and Interface Design** 3 (0-6) Course Prerequisite: DTC or ENGLISH 355. Design of websites using best practices of visual literacy, interface architecture and usability. (Crosslisted course offered as DTC 478, ENGLISH 478).
- 480 American Literature: Beginnings to 1865** 3 Course Prerequisite: ENGLISH 302. Advanced study of major authors and movements from the period including Bradstreet, Wheatley, Franklin, Douglass, Poe, Emerson, and Hawthorne.
- 481 American Literature: 1865-1940** 3 Course Prerequisite: ENGLISH 302. Advanced study of major authors and movements from the period including Whitman, Dickinson, Twain, Wharton, James, Hemingway, Faulkner, and Wright.
- 482 American Literature: 1940-Present** 3 Course Prerequisite: ENGLISH 302. Advanced study of major authors and movements from the period including O'Connor, Bellow, Salinger, Baldwin, Pynchon, Morrison, Tan, and Alexie. (Crosslisted course offered as ENGLISH 482, WOMEN ST 382).
- 483 Chaucer and Medieval Literature** 3 Course Prerequisite: ENGLISH 302. Advanced study of Chaucer's *Canterbury Tales* in the context of Medieval culture and literary tradition.
- 484 English Literature of the 16th Century** 3 Course Prerequisite: ENGLISH 302. Advanced study of English Renaissance literature, including More, Sidney, Spenser, Marlowe, and Shakespeare, in age of Humanism and Reformation. Credit not granted for both ENGLISH 484 and ENGLISH 584.
- 485 Milton and English Literature of the 17th Century** 3 Course Prerequisite: ENGLISH 302. Advanced study of works from the Metaphysicals and Johnson through Milton, in the context of religious controversy and civil war.
- 486 English Literature of the Restoration and 18th Century** 3 Course Prerequisite: ENGLISH 302. Advanced study of works from this revolutionary period, including Locke, Behn, Defoe, Pope, Johnson, Equiano, and others.
- 487 British Romantic Literature** 3 Course Prerequisite: ENGLISH 302. Advanced study of Blake, Wordsworth, Coleridge, Mary Shelley, Keats, and others in an age of social and aesthetic revolution, 1770-1840.
- 488 Victorian Literature** 3 Course Prerequisite: ENGLISH 302. Advanced study of Tennyson, Dickens, Eliot, Wilde, and others in the context of science, industrialization, and empire, 1832-1901.
- 489 20th/21st Century British and Postcolonial Literatures** 3 Course Prerequisite: ENGLISH 302. Advanced study of modernist, postmodernist, and postcolonial writing from Britain, Ireland, Africa, the Indian subcontinent, and the Caribbean.
- 492 [M] Advanced Topics in Literature, Criticism, and Theory** 3 May be repeated for credit; cumulative maximum 6 hours. Seminar with term paper project; focused studies in literature and critical theory. Not open to graduate students.
- 494 [M] Advanced Topics in Literature** 3 May be repeated for credit; cumulative maximum 6 hours. Seminar with term paper project; focused studies in American, British, or global literatures. Not open to graduate students.
- 495 Rhetoric of Science and Technology** 3 Written, visual, and verbal conventions of scientific disciplines for academic, scientific, technical, and public audiences.
- 498 Internship** V 1-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: Certified major in English; junior standing. Cooperative learning experience in business, education, or industry in English-related jobs. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. 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 Course Prerequisite: ENGLISH 501. Contemporary theories of composition and their application to the classroom.
- 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 Theory and Method in American Studies** 3 Major theories and methods currently used by American studies scholars; key concepts in cultural analysis. (Crosslisted course offered as AMER ST 513, ENGLISH 513, HISTORY 513).
- 514 Seminar in 20th Century American Literature** 3 May be repeated for credit; cumulative maximum 6 hours.
- 515 Contemporary Theories of Rhetoric** 3 Contemporary critical theory and cultural studies and reconsiderations of suasive discursive practices.
- 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 Program** 3 Combining theory and practice in writing program supervision and management. Interns will work under direct faculty supervision.
- 532 Teaching Writing to Nontraditional Students** 3 Course Prerequisite: ENGLISH 501. Theory and practice of the teaching of basic writers.
- 534 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.
- 543 Phonology** 3 Technical introductions to the analysis of the sound systems of human languages. Credit not granted for both ENGLISH 443 and 543. Cooperative: Open to UI degree-seeking students.
- 544 Syntax** 3 Technical introduction to the generative analysis of sentence structure with a focus on English. Credit not granted for both ENGLISH 444 and 544.

- 546 Topics in Teaching English as a Second Language** 3 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 hours. Topics and controversies related to second language acquisition theory and pedagogy. Cooperative: Open to UI degree-seeking students.
- 548 Seminar in Critical and Cultural Theory** 3 May be repeated for credit; cumulative maximum 6 hours. Critical and cultural theory relevant to advanced literary studies and /or the advanced study of rhetoric and composition.
- 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 and non-fiction prose.
- 554 History of the English Language** 3 Language related to the origin, history, and literature of its speakers. Credit not granted for both ENGLISH 454 and ENGLISH 554.
- 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.
- 584 English Literature of the 16th Century** 3 Advanced study of English Renaissance literature, including More, Sidney, Spenser, Marlowe, and Shakespeare, in age of Humanism and Reformation. Credit not granted for both ENGLISH 484 and ENGLISH 584.
- 590 Research in English Studies** 1 May be repeated for credit; cumulative maximum 6 hours. Directed reading and interpretive problems in English studies.
- 591 Topics in Pedagogy** 3 Theory and practice of designing and teaching courses in literature, rhetoric, composition, theory, or cultural studies.
- 595 Topics in English** 3 May be repeated for credit; cumulative maximum 6 hours. Language, English pedagogy, or literature of special or current interest; reading theories, teaching of writing, current literary theories.
- 597 Topics in Composition and Rhetoric** 3 May be repeated for credit; cumulative maximum 6 hours. Rhetoric and composition theory and praxis.
- 598 Teaching Apprenticeship** 1 May be repeated for credit. S, F grading.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Entomology

entomology.wsu.edu
FSHN 166
509-335-5422

Professor and Chair, W. S. Sheppard; Professors, C. A. Black, W. E. Snyder, R. S. Zack; Associate Professors, L. S. Corley-Lavine, J. Owen; Assistant Professor, D. Crowder; Research, and Extension Centers: E. H. Beers, J. F. Brunner, C. Daniels, A. Felsot, V. Hebert, D. G. James, V. Jones, J. D. Stark, L. K. Tanigoshi, D. B. Walsh; Professors Emeriti, A. A. Berryman, J. J. Brown, G. E. Long, W. J. Turner.

Insects and related arthropods are dominant components in all terrestrial and most freshwater ecosystems. There are more species of insects than all the other species of animals and plants combined. This almost unimaginable diversity provides the most fertile resource for scientific inquiry within a number of areas of biology. Entomology at Washington State University is active, robust, and dynamic. The curriculum provides the opportunity to investigate the basic and applied aspects of the science. Facilities and training are available for study in major areas of entomology including, but not limited to, apiculture, behavior, integrated biological control and sustainable pest management, ecology, forest entomology, insect/plant interactions, population genetics, physiology, taxonomy/systematics, biological diversity, environmental toxicology, and medical/veterinary entomology. We believe that a detailed understanding of insect biology is a prerequisite to developing rational, effective, and sustainable management practices. Similarly, an understanding of the ecological ramifications of such management practices, particularly pesticide use, is a requirement.

The entomology curriculum provides the opportunity to study basic and applied aspects of entomology and prepares students employment in all aspects and levels of the science. 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. 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 as delineated above. Departmental faculty, adjunct faculty, and affiliate faculty may all serve as student advisors. Faculty are housed both on campus and at research stations throughout the state; this ability to significantly interact with both on and off campus advisors and mentors offers students opportunities and perspectives not available in most programs. We maintain strong cooperative interactions with the USDA, ARS and students are encouraged to explore this avenue for advisors and funding opportunities. The department has a long and excellent record of student placement both nationally and internationally. Extensive insect collections, insectary, quarantine, computer, and molecular facilities support teaching, extension, and research. The department is committed to both basic and applied aspects of the science. We are heavily involved in developing an integrated biological control approach to pest management. This commitment is reflected in the broad involvement of the faculty in all aspects of entomology.

The department offers courses of study leading to the degrees of Bachelor of Science in Biology with an Entomology option <http://www.catalog.wsu.edu/General/Academics/Info/10> ; Master of Science in Entomology, and Doctor of Philosophy (Entomology). Additional information can be obtained on the web at <http://entomology.wsu.edu>.

Preparation for Graduate Study

As preparation for work toward an advanced degree in entomology, a student should have completed an undergraduate major in one of the biological or physical sciences, forestry, agriculture, or a closely related field. Potential students with majors in other disciplines are considered on an individual basis. Background work should include courses in the biological and physical sciences, genetics, ecology, entomology, and the plant and animal sciences.

INTEGRATED PEST MANAGEMENT

Integrated pest management is a multidisciplinary field. The Agriculture and Food Security major prepares students to manage plant pests and diseases. Students learn to understand the complexity of relationships within agricultural ecosystems, how external factors influence these systems, and how to effectively manage pests and diseases without incurring undue risks to human or environmental health. The major is offered under Agricultural and Food Systems, <http://www.afs.wsu.edu/>.

Students electing this major will take courses in the Departments of Crop and Soil Sciences, Entomology, Horticulture, 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.

Minors

Entomology

A minimum of 16 hours is required for the minor and must include ENTOM 343, 344, 439, or 440 and 9 hours from: ENTOM 348, 441, 448, 449, 450, 462; IPM 201, 452, 462. 9 hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Description of Courses

ENTOMOLOGY

ENTOM

- 101 [BSCI] Insects and People: A Perspective** 3 The world's most abundant animals and their extensive effects on people yesterday and today.
- 102 [BSCI] Entomology in Human Health** 3 Arthropods and their role in the transmission of human diseases; major arthropod vectored diseases.
- 150 [BSCI] Insects, Science, and World Cultures** 3 (2-3) An interdisciplinary view of the global impact of insects on humans in the arts, myths and legends, cuisine, human nutrition, agriculture, sustainability, and medicine. Exploration of the use of insects and their products in culture, scientific research, and forensics. Cooperative: Open to UI degree-seeking students.
- 201 [BSCI] Science in the Public Eye** 3 Course Prerequisite: [PSCI] UCORE or concurrent enrollment, [P] GER or concurrent enrollment, [SCI] UCORE or concurrent enrollment, or sophomore standing. Scientific literacy in biology and medicine, using evolutionary theory as the unifying framework for all life.
- 340 Agricultural Entomology** 3 (2-3) Course Prerequisite: BIOLOGY 106 or 107. Control, identification, and biology of insects and related arthropods. Course equivalent to OSU's Ent 311 and UI's Ent 322.
- 343 [M] General Entomology** 3 Biology, natural history, and importance of insects and related arthropods.
- 344 [M] General Entomology Laboratory** 2 (0-6) Identification and taxonomy of insects and related arthropods; insect collection and field work required.
- 350 Pest Management in Organic Agriculture Production Systems** 2 Course Prerequisite: BIOLOGY 106 or 372. Principles, methodologies and implementation of arthropod pest suppression in organic cropping systems.
- 361 Honey Bee Biology** 3 Biology of the honey bee, including behavior, genetics, evolution, pollination, sociality, and beekeeping practices.
- 401 Biology and Society, Past and Present** 3 Course Prerequisite: BIOLOGY 106. Development of biological ideas and knowledge from antiquity to present with emphasis on major advances achieved through invertebrate models. Recommended preparation: BIOLOGY 150. Cooperative: Open to UI degree-seeking students.
- 448 Medical and Veterinary Entomology** 3 Biology and ecology of parasitic arthropods and their direct impacts on human and animal health; transmission of pathogens. Credit not granted for both ENTOM 448 and ENTOM 548.
- 490 Special Topics in Entomology** V 1-4 May be repeated for credit; cumulative maximum 10 hours. Credit not granted for both ENTOM 490 and ENTOM 590. Cooperative: Open to UI degree-seeking students.
- 540 Taxonomy of Immature Insects** V 2-4 Identification of eggs, larvae, nymphs, and pupal stages of insects. Insect collection required.
- 548 Medical and Veterinary Entomology** 3 Biology and ecology of parasitic arthropods and their direct impacts on human and animal health; transmission of pathogens. Credit not granted for both ENTOM 448 and ENTOM 548.
- 550 Insect Physiology** 3 General principles of insect physiology; the mechanisms of vital processes in insects; organ, cellular, subcellular, chemical and physical levels. Required preparation must include BIOLOGY 332, 352, CHEM 345, ENTOM 340, or 343. Cooperative: Open to UI degree-seeking students.
- 555 Agricultural Chemical Technology for Crop Protection & Production** 3 Mechanistic examination of agricultural chemical technology; synthetic and biological pesticides and fertilizers; mechanism of biological activity; deployment; management.
- 556 Insecticides: Toxicology and Mode of Action** 1 Insecticides in terms of historical perspective, classification, synthesis, toxicity, mode of action, and metabolism. Required preparation must include MBIOS 303; CHEM 345; BIOLOGY 352, 420, or 350.
- 557 Herbicides: Toxicology and Mode of Action** 1 Herbicides in terms of historical perspective, classification, synthesis, toxicity, mode of action, and metabolism. Required preparation must include MBIOS 303; CHEM 345; BIOLOGY 352, 420, or 350.
- 558 Pesticide Topics** 1 Current issues concerning pesticides in terms of toxicity, mode of action, and metabolism. Required preparation must include MBIOS 303; CHEM 345; BIOLOGY 352, 420, or 350.
- 590 Special Topics in Entomology** V 1-4 May be repeated for credit; cumulative maximum 10 hours. Credit not granted for both ENTOM 490 and ENTOM 590. Cooperative: Open to UI degree-seeking students.
- 593 Seminar** 1 May be repeated for credit. Reporting and discussing problems and research in entomology.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, F grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

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 May be repeated for credit; cumulative maximum 7 hours. Supervised individual practicum with IPM-oriented businesses, organizations, and governmental agencies; professionally related field interaction. S, F grading.
- 452 Pesticides and the Environment** 2 Immediate and prolonged effects of pesticides on human and other animals; legal and moral repercussions of pesticide use. Recommended for graduate-level course: 12 credit hours of biology or ecology courses.
- 462 [M] Systems of Integrated Pest Management** 3 (2-3) Utilization of the systems approach in agricultural pest management; design, implementation, and analysis of IPM programs for selected crops.
- 552 Pesticides and the Environment** 2 Immediate and prolonged effects of pesticides on human and other animals; legal and moral repercussions of pesticide use. Recommended for graduate-level course: 12 credit hours of biology or ecology courses.

School of the Environment

environment.wsu.edu

Webster Physical Science Bldg, 1228

509-335-3009

Student Svs: Webster 1227, 509-335-8538

Director and Professor, S. M. Bollens; Associate Director for Undergraduate Education and Professor, K. A. Blatner; Associate Director for Research and Graduate Studies and Professor, J. A. Wolff; Academic Vice Chancellor and Professor, Tri-Cities/Prosser, J. Pratt; Professors, M. S. Carroll, A. Ford, D. R. Gaylord, C. K. Keller, P. B. Larson, C. T. Robbins, L. A. Shipley, B. Tissot, J. Vervoort, A. J. Watkinson; Associate Professors, L. H. Hardesty, B. C. Moore, R. D. Saylor, D. Schulze-Makuch, M. Swanson, R. B. Wielgus, B. A. Zamora; Clinical Associate Professor, G. Rollwagen-Bollens; Assistant Professors, J. Chappell, C. M. Cooper, J. Harrison, S. Henderson, C. H. Orr; Assistant Research Professor, Z. Shi; Instructors: A. Beall, M. Berger, K. Wilkie, M. McClure; Adjunct Faculty, R. Cook, R. Everett, R. Gootee, B. Green, B. T. Maletzke, C. Grue, R. L. Patton, T. Paveglio, P. L. Pavek, J. L. Rachlow, S. P. Reidel, M. A. Schroder, E. W. Shallenberger, T. N. Tollefson; Professors Emeriti, D. M. Baumgartner, R. C. Chapman, F. F. Foit, J. Goebel, D. P. Hanley, G. W. Hinman, P. E. Rosenberg, R. L. Shew, G. D. Webster, G. I. Young.

Under pressures of human population growth, increasing consumption, and reliance on fossil fuels, humanity is rapidly altering planetary biogeochemical processes and earth systems without fully knowing the consequences. We now face an uncertain future of food, water, and energy shortages, changing climate and weather patterns, rising and acidifying oceans, depleted soil and forest resources, and endangerment of a third or more of all the natural biological diversity of life on Earth. In response, society is shifting priorities to address these issues and students are looking for degrees that provide interdisciplinary training to tackle these emerging problems. Never before has there been such urgent need to address complex, multidimensional environmental and social problems.

The WSU School of the Environment is charged with strengthening and working with other academic programs to more tightly couple the natural and social sciences at WSU, thereby refocusing a core of our future land grant mission to better cope with pressing issues of global change, water science, and environmental sustainability. The new School represents the recent merging of two previous units – the School of Earth and Environmental Sciences (SEES) and the Department of Natural Resource Sciences (NATRS) – which bring together the geosciences (the physical context for global change), ecosystem and natural resource ecology (the biological context), and social/sustainability sciences (the human context). Our State-Wide System of Campuses has environmentally focused faculty located throughout WSU's multi-campus system in Pullman, Tri-Cities, and Vancouver.

The WSU School of the Environment strives to create synergy by marrying research, teaching, and extension efforts to ensure an ecologically sound, socially responsible, and economically viable future for communities in Washington. Faculty and students in the School are:

- Generating fundamental knowledge about the

Earth, environmental and ecological processes, natural resources, and human-environment interactions.

- Developing solutions to state, national, and global environmental problems (e.g., sustainable use of water, forests, biodiversity and other natural resources).
- Providing cutting-edge interdisciplinary undergraduate and graduate training to the next generation of research scientists, environmental and natural resource managers, environmental leaders, policy makers, and global citizens.
- Facilitating the integrated research and education necessary to support the Land Grant mission to achieve a sustainable future.
- Promoting the long-term conservation and enhancement of biological diversity and natural resources in an ecologically sustainable manner.

The WSU School of the Environment has defined several core thrusts to better address new and emerging challenges in the study of Earth Science and the environment. These include:

• **“Water: Connecting Earth and Life,”** including modeling and dynamics of wetland, lake, estuarine, marine and terrestrial systems, population ecology and modeling, sustainable resource management including water resources and biofuels, private land management, and analysis of policy impacts and the human dimensions of water and other resource conservation.

• **“Global Change: Sustaining Healthy Landscapes and Communities,”** including wildlife ecology and endangered species conservation, biogeochemistry, spatial and ecological relationships of plants and animals in terrestrial and aquatic ecosystems, in-stream physical and biological processes, and vertebrate and invertebrate ecology.

• **“Earth System Science,”** with strong focus on the geologic record that is the baseline for characterizing and understanding global change. Includes the chemistry, physics, and structure of the Earth; hydro- and biogeology, including astrobiology, biogeochemical cycles, geologic and environmental hazards, and watershed biogeochemistry and hydrology.

Please find specific information below on courses and majors under “BS in Earth and Environmental Sciences”.

BS in EARTH AND ENVIRONMENTAL SCIENCES

The School of the Environment offers a BS in Earth and Environmental Sciences with majors in: “Earth Sciences,” “Environmental and Ecosystem Sciences” and “Wildlife Ecology and Conservation Sciences.” The new degree and associated majors replaces the following degrees/majors: BS in Environmental Science, BS in Geology, BS in Natural Resource Sciences with majors/options in Wildlife Ecology and Natural Resource Sciences. The new degree provides an updated and more visible point of contact for students interested in these disciplines. **Additional information about the school can be found on our website at: <http://environment.wsu.edu/>.**

Earth Sciences Major

Earth Sciences 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. The geologic

record provides the context for understanding episodes of past rapid global change. It is also the geologist's job to evaluate groundwater quality and quantity for drinking water supply, discover new reserves of energy and raw materials, assess geologic hazards in land-use planning and unravel the mechanisms of volcanism, earthquakes, plate tectonics and the origins of life.

In addition to the University Common Requirements (UCORE), basic science courses and the School of the Environment common core, students majoring earth sciences complete a series of 300-400-level courses designed to provide training for professional geological work as well as preparation for postgraduate study.

The School of the Environment has well-equipped geological laboratory facilities, including electron microprobe, X-ray diffraction and fluorescence instruments, a laser ablation cell and 6 mass spectrometers for the determination of trace elements, isotope ratios and organic compounds. There are active research programs in volcanology, geochemistry, tectonics, groundwater and contaminant hydrology, sedimentology, stratigraphy and astrobiology.

Earth Sciences majors are expected to graduate with a complete understanding of earth, including its constituent materials, the environments and processes through which these materials form and interact, and its physical, chemical, and biological evolution. The students are expected to be capable of examining and interpreting relations among geologic materials in the field. Problem solving and critical thinking will be applied in the classroom, laboratory, and field, and effective communication skills will be expected. The students will demonstrate quantitative understanding of earth materials and processes. **Students interested earth sciences should contact the staff in Webster 1227 (509-335-8538) for further assistance.**

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: GEOLOGY 102, 210, 308, 320, 340, 350, 351, 356; one year of general physics; one year of general inorganic chemistry; mathematics through two semesters of calculus. A minimum gpa of 3.0 is normally required for admission.

Environmental and Ecosystem Sciences Major

The Environmental and Ecosystem Sciences major is offered for students interested in biological, physical or socioeconomic aspects of environmental/natural sciences that either extend beyond traditional disciplinary boundaries or which represent areas of specialization not encompassed by our other majors. This is the most flexible of our majors, offering exceptional opportunities for tailoring of courses/curricula to match individual student interests and needs within the realm of environmental and ecosystem sciences.

Environmental and Ecosystem Sciences is an interdisciplinary science concerned with natural and managed environments and their interactions with biological and human systems. Emphasis is put on the comprehensive understanding of environmental and ecological contexts, assessment of beneficial and disruptive anthropogenic impacts, and methodologies to analyze and resolve conflict in complex systems. Students acquire interdisciplinary perspectives and understanding necessary to prepare

them for a variety of roles in the study, planning and management of the environment.

All students in Environmental and Ecosystem Sciences major will receive a well-rounded, general science background in the physical and life sciences. They will develop an in-depth, interdisciplinary expertise in an area of concentration within the field. In addition to the University Common Requirements (UCORE), basic science courses and a common core taken by all students completing a BS in Earth and Environmental Sciences, students select a structured set of courses in concert with their advisor based upon their area(s) of primary interest. Lists of approved electives are available from an advisor. **Students interested in the Environmental and Ecosystem Sciences major may contact the staff in Johnson Hall, Room 115, (509-335-6166) or Webster 1227, 509-335-8538 for further assistance.**

Wildlife Ecology and Conservation Major

The Wildlife Ecology and Conservation major provides students with a basic background in the sciences plus additional courses emphasizing the management and scientific aspects of wildlife ecology. Students are therefore prepared to pursue a variety of careers focusing upon either/both wildlife biology or wildlife management. The core requirements plus proper selection of approved wildlife electives may allow majors to meet the US Office of 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 and range conservationist. Wildlife students can further individualize and often enhance their professional credentials by minoring in another subject such as criminal justice.

In addition to the University Common Requirements (UCORE), basic science courses and the School of the Environment common core, students in this major complete a core of wildlife classes emphasizing wildlife ecology, management, nutrition, population ecology, and conservation biology. Opportunities for specialization and pursuit of individual student interests beyond the wildlife core are provided through approved electives in the areas of habitat ecology, aquatic ecology, animal ecology and conservation biology. Students seeking to complete the key science prerequisites for admission to the College of Veterinary Medicine may do as a part of this major.

The student chapter of The Wildlife Society provides out of class opportunities for students to interact with each other socially and professionally with the faculty and other professionals. Faculty contacts with many of the employing organizations and interaction with career services on campus help students obtain summer and permanent employment, as well as internship and cooperative education opportunities in their chosen field.

Facilities such as various teaching and research laboratories; bear research facility; animal holding facilities, greenhouses and grasslands/woodlands at the E.H. Steffen Center; the Hudson Biological Reserve at Smoot Hill; and the Kramer/Palouse Natural Area; provide students with knowledge and training needed to develop competence in their chosen professions. These facilities and the close proximity of natural forest, rangeland and aquatic ecosystems to the Pullman campus

provide significant opportunities for field and experiential learning to natural resource science students. **Students interested Wildlife Ecology and Conservation Sciences should contact the staff in Johnson Hall 115 (509-335-6166) for further assistance.**

Pre-Veterinary Medicine

Students seeking to complete the key science prerequisites for admission to the College of Veterinary Medicine may do so through the proper selection of basic science courses and through the use of their electives within the Wildlife Ecology and Conservation Sciences. Please contact the staff in Johnson Hall 115 (509-335-6166) for more information.

Minors

The School of the Environment offers minors in: Earth Science, Environmental Science, Natural Resource Sciences, Rangeland Ecology and Wildlife Ecology. Please contact one our offices for more information.

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 the web, for details.

Graduate Programs

Graduate programs provide students with an increased depth of knowledge of the scientific basis of their profession and a more complete understanding of the holistic nature of global change science.

The School of the Environment offers thesis-based MS degrees in:

- Environmental Sciences
- Geology
- Natural Resource Sciences

PhD degrees are offered in:

- Environmental and Natural Resource Sciences
- Geology

Under the broad rubric of each graduate degree, students may specialize in a variety of biological, geochemical, physical or social science aspects of Earth, environmental or natural resource science by virtue of both advanced coursework and graduate research. Graduate curricular requirements are flexible; hence, students with preceding education in any related fields are encouraged to apply. To be accepted to graduate study, applicants must (1) meet the Graduate School's minimum admission requirements, (2) complete the department's supplemental application form, (3) take and submit their the Graduate Record Exam (GRE) scores and (4) have at least one member of the department's faculty willing to serve as the student's major advisor. (Note: the School of the Environment does not have a minimum required GRE score for admission.) Students interested in graduate study should consult the WSU Graduate Bulletin and directly contact the School of the Environment for further information on opportunities and requirements.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

EARTH SCIENCES (120 HOURS)

To certify in the major you must have at least 24 credits and a 2.0 cumulative gpa.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 101 [PSCI] or 105 [PSCI]	4
GEOLOGY 101	4
HISTORY 105 [ROOT]	3
MATH 106	3

<i>Second Term</i>	<i>Hours</i>
CHEM 102 or 106	4
ECONS 101 [SSCI]	3
ENGLISH 101 [WRTG]	3
GEOLOGY 210	4
MATH 108	2

Second Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
ENVR_SCI 101	4
GEOLOGY 350	4
PHYSICS 101 or 201	4

<i>Second Term</i>	<i>Hours</i>
GEOLOGY 315	3
Humanities [HUM]	3
MATH 140 [QUAN] or 171 [QUAN]	4
PHYSICS 102 or 202	4
Complete Writing Portfolio	

<i>Third Term</i>	<i>Hours</i>
Year 2, Summer Session: GEOLOGY 307	3

Third Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
ENGLISH 301 [WRTG] or 402 [WRTG]	3
GEOLOGY 320	3
SOIL SCI 368	3
STAT 412	3

<i>Second Term</i>	<i>Hours</i>
COM 102 or H D 205	3 or 4
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
GEOLOGY 340 [M]	4
GEOLOGY 356	4

<i>Third Term</i>	<i>Hours</i>
Year 3, Summer Session: GEOLOGY 408 [CAPS] [M]	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
NATRS 300 or BIOLOGY 372	3 or 4
Professional Electives ¹	6
Electives	3

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3

Experiential Elective ²	3
GEOLOGY 303	3
Professional Electives ¹	4

¹ Within the School of the Environment, professional electives are courses selected by the student in concert with their advisor that pertain to their major and/or to a specific sub-discipline of interest. Professional electives may also include courses from outside of their major as needed to complete a minor in another field of study. SEE ADVISOR

² Certified students in the School of the Environment are required to fulfill the Experiential Requirement before graduation. This requirement is designed to give students experience that they will not receive in the traditional classroom oriented course, and to better prepare them for a successful career after graduation. There are various ways to complete this requirement, and students are encouraged to choose an experience of interest to them. SEE ADVISOR

ENVIRONMENTAL AND ECOSYSTEM SCIENCES (120 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 101 [PSCI] or 105 [PSCI]	4
ENVR_SCI 101[BSCI]	4
HISTORY 105 [ROOT]	3
MATH 106	3

<i>Second Term</i>	<i>Hours</i>
CHEM 102 or 106	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
MATH 108	2
NATRS 300 or BIOLOGY 372	3 or 4

Second Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106	4
ECONS 101 [SSCI]	3
PHYSICS 101, 102, or GEOLOGY 101	4
Required Electives ¹	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
GEOLOGY 315 or NATRS 460	3
STAT 212 [QUAN] or MATH 140 [QUAN]	4
Professional Electives or Required Electives ¹²	5
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
ENVR SCI 310, SOIL SCI 368, or BIOLOGY 340	3
STAT 412 or 370	3
Professional Electives ²	7

<i>Second Term</i>	<i>Hours</i>
COM 102 [COMM] or H D 205 [COMM]	3 or 4
ENGLISH 301 or 402	3
GEOLOGY 303 or 390	3
Professional Electives ²	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Integrative Capstone [CAPS]	3
Writing in the Major [M]	3
Professional Electives ²	6

<i>Second Term</i>	<i>Hours</i>
ENVR SCI 444 or ENVR SCI 335 ⁴	3
Experiential Elective ³	3
NATRS 312 [DIVR]	3
Writing in the Major [M]	3
Professional Electives ²	3

¹ Students are required to select at least one course from a block of 200-level electives. SEE ADVISOR

² Within the School of the Environment, professional electives are courses selected by the student in concert with their advisor that pertain to their major and/or to a specific sub-discipline of interest. Professional electives may also include courses from outside of their major as needed to complete a minor in another field of study. SEE ADVISOR

³ Certified students in the School of the Environment are required to fulfill the Experiential Requirement before graduation. This requirement is designed to give students experience that they will not receive in the traditional classroom oriented course, and to better prepare them for a successful career after graduation. There are various ways to complete this requirement, and students are encouraged to choose an experience of interest to them. SEE ADVISOR

WILDLIFE ECOLOGY AND CONSERVATION SCIENCES - PRE-VETERINARY PLAN (129 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
COM 102 [COMM] or H D 205 [COMM]	3 or 4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 106	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 108	2
NATRS 300 or BIOLOGY 372	3 or 4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 106	4
ECONS 101 [SSCI]	3
NATRS 204	2
NATRS 301	3
NATRS 310	4

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
ENGLISH 301 or 402	3
NATRS 302	3
STAT 212 [QUAN]	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
NATRS 435	4
SOIL SCI 368	3
STAT 412	3

<i>Second Term</i>	<i>Hours</i>
Animal Systematics Elective ¹	4
NATRS 431	3
NATRS 438	3
NATRS 460 or GEOLOGY 315	3
PHYSICS 101	4

Fourth Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 301	4
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Integrative Capstone [CAPS]	3
MBIOS 303	4
NATRS 450 [M]	3

<i>Second Term</i>	<i>Hours</i>
Animal Systematics Elective ¹	4
GEOLOGY 303 or 390	3
Experiential Elective ²	3
NATRS 441	4
NATRS 446 [M]	3

¹ Choose two of the following Animal Systematics Courses: BIOLOGY 412, 423, 428, or 432.

² Certified students in the School of the Environment are required to fulfill the Experiential Requirement before graduation. This requirement is designed to give students experience that they will not receive in the traditional classroom oriented course, and to better prepare them for a successful career after graduation. There are various ways to complete this requirement, and students are encouraged to choose an experience of interest to them. SEE ADVISOR

WILDLIFE ECOLOGY AND CONSERVATION SCIENCES – BASIC PLAN (120 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 106	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 101 [PSCI] or 105 [PSCI]	4
Creative & Professional Arts [ARTS]	3
ENGLISH 101 [WRTG]	3
MATH 108	2

Second Year

<i>First Term</i>	<i>Hours</i>
COM 102 [COMM] or H D 205 [COMM]	3 or 4
NATRS 204	2
NATRS 300	3
NATRS 301	3
NATRS 310	3

<i>Second Term</i>	<i>Hours</i>	
CHEM 102 or 106	4	
NATRS 302	3	
STAT 212 [QUAN]	4	
Electives	3	
Complete Writing Portfolio		

Third Year

<i>First Term</i>	<i>Hours</i>	
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3	
ENGLISH 301 or 402	3	
SOIL SCI 368	3	
STAT 412	3	
Professional Electives ¹	3	

<i>Second Term</i>	<i>Hours</i>	
Animal Systematics Course ²	4	
GEOLOGY 303	3	
NATRS 431	3	
NATRS 438	3	
NATRS 460 or GEOLOGY 315	3	

Fourth Year

<i>First Term</i>	<i>Hours</i>	
Integrative Capstone [CAPS]	3	
NATRS 312 [DIVR]	3	
NATRS 435	4	
NATRS 450 [M]	3	
Professional Electives ¹	2	

<i>Second Term</i>	<i>Hours</i>	
Animal Systematics Course ²	4	
Experiential Elective ³	3	
NATRS 441	4	
NATRS 446 [M]	3	

¹ Within the School of the Environment, professional electives are courses selected by the student in concert with their advisor that pertain to their major and/or to a specific sub-discipline of interest. Professional electives may also include courses from outside of their major as needed to complete a minor in another field of study. SEE ADVISOR

² Choose two of the following Animal Systematics Courses: BIOLOGY 412, 423, 428, or 432.

³ Certified students in the School of the Environment are required to fulfill the Experiential Requirement before graduation. This requirement is designed to give students experience that they will not receive in the traditional classroom oriented course, and to better prepare them for a successful career after graduation. There are various ways to complete this requirement, and students are encouraged to choose an experience of interest to them. SEE ADVISOR

Minors

Environmental Science

A minor in Environmental Science may be certified after the completion of 90 semester credit hours. The minor requires 18 credit hours, including ENVR SCI 101, 444. An additional 10 credit hours may be selected from the following classes: ENVR SCI 250, 275, 285, 310, 335, 463, 490, GEOLOGY 230, 303, 315, NATRS 300, 312, or 454. Of these 18 credit hours, 9 hours must be

in upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Courses taken to meet the minor requirements cannot be taken on a pass/fail basis.

Forestry

Minimum of 16 credit hours. Required courses: NATRS 204, 301, 305. Restricted electives: at least 8 credit hours selected from NATRS 331, 348, 420, 430, 460. Credit hours must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

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, 9 hours of which must be in 300-400-level course work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. A minimum 2.0 gpa in geology minor course work is required.

Natural Resources

Minimum of 16 credit hours of courses approved by department. For non-natural resource sciences majors only. Required courses: at least 9 credit hours of NATRS courses, at least 9 credit hours of courses numbered 300 or higher, and at least one course in each of the following areas (three courses total); individual courses may be used to satisfy only one area: 1) basic principles of natural resource sciences/management: recommended electives: NATRS 100 and 303; others upon departmental approval; 2) socioeconomic aspects of natural resource sciences/management: recommended electives: NATRS 303, 311, 312, 403, 419, 438; others upon departmental approval; 3) ecological aspects of natural resource sciences/management: recommended electives: NATRS 280, 301, 302, 303, 419, 450, 460, 470; others upon departmental approval. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Rangeland Ecology and Management

Minimum of 20-23 credit hours. Required courses: NATRS 455, 460, 468 and SOIL SCI 201. One from NATRS 459 or BIOLOGY 462. One from NATRS 428, 430 or ENVR SCI 444. One from ANIM SCI 101 or 174. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Wildlife

Minimum of 19 credit hours. Required courses: NATRS 280, 435. Restricted electives: at least 11 credit hours from NATRS 431, 436, 450, 460 no more than one from BIOLOGY 423, 428, 432. Credit hours for the minor must include 9 hours taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Description of Courses

ENVIRONMENTAL SCIENCE

ENVR SCI

101 [BSCI] The Environment, Human Life, and Sustainability 4 (3-3) Interactions between humans and their environment; multidisciplinary introduction to environmental concepts and concerns.

250 [PSCI] Introduction to Earth System Science 3 Course Prerequisite: ENVR SCI 101. Earth's fundamental systems (the geo-, atmo-, hydro-, and bio-spheres) in the context of global change. Recommended: BIOLOGY 106 or CHEM 105.

275 Watersheds and Communities 3 Course Prerequisite: ENVR SCI 101. Introduction to basic concepts in hydrology, aquatic ecology, and sustainability.

285 The Science and Policy of Climate Change 3 Course Prerequisite: ENVR SCI 101. The science of the climate system; the case for reducing greenhouse gas emissions, and the best policies to do so.

310 Modeling the Environment 4 (3-3) Construction and testing of computer simulation models of environmental systems. Cooperative: Open to UI degree-seeking students.

335 [M] Environmental Policy 3 Course Prerequisite: ENVR SCI 101. Global, national, and regional environmental issues and policy.

402 Human Health & the Environment 3 Problem-solving approach to adverse effects on human health caused by contamination of environmental media or anthropogenic changes in ecosystems.

404 [M] The Ecosystem 3 Course Prerequisite: CHEM 345; PHYSICS 102 or 202; or graduate standing. Ecosystem organization and processes; theory and applications to contemporary environmental problems. Recommended preparation: BIOLOGY 372.

406 Introduction to Radiological Science 2 Course Prerequisite: BIOLOGY 107; CHEM 105; MATH 171; PHYSICS 101, or graduate standing. Fundamentals of atomic physics; interactions of radiation with matter; radiation dosimetry and biology, radioecology and radiological health protection.

410 [M] Global Biogeochemistry 3 Cycles of biogeochemically important elements and anthropogenic changes to those cycles in terrestrial and aquatic environments on a global scale. Field trip required.

444 Environmental Assessment 4 Environmental impact statements and their national and state policy frameworks, methods of assessment, and team preparation of an impact statement. Credit not granted for both ENVR SCI 444 and ENVR SCI 544. Cooperative: Open to UI degree-seeking students.

- 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 ENVR SCI 445 and ENVR SCI 545. Cooperative: Open to UI degree-seeking students.
- 463 Water in the Environment 3** Water flows in the natural environment, including cloud formation, rainfall, evaporation, infiltration, groundwater, river flows, lakes, estuaries, mixing, and erosion.
- 464 Introductory Physical Oceanography 3** Course Prerequisite: MATH 140, PHYSICS 101, or graduate standing. Climate, ocean currents, waves, mixing, and erosion, driven by salinity, temperature, winds, gravity, and earth's rotation.
- 465 Aquatic Microbial Ecology 2** Course Prerequisite: BIOLOGY 372; by permission of the instructor. Biological, ecological and environmental impact of microbes in aquatic systems.
- 469 Ecosystem Ecology and Global Change 3** Historic and current factors controlling the function of ecosystems and their responses to natural and human caused global change. (Crosslisted course offered as BIOLOGY 469, ENVR SCI 469, BIOLOGY 569, ENVR SCI 569). Credit not granted for both BIOLOGY 469 and 569, or ENVR SCI 469 and 569. Cooperative: Open to UI degree-seeking students.
- 482 Special Topics: Study Abroad V 1-15** May be repeated for credit. S, F grading.
- 486 ArcGIS and Geospatial Analysis 4 (2-6)** Geographic information systems applied to analysis of landscape data; maps, geographic coordinate systems and projections, geodatabases. (Crosslisted course offered as SOIL SCI 468, ENVR SCI 486, ENVR SCI 586).
- 490 Special Topics V 1-3** May be repeated for credit; cumulative maximum 6 hours.
- 491 Senior Seminar 1** Course Prerequisite: Certified major in Environmental Science and Regional Planning; senior standing, or graduate standing.
- 492 Special Topics V 1-3** May be repeated for credit; cumulative maximum 12 hours. Specialized topics within the discipline; content will vary each term.
- 495 Undergraduate Internship V 1-12** May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: 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. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Graduate Skills Seminar 1** Seminar designed to introduce first year graduate students to the science graduate program; roles and responsibilities of graduate students, teaching assistants and researchers. S, F grading.
- 504 Ecosystem Management 3** Analysis of ecosystem processes; dual emphasis on ecological principles and development of methods and concepts to evaluate policies for management.
- 531 Fundamentals of Environmental Toxicology 3** Fundamentals of toxicology; environmental fate and biological deposition and effects of natural products, drugs, food chemicals, and pollutants.
- 532 Applied Environmental Toxicology 3** Course Prerequisite: ENVR SCI 531 or PHARMSCI 505. Overview of the field of environmental toxicology; interactions of xenobiotics with natural systems.
- 540 Agroecology 3** Social and ecological aspects of agriculture and human food systems.
- 544 Environmental Assessment 4** Environmental impact statements and their national and state policy frameworks, methods of assessment, and team preparation of an impact statement. Credit not granted for both ENVR SCI 444 and ENVR SCI 544. Cooperative: Open to UI degree-seeking students.
- 545 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 ENVR SCI 445 and ENVR SCI 545. Cooperative: Open to UI degree-seeking students.
- 550 System Dynamics Models of Environmental Systems 3** Analysis of environmental system dynamics; development and uses of simulation models using the Stella software on Macintosh. Cooperative: Open to UI degree-seeking students.
- 569 Ecosystem Ecology and Global Change 3** Historic and current factors controlling the function of ecosystems and their responses to natural and human caused global change. (Crosslisted course offered as BIOLOGY 469, ENVR SCI 469, BIOLOGY 569, ENVR SCI 569). Credit not granted for both BIOLOGY 469 and 569, or ENVR SCI 469 and 569. Cooperative: Open to UI degree-seeking students.
- 585 Aquatic System Restoration 3** Study of natural, damaged and constructed ecosystems with emphasis on water quality protection and restoration of lakes, rivers, streams and wetlands. (Crosslisted course offered as CE 585, BSYS 554, ENVR SCI 585). Required preparation must include CHEM 345; MBIOS 101. Required preparation must include CHEM 345; MBIOS 101.
- 586 ArcGIS and Geospatial Analysis 4 (2-6)** Geographic information systems applied to analysis of landscape data; maps, geographic coordinate systems and projections, geodatabases. (Crosslisted course offered as SOIL SCI 468, ENVR SCI 486, ENVR SCI 586).
- 590 Special Topics 2** May be repeated for credit; cumulative maximum 6 hours. Cooperative: Open to UI degree-seeking students.
- 592 Special Topics V 1-4** May be repeated for credit; cumulative maximum 4 hours.
- 593 Seminar in Environmental Science and Regional Planning 1** May be repeated for credit; cumulative maximum 8 hours. May be repeated for credit, cumulative maximum 8 hours.
- 594 Environmental and Natural Resources Issues and Ethics 3** Ethical systems applied to natural resources; issues of professionalism and ethics in natural resource management. (Crosslisted course offered as NATRS 594, ENVR SCI 594). Cooperative: Open to UI degree-seeking students.
- 600 Special Projects or Independent Study V 1-18** May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V 1-18** May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.
- GEOLOGY**
- GEOLOGY**
- 101 [PSCI] Introduction to Geology 4 (3-3)** Introductory physical geology for non-science majors; emphasis on western US. Credit not granted for more than one of GEOLOGY 101, 102, 180.
- 102 Physical Geology 4 (3-3)** Course Prerequisite: Certified major in sciences, engineering, or in the Honors College. Modern concepts of earth science; mineral rock, resource, and map study. Field trip required. Credit not granted for more than one of GEOLOGY 101, 102, 180.
- 103 The Solar System 3** Overview of the results of modern planetary exploration, geological processes and environments on planets and moons in our solar system. Field trip required.

- 210 [PSCI] Earth's History and Evolution** 4 (3-3) Introduction to earth's history and evolution through observations, data collection and analysis, readings and writing exercises. Two field trips required.
- 221 Field Trip** 1 (0-3) May be repeated for credit. Course Prerequisite: GEOLOGY 210. One-week field trip to study geology of a selected area of the western United States. S, F grading.
- 230 [PSCI] Introductory Oceanography** 3 Interdisciplinary study of ocean systems: marine geology, chemistry, physics and biology; oceans' influence on climate and response to human activity.
- 285 Introduction to Astrobiology** 3 Origins, distribution, evolution and future of life in the universe.
- 303 Environmental Geology** 3 Course Prerequisite: GEOLOGY 101 or 102. Geological hazards and geologic problems associated with human activities. Optional field trip.
- 307 Geology Field Camp** 3 (0-9) Course Prerequisite: GEOLOGY 101; GEOLOGY 210. Introduction to geologic field methods; basic geologic mapping.
- 315 Water and the Earth** 3 (2-3) Course Prerequisite: CHEM 106 or GEOLOGY 101; MATH 140 or concurrent enrollment, or Math 171 or concurrent enrollment; PHYSICS 102 or 202. Global hydrologic cycle, including rivers and weathering, groundwater, rainwater and the atmosphere, oceans, human impacts. Field research required.
- 320 Sedimentary Petrology and Sedimentation** 3 (2-3) Course Prerequisite: GEOLOGY 210; GEOLOGY 350. Sedimentary rock composition and origins applying fundamental principles of sedimentology. Field trip required.
- 322 Geology of the Pacific Northwest** 3 Course Prerequisite: GEOLOGY 101 or 102. Physical geology of the Pacific Northwest focusing on geological processes important in its evolution. Field trips required. Credit not granted for both GEOLOGY 322 and 323.
- 323 Geology of the Pacific Northwest** 4 (3-3) Course Prerequisite: GEOLOGY 101 or 102. Physical geology of the Pacific Northwest focusing on geological processes important to its evolution. Field trips required. Credit not granted for both GEOLOGY 322 and 323.
- 340 [M] Geologic Structures** 4 (3-3) Course Prerequisite: GEOLOGY 210; MATH 107. Basic understanding and techniques of working in deformed rocks in mountain belts. Field trip required.
- 350 Mineralogy and Crystallography** 4 (2-6) Course Prerequisite: CHEM 101 or 105; GEOLOGY 101, 102, or 210. Composition, physical properties, structure, crystallography, identification, and origin of minerals. Field trip required.
- 356 Igneous and Metamorphic Petrology** 4 (2-6) Course Prerequisite: GEOLOGY 350. Origin, evolution, and eruption of magmas and crustal rocks; mineralogy, textures and chemical composition of igneous and metamorphic rocks. Field trips required.
- 390 Living on the Edge: Global Climate Change and Earth History** 3 Course Prerequisite: Junior standing. Global earth system: ocean, earth, atmosphere, biosphere, and cryosphere; human impact on the climate system; climate change data predictions; debates.
- 405 Geophysics** 4 (3-3) Course Prerequisite: GEOLOGY 340. Theory and application of geophysical methods for hydrology, environmental, engineering, exploration, and structural geology; review of techniques. (Crosslisted course offered as GEOLOGY 405).
- 408 [CAPS] [M] Field Geology** 3 (0-9) Course Prerequisite: GEOLOGY 307; GEOLOGY 340; GEOLOGY 350; senior standing. Advanced field problems and methods; data interpretation and report preparation. Cooperative: Open to UI degree-seeking students.
- 445 Astrobiology** 3 Origin, evolution, distribution and future of life in the universe; fundamental concepts of life and habitable environments on Earth and other planetary bodies with in and outside of the solar system. Credit not granted for both GEOLOGY 445 and GEOLOGY 545.
- 451 [M] Soil Geography** 3 (2-3) Study the geographic distribution of soil features and properties at hillslope to global scales. Field trips required.
- 467 Volcanology** 3 (2-3) Course Prerequisite: GEOLOGY 320; GEOLOGY 356. Volcanic process, eruption mechanisms, volcanic deposits, hazard assessment. Field trip required. Credit not granted for both GEOLOGY 467 and GEOLOGY 567.
- 470 Introduction to Economic Geology** 3 (2-3) Course Prerequisite: GEOLOGY 340; GEOLOGY 350. Genesis, evolution and tectonic setting of ore deposits combining theory, description, and detailed hand specimen analysis. Field trip to major mining districts. Cooperative: Open to UI degree-seeking students.
- 475 Groundwater** 3 (2-3) Course Prerequisite: CE 317 or GEOLOGY 315; MATH 140 or concurrent enrollment, or MATH 172 or 182 or concurrent enrollment. Introduction to groundwater occurrence, movement, quality, and resource management, emphasizing physical and biogeochemical principles. Field trip required. (Crosslisted course offered as GEOLOGY 475, CE 475).
- 480 Introductory Geochemistry** 3 Course Prerequisite: CHEM 106; GEOLOGY 350. The chemistry of Earth materials and processes.
- 490 Undergraduate Research** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: GEOLOGY 101; GEOLOGY 210. Research and advanced laboratory experience with a geology faculty member; oral presentation and written thesis.
- 498 Seminar** 1 May be repeated for credit; cumulative maximum 3 hours. Research papers presented by students, faculty, and visiting scientists on geological research. Credit not granted for both GEOLOGY 498 and GEOLOGY 598. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 505 Geophysics** 4 (3-3) Theory and application of geophysical methods for hydrology, environmental, engineering, exploration, and structural geology; review of techniques. (Crosslisted course offered as GEOLOGY 405).
- 520 Advanced Topics in Sedimentology** 3 (2-3) May be repeated for credit; cumulative maximum 6 hours. Modern aspects of sedimentary rocks. Field trip required. Cooperative: Open to UI degree-seeking students.
- 521 Clastic Depositional Systems** 3 (2-3) Clastic sedimentary environments; architectural elements and facies analysis. Field trip required. Cooperative: Open to UI degree-seeking students.
- 523 Advanced Topics in Stratigraphy** 3 May be repeated for credit. Cooperative: Open to UI degree-seeking students.
- 525 Carbonate Depositional Systems** 3 (2-3) Modern carbonate environments and processes; ancient carbonate rock sequences; carbonate platform-to-basin transition; diagenesis of carbonate rocks. Field trip required. Cooperative: Open to UI degree-seeking students.
- 538 Orogenic Systems I** 3 Field-base course examines tectonic processes active in the northern Cordillera. Field trip required and final research paper. Cooperative: Open to UI degree-seeking students.
- 540 Tectonics** 3 Nature and origin of the Earth's major tectonic features. Cooperative: Open to UI degree-seeking students.
- 541 Structural Analysis** 3 (2-3) Structural analysis of complexly deformed rocks in orogenic belts. Field trip required. Cooperative: Open to UI degree-seeking students.
- 545 Astrobiology** 3 Origin, evolution, distribution and future of life in the universe; fundamental concepts of life and habitable environments on Earth and other planetary bodies with in and outside of the solar system. Credit not granted for both GEOLOGY 445 and GEOLOGY 545.
- 550 Advanced Mineralogy** 3 Elements of crystal chemistry and crystal physics. Cooperative: Open to UI degree-seeking students.
- 552 Analytical Methods in Earth Sciences** 3 (2-3) Theory and practical experience in EMPA, XRD, XRF, and ICPMS analysis. Cooperative: Open to UI degree-seeking students.
- 560 Advanced Igneous Petrology** 3 (2-3) Origin, evolution, and tectonic significance of igneous rocks. Field trip required. Cooperative: Open to UI degree-seeking students.
- 562 Watershed Biogeochemistry** 3 Sources, transformations, fates and impacts of biogeochemically important compounds as they move downstream through watersheds to the coastal zone.

- 567 Volcanology** 3 (2-3) Volcanic process, eruption mechanisms, volcanic deposits, hazard assessment. Field trip required. Credit not granted for both GEOLOGY 467 and GEOLOGY 567.
- 578 Groundwater Geobiology** 3 (2-3) Interaction of groundwater geology and the environment including microbial populations with emphasis on microbial transport in the sub-surface and bioremediation approaches.
- 579 Groundwater Geochemistry** V 2-4 May be repeated for credit; cumulative maximum 4 hours. Organic and inorganic aqueous geochemistry; controls on groundwater contaminant fate. Cooperative: Open to UI degree-seeking students.
- 583 Radiogenic Isotopes and Geochronology** 3 Radiogenic isotopes and their uses as chronometers (radiometric dating) and as tracers of earth evolution and differentiation. Cooperative: Open to UI degree-seeking students.
- 584 Stable Isotope Geochemistry** 3 Principles and applications of isotope geochemistry in the geological sciences. Cooperative: Open to UI degree-seeking students.
- 588 Methods in Radiogenic Isotope Geochemistry** 3 (1-6) Course Prerequisite: GEOLOGY 583. Laboratory-based course in modern analytical methods in radiogenic isotope geochemistry.
- 595 Advanced Topics in Geology** V 1-4 May be repeated for credit; cumulative maximum 6 hours. Topics of current interest in geology.
- 596 Advanced Topics in Geology** V 1-4 May be repeated for credit; cumulative maximum 6 hours. Topics of current interest in geology.
- 597 Advanced Topics in Geology** V 1-4 May be repeated for credit; cumulative maximum 6 hours. Topics of current interest in geology.
- 598 Seminar** 1 May be repeated for credit; cumulative maximum 3 hours. Research papers presented by students, faculty, and visiting scientists on geological research. Credit not granted for both GEOLOGY 498 and GEOLOGY 598. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.
- NATURAL RESOURCE SCIENCES**
- NATRS**
- 100 Introduction to Natural Resource Management I** 1 Nature and significance of natural resources; types of renewable natural resource systems; goals and principles of natural resource management.
- 204 Introduction to Measurements and Computers in Natural Resources** 2 (1-3) Course Prerequisite: MATH 107, MATH 106/108, MATH 108 concurrent enrollment if 106 is complete, MATH 140, MATH 171, or MATH 202. Introduction to basic concepts, field techniques and the use of spread sheets in natural resources. Field trips required.
- 300 Natural Resource Ecology** 3 Ecology as applied to management of natural resource ecosystems; biological diversity, conservation biology, global climate change in natural resource ecology. Field trips required.
- 301 Forest Plants and Ecosystems** 3 (2-3) Course Prerequisite: NATRS 300 or concurrent enrollment. Identification and ecology of forest plants with emphasis on trees and the ecosystems in which they occur. Field trips required.
- 302 Arid Land Plants and Ecosystems** 3 (2-3) Course Prerequisite: NATRS 301. Identification and ecology of arid land plants (trees, shrubs, grasses, forbs) and the ecosystems in which they occur. Field trips required.
- 305 Silviculture** 3 Stand dynamics, natural regeneration methods, intermediate stand treatment, relationships of natural resource management to silvicultural practice. Field trips required.
- 310 Methods in Wildlife Ecology** 4 (3-3) Course Prerequisite: BIOLOGY 106; BIOLOGY 107; NATRS 204. Field and laboratory sampling techniques in wildlife research and management.
- 312 [DIVR] Natural Resources, Society, and the Environment** 3 Social views of natural resources; processes by which these views are developed and expressed; social conflict over natural resources.
- 411 [M] Limnology and Aquatic Ecosystem Management** 3 (2-3) Introduction to the science and management of aquatic ecosystems, emphasizing lakes.
- 416 Fisheries Management** 4 (3-3) Techniques employed in sampling and application of principles toward managing recreational and commercial aquatic resources. (Crosslisted course offered as NATRS 416, BIOLOGY 416). Recommended NATRS 411. Recommended preparation: NATRS 411. Cooperative: Open to UI degree-seeking students.
- 419 Topics in Natural Resource Sciences** V 1-3 May be repeated for credit; cumulative maximum 9 hours. Topical issues in natural resource sciences.
- 421 Fish Health Management** 4 (3-3) Course Prerequisite: MBIOS 101. Epidemiology, prevention, diagnostics, and treatment of infectious and non-infectious diseases of free-living and confined finfish and shellfish.
- 430 Introduction to Wildland Fire** 3 Course Prerequisite: NATRS 301. Physical nature and behavior of wildland fire; the fire environment; fire ecology; practice of wildland fire management. Field trip required.
- 431 Wildlife Nutrition** 3 (2-3) Nutritional requirements and interactions of wildlife populations. Cooperative: Open to UI degree-seeking students.
- 435 Wildlife Ecology** 4 (3-3) Course Prerequisite: BIOLOGY 372 or NATRS 300; STAT 212 or 412; junior standing. The ecology of wildlife species and the contributing biological processes. Overnight field trip required.
- 438 Natural Resource and Environmental Policy and Law** 3 Course Prerequisite: Junior standing. Development, content and implementation of natural resources and environmental policy and law in the U.S. Emphasis on both historical development and current issues in this field. Recommended preparation: NATRS 312.
- 441 Population Ecology and Conservation** 4 (3-3) Course Prerequisite: BIOLOGY 372 or NATRS 300; STAT 212 or 412. Ecology, conservation, management of vertebrate populations, especially threatened and endangered species; designed for wildlife and conservation biology majors.
- 446 [M] Wildlife Habitat Ecology** 3 (2-3) The ecology of how wildlife use, respond to, and affect resources in their environment.
- 450 [M] Conservation Biology** 3 Course Prerequisite: Junior standing. Patterns of biological diversity, factors producing changes in diversity, values of diversity, management principles applied to small populations, protected areas, landscape linkages, biotic integrity, restoration, legal issues and funding sources. Credit not granted for both NATRS 450 and NATRS 550.
- 454 [M] Restoration Ecology** 3 (2-3) Course Prerequisite: Senior standing. Ecological principles used to restore biological communities; ecological processes and species on degraded landscapes. Credit not granted for both NATRS 454 and NATRS 554.
- 455 Elements of Range Management Sciences** 3 Course Prerequisite: BIOLOGY 107. Systems science, ecology, wildlife, livestock, social science, concept design, and their contributions to a management science involving rangelands.
- 460 Watershed Management** 3 Principles and practices of management of forest and rangelands for protection, maintenance, and improvement of water resource values. Field trip required. Recommended preparation: NATRS 204 or sufficient background in spreadsheets.

- 464 [M] Landscape Ecology 3 (2-3)** Course Prerequisite: Junior standing. Linkages between spatial patterns and processes in a variety of landscapes and the qualitative tools used in the investigation of these linkages. Credit not granted for both NATRS 464 and NATRS 564.
- 479 Natural Resource Management Internship V 2-12** May be repeated for credit; cumulative maximum 12 hours. An elective opportunity for select students to supplement their academic training with practical field experience.
- 488 Senior Thesis in Natural Resources V 3-6** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Certified major in Natural Resource Sciences; senior standing.
- 519 Advanced Topics V 1-3** May be repeated for credit; cumulative maximum 6 hours.
- 535 Wildlife Ecology 4 (3-3)** The ecology of wildlife species and the contributing biological processes. Overnight field trip required.
- 550 [M] Conservation Biology 3** Patterns of biological diversity, factors producing changes in diversity, values of diversity, management principles applied to small populations, protected areas, landscape linkages, biotic integrity, restoration, legal issues and funding sources. Credit not granted for both NATRS 450 and NATRS 550.
- 554 [M] Restoration Ecology 3 (2-3)** Ecological principles used to restore biological communities; ecological processes and species on degraded landscapes. Credit not granted for both NATRS 454 and NATRS 554.
- 556 Foraging Ecology of Herbivores 2** Synthesis of foraging behavior concepts including nutritive quality of forages, digestive and metabolic constraints, and diet and habitat selection. Cooperative: Open to UI degree-seeking students.
- 560 Watershed Management 3** Principles and practices of management of forest and rangelands for protection, maintenance, and improvement of water resource values. Field trip required. Recommended preparation: NATRS 204 or sufficient background in spreadsheets.
- 564 [M] Landscape Ecology 3 (2-3)** Linkages between spatial patterns and processes in a variety of landscapes and the qualitative tools used in the investigation of these linkages. Credit not granted for both NATRS 464 and NATRS 564.
- 594 Environmental and Natural Resources Issues and Ethics 3** Ethical systems applied to natural resources; issues of professionalism and ethics in natural resource management. (Crosslisted course offered as NATRS 594, ENVR SCI 594). Cooperative: Open to UI degree-seeking students.
- 595 Seminar in Natural Resource Sciences 1** May be repeated for credit. Literature review; preparation and presentation of reports in natural resource sciences.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Fine Arts

finearts.wsu.edu
FA Center 5072
509-335-8686

Professor and Department Chair, T. Brown; Professors, C. Ivory, K. Haas, C. Watts; Associate Professors, M. DePrano, M. Forsyth, D. Gast (Tri-Cities), H. Higgs (Vancouver), M. Holloman, M. Kinkel, N. Meisel, I. Palmer; Assistant Professors, A. Bawa (Vancouver), P. Christenson (Tri-Cities), D. DeHart, R. Safavi; Associate Clinical Professor, P. Lee.

The Fine Arts Department offers a diversity of experiences in the visual arts. The department offers courses of study leading to the degrees of Bachelor of Arts in Fine Arts (within this degree, there are two options: an Art Studio option, and an Art History option), Bachelor of Fine Arts and Master of Fine Arts. The 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 seven areas of emphasis within which to develop a program: drawing, painting, sculpture, printmaking, ceramics, photography, and digital media. These are supported by a strong art history component. Many career possibilities involving art exist in the world outside the university.

Students with a BA in Fine Arts - Art Studio Option, should have a broad understanding of the visual arts with an understanding of arts-related concepts/terms (including subject matter, form, and content) and basic studio production, as well as of art history, from a culturally diverse global perspective that includes contemporary trends and theory. They should be able to articulate in visual form a range of approaches, from a representational point of view through a more conceptual focus, make critical judgments about contemporary art and culture, and have an acceptable command of verbal and written expression in addition to visual expression.

Students with a BA in Fine Arts - Art History Option are given broad exposure to the history of the visual arts. As an interdisciplinary field, art history is an intellectual arena in which students develop their perceptual skills and analytical tools to

engage diverse art forms from multiple perspectives. Students begin with foundation survey courses, the History of World Art (FA 201 and FA 202), and then take upper-division courses to consider art from specific cultures and historical time periods. In these specialized courses, students gain familiarity with contextual issues concerning the production and consumption of art. They develop research and writing skills necessary to think critically about art and visual culture. Students are also introduced to basic aspects of studio production to enhance their visual skills and knowledge of material practices. Students complete their studies by writing a thesis paper and developing knowledge of one foreign language.

Students with a BFA should have a working knowledge of the processes and media that produce works of visual art, including a clear understanding of the terms: subject matter, form, and content, as well as specialized technical, conceptual and imaginative expertise in a given field. They should be able to articulate in visual form a range of approaches, from a representational point of view through a more conceptual focus, make critical judgments about contemporary art and culture, and have an acceptable command of verbal and written expression in addition to visual expression.

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 Teaching and Learning does not offer a certification program in art education.

Certification Process

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.

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. Other opportunities for undergraduate study abroad in Europe, Australia, and the Far East are available from the Office of International Programs.

Graduate Study

The Fine Arts Department offers an interdisciplinary Master's program for those wishing to pursue a career in studio art. Students may focus on, but are not limited to, ceramics, drawing, digital media, painting, photography, printmaking, and sculpture. Emphasis is placed on personal and conceptual artistic development in light of contemporary art practices.

The M.F.A degree requires 52-60 credit hours and serves as the entry credential to college-level teaching and/or work as a practicing artist in the fine and applied arts. Graduates meet with faculty for one-on-one studio discussions. At the end of the first year students have an exhibition

in the departmental gallery and the second year program culminates in a thesis exhibition held in the Museum of Art. A final oral examination is also required.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

BACHELOR OF ARTS IN FINE ARTS - ART HISTORY OPTION (120 HOURS)

Certification requirements:

- 1) FINE ART 102 or 103;
- 2) 9 hours from 200 or 300-level art history courses;
- 3) 2.0 cumulative gpa in FINE ART courses.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
ENGLISH 101 [WRTG]	3
FINE ART 102	3
FINE ART 201 [HUM]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
FINE ART 103	3
Quantitative Reasoning [QUAN]	3 or 4
Social Sciences [SSCI]	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
Foreign language or Elective	4
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives	3

<i>Second Term</i>	<i>Hours</i>
FINE ART 202 [HUM]	3
Foreign language or Elective	4
Electives	7
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
FINE ART 301, 302 [M], or 404 [M]	3
FINE ART 303 [ARTS]	3
FINE ART Studio Elective ¹	3
300-400-level General Electives	4
Electives	3

<i>Second Term</i>	<i>Hours</i>
FINE ART [M] Course	3
FINE ART 304	3
General Elective	3
300-400-level Art History Elective ²	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
FINE ART [M] Course	3
Integrated Capstone [CAPS]	3
300-400-level Art History Electives ²	6
300-400-level General Elective	3

<i>Second Term</i>	<i>Hours</i>
FINE ART 408	3
300-400-level Art History Electives ²	6
300-400-level General Electives	6

¹ Select from any non-art history FA course.
² See department for approved list of electives.

BACHELOR OF ARTS IN FINE ARTS - STUDIO OPTION (120 HOURS)

For the degree Bachelor of Arts in Fine Arts a total of at least 48 hours of fine arts is required; 30 of these hours must be in 300-400-level courses.

- 1) FINE ART 102, 103 and 110;
- 2) FINE ART 201 and 202;
- 3) One course from 2D area (FINE ART 111, 312, 320 or 370);
- 4) One course from 3D area (FINE ART 340 or 350)
- 5) One course from media arts areas (FINE ART 332, 333 or 381);
- 6) 2.0 cumulative gpa in FINE ART courses.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
ENGLISH 101 [WRTG]	3
FINE ART 102	3
FINE ART 110	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
FINE ART 103	3
FINE ART 111, 312, 320, or 370	3
FINE ART 201 [HUM]	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
FINE ART 340 or 350	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives	6

<i>Second Term</i>	<i>Hours</i>
FINE ART 202 [HUM]	3
FINE ART 332, 333, or 381	3
Quantitative Reasoning [QUAN]	3 or 4
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level FINE ART Elective	3
FINE ART 303 [ARTS]	3
Social Sciences [SSCI]	3
Electives	7

<i>Second Term</i>	<i>Hours</i>
300-400-level FINE ART Elective	3
FINE ART 304	3
Electives	9

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Electives	6
300-400-level FINE ART Elective	3
FINE ART [M]	3
Integrated Capstone [CAPS]	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Electives	6
300-400-level FINE ART Elective	3
FINE ART [M]	3

BACHELOR OF FINE ARTS (BFA) (120 HOURS)

For the degree Bachelor of Arts in Fine Arts a total of at least 70 hours in fine arts are required; 46 of these must be in 300-400-level courses.

Certification requirements (students should prepare for BFA certification during fall semester of the junior year):

- 1) FINE ART 102, 103 and 110;
- 2) FINE ART 201 and 202;
- 3) One course from 2D area (FINE ART 111, 312, 320 or 370);
- 4) One course from 3D area (FINE ART 340 or 350)
- 5) One course from media arts areas (FINE ART 332, 333 or 381);
- 6) 6 additional hours in major emphasis;
- 7) 2.0 cumulative gpa in FINE ART courses;
- 8) Slide portfolio and exhibit presentation of original art work.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
ENGLISH 101 [WRTG]	3
FINE ART 102	3
FINE ART 110	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
FINE ART 103	3
FINE ART 111, 312, 320, or 370	3
FINE ART 201 [HUM]	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
300-level FINE ART Elective	3
Diversity [DIVR]	3
FINE ART 340 or 350	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives	3

<i>Second Term</i>	<i>Hours</i>
300-level FINE ART Elective	3
FINE ART 202 [HUM]	3
FINE ART 332, 333, or 381	3
Quantitative Reasoning [QUAN]	3 or 4
Electives	3

Complete Writing Portfolio

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level FINE ART Elective	3
FINE ART 303 [ARTS]	3
FINE ART 312	3
Social Sciences [SSCI]	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
300-400-level FINE ART Electives	6
FINE ART 304	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level FINE ART Electives	9
FINE ART 498 [M]	3
Integrated Capstone [CAPS]	3

<i>Second Term</i>	<i>Hours</i>
300-400-level FINE ART Electives	3
FINE ART [M]	3
FINE ART 493	4
Electives	3

Minors

Art

A minor in art requires 18 hours including FINE ART 102 or FINE ART 103; FINE ART 110; and one course from FINE ART 201 or 202. The remaining 9 hours of electives must be in 300-400-level courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Art History

A minor in art history requires 18 hours including FINE ART 201 and 202. The remaining 12 hours of electives must be in 300-400-level art history courses. 9 hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Description of Courses

FINE ARTS

FINE ART

- 101 [ARTS] Introduction to Art** 3 Course Prerequisite: For non-majors only. For non-majors. Appreciation of various visual art forms; emphasis on contemporary period.
- 102 Visual Concepts I** 3 (0-6) Introduction to visual and conceptual studio art practice through an interdisciplinary approach to two-dimensional space.
- 103 Visual Concepts II** 3 (0-6) Introduction to visual and conceptual studio art practice through an interdisciplinary approach to three-dimensional space.
- 110 Drawing** 3 (0-6) Composition in pictorial space, visualization of ideas, drawing from life.

111 Figure Drawing 3 (0-6) Course Prerequisite: FINE ART 102 or 110. Introduction to drawing the human figure.

201 [HUM] World Art History I 3 Historical survey of art and architecture from prehistory through 1450.

202 [HUM] World Art History II 3 Historical survey of art and architecture from 1450 to the present.

301 Arts of Native North America 3 Diversity of visual forms, traditional and contemporary, within changing historical and cultural contexts.

302 [M] Arts of Asia 3 Art and architecture of India, China and Japan within their historical, religious and cultural contexts. (Crosslisted course offered as FINE ART 302, ASIA 302).

303 [ARTS] Modern Art-19th Century 3 History of 19th century art in Europe and the United States.

304 Modern Art-20th Century 3 Modern art in the 20th century.

305 [HUM] [M] Arts of Ancient Greece and Rome 3 Course Prerequisite: FINE ART 201 or concurrent enrollment. The arts of ancient Greece, Etruria, and Rome from the Greek Dark Ages to the early Christian era.

307 [HUM] [M] The Arts of Renaissance Europe 3 Course Prerequisite: FINE ART 202 or concurrent enrollment. The arts of southern and northern Europe from 1300 to 1550.

308 [M] Women Artists I 3 Middle Ages through the 18th century. (Crosslisted course offered as FINE ART 308, WOMEN ST 308).

310 [M] Women Artists II 3 19th to 20th century. (Crosslisted course offered as FINE ART 310, WOMEN ST 310).

312 Advanced Drawing 3 (0-6) May be repeated for credit. Course Prerequisite: FINE ART 110. Advanced projects using drawing media and process.

313 Drawing from the Body 3 (0-6) May be repeated for credit. Course Prerequisite: FINE ART 111. Continuation of FINE ART 111. Contemporary discourse surrounding the body; exploration through the practice of drawing and performative actions.

320 Beginning Painting 3 (0-6) Course Prerequisite: FINE ART 110. Introduction to problems in painting; development of composition and color.

321 Intermediate Painting 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: FINE ART 320. Problems and ideas in painting.

331 Art, Science, and Technology 3 Course Prerequisite: Certified major or minor in Fine Art, or DTC majors and minors. Survey of art's relationship to science and technology from Renaissance to present day; emphasis on historical overview and cultural implications.

332 Introduction to Digital Media - Print and Web 3 (0-6) Course Prerequisite: FINE ART 102 or concurrent enrollment, or FINE ART 103 or concurrent enrollment, or FINE ART 110 or concurrent enrollment. Introduction to principles and processes of digital media through print and web based projects; emphasis on theoretical investigations, conceptual development

333 Introduction to Digital Media - Video and Sound 3 (0-6) Course Prerequisite: FINE ART 102 or concurrent enrollment, or FINE ART 103 or concurrent enrollment, or FINE ART 110 or concurrent enrollment. Principles and processes of digital media through video and sound-based projects; theoretical investigations and conceptual development.

337 Experimental Animation 3 (2-2) Digital and analog animation techniques; conceptual development of narrative structures. (Crosslisted course offered as ENGLISH 337, FINE ART 337).

340 Ceramics 3 (0-6) Course Prerequisite: FINE ART 103 or 110. Hand building processes; glazing; firing.

341 Intermediate Ceramics 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: FINE ART 340.

350 Sculpture 3 (0-6) Course Prerequisite: FINE ART 103 or 110. Composition of form in the three-dimensional space.

351 Intermediate Sculpture 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: FINE ART 350. May be repeated for credit; cumulative maximum 9 hours.

361 Special Topics?Drawing V 1-6 May be repeated for credit.

362 Special Topics?Painting V 1-6 May be repeated for credit.

363 Special Topics-Digital Media V 1-6 May be repeated for credit.

364 Special Topics?Ceramics V 1-6 May be repeated for credit.

365 Special Topics?Sculpture V 1-6 May be repeated for credit.

366 Special Topics?Printmaking V 1-6

367 Special Topics?Photography V 1-6 May be repeated for credit.

369 Apparel Illustration and Rendering 3 (0-6) Illustration and rendering used for costume and fashion design. (Crosslisted course offered as AMDT 368, FINE ART 369).

370 Introduction to Printmaking 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: FINE ART 102. Introduction to the fundamentals of printmaking, incorporating drawing, painting and collage; processes may include lithography, etching, relief and monotype.

371 Screenprinting 3 (0-6) Course Prerequisite: FINE ART 102. Introduction to the basic techniques, processes and history of screenprinting; collage, repetition, multiples, hand-drawn, photo and digital processes.

- 380 History of Photography** 3 Historical survey of photography from its invention to the present; conceptual, cultural, and technical implications of the medium.
- 381 Beginning Photography** 3 (0-6) Course Prerequisite: FINE ART 102. Camera and black/white film used in conjunction with studio and darkroom techniques; composition and aesthetic concepts introduced. Cooperative: Open to UI degree-seeking students.
- 382 Intermediate Photography** 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: FINE ART 381. Expansion of conceptual building in black/white darkroom and camera techniques; research and portfolio. Cooperative: Open to UI degree-seeking students.
- 385 Digital Imaging** 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: FINE ART 332 or 381. Principles and processes of digital imaging including color theory, software, cameras, scanning, color management and output options.
- 401 Special Topics?Art History** V 1-6 May be repeated for credit.
- 403 [M] Modern Theories of Art** 3 May be repeated for credit; cumulative maximum 6 hours. 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. 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. (Crosslisted course offered as FINE ART 405, WOMEN ST 405).
- 408 Art History Thesis** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Certified major in Fine Arts, with an Art History option. Thesis directed by student's department; original research paper regarding visual culture using art historical research skills.
- 423 Advanced Painting** V 3 (0-6) to 6 (0-12) May be repeated for credit. Course Prerequisite: FINE ART 321; certified major in Fine Arts. Continuation of FINE ART 321. Advanced problems in painting. Six credits only with permission of instructor.
- 433 Print Based Media** 3 (0-6) May be repeated for credit. Course Prerequisite: FINE ART 332. Principles and processes of visual communication in digital print; may include typography, image/text relationships, layout design and book arts.
- 434 Time Based Media** 3 (0-6) May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: FINE ART 333. Principles and processes of video, installation, and sound based art; emphasis on conceptual development of experimental forms.
- 435 Interactive Media** 3 (0-6) Course Prerequisite: FINE ART 332. Interactive possibilities in digital media including web-based projects, installation and physical computing.
- 442 Advanced Ceramics** V 3 (0-6) to 6 (0-12) May be repeated for credit. Course Prerequisite: FINE ART 341.
- 451 Material and Performance** 3 (2-4) Course Prerequisite: FINE ART 102, 103, 340, or 350. Studio-based class providing understanding of contemporary issues related to fiber materials and performance.
- 452 Advanced Sculpture** V 3 (0-6) to 6 (0-12) May be repeated for credit. Course Prerequisite: FINE ART 351. Six credits only with permission of instructor.
- 471 Advanced Printmaking** 3 (0-6) May be repeated for credit. Course Prerequisite: FINE ART 370 or 371. Survey of digital and photo processes for printmaking.
- 483 Advanced Photography** V 3 (0-6) to 6 (0-12) May be repeated for credit. Course Prerequisite: FINE ART 382; certified major in Fine Arts. Advanced black/white darkroom and studio; research of historic and contemporary trends; discussion of personal direction; portfolio.
- 490 Gallery Procedures with Museum of Art** V 3 (0-6) to 6 (0-12) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Permission of the Museum of Art. Introduction to art museums and galleries, including practicum in exhibition preparation, installation, art handling, collections.
- 493 Senior Exhibit** 4 Course Prerequisite: Certified BFA major. Independent study involving exhibit, written thesis and oral examination working with area coordinator. S, F grading.
- 495 Fine Arts Internship** V 1-12 May be repeated for credit. Course Prerequisite: Certified major in Fine Arts. Experience in work-related fine arts environments for practical application and experience. S, F grading.
- 498 [M] Contemporary Issues Seminar** 3 Course Prerequisite: FINE ART 304. Research seminar examining current issues confronting art and artists.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 500 Graduate Art History** 2 May be repeated for credit; cumulative maximum 6 hours.
- 510 Graduate Drawing** 3 May be repeated for credit; cumulative maximum 9 hours.
- 511 Graduate Drawing** 3 May be repeated for credit; cumulative maximum 9 hours.
- 512 Graduate Drawing** 3 May be repeated for credit; cumulative maximum 9 hours.
- 520 Graduate Painting** 3 May be repeated for credit; cumulative maximum 9 hours.
- 521 Graduate Painting** 3 May be repeated for credit; cumulative maximum 9 hours. May be repeated for credit; cumulative maximum 9 hours.
- 522 Graduate Painting** 3 May be repeated for credit; cumulative maximum 9 hours.
- 530 Graduate Digital Media** 3 May be repeated for credit; cumulative maximum 9 hours.
- 531 Graduate Digital Media** 3 May be repeated for credit; cumulative maximum 9 hours.
- 532 Graduate Digital Media** 3 May be repeated for credit; cumulative maximum 9 hours.
- 540 Graduate Ceramics** 3 May be repeated for credit; cumulative maximum 9 hours.
- 541 Graduate Ceramics** 3 May be repeated for credit; cumulative maximum 9 hours.
- 542 Graduate Ceramics** 3 May be repeated for credit; cumulative maximum 9 hours.
- 550 Graduate Sculpture** 3 May be repeated for credit; cumulative maximum 9 hours.
- 551 Graduate Sculpture** 3 May be repeated for credit; cumulative maximum 9 hours.
- 552 Graduate Sculpture** 3 May be repeated for credit; cumulative maximum 9 hours.
- 570 Graduate Printmaking** 3 May be repeated for credit; cumulative maximum 9 hours.
- 571 Graduate Printmaking** 3 May be repeated for credit; cumulative maximum 9 hours.
- 572 Graduate Printmaking** 3 May be repeated for credit; cumulative maximum 9 hours.
- 580 Graduate Photography** 3 May be repeated for credit; cumulative maximum 9 hours.
- 581 Graduate Photography** 3 May be repeated for credit; cumulative maximum 9 hours.
- 582 Graduate Photography** 3 May be repeated for credit; cumulative maximum 9 hours.
- 598 Graduate Seminar** 2 May be repeated for credit; cumulative maximum 6 hours. Topics in contemporary issues, theory, and criticism.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

School of Food Science

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Director, Denise Smith; Professors, B. Chew, J. Culbertson, R. Dougherty, C. Edwards, T. Henick-Kling,

J. Powers, B. Rasco; Associate Professors, J. Harbertson, K. Killinger, C. Ross; Assistant Professors, G. Ganjyal, G. Noratto, M. Zhu; Instructor, F. Younce; UI Affiliates: Professors, C. Bohach, G. Moller, A. Paszczynski; Associate Professors, S. Mimmich, D. Ryu, G. Unlu.

The School of Food Science (SFS), jointly administered by Washington State University and the University of Idaho, offers courses of study in the undergraduate major field of food science. Students complete a prescribed course of study leading to the Bachelor of Science in Food Science with emphasis areas in processing, business, science, or enology. Graduate degrees are also offered leading to Masters and Doctor of Philosophy in Food Science.

Food Science

Food Science is the scientific discipline that supports the food and beverage manufacturing industry. Food Science is a multidisciplinary science that applies biology, chemistry, physics, engineering, nutrition, and other sciences to improve the safety and quality of food products; create healthy food products; and design new, safer, and more sustainable food preservation methods. Food scientists strive to improve the quality and nutrition of foods through traditional and emerging preservation technologies. Food scientists conduct research to mitigate chemical and microbial risk factors in foods and to understand the causes of food deterioration and spoilage. Food scientists are employed around the world by large and small food processing companies, food ingredient suppliers, food quality assurance and testing labs, federal and state governmental agencies, and academia. Food scientists also work with existing and emerging companies preparing organic, natural, kosher, and halal food products.

Graduates of the food science program are well positioned to meet the evolving challenges, needs, and opportunities of the food industry not only in the Pacific Northwest, but also nationally and internationally. Graduates begin careers in food quality assurance, food safety microbiology, technical sales, production management, product extension or development, regulatory affairs, or research in the food/allied industries or federal/state regulatory agencies.

Food Science students learn to convert food commodities into high quality, safe and nutritious food products. As part of the BS degree, students receive training and learn skills relative to the production, processing, preservation, safety, evaluation, and distribution of foods. The food processing industry is continually challenged to evaluate existing foods for quality, as well as the development of new foods to better meet consumer demands and the nutritional needs of the world. Students who work at the WSU Creamery can gain practical processing and leadership skills in the state-of-the-art creamery where world-renowned Cougar Gold Cheese is made.

In the first two years of college, students enroll in science courses and complete most University Common Requirements (UCORE). In the junior and senior years, the curriculum emphasizes courses in food processing, food chemistry, food analysis, food microbiology, sensory evaluation, and other specialized areas such as the processing and manufacture of cereal and dairy products, as well as wines.

Our graduating seniors will: 1) show a depth of knowledge within Food Science that reflects an appropriate degree of specialization; 2) understand how the methods and concepts of Food Science relate to those of other disciplines, and possess the ability to engage in cross-disciplinary activities; 3) identify, summarize, and define the issue or problem at hand; 4) use information effectively to accomplish a specific purpose, such as making a decision; and 4) effectively organizing and articulating information to promote understanding and communicate significance of the issue or problem.

Other Opportunities

Students with specific interests can gain additional education by taking elective courses, participating in internships with food companies, and/or conducting a research project with a faculty member. Numerous summer internships are available to gain practical hands-on training. Contact your advisor for more information. Graduate programs are also available that lead to the degrees of Master of Science and Doctor of Philosophy in Food Science.

Transfer Students

Students planning to transfer to the School of Food Science should coordinate their programs of study with advisors to select courses applicable to the degree requirements. Many of the University Common Requirements (UCORE) courses and introductory chemistry, biology, and physics courses can be completed at community colleges. We especially recommend students take the appropriate science and mathematics courses required in our first two years of study, so students are on track when transferring to WSU.

Preparation for Graduate Study

Students who identify an interest in graduate work are encouraged to contact the advisor 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. Students from other science majors who wish to obtain an advanced degree in food science are encouraged to apply as they may be well prepared for graduate studies. Students are required to take certain core courses required of food science undergraduates in addition to those needed for their graduate program. For more complete information on our graduate program, admission requirements, and program requirements, review the School of Food Science website <http://sfs.wsu.edu/graduate-program/>. Please see faculty profiles at <http://sfs.wsu.edu/personnel/faculty-staff/> for research opportunities. Admission to the graduate program is based on ability to complete graduate-level work as evidenced by undergraduate transcripts; the compatibility of the student's objectives with faculty expertise and program objectives; and availability of graduate faculty to act as major advisor for the applicant. The School of Food Science requires GRE scores, in addition to admission materials required by the WSU Graduate School.

The School of Food Science welcomes inquiries about our program. Potential students can contact the School via phone (509-335-4763), email (food.science@wsu.edu) or visit the School of Food Science website (<http://sfs.wsu.edu>).

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

FOOD SCIENCE (120 HOURS)

The food science major is for the student interested in the science of food processing, quality, safety and product development. Students gain practical training in the application of chemistry and microbiology to the processing of foods.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG] or 105 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN] ¹	4

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107 [BSCI] ²	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
FS 110	3

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
ECONS 101 [SSCI]	3
FS 220	3
PHYSICS 101	4
Electives	3

<i>Second Term</i>	<i>Hours</i>
ANIM SCI 314 or MBIOS 233	3
COM 102 [COMM] or H D 205 [COMM]	3 or 4
MBIOS 303	4
MBIOS 305	3
MBIOS 306	2
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
FS 303	3
FS 416	3
FS 417	2
Humanities [HUM]	3
STAT 212	4

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
FS 432	3
FS 433	1
Electives ³	7

Fourth Year

<i>First Term</i>	<i>Hours</i>
FS 408	1
FS 460	3
FS 461 [M]	1
Integrative Capstone [CAPS]	3
Electives ³	6

<i>Second Term</i>	<i>Hours</i>
FS 422	3
FS 423	1
FS 462	4

FS 470	3
FS 489	3
Electives ³	3

¹ One semester of calculus (MATH 140 or 171) is required of those students who will be competing for scholarships offered by the Institute of Food Technologists.

² Although BIOLOGY 106 is listed as a prerequisite to BIOLOGY 107, BIOLOGY 107 can be taken without BIOLOGY 106 if CHEM 105 is taken prior to BIOLOGY 107 and if BIOLOGY 107 is taken concurrently with CHEM 106.

³ Electives may be selected using the emphasis area list available in the F S department. All courses must be selected in consultation with an academic advisor.

Description of Courses

FOOD SCIENCE

FS

- 110 Introduction to Food Science** 3 Chemistry, microbiology, and processing of food and food products; concepts of food preservation, packaging and marketing of foods; world food issues. Field trip required. Cooperative: Open to UI degree-seeking students.
- 201 [BSCI] Science on Your Plate** 3 Course Prerequisite: One [P] or [PSCI] course or concurrent enrollment, or one [Q] or [SCI] course or concurrent enrollment, or sophomore standing. Applications of science, scientific literacy, and critical thinking as related to the development and manufacture of modern food products and their use in modern civilizations. Cooperative: Open to UI degree-seeking students.
- 220 Food Safety and Quality** 3 Regulation, safety, and wholesomeness of food products; microbiological, chemical, and physical risks associated with food; hazard analysis as related to food safety, processing and quality; sanitation and pest management principles; methods for analyzing the sensory qualities of food products; problem management associated with food quality assurance. Cooperative: Open to UI degree-seeking students.
- 302 [M] Food Processing Lab** 1 (0-3) Course Prerequisite: Concurrent enrollment with FS 303. Application of specialized techniques, concepts and practices of food processing. Cooperative: Open to UI degree-seeking students.
- 303 Food Processing** 3 Course Prerequisite: FS 110 or 220; MATH 140 or 171; STAT 212 or concurrent enrollment. Specialized techniques, concepts and practices of food processing. Cooperative: Open to UI degree-seeking students.
- 304 Cereal Products** 2 Course Prerequisite: CHEM 345. Technical principles related to the production and commercial processing of legume and cereal foods. Field trip required. Cooperative: Open to UI degree-seeking students.
- 401 Topics in Food Science** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Selected topics in food science. Cooperative: Open to UI degree-seeking students.
- 406 Evaluation of Dairy Products I** 1 Identifying defects in dairy products and relating these defects to their probable cause; remedies. Cooperative: Open to UI degree-seeking students.
- 409 Principles of Environmental Toxicology** 3 Nature, properties, effects, and detection of toxic substances in the environment and in environmentally exposed species, including humans. Recommended preparation: BIOLOGY 102 or 107; CHEM 102; CHEM 105; CHEM 106; STAT 205. Cooperative: Open to UI degree-seeking students.
- 416 Food Microbiology** 3 Course Prerequisite: MBIOS 304; MBIOS 305. Purpose for enumeration, detection and identification of microorganisms in food products; physical, chemical and environmental factors influencing growth and survival of foodborne microorganisms; pathogenic and spoilage microorganisms in food and their control. Cooperative: Open to UI degree-seeking students.
- 417 Food Microbiology Laboratory** 2 (0-6) Course Prerequisite: Concurrent enrollment in FS 416. Methods for enumeration, detection, and identification of spoilage and pathogenic microorganisms in foods. Cooperative: Open to UI degree-seeking students.
- 418 Oral Seminar in Food Science** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: FS 110 or 220; junior standing; certified major in food science. Development of skills and communication tools and techniques for oral presentations of current food science research. Cooperative: Open to UI degree-seeking students.
- 422 Sensory Evaluation of Food and Wine** 3 Course Prerequisite: STAT 212; FS 110 or VIT ENOL 113. Theory, principles and application of sensory evaluation techniques in appearance, aroma, flavor and texture of foods and wine. (Crosslisted course offered as FS 422, VIT ENOL 422). Cooperative: Open to UI degree-seeking students.
- 423 Sensory Evaluation of Food and Wine Lab** 1 (0-3) Course Prerequisite: FS 422 or concurrent enrollment. Practical application of FS 422 including theory, principles and application of sensory evaluation techniques for appearance, aroma, flavor and texture of foods and wine. Recommended preparation: Age 21 or older. Cooperative: Open to UI degree-seeking students.
- 429 Dairy Products** 3 Course Prerequisite: CHEM 345; MBIOS 303. Dairy chemistry, microbiology, sanitation, product development and processing from cow to consumer. Credit not granted for both FS 429 and FS 529. Cooperative: Open to UI degree-seeking students.
- 430 Dairy Products Lab** 1 (0-3) Course Prerequisite: FS 429 or concurrent enrollment. Hands-on skills formulating, processing, evaluating and analyzing dairy products using communication and critical thinking skills. Cooperative: Open to UI degree-seeking students.
- 432 Food Engineering** 3 Course Prerequisite: FS 303; PHYSICS 101. Food engineering for improving the efficiency of food processing operations and quality processed food; heat transfer, stream, air-vapor mixtures, refrigeration and fluid flow. Cooperative: Open to UI degree-seeking students.
- 433 Food Engineering Lab** 1 (0-3) Course Prerequisite: FS 432 or concurrent enrollment. To enhance the learning experience of the students taking FS 432 through laboratories, problem sessions and group discussions. Cooperative: Open to UI degree-seeking students.
- 436 Principles of Sustainability** 3 Course Prerequisite: Junior standing. Issues and processes in sustainability; resource management, waste generation and management; industrial approaches to sustainability; case studies. Cooperative: Open to UI degree-seeking students.
- 460 Food Chemistry** 3 Course Prerequisite: CHEM 345; MBIOS 303. Fundamentals of food chemistry; composition of foods and the changes that occur during processing. Cooperative: Open to UI degree-seeking students.
- 461 [M] Food Chemistry Laboratory** 1 (0-3) Course Prerequisite: FS 460 or concurrent enrollment. Experiments related to the properties, reactions and interactions of chemical components of foods. Cooperative: Open to UI degree-seeking students.
- 462 Food Analysis** 3 (2-3) Course Prerequisite: CHEM 345; FS 302; FS 303; senior standing. Introductory food analysis; methods common to many food commodities. Recommended preparation: FS 460; FS 461. Cooperative: Open to UI degree-seeking students.
- 464 Food Toxicology** 3 Course Prerequisite: MBIOS 303. General principles of toxicological evaluation of chemicals which enter the food chain; toxicology of food additives, colors, preservatives, drugs, pesticides and natural toxins in foods and risk characterization. Credit not granted for both FS 464 and FS 564. Cooperative: Open to UI degree-seeking students.
- 465 Wine Microbiology and Processing** 3 Course Prerequisite: MBIOS 303; MBIOS 305. Technical principles related to the processing and fermentation of wines with an emphasis on microbiology. (Crosslisted course offered as FS 465, VIT ENOL 465). Recommended preparation for graduate students: MBIOS 303; MBIOS 305; MBIOS 306. Cooperative: Open to UI degree-seeking students.
- 466 Wine Microbiology and Processing Laboratory** 1 (0-3) Course Prerequisite: FS 465 or concurrent enrollment; MBIOS 304. Hands-on winemaking; application of chemical microbiological methods for wine analysis. Field trip required. (Crosslisted course offered as FS 466, VIT ENOL 466). Cooperative: Open to UI degree-seeking students.
- 470 Advanced Food Technology** 3 Course Prerequisite: FS 302; FS 303. Physical principles of food preservation and recent advances in food technology. Recommended preparation: FS 416; FS 432; FS 460. Cooperative: Open to UI degree-seeking students.

- 489 Food Product Development 3** (1-6) Course Prerequisite: FS 303; FS 416; FS 460; senior standing. Course serves as a capstone experience for food science seniors, and will require the application of food chemistry, food processing/engineering, and microbiology course knowledge in formulating a new food product. Cooperative: Open to UI degree-seeking students.
- 495 Internship in Food Science 2** May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Sophomore standing. Students work full time in industrial assignments with prior approval of advisor and industrial supervisor. Cooperative: Open to UI degree-seeking students. S, F grading.
- 496 Internship in a Winery 2** May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Sophomore standing. Industrial assignments at a regional, national or international winery. (Crosslisted course offered as FS 496, VIT ENOL 496). Cooperative: Open to UI degree-seeking students. S, F grading.
- 499 Special Problems V** 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. Cooperative: Open to UI degree-seeking students. S, F grading.
- 501 Topics in Food Science V** 1-3 May be repeated for credit; cumulative maximum 6 hours. Selected topics in food science. Cooperative: Open to UI degree-seeking students.
- 510 Functional Foods and Health 3** Benefits of foods beyond basic nutrition; bioactive compounds in functional foods and nutraceuticals relating to disease prevention and health promotion. Recommended preparation: BIOLOGY 101; BIOLOGY 102, or BIOLOGY 106; BIOLOGY 107; MBIOS 303. Cooperative: Open to UI degree-seeking students.
- 511 Food Lipids 3** Occurrence, structure, chemical and physical properties; functions of lipids in foods. Recommended preparation: FS 460; MBIOS 303. Cooperative: Open to UI degree-seeking students.
- 512 Food Proteins and Enzymes 2** Chemistry/biochemistry of proteins/enzymes applied to food research and industry; protein functionality/enzyme technology application to food industry. Recommended preparation: FS 460; MBIOS 303. Cooperative: Open to UI degree-seeking students.
- 513 Food Carbohydrates 3** Structure function relationships of polysaccharides within food systems as a function of their respective molecular structures and physical characteristics. Cooperative: Open to UI degree-seeking students.
- 516 Food Laws 2** Become familiar with government statutes and regulations that contribute to a safe, nutritious, and wholesome food supply. Understand more about the law and the US legal system relevant to the regulation of the manufacture and sale of food and supplements, including jurisdictional issues, administrative law, and tort, contract, corporate, environmental, labor, and criminal law issues. Cooperative: Open to UI degree-seeking students.
- 517 Scientific Writing 2** May be repeated for credit. Fundamentals of good technical writing and presentation; preparing and writing thesis/dissertation, scientific publications, and research grants; bibliography organization and citing, statistical data analysis, and preparation of graphics, tables, and posters; reviewing and evaluating current research. Cooperative: Open to UI degree-seeking students.
- 518 Oral Seminar 1** May be repeated for credit. Development of skills and communication tools and techniques for oral presentations of current food science research. Cooperative: Open to UI degree-seeking students.
- 522 Sensory Evaluation of Food and Wine 3** Recommended preparation: STAT 212; FS 110 or VIT ENOL 113. Theory, principles and application of sensory evaluation techniques in appearance, aroma, flavor and texture of foods and wine. (Crosslisted course offered as FS 422, VIT ENOL 422). Cooperative: Open to UI degree-seeking students.
- 529 Dairy Products 3** Dairy chemistry, microbiology, sanitation, product development and processing from cow to consumer. Credit not granted for both FS 429 and FS 529. Cooperative: Open to UI degree-seeking students.
- 530 Dairy Products Lab 1** (0-3) Course Prerequisite: Concurrent enrollment in FS 529. Hands-on skills formulating, processing, evaluating and analyzing dairy products using communication and critical thinking skills. Cooperative: Open to UI degree-seeking students.
- 531 Advanced Food Safety and Quality 3** Analysis of the safety, regulation, protection, and quality of processed food products and their manufacturing environment. Cooperative: Open to UI degree-seeking students.
- 538 Physical Properties of Food 2** Thermophysical behavior of foods and biopolymers, including water transport/activity, rheological, thermal, dielectric, and barrier properties; Newtonian and non-Newtonian flow; Viscous, viscoelastic, and Hookean behavior; relationship between rheology of food biopolymers and structure, composition, temperature, and plasticizer content. Cooperative: Open to UI degree-seeking students.
- 564 Food Toxicology 3** General principles of toxicological evaluation of chemicals which enter the food chain; toxicology of food additives, colors, preservatives, drugs, pesticides and natural toxins in foods and risk characterization. Credit not granted for both FS 464 and FS 564. Cooperative: Open to UI degree-seeking students.
- 565 Wine Microbiology and Processing 3** Technical principles related to the processing and fermentation of wines with an emphasis on microbiology. (Crosslisted course offered as FS 465, VIT ENOL 465). Recommended preparation for graduate students: MBIOS 303; MBIOS 305; MBIOS 306. Cooperative: Open to UI degree-seeking students.
- 570 Advanced Food Technology 3** Physical principles of food preservation and recent advances in food technology. Recommended preparation: FS 416; FS 432; FS 460. Cooperative: Open to UI degree-seeking students.
- 583 Advances in Cereal Sciences and Technology 2** Chemistry and functionality of cereal grains as related to their processing and product quality. Recommended preparation: MBIOS 303, CHEM 345, or FS 460. Cooperative: Open to UI degree-seeking students.
- 700 Master's Research, Thesis, and/or Examination V** 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V** 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Foreign Languages and Cultures

forlang.wsu.edu
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Professor and Interim Department Chair, L. Wiest; Professors, E. Gonzalez, J. Grenier-Winther (Vancouver), F. Manzo-Robledo; Associate Professors, R. Halverson, C. Lupke, V. Navarro-Daniels, A. M. Rodriguez-Vivaldi; Assistant Professors, W. Brecher, M. Hubert, K. Inoue, X. Liu; Clinical Professors, J. Bonzo, W. Cao, S. Davis, M. Glynn, M. Previto, I. Serna; Instructors, K. Niimi, E. Smith, C. Gulam (Vancouver), M. Lee-Lopez (Vancouver), S. Lopez-Lopez, I. Webber, Visiting Instructor, X. Lin; Director, Language and Learning Resource Center, J. Martin; Educational Technology Coordinator, C. Williams; Undergraduate Advising Program Manager, L. Heustis.

To support and enhance the university's stated goal of promoting global leadership, the Department of Foreign Languages and Cultures is in the unique position to provide WSU students with the linguistic proficiency and intercultural competence that will allow them to become true and effective global leaders.

The department offers courses of study leading to the degrees of Bachelor of Arts in Foreign

Languages and Cultures (Chinese Language and Culture, French, and Spanish) and Master of Arts in Foreign Languages and Cultures (Spanish). Language minors are available in Chinese, French, German, Japanese, and Spanish. Language/cultural minors are also possible in Film Studies, French Area Studies, German Area Studies, and Latin American Area Studies. Russian (Pullman) and elementary Latin (Vancouver) are also offered.

The department also advises in degree areas of General Humanities-International Studies in the major concentration areas of Latin American Area Studies, Germanic Area Studies, French and Francophone Area Studies, and European Area Studies. (See Liberal Arts, General Studies-International Studies.)

In the case of the French and Spanish majors, the program outcomes promote linguistic proficiency and intercultural competence:

Linguistic Proficiency: Students can demonstrate an Advanced Low level of proficiency (as defined in ACTFL Proficiency Guidelines) in the target language in speaking, writing, listening and reading.

- **Speaking:** Students are able to handle a variety of communicative tasks. They are able to participate in most informal and some formal conversations on topics related to school, home, and leisure activities. They can also speak about some topics related to employment, current events, and matters of public and community interest.

- **Writing:** Students are able to meet basic work and/or academic writing needs. They demonstrate the ability to narrate, describe and express viewpoints about familiar topics in major time frames with some control of aspect.

- **Listening and Reading:** Students are able to understand short conventional narrative and descriptive texts (spoken and/or written) such as descriptions of persons, places, and things, and narrations about past, present, and future events with a clear underlying structure though their comprehension may be uneven. They can understand the main facts and some supporting details. Comprehension may often derive primarily from situational and subject-matter knowledge.

Intercultural Competence: Students will demonstrate knowledge and understanding of other cultures and their products. By the time they graduate from our program, they will be able to:

- Recognize and describe the historical, social, economic, and political forces that shape society in the target culture

- Analyze and critique the products of the target culture (film, literature, art, popular culture, media, etc) within their context, including conducting basic research tasks

- Examine the validity of one's own cultural beliefs, behaviors and norms by contrasting and comparing them with those of the target culture

- Perceive and value cultural diversity and reinterpret the place of the self as an identity culturally situated in the global context

The major in Chinese language and culture provides students with a broad range of skills that enable our graduates to become leaders in fields related to Chinese, the most spoken language in the world. The major includes study of at least four years of Chinese language, at least three courses on Chinese and/or East Asian culture taught in English, and three area studies courses taught in other disciplines, such as philosophy, political

science, history, art history, international business, or others. Study abroad in an immersion program in China or Taiwan is strongly recommended. Up to eighteen credits from study abroad may be counted toward the major, depending on the length of the program and the amount of contact hours.

A student who graduates with a Chinese major should be able to speak, understand, read and write Chinese at an advanced level of proficiency. Students should be able to speak with confidence on a broad range of daily topics such as ordering food in a restaurant, going to the bank and the post office, taking various kinds of transportation, and shopping. Students should also be able to express their opinions on a wide variety of subjects such as politics, culture, society, and to talk about themselves, their families, and their backgrounds with Chinese while also asking the same of their Chinese interlocutors. Students should be able to develop relationships with others entirely with the use of Chinese. Students should be able to discuss some topics, such as those related to a second specialization, with sophistication and accuracy, utilizing a broad vocabulary.

Such students should also possess a broad knowledge of Chinese and East Asian society. Students should have some knowledge of important events, phenomena and trends in Chinese history, and they should have an understanding of at least some literary and philosophical texts. They should have a good understanding of China in relation to its neighbors and in the world. They should also have the skills to interpret emerging issues and events related to China. A student who graduates with a major in Chinese, especially if that is combined with a double major in a subject such as international business, engineering, political science, hospitality business management, communication, or another subject, can expect to fare more competitively in the job market or in applying to graduate or professional school than if he or she had not studied Chinese. Chinese is one of the most practical languages to study today, as China's presence in the global marketplace as well as its position with respect to issues of national security and international stability is second only to the United States.

Students who wish to pursue an international career should (1) select a major or minor in a foreign language, (2) select a second major in another professional field, (3) choose courses in the second professional field that focus on international issues, (4) choose University Common Requirements (UCORE) courses that focus on international studies, and (5) spend a semester or more in a study abroad program, ideally a program that offers an internship in the student's professional field.

Recognizing the need for students to reinforce, in a practical way, knowledge gained in the classroom, the department sponsors a wide variety of supplementary activities. The Chinese House, a living group where only Chinese is spoken and where conversational activities are supervised by a resident native speaker. McCroskey International House promotes cultural awareness and understanding built on personal contact and the exchange of ideas and opinions between people of diverse nations, races and religions. Visiting lecturers, language tables, foreign film showings, and other cultural events supplement the classroom experience.

State-of-the-art technology and multimedia

facilities in the classroom and at our Language Learning Resource Center enhance the learning experience.

Teacher Training Program

Students preparing to teach should consult the catalog listing of the Department of Teaching and Learning 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. Students are also required to take FOR_LANG 440 and 441. Teacher training is available in the language programs of French and Spanish.

Preparation for Graduate Study

Students who contemplate graduate work in Spanish in the Department of Foreign Languages and Cultures should present an undergraduate degree similar to those described in the schedule of studies. Complete details on graduate programs are available from the graduate studies advisor and on the departmental website, <http://forlang.wsu.edu>.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

CHINESE LANGUAGE AND CULTURE (120 HOURS)

A minimum of 34 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 Cultures. 101, 102, and 203 do not count toward the major. Students who place into 102 and receive a B or better qualify for an additional 4 departmental advanced placement credits; students placing into 203 or above and receiving a B or better qualify for 8 departmental advanced placement credits. A maximum of 8 departmental AP credits is possible. See department for details.

Majors must complete either a minor in a second foreign language, a concentration of at least 16 credits in a related field, or a second major.

No course in which a C- or lower grade is earned will be counted toward the major or minor. 300-400-level courses taken pass, fail may not be included for credit toward the major. No course may be repeated for credit toward the major unless thus designated in the catalog. No course may count for both the major and the minor.

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 34 hours required for the major, a minimum of 15 must be taken in residence with 6 of these hours at the 400-level. A maximum of 12 credits per semester or 18 credits per year earned in a study abroad program may be applied toward the major. Credits for 105, 205, 305 may not be applied toward the major or minor.

First Year

<i>First Term</i>	<i>Hours</i>
CHINESE 101 or higher (102, 203, 204) ¹	4
ENGLISH 101 [WRTG]	3
FOR LANG 101, 110, 120, or 130	3
HISTORY 105 [ROOT]	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
CHINESE 102 or higher (203, 204)	4
CHINESE 111, 121, or 131	3
Creative & Professional Arts [ARTS]	3

Second Year

<i>First Term</i>	<i>Hours</i>
CHINESE 203 or higher (204)	4
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Quantitative Reasoning [QUAN] (105 recommended)	3
Electives ²	4

<i>Second Term</i>	<i>Hours</i>
Chin 311 [M]	3
CHINESE 204 or 307	3 or 4
Communication [COMM] or Written Communication [WRTG]	3
Humanities [HUM]	3
Electives ²	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
CHINESE 306, 307, or 308	3
CHINESE 361, 363, or 364	3
Chinese Area Studies Elective ³	3
Diversity [DIVR]	3
Elective or FOR LANG 440 if teaching major ²	3

<i>Second Term</i>	<i>Hours</i>
CHINESE 306, 307, or 308	3
CHINESE 330 [M]	3
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
300-400-level Electives ²	3
Electives ²	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
CHINESE 306, 307, or 308	3
Chinese Area Studies Elective ³	3
300-400-level Electives ²	9

<i>Second Term</i>	<i>Hours</i>
CHINESE 361, 363, or 364	3
Chinese Area Studies Elective ³	3
Integrative Capstone [CAPS]	3
300-400-level Electives ²	6

¹ Study abroad in an immersion program in China or Taiwan is strongly recommended.

² Electives must be represented by an approved university minor in a second foreign language; 16 credits in a concentrated related field; or a second major in another field.

³ Students must take nine credits in China-related courses from other departments. For a list of approved courses, see the Department of Foreign Languages and Cultures.

FRENCH REQUIREMENTS (120 HOURS)

A minimum of 34 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 Cultures. 101, 102, and 203 do not count toward the major. Students who place into 102 and receive a B or better qualify for an additional 4 departmental advanced placement credits; students placing into 203 or above and receiving a B or better qualify for 8 departmental advanced placement credits. A maximum of 8 departmental AP credits is possible. See department for details.

Majors must complete either a minor in a second foreign language, a concentration of at least 16 credits in a related field, or a second major.

No course in which a C- or lower grade is earned will be counted toward the major or minor. 300-400-level courses taken pass, fail may not be included for credit toward the major. No course may be repeated for credit toward the major unless thus designated in the catalog. No course may count for both the major and the minor.

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 34 hours required for the major, a minimum of 15 must be taken in residence with 6 of these hours at the 400-level. A maximum of 12 credits per semester or 18 credits per year earned in a study abroad program may be applied toward the major. Credits for 105, 205, 305 may not be applied toward the major or minor.

First Year

<i>First Term</i>	<i>Hours</i>
CHINESE, GERMAN, SPANISH 110, 111, 120, 121, 130, or 131	3
ENGLISH 101 [WRTG]	3
FOR LANG 101, 110, 120, or 130	3
FRENCH 101 (if necessary) or higher (102, 203, or 204)	4
FRENCH 105	1
HISTORY 105 [ROOT]	3

Second Term

<i>Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]</i>	<i>Hours</i>
	4
CHINESE, GERMAN, SPANISH 110, 111, 120, 121, 130, or 131	3
Creative & Professional Arts [ARTS]	3
FRENCH 102 (if necessary) or higher (203 or 204)	4
FRENCH 105	1

Second Year

<i>First Term</i>	<i>Hours</i>
FRENCH 203 (if necessary), or higher (204)	4
FRENCH 205	1
Quantitative Reasoning [QUAN] (105 recommended)	3
Social Sciences [SSCI]	3
Electives ¹	3

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3

FRENCH 110, 120, or 130	3
FRENCH 204	4
FRENCH 205	1
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
FRENCH 305	1
FRENCH 306, 307 or 308 [M]	3
FRENCH 310, 320, 350, or 361	3
Humanities [HUM]	3
Electives or FOR LANG 440 if teaching major ¹	3

Second Term

<i>Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]</i>	<i>Hours</i>
	3
FRENCH 305	1
FRENCH 306, 307 or 308 [M]	3
FRENCH 310, 320, 350, or 361	3
Electives ¹	4

Fourth Year

<i>First Term</i>	<i>Hours</i>
FRENCH 310, 320, 350, or 361	3
FRENCH 405	1
FRENCH 410 [CAPS], 420 [CAPS], 430, or 450 [M] ²	3
300-400-level Electives ¹	9

Second Term

<i>FRENCH 405, FRENCH 408 [M], FRENCH 410 [CAPS], 420 [CAPS], 430, or 450 [M]²</i>	<i>Hours</i>
	1
	3
	3
Integrative Capstone [CAPS] ²	3
Electives ¹	3

¹ Electives must be represented by an approved university minor in a second foreign language; 16 credits in a concentrated related field; or a second major in another field.

² If FRENCH 410 or 420 is chosen, then the Integrative Capstone [CAPS] is fulfilled.

SPANISH REQUIREMENTS (120 HOURS)

A minimum of 34 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 Cultures. 101, 102, and 203 do not count toward the major. Students who place into 102 and receive a B or better qualify for an additional 4 departmental advanced placement credits; students placing into 203 or above and receiving a B or better qualify for 8 departmental advanced placement credits. A maximum of 8 departmental AP credits is possible. See department for details.

Majors must complete either a minor in a second foreign language, a concentration of at least 16 credits in a related field, or a second major.

No course in which a C- or lower grade is earned will be counted toward the major or minor. 300-400-level courses taken pass, fail may not be included for credit toward the major. No course may be repeated for credit toward the major unless thus designated

in the catalog. No course may count for both the major and the minor.

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 34 hours required for the major, a minimum of 15 must be taken in residence with 6 of these hours at the 400-level. A maximum of 12 credits per semester or 18 credits per year earned in a study abroad program may be applied toward the major. Credits for 105, 205, 305 may not be applied toward the major or minor.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
FOR LANG 101, 110, 120, or 130	3
HISTORY 105 [ROOT]	3
SPANISH 101 (if necessary), or higher (102, 203, or 204)	4
Electives ¹	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS]	3
SPANISH 102 (if necessary), or higher (203 or 204)	4
SPANISH 105	1
SPANISH 110, 111, 120, 121, 130, or 131	3

Second Year

<i>First Term</i>	<i>Hours</i>
MATH 103 (if necessary)	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Social Sciences [SSCI]	3
SPANISH 203 (if necessary), or higher (204)	4
SPANISH 205	1

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN] (105 recommended)	3
SPANISH 204	4
SPANISH 205	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
SPANISH 306	3
SPANISH 307	3
SPANISH 310, 311, 320, 321, 350, 351, or 361	3
Electives or FOR LANG 440 if teaching major ¹	3

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
SPANISH 305	1
SPANISH 308	3
SPANISH 310, 311, 320, 321, 350, 351, or 361	3
300-400-level Electives ¹	4

Fourth Year

<i>First Term</i>	<i>Hours</i>
SPANISH 407	3
SPANISH 450, 451, or 452 [M]	3
Electives ¹	9

<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
SPANISH 305	1
SPANISH 408 [M]	3
SPANISH 450, 451, or 452 [M]	3
300-400-level Electives ¹	4

¹ Electives must be represented by a competence in a second foreign language up to and including 204; an approved university minor or a teaching minor; or a second major in another field.

Minors

Chinese, French, German, Japanese, or Spanish

To fulfill requirements for a minor in Chinese, French, German, Japanese, or Spanish, a student must complete a minimum of 17 credits of course work in one language area. A foundation of the target language, 203 and 204 (8 credits), is required; in addition, 3 courses (9 credits) must be taken in courses other than 203-204 at the 300-400 level. A minimum of 9 credits with a letter grade must be taken in residence at WSU, of which 3 must be at the 300-400-level. All courses must be passed with a grade of C or better. Only courses thus designated in the Catalog may be repeated for credit toward the minor. Courses counting towards a minor in the language may not be counted towards a major in International Area Studies (i.e., Asian Studies, Latin America Area Studies, German Area Studies, or French and Francophone Area Studies). 105, 205, and 305 may not count towards the minor. For courses taken in Study Abroad Programs or as other transfer credits, please check with your advisor.

Film Studies

A minimum of 18 credits is required and must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. 9 credits must be chosen from ENGLISH 150, FOR LANG 110, PHIL 210, or SOC 372. An additional 9 credits are chosen from the following: People and Cultural Perspectives: CES 338, 379, CHINESE 111, FOR LANG 410, FRENCH 110, 111, 310, 311, GERMAN 110, 310, RUSSIAN 410, SPANISH 110, 111, 310, 311, WOMEN ST 340. Themes and Issues: CES 404/COM471, CRM J/POL S 381, ENGLISH 339, SHS 489. Production Skills: COMJOUR 360, FINE ART/ENGLISH 337, FINE ART 380, 434. All core courses must be taken at WSU. After consultation with the film studies advisor, one elective course per semester, not to exceed two courses (one of which must be upper-division), may be transferred to the film studies minor from accredited study abroad and other university/college programs.

French Area and Culture Studies

A minimum of 16 credits is required (options in French or Francophone Studies). A foundation

of the target language, French 203 (4 credits), is required; in addition, 4 courses (12 credits) of further knowledge must be taken other than 203 as: EITHER one lower level and two upper-level courses in FLC plus one approved course in another department; OR one lower-level and one upper-level course in FLC plus two approved courses in another department. See the department of FL&C for a list of acceptable courses. For special requirements concerning French and Francophone options in the French Area Studies Minor, please see your advisor. A minimum of 9 credits with a letter grade must be taken in residency at WSU at the 300-400 level. All courses must be passed with a grade of C or better. Only courses thus designated in the Catalog may be repeated for credit toward the minor. Courses counting towards a minor in the language may not be counted towards a major in International Area Studies (i.e., Latin America Area Studies, German Area Studies, French and Francophone Area Studies, or Russian Area Studies). 105, 205, and 305 may not count towards the minor. For courses taken in Study Abroad Programs or as other transfer credits, please check with your advisor.

German Area and Culture Studies

A minimum of 16 credits is required. A foundation of the target language, GERMAN 203 (4 credits), is required; in addition, 4 courses (12 credits) of further knowledge must be taken other than 203 as: EITHER one lower level and two upper-level courses in FLC plus one approved course in another department; OR one lower-level and one upper-level course in FLC plus two approved courses in another department. See the department of FL&C for a list of acceptable courses. A minimum of 9 credits with a letter grade must be taken in residency at WSU at the 300-400 level. All courses must be passed with a grade of C or better. Only courses thus designated in the Catalog may be repeated for credit toward the minor. Courses counting towards a minor in the language may not be counted towards a major in International Area Studies (i.e., Latin America Area Studies, German Area Studies, French and Francophone Area Studies, or Russian Area Studies). 105, 205, and 305 may not count towards the minor. For courses taken in Study Abroad Programs or as other transfer credits, please check with your advisor.

Latin American and Spanish Area Studies

A minimum of 16 credits is required. A foundation of the target language, SPANISH 203 (4 credits), is required; in addition, 4 courses (12 credits) of further knowledge must be taken other than 203 as: EITHER one lower level and two upper-level courses in FLC plus one approved course in another department; OR one lower-level and one upper-level course in FLC plus two approved courses in another department. See the department of FL&C for a list of acceptable courses. A minimum of 9 credits with a letter grade must be taken in residency at WSU at the 300-400 level. All courses must be passed with a grade of C or better. Only courses thus designated in the Catalog may be repeated for credit toward the minor. Courses counting towards a minor in the language may not be counted towards a major in International Area Studies (i.e., Latin America Area Studies, German Area Studies, French and

Francophone Area Studies, or Russian Area Studies). 105, 205, and 305 may not count towards the minor. For courses taken in Study Abroad Programs or as other transfer credits, please check with your advisor.

Description of Courses

CHINESE

CHINESE

- 101 First Semester 4** Fundamentals of speaking, listening, reading, and writing. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.
- 102 Second Semester 4** Prerequisite: CHINESE 101 with a grade of C or better. Continuation of CHINESE 101. Not open to native speakers except with permission. Required preparation must include CHINESE 101 with a grade of C or better or equivalent proficiency. Cooperative: Open to UI degree-seeking students.
- 105 Elementary Conversation 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: CHINESE 101 or concurrent enrollment, or CHINESE 102 or concurrent enrollment. Elementary-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students. S, F grading.
- 111 [DIVR] Asian Film 3** Asian film from a cultural perspective. Taught in English. (Crosslisted course offered as CHINESE 111, ASIA 111, JAPANESE 111). Cooperative: Open to UI degree-seeking students.
- 120 Traditional Chinese Culture 3** Cultural development of China from early times through the golden age of Chinese civilization. Taught in English. (Crosslisted course offered as CHINESE 120, ASIA 120, HUMANITY 120).
- 121 Modern Chinese Culture 3** An introduction to the culture of modern China, including Hong Kong and Taiwan. All readings in English. (Crosslisted course offered as CHINESE 121, ASIA 121). Cooperative: Open to UI degree-seeking students.
- 131 [DIVR] Masterpieces of Asian Literature 3** Introduction to Asian literature. Taught in English. (Crosslisted course offered as CHINESE 131, ASIA 131, HUMANITY 131, JAPANESE 131). Cooperative: Open to UI degree-seeking students.
- 180 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 203 Third Semester 4 (3-2)** Course Prerequisite: CHINESE 102 with a grade of C or better. Further development of speaking, listening, reading, and writing skills. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.
- 204 Fourth Semester 4 (3-2)** Course Prerequisite: CHINESE 203 with a grade of C or better. Continued practice in spoken and written language; selected texts in a cultural context. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.
- 205 Intermediate Conversation I 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: CHINESE 203 or concurrent enrollment, or CHINESE 204 or concurrent enrollment. Intermediate-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. S, F grading.
- 261 Chinese for the Professions 3** Course Prerequisite: CHINESE 203 with a grade of C or better. Profession-specific language skills training - healthcare, law enforcement, business - with emphasis on speaking and listening. Not open to native speakers except with permission.
- 280 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. S, F grading.
- 305 Intermediate Conversation II 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: CHINESE 204 or a 300-level CHINESE course or concurrent enrollment. Conversation practice in small groups. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students. S, F grading.
- 306 Intermediate Reading and Translation 3** English-Chinese expressions, development of skills to increase reading speed and fluency. Required preparation must include CHINESE 204 with a grade of C or better or equivalent proficiency. Cooperative: Open to UI degree-seeking students.
- 307 Intermediate Speaking and Listening 3** Early advanced training in speaking, reading and writing on abstract topics in Chinese; continued development of listening comprehension skills. Taught in Chinese. Required preparation must include CHINESE 204 with a grade of C or better or equivalent proficiency. Cooperative: Open to UI degree-seeking students.
- 308 Intermediate Grammar and Writing 3** Writing practice in the language and active review of grammar. Not open to native speakers except with permission. Required preparation must include CHINESE 204 with a grade of C or better or equivalent proficiency. Cooperative: Open to UI degree-seeking students.
- 311 Great Asian Directors 3 (2-3)** Focused study of two prominent Asian film directors. Taught in English.
- 320 [DIVR] [M] Issues in East Asian Ethics 3** Philosophical foundations of ethical thought in East Asia; informed responses to modern ethical dilemmas. Taught in English. (Crosslisted course offered as JAPANESE 320, ASIA 320, CHINESE 320, HUMANITY 320). Cooperative: Open to UI degree-seeking students.
- 321 [M] Gender and Love in East Asian Culture 3** The theme of gender with respect to love, courage, self-sacrifice, and vulnerability in traditional Chinese and Japanese literature and culture. (Crosslisted course offered as CHINESE 321, ASIA 321, JAPANESE 321, WOMEN ST 322).
- 330 [M] The Art of War 3 (2-2)** The philosophy behind war, military strategy and its consequences and representation in literature and film from East Asia. Taught in English. (Crosslisted course offered as CHINESE 330, ASIA 330). Cooperative: Open to UI degree-seeking students.
- 361 Advanced Chinese for the Professions 3** Course Prerequisite: CHINESE 204 with a grade of C or better. Communication in Chinese in the professional setting; telephone and meeting role play, letter writing, television and discussion of current events. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.
- 363 Introduction to Literary Chinese 3** Course Prerequisite: CHINESE 204 with a grade of C or better. Fundamentals of literary Chinese. Open to native speakers. Cooperative: Open to UI degree-seeking students.
- 364 Media Chinese 3** Course Prerequisite: CHINESE 204 with a grade of C or better. Study of Chinese using newspapers, television news, radio broadcasts, webcasts and other journalistic media. Taught in Chinese. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.
- 380 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. S, F grading.
- 405 Advanced Conversation 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: CHINESE 305. Advanced-level conversation practice in small groups with a native speaker. Cooperative: Open to UI degree-seeking students. S, F grading.
- 450 Seminar in Chinese Studies - Themes 3** Course Prerequisite: Two CHINESE 300-level courses excluding CHINESE 305. Seminar on important themes in Chinese studies. Taught in Chinese. Cooperative: Open to UI degree-seeking students.
- 480 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. S, F grading.
- 499 Special Problems V 1-4** May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

CLASSICS

CLASSICS

- 180 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. S, F grading.

280 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. S, F grading.

380 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. S, F grading.

480 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. S, F grading.

FOREIGN LANGUAGES AND CULTURES

FOR LANG

100 Studies in Foreign Languages I V 1-4 May be repeated for credit; cumulative maximum 8 hours. Languages, topics, or foreign language skills/learning opportunities not covered by other 100-level courses. Cooperative: Open to UI degree-seeking students.

101 [DIVR] Introduction to the World of Languages 3 Taught in English. Explore the nature, history, evolution, acquisition, and use of language with examples from major foreign language groups.

102 [HUM] Humanities in the Ancient World 3 Integrated humanities: literature, philosophy, history, and art of the ancient world. (Crosslisted course offered as HUMANITY 101, FOR LANG 102).

110 Introduction to Foreign Film 3 Taught in English. An introduction to the study of international film; stories, cultures, and cinematic features.

120 [DIVR] Introduction to Foreign Cultures 3 An introduction to inter-/intra-cultural communication of foreign cultures, plus customs, art, music, religion, fashion, food, et al. Taught in English.

130 Global Literature in Translation 3 Taught in English. An introduction to the study of international literature; stories, cultures, and literary devices. (Crosslisted course offered as FOR LANG 130, HUMANITY 130).

180 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.

200 Studies in Foreign Languages II V 1-4 May be repeated for credit; cumulative maximum 8 hours. Languages, topics, or foreign language skills/learning opportunities not covered by other 200-level courses. Cooperative: Open to UI degree-seeking students.

210 Foreign Film and Lecture Series 1 1 (0-3) An introduction to foreign films through universal themes and their varied cinematic portrayal. S, F grading.

220 [DIVR] Global Issues, Regional Realities 3 Introduction to the themes and concepts involved in global studies. Taught in English. (Crosslisted course offered as FOR LANG 220, ASIA 220).

221 Pre-Study/Internship Abroad Orientation 1 Taught in English. Orientation and practical information for students preparing to study or intern abroad. S, F grading.

280 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.

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. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.

302 [HUM] [M] Humanities in the Middle Ages and Renaissance 3 Integrated humanities; exploring great works and themes of the European Middle Ages and Renaissance, including art, architecture, music, philosophy, and literature. (Crosslisted course offered as HUMANITY 302, FOR LANG 302).

303 [M] Reason, Romanticism, and Revolution 3 Integrated humanities; literature, philosophy, music, art, 1700 to World War I; revolutionary changes which led to the 20th century. (Crosslisted course offered as HUMANITY 303, FOR LANG 303).

304 [HUM] 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. (Crosslisted course offered as HUMANITY 304, FOR LANG 304).

350 Speech, Thought and Culture 3 The role of language in social situations and as a reflection of cultural differences. (Crosslisted course offered as ANTH 350, FOR LANG 350).

380 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.

400 Special Topics 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: GENED 110 or 111. Interdisciplinary study of foreign languages, literature, or culture.

410 Issues in Foreign Film and Literature 3 Course Prerequisite: Junior standing. Taught in English; no foreign language proficiency required. Analysis and appreciation of foreign films, including filmic adaptations of literary works, to understand how cultures respond to contemporary issues.

440 Methods of Teaching Foreign Languages 3 Course Prerequisite: 204-level foreign language course. Survey of current methodology with emphasis on practical application in the classroom. Credit not granted for both FOR LANG 440 and FOR LANG 540.

450 Descriptive Linguistics 3 Introduction to analysis and description of natural languages; phonological, syntactic, and semantic analysis of data from a variety of languages. (Crosslisted course offered as ANTH 450, FOR LANG 450). Cooperative: Open to UI degree-seeking students.

480 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.

495 Cooperative Education Internship V 1-6 May be repeated for credit; cumulative maximum 6 hours. Cooperative education internship with academic, business, industry or government units. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

540 Methods of Teaching Foreign Languages 3 Survey of current methodology with emphasis on practical application in the classroom. Credit not granted for both FOR LANG 440 and FOR LANG 540.

541 Research and Methods of Technology Enhanced Foreign Language Learning 3 Taught in English. The use of technology in the foreign language classroom; hands-on experience with equipment and multi-media materials.

560 Seminar in Scholarly Methodology 2 Bibliography and formal aspects of scholarly writing; general introduction to literary criticism.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

FRENCH

FRENCH

101 First Semester 4 Fundamentals of speaking, listening, reading, and writing. Not open to native speakers except with permission. Credit not granted for FRENCH 101/102, and 104.

102 Second Semester 4 Course Prerequisite: FRENCH 101 with a grade of C or better. Continued development of basic skills in speaking, listening, reading, and writing. Not open to native speakers except with permission. Credit not granted for FRENCH 101/102, and 104. Required preparation must include FRENCH 101 with a grade of C or better or equivalent proficiency.

104 Intensive French: Foundations of Language and Culture 4 Intensive first-year French, emphasizing reading, writing, oral expression and comprehension, cultural awareness. Serves as a prerequisite for FRENCH 203. Not open to native speakers except with permission. Credit not granted for FRENCH 101/102 and 104.

105 Elementary Conversation 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: FRENCH 101 or concurrent enrollment, or FRENCH 102 or concurrent enrollment. Elementary-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. S, F grading.

- 110 [HUM] French/Francophone Film 3** French and Francophone Film. Taught in English.
- 120 [HUM] French Culture 3** Cultural history of France from beginnings to present; comparison of French and American cultures. Taught in English.
- 180 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 203 Third Semester 4 (3-2)** Grammar review and further development of speaking, listening, reading, and writing skills. Not open to native speakers except with permission. Required preparation must include FRENCH 102 with a grade of C or better or equivalent proficiency.
- 204 Fourth Semester 4 (3-2)** Continued practice in spoken and written language; selected texts in a cultural context. Not open to native speakers except with permission. Required preparation must include FRENCH 203 with a grade of C or better or equivalent proficiency.
- 205 Intermediate Conversation I 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: FRENCH 203 or concurrent enrollment, or FRENCH 204 or concurrent enrollment. Intermediate-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. S, F grading.
- 261 French for the Professions 3** Course Prerequisite: FRENCH 203 with a grade of C or better. Profession-specific language skills training - healthcare, law enforcement, business - with emphasis on speaking and listening. Not open to native speakers except with permission.
- 280 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 305 Intermediate Conversation II 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: FRENCH 204, or a 300-level FRENCH course or concurrent enrollment. Conversation practice in small groups with native/near-native speakers. Not open to native speakers except with permission. May be repeated for credit; cumulative maximum 2 hours. S, F grading.
- 306 Intermediate Reading and Translation 3** Vocabulary building, contrastive English-French expressions, development of skills to increase reading speed and fluency. Required preparation must include FRENCH 204 with a grade of C or better or equivalent proficiency.
- 307 Intermediate Speaking and Listening 3** May be repeated for credit; cumulative maximum 6 hours. Systematic development of speaking and listening proficiency; emphasis on pronunciation and phonetics. Not open to native speakers except with permission. Required preparation must include FRENCH 204 with a grade of C or better or equivalent proficiency.
- 308 [M] Intermediate Grammar and Writing 3** Writing practice in the language and active review of grammar. Not open to native speakers except with permission. Required preparation must include FRENCH 204 with a grade of C or better or equivalent proficiency.
- 310 French and Francophone Film 3 (2-3)** Course Prerequisite: FRENCH 306, 307, or 308. Taught in French. View and discuss French and Francophone films from the 1930's to present. Cooperative: Open to UI degree-seeking students.
- 320 French/Francophone Culture 3** Course Prerequisite: FRENCH 306, 307, or 308. Introduction to French and Francophone culture. Taught in French.
- 350 Introduction to French Literature 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: FRENCH 306, 307, or 308. Taught in French. French and Francophone novels, short stories and plays.
- 361 Advanced French for the Professions 3** Course Prerequisite: FRENCH 204 with a C or better. Communication in French for professional purposes; telephone and meeting role-plays, letter- and resume-writing, discussions of current events in the Francophone world. Not open to native speakers except with permission.
- 380 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 405 Advanced Conversation 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: FRENCH 408 or concurrent enrollment. Advanced-level conversation practice in small groups with a native speaker. S, F grading.
- 408 [M] Advanced French 3** Course Prerequisite: FRENCH 308 with a C or better. Systematic development of language skills at the advanced level.
- 410 [CAPS] French Film in Translation 3 (2-2)** Course Prerequisite: Junior standing. In depth study of French cinema integrating its history, techniques, methods, and global impact. Taught in English. Cooperative: Open to UI degree-seeking students.
- 420 [CAPS] French Culture Through Wine 3** Course Prerequisite: Junior standing. French societal and cultural heritage through the geography, history, production, legislation, and consumption of wine. Taught in English.
- 430 Topics in French/Francophone Literature in Translation 3** Course Prerequisite: Junior standing. Taught in English. In-depth reading and discussion of a select group of French literary works of a particular theme, genre, or author.
- 450 [M] Seminar in French Studies - Themes 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Two 300-level FRENCH courses, excluding FRENCH 305. Seminar on important themes in French studies. Taught in French.
- 480 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. S, F grading.
- 499 Special Problems V 1-4** May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- GERMAN**
- GERMAN**
- 101 First Semester 4** Fundamentals of speaking, listening, reading, and writing. Not open to native speakers except with permission.
- 102 Second Semester 4** Course Prerequisite: GERMAN 101 with a grade of C or better. Continued development of basic skills in speaking, listening, reading, and writing. Not open to native speakers except with permission. Required preparation must include GERMAN 101 with a grade of C or better or equivalent proficiency.
- 105 Elementary Conversation 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: GERMAN 101 or concurrent enrollment, or GERMAN 102 or concurrent enrollment. Elementary-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. S, F grading.
- 110 German Film 3** Taught in English. Introduction to German film.
- 120 Germanic Culture 3** Taught in English. The cultural development of the Germanic peoples to 1750.
- 180 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 203 Third Semester 4 (3-2)** Further development of speaking, listening, reading, and writing skills. Not open to native speakers except with permission. Required preparation must include GERMAN 102 with a grade of C or better or equivalent proficiency.
- 204 Fourth Semester 4 (3-2)** Continued practice in spoken and written language; selected texts in a cultural context. Not open to native speakers except with permission. Required preparation must include GERMAN 203 with a grade of C or better or equivalent proficiency.
- 205 Intermediate Conversation I 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: GERMAN 203 or concurrent enrollment, or GERMAN 204 or concurrent enrollment. Intermediate-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. S, F grading.
- 280 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.

305 Intermediate Conversation II 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: GERMAN 204; or a 300-level GERMAN course or concurrent enrollment. Conversation practice in small groups with native/near-native speakers. Not open to native speakers except with permission. S, F grading.

307 Intermediate Speaking and Listening 3 Systematic development of speaking and listening proficiency; emphasis on pronunciation and phonetics. Not open to native speakers except with permission. Required preparation must include GERMAN 204 with a grade of C or better or equivalent proficiency.

308 Intermediate Grammar and Writing 3 Writing practice in the language and active review of grammar. Not open to native speakers except with permission. Required preparation must include GERMAN 204 with a grade of C or better or equivalent proficiency. Cooperative: Open to UI degree-seeking students.

310 German Film 3 Course Prerequisite: GERMAN 307 or GERMAN 308. Study of important German films. Taught in German.

320 German Culture 3 Course Prerequisite: GERMAN 307 or GERMAN 308. Introduction to German culture. Taught in German. Cooperative: Open to UI degree-seeking students.

350 Introduction to German Literature 3 Course Prerequisite: GERMAN 307 or GERMAN 308. Survey of masterpieces of German literature. Taught in German.

380 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.

408 [M] Advanced Grammar and Writing 3 Course Prerequisite: GERMAN 308 with a grade of C or better. Development of advanced proficiency in writing.

450 [M] Seminar in German Studies - Themes 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Two GERMAN 300-level courses excluding GERMAN 305. Seminar on important themes in German studies. Taught in German. Cooperative: Open to UI degree-seeking students.

451 [M] Seminar in German Studies - Authors 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Two GERMAN 300-level courses excluding GERMAN 305. Seminar on important authors in German studies. Taught in German. Cooperative: Open to UI degree-seeking students.

452 [M] Seminar in German Studies - Genres 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Two GERMAN 300-level courses excluding GERMAN 305. Seminar on important genres in German studies. Taught in German.

480 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

ITALIAN

ITALIAN

101 First Semester 4 (3-2) Fundamentals of speaking, listening, reading, and writing. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.

102 Second Semester 4 (3-2) Continued development of basic skills in speaking, listening, reading and writing. Not open to native speakers except with permission. Required preparation must include ITALIAN 101 with a grade of C or better or equivalent proficiency. Cooperative: Open to UI degree-seeking students.

105 Elementary Conversation 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: ITALIAN 101 or concurrent enrollment, or ITALIAN 102 or concurrent enrollment. Elementary-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students. S, F grading.

180 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.

205 Intermediate Conversation 1 May be repeated for credit; cumulative maximum 2 hours. Intermediate-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. Required preparation must include two semesters of ITALIAN at the college level or equivalent proficiency. Cooperative: Open to UI degree-seeking students. S, F grading.

280 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.

380 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.

480 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

JAPANESE

JAPANESE

101 First Semester 4 Fundamentals of speaking, listening, reading, and writing. Not open to native speakers except with permission.

102 Second Semester 4 Course Prerequisite: JAPANESE 101 with a grade of C or better. Continued development of basic skills in speaking, listening, reading, and writing. Not open to native speakers except with permission. Required preparation must include JAPANESE 101 with a grade of C or better or equivalent proficiency.

105 Elementary Conversation 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: JAPANESE 101 or concurrent enrollment, or JAPANESE 102 or concurrent enrollment. Elementary-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. S, F grading.

111 [DIVR] Asian Film 3 Asian film from a cultural perspective. Taught in English. (Crosslisted course offered as CHINESE 111, ASIA 111, JAPANESE 111). Cooperative: Open to UI degree-seeking students.

120 [DIVR] Traditional Japanese Culture 3 Traditional Japanese society and culture from ancient times to the 19th century. Taught in English. (Crosslisted course offered as JAPANESE 120, ASIA 122).

123 [HUM] Modern Japanese Culture 3 Issues, trends, and forms of popular culture that define modern and contemporary Japanese life. Taught in English. (Crosslisted course offered as JAPANESE 123, ASIA 123).

131 [DIVR] Masterpieces of Asian Literature 3 Introduction to Asian literature. Taught in English. (Crosslisted course offered as CHINESE 131, ASIA 131, HUMANITY 131, JAPANESE 131). Cooperative: Open to UI degree-seeking students.

180 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. S, F grading.

203 Third Semester 4 (3-2) Course Prerequisite: JAPANESE 102 with a grade of C or better. Further development of speaking, listening, reading, and writing. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.

204 Fourth Semester 4 (3-2) Course Prerequisite: JAPANESE 203 with a grade of C or better. Continued practice in spoken and written language; selected texts in a cultural context. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.

205 Intermediate Conversation I 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: JAPANESE 203 or concurrent enrollment, or JAPANESE 204 or concurrent enrollment. Intermediate-level conversation practice in small groups with a native/near-native speaker; not open to native speakers except with permission. S, F grading.

- 280 Special Topics: Study Abroad V** 1-6 May be repeated for credit; cumulative maximum 6 hours. S, F grading.
- 305 Intermediate Conversation II** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: JAPANESE 204, or a 300-level JAPANESE course or concurrent enrollment. Conversation practice in small groups with native/near-native speakers. Not open to native speakers except with permission. S, F grading.
- 306 Intermediate Reading and Translation** 3 Vocabulary building, contrastive English-Japanese expressions, development of skills to increase reading speed and fluency. Not open to native speakers except with permission. Required preparation must include JAPANESE 204 with a grade of C or better or equivalent proficiency.
- 307 Intermediate Speaking and Listening** 3 Systematic development of speaking and listening proficiency; emphasis on pronunciation and phonetics. Not open to native speakers except with permission. Required preparation must include JAPANESE 204 with a grade of C or better or equivalent proficiency.
- 308 Intermediate Grammar and Writing** 3 Writing practice in the language and active review of grammar. Not open to native speakers except with permission. Required preparation must include JAPANESE 204 with a grade of C or better or equivalent proficiency.
- 320 [DIVR] [M] Issues in East Asian Ethics** 3 Philosophical foundations of ethical thought in East Asia; informed responses to modern ethical dilemmas. Taught in English. (Crosslisted course offered as JAPANESE 320, ASIA 320, CHINESE 320, HUMANITY 320). Cooperative: Open to UI degree-seeking students.
- 321 [M] Gender and Love in East Asian Culture** 3 The theme of gender with respect to love, courage, self-sacrifice, and vulnerability in traditional Chinese and Japanese literature and culture. (Crosslisted course offered as CHINESE 321, ASIA 321, JAPANESE 321, WOMEN ST 322).
- 361 Advanced Japanese for the Professions** 3 Course Prerequisite: JAPANESE 204. Communication in Japanese for professional purposes, including letter/e-mail writing, telephoning, interpreting, role-playing, and negotiating in the Japanese business world.
- 380 Special Topics: Study Abroad V** 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 480 Special Topics: Study Abroad V** 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 499 Special Problems V** 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- LATIN**
- LATIN**
- 101 First Semester Latin** 4 Latin fundamentals of speaking, listening, reading and writing skills.
- 102 Second Semester Latin** 4 Continued development of Latin speaking, listening, reading and writing skills. Required preparation must include LATIN 101 with a grade of C or better or equivalent proficiency.
- 103 Latin Grammar Tutorial** 1 Course Prerequisite: Concurrent enrollment in LATIN 101 or 102. Student-centered, instructor-facilitated grammar tutorial and review session focusing on material presented in LATIN 101 and 102. S, F grading.
- RUSSIAN**
- RUSSIAN**
- 101 First Semester** 4 Fundamentals of speaking, reading, and writing. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.
- 102 Second Semester** 4 Course Prerequisite: RUSSIAN 101 with a grade of C or better. Continued development of basic skills in speaking, reading, and writing. Not open to native speakers except with permission. Required preparation must include RUSSIAN 101 with a grade of C or better or equivalent proficiency. Cooperative: Open to UI degree-seeking students.
- 105 Elementary Conversation** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: RUSSIAN 101 or concurrent enrollment, or RUSSIAN 102 or concurrent enrollment. Elementary-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students. S, F grading.
- 180 Special Topics: Study Abroad V** 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 203 Third Semester** 4 (3-2) Further development of speaking, listening, reading, and writing skills. Not open to native speakers except with permission. Required preparation must include RUSSIAN 102 with a grade of C or better or equivalent proficiency. Cooperative: Open to UI degree-seeking students.
- 204 Fourth Semester** 4 (3-3) Continued practice in spoken and written language; selected texts in a cultural context. Not open to native speakers except with permission. Required preparation must include RUSSIAN 203 with a grade of C or better or equivalent proficiency. Cooperative: Open to UI degree-seeking students.
- 205 Intermediate Conversation I** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: RUSSIAN 203 or concurrent enrollment, or RUSSIAN 204 or concurrent enrollment. Intermediate-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students. S, F grading.
- 261 Russian for the Professions** 3 Course Prerequisite: RUSSIAN 203 with a grade of C or better. Profession-specific language skills training - healthcare, law enforcement, business - with emphasis on speaking and listening. Not open to native speakers except with permission.
- 280 Special Topics: Study Abroad V** 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 305 Intermediate Conversation II** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: RUSSIAN 204 or a 300-level RUSSIAN course or concurrent enrollment. Conversation practice in small groups. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students. S, F grading.
- 321 Contemporary Russian Culture** 3 Taught in English. Current cultural and social trends in the former USSR. Cooperative: Open to UI degree-seeking students.
- 361 Advanced Russian for the Professions** 3 Course Prerequisite: RUSSIAN 204 with a grade of C or better. Communication in Russian for professional purposes; telephone and meeting role-plays; letter and resume writing; discussions of current events in the Russian-speaking world. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.
- 380 Special Topics: Study Abroad V** 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 410 Russian Film** 3 Course Prerequisite: Junior standing. Russian daily life, historical events, and values in representative samples of Russian film. Taught in English. Cooperative: Open to UI degree-seeking students.
- 430 St. Petersburg** 3 Course Prerequisite: Junior standing. Taught in English. The image and role of St. Petersburg in Russian classics in literature, art, music, and film. Cooperative: Open to UI degree-seeking students.
- 462 History of Imperial Russia** 3 History and culture of Imperial Russia from Peter the Great to the 1905 revolution. (Crosslisted course offered as HISTORY 462, RUSSIAN 462).
- 463 [M] History of the Soviet Union** 3 The Russian revolutions and the Soviet regime: 1905 to the present. (Crosslisted course offered as HISTORY 463, RUSSIAN 463).
- 480 Special Topics: Study Abroad V** 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.

- 499 Special Problems V 1-4** May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- SPANISH**
- SPANISH**
- 101 First Semester 4** Fundamentals of speaking, listening, reading, and writing. Not open to native speakers except with permission.
- 102 Second Semester 4** Course Prerequisite: SPANISH 101 with a grade of C or better. Continued development of basic skills in speaking, listening, reading, and writing. Not open to native speakers except with permission. Required preparation must include SPANISH 101 with a grade of C or better or equivalent proficiency.
- 105 Elementary Conversation 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: SPANISH 101 or concurrent enrollment, or SPANISH 102 or concurrent enrollment. Elementary-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. S, F grading.
- 110 [ARTS] Peninsular Spanish Film 3** Introduction to Spanish film. Taught in English.
- 111 [ARTS] Latin American Film 3** History of Latin American cinema from a cultural perspective. Taught in English.
- 120 [HUM] Peninsular Spanish Culture 3** Introduction to Spanish culture. Taught in English.
- 121 [HUM] Latin American Culture 3** Contemporary social, political, and cultural issues in Latin America. Taught in English.
- 180 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 203 Third Semester 4 (3-2)** Further development of speaking, listening, reading, and writing skills. Not open to native speakers except with permission. Required preparation must include SPANISH 102 with a grade of C or better or equivalent proficiency.
- 204 Fourth Semester 4 (3-2)** Continued practice in spoken and written language; selected texts in a cultural context. Not open to native speakers except with permission. Required preparation must include SPANISH 203 with a grade of C or better or equivalent proficiency.
- 205 Intermediate Conversation I 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: SPANISH 203 or concurrent enrollment, or SPANISH 204 or concurrent enrollment. Intermediate-level conversation practice in small groups with a native/near-native speaker. Not open to native speakers except with permission. S, F grading.
- 261 Spanish for the Professions 3** Course Prerequisite: SPANISH 203 with a C or better. Profession-specific language skills training - healthcare, law enforcement, business - with emphasis on speaking and listening. Not open to native speakers except with permission.
- 280 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 305 Intermediate Conversation II 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: SPANISH 204 or a 300-level SPANISH course or concurrent enrollment. Conversation practice in small groups with native/near native speakers. Not open to native speakers except with permission. S, F grading.
- 306 Intermediate Reading and Translation 3** Vocabulary building, contrastive English-Spanish expressions, development of skills to increase reading speed and fluency. Required preparation must include SPANISH 204 with a grade of C or better or equivalent proficiency.
- 307 Intermediate Speaking and Listening 3** Systematic development of speaking and listening proficiency; emphasis on pronunciation and phonetics. Not open to native speakers except with permission. Required preparation must include SPANISH 204 with a grade of C or better or equivalent proficiency.
- 308 Intermediate Grammar and Writing 3** Writing practice in the language and active review of grammar. Not open to native speakers except with permission. Required preparation must include SPANISH 204 with a grade of C or better or equivalent proficiency.
- 310 Peninsular Spanish Film 3** Course Prerequisite: SPANISH 306, 307, or 308. Study of important Spanish films. Taught in Spanish.
- 311 Latin American Film 3** Course Prerequisite: SPANISH 306, 307, or 308. Variable content seminar that focuses on the study of culture through films; taught in Spanish.
- 320 Peninsular Spanish Culture 3** Course Prerequisite: SPANISH 306, 307, or 308. Study of the culture of Spain. Taught in Spanish.
- 321 Latin American Culture 3** Course Prerequisite: SPANISH 306, 307, or 308. Study of Latin American culture. Taught in Spanish.
- 350 Introduction to Peninsular Spanish Literature 3** Course Prerequisite: SPANISH 306, 307, or 308. Introduction of literary analysis and the history of literature in Spain.
- 351 Introduction to Latin American Literature 3** Course Prerequisite: SPANISH 306, 307, or 308. Introduction to literary analysis and the history of literature in Latin America. Taught in Spanish.
- 361 Spanish for the Business Professions 3** Course Prerequisite: Spanish 204 with a grade of C or better. Specialized language training for business professionals including basic concepts and economies of Hispanic countries. Not open to native speakers except with permission.
- 362 Spanish for Health Professions 3** Course Prerequisite: Spanish 204 with a grade of C or better. Specialized language training for health professionals focusing on the main systems of human anatomy. Not open to native speakers except with permission.
- 363 Spanish for Law Enforcement 3** Course Prerequisite: Spanish 204 with a grade of C or better. Specialized Spanish language training in the law enforcement profession. Not open to native speakers except with permission.
- 364 Spanish for Veterinarians 3** Course Prerequisite: Spanish 204 with a grade of C or better. Spanish language and culture for veterinary professionals; client-veterinarian situations with specialized terms considering cultural aspects. Not open to native speakers except with permission.
- 365 Spanish for Translation and Interpretation Professions 3** Course Prerequisite: Spanish 204 with a grade of C or better. Specialized Spanish language training in written translation; spoken interpretation techniques to facilitate high quality cross-cultural communication. Not open to native speakers except with permission.
- 380 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 405 Advanced Conversation 1** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Spanish 408 or Spanish 407 or concurrent enrollment. Advanced-level conversation practice in small groups with a native speaker. S, F grading.
- 407 Advanced Speaking and Listening 3** Course Prerequisite: Spanish 307 with a grade of C or better. Systematic development of speaking and listening proficiency at the advanced level.
- 408 [M] Advanced Grammar and Writing 3** Course Prerequisite: Spanish 308 with a grade of C or better. Development of advanced proficiency in writing.
- 420 Cultural Topics 3** Course Prerequisite: Junior standing. Variable content on Peninsular and/or Latin American cultural topics, including US Latino Societies.
- 430 Masterpieces in Spanish Literature 3** Course Prerequisite: Junior standing. Taught in English. Variable topic seminar on Spanish literature.
- 450 [M] Seminar in Spanish Studies - Themes 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Two SPANISH 300-level courses excluding SPANISH 305. Seminar on important themes in Spanish studies. Taught in Spanish.

- 451 [M] Seminar in Spanish Studies - Authors** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Two SPANISH 300-level courses excluding SPANISH 305. Seminar on important authors in Spanish studies. Taught in Spanish.
- 452 [M] Seminar in Spanish Studies - Genres** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Two SPANISH 300-level courses excluding SPANISH 305. Seminar on important genres in Spanish studies. Taught in Spanish.
- 453 [M] Seminar in Spanish Studies: Linguistics** 3 Course Prerequisite: Two SPANISH 300-level courses excluding SPANISH 305. The nature of Spanish language, history, dialects, phonetics, morphology, syntax, semantics, pragmatics, bilingualism and phonology.
- 480 Special Topics: Study Abroad** V 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 credits. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 550 Medieval Literature** 3 Selected works. Taught in Spanish.
- 551 Seminar in Golden Age Literature** 3 Reading and discussion of representative works of the Spanish Golden Age. Taught in Spanish.
- 552 Topics in Nineteenth-Century Spanish Literature** 3 May be repeated for credit; cumulative maximum 6 hours. Selected works and topics. Taught in Spanish.
- 553 Topics in Twentieth-Century Spanish Literature** 3 May be repeated for credit; cumulative maximum 6 hours. Selected works and topics. Taught in Spanish.
- 554 Seminar in Spanish Literature and/or Culture** V 1-3 May be repeated for credit.
- 555 Seminar in Colonial Spanish American Literature** 3 May be repeated for credit; cumulative maximum 6 hours. Seminar on conquest and colonial literature in Hispanic America.
- 556 Seminar in Nineteenth-Century Spanish American Literature** 3 May be repeated for credit; cumulative maximum 6 hours. Study of nineteenth-century Spanish American Literature. May be repeated for credit; cumulative maximum 6 hours.
- 557 Seminar in Twentieth-Century Spanish American Literature** 3 May be repeated for credit; cumulative maximum 6 hours. Study of twentieth-century Spanish American literature and culture.
- 558 Seminar in Spanish American Literature and/or Culture** V 1-3 May be repeated for credit.

559 Special Topics in Hispanic Studies and/or Linguistics V 1-3 May be repeated for credit; cumulative maximum 6 hours. Special interdisciplinary topics in Hispanic studies and/or linguistics.

560 Beginning Instructional Practicum 2 May be repeated for credit; cumulative maximum 4 hours. An introduction to foreign language instruction for beginning teaching assistants.

561 Advanced Instructional Practicum 1 May be repeated for credit; cumulative maximum 4 hours. Supervised practical experience in foreign language teaching. S, F grading.

597 Graduate Internship V 1 (0-3) to 6 (0-18) May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: SPANISH 560; FOR LANG 540; minimum gpa of 3.50. Supervised internship experience relating to career objectives; portfolio assignment required. S, F grading.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

Program in General Studies

Complete information is presented below under General Studies — Liberal Arts and General Studies — Sciences.

Description of Courses

GENERAL STUDIES

GENST

400 General Studies Portfolio 1 Course Prerequisite: By interview only. Evaluating one's educational experience and presenting that evaluation in written form. S, F grading.

General Studies — Liberal Arts

libarts.wsu.edu/genstudies/
Daggy 201
509-335-8731

Director, A. M. Rodriguez-Vivaldi; Associate Director, T. Whitacre.

General Studies is for students who have varied interests that may cut across the usual departmental boundaries and who wish to play a role in deciding on a suitable curriculum of study.

The degrees offered are the Bachelor of Arts in Humanities and Bachelor of Arts in Social Sciences. These degrees are not identified with a specific subject-matter field on the diploma.

The Learning Goals/Outcomes for the General Studies program are primarily based on those of the General Education program. Student learning goals/outcomes can be identified as (1) reason critically; (2) conduct self-directed or independent learning projects; (3) understand the roles of normative views and values, including ethics and aesthetics; (4) communicate conclusions, interpretations, and implications clearly, concisely, and effectively, both orally and in writing; (5) acquire and assimilate knowledge in a variety of modes and contexts and recognize diverse disciplinary viewpoints and methods; (6) understand the historical development of human knowledge and cultures, including both Western and non-Western civilizations; (7) graduation of life-long learners; (8) adaptability to new situations through understanding of how information is gathered and organized and how knowledge is constructed in more than one specialty area; (9) knowledge in the main scholarly disciplines in which knowledge is organized; (10) ability to integrate knowledge from various knowledge domains; (11) preparation for advanced study and research outside the major; and (12) broad-based education in the humanities, social sciences, and sciences.

The student's University experience in terms of assignments, course selection, classroom participation, internships, performances, community services, and service learning activities will be considered. Outcomes will be measured in terms of society and self; critical thinking and creativity; writing, listening and speaking skills; information literacy; quantitative and symbolic reasoning skills; and depth, breadth and application of knowledge.

For each of the tracks within Liberal Arts General Studies, a limited number of particular learning goals relate to each respective track. These learning goals specify knowledge and skill appropriate to the title of the degree. For example: the BA in Social Science, and the various BA in Humanities options including International Area Studies, Linguistics, and Religious Studies.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

GENERAL STUDIES - INTERNATIONAL STUDIES (120 HOURS)

Rachel Halverson, Coordinator

The International Area Studies area of General Studies is for students who have interests that are both international and interdisciplinary. Students may choose between these major concentrations: Latin America Area Studies, German Area Studies, French and Francophone Area Studies, and European Area Studies. (Please note that Asian Area Studies, David Pietz, Coordinator, is described in the Asian Program section of the catalog). Students who wish to earn a Bachelor of Arts in Humanities with a focus in International Area Studies will devise an approved, coherent program of study with the coordinator and a designated advisor who is a specialist in the student's area of interest. The program of study must fulfill an academic or career goal, include prerequisites consistent with the 300-400-level major coursework, satisfy the UCORE requirements and any additional requirements for the College of Arts and Sciences, and include language proficiency appropriate to the cultural area. The area studies major will consist of a minimum of 40 credits. No course in which C- or lower is earned will be counted toward the major. More details are available on the websites of WSU, the General Studies program, and the Foreign Languages Department, at www.forlang.wsu.edu.

GENERAL STUDIES - LINGUISTICS (120 HOURS)

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 formal theories of linguistic analysis. Students who major in linguistics will earn a Bachelor of Arts in Humanities degree.

The major in linguistics requires 40 credit hours, variously distributed in the following sequence, depending upon the special emphasis which the student and advisor together select.

First Year

First Term	Hours
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
Electives	3

Second Term	Hours
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
Linguistics Elective ¹	3
Electives	1

Second Year

First Term	Hours
Linguistics Elective ¹	3
MATH, CPT S, or STAT Elective ²	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Social Sciences [SSCI]	3
Electives	3

Second Term	Hours
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Linguistics Elective ¹	6
PHIL Elective ³	3
Electives	3
Complete Writing Portfolio	

Third Year

First Term	Hours
Linguistics Elective ¹	3
300-level Foreign Language Elective ⁴	3
Electives	6
Emphasis Elective ⁵	3

Second Term	Hours
Diversity [DIVR]	3
Linguistics Elective ¹	3
300-level Foreign Language Elective ⁴	3
Elective	3
Emphasis Elective ⁵	3

Fourth Year

First Term	Hours
Linguistics Elective ¹	3
300-400-level Electives	12

Second Term	Hours
Integrative Capstone [CAPS]	3
300-400-level Electives	12

¹ Students must take ENGLISH 443 and 444, and 15 hours or more to be selected from ANTH 350, 450, 499; ENGLISH 255, 256, 454, 456, 457, 458, 499; COM 245; FOR LANG 101.

² Students must take 3-12 hours depending upon special emphasis to be selected from MATH 106 and 108, 140, 151, 171, 172, 182, 202, 206, 273, 283 (i.e., any precalculus or calculus course or sequence); MATH/STAT 205, 212, 360, 443, PSYCH 311 (i.e., any statistics course); Computer Science 111, 121, 251, 401, 440 (with its prerequisites Computer Science 122 and a statistics course), 443.

³ Students must take 3-9 hours depending upon emphasis: PHIL 201, 401, 443, 499.

⁴ Students must take 6-18 hours depending upon special emphasis. The 6-hour minimum, if elected, must be at the 300-level or higher.

⁵ Emphasis electives are chosen in consultation with the advisor to meet the required 40 credit hours and may include Psych 490, 492, SHS 371, 375, TCH LRN 333, 414, ENGLISH 546, FOR L 440.

GENERAL STUDIES - RELIGIOUS STUDIES (120 HOURS)

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 39 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.

A student must also satisfy the UCORE and College of Arts and Sciences graduation requirements and take at least 40 of the total 120 semester hours in 300-400-level 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.

First Year

First Term	Hours
ENGLISH 101 [WRTG]	3
FOR LANG Elective	4
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
Electives	4

Second Term	Hours
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
FOR LANG Elective	4
Humanities [HUM]	3

Second Year

First Term	Hours
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
FOR LANG Elective	4
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Social Sciences [SSCI]	3
Electives	3

Second Term	Hours
Diversity [DIVR]	3
FOR LANG Elective	4
Integrative Capstone [CAPS]	3
PHIL 207	3
SOC 341	3
Complete Writing Portfolio	

Junior & Senior Year — Choose one option:

Western Religions: HISTORY 272, 445, PHIL 407; seven courses from: ANTH 330, ENGLISH 305, 306, 383, 385; FINE ART 201, 202; HISTORY 341, 423, 440, 441; HUMANITY 101, 198, 302, 340; PHIL 290, 310, 340, 400; Soc 341.

Non-Western Religions: HISTORY 273, PHIL

314, 315; six courses from: ANTH 303, 330; FINE ART 201, 202, 302; HISTORY 270, 275, 308, 370, 373, 374, 408, 470, 472, 473; HUMANITY 350; SOC 341.

Comparative Religions: HISTORY 273, 445, PHIL 314, 315; five courses from: ANTH 303, ENGLISH 305, 306, 383, 385; FINE ART 201, 202, 302; HISTORY 308, 341, 370, 373, 374, 408, 440, 441, 470, 472, 473; HUMANITY 350; PHIL 340, SOC 341.

**GENERAL STUDIES - SOCIAL SCIENCES
OPTION: PERSONNEL PSYCHOLOGY/
HUMAN RESOURCES (VANCOUVER-ONLY
OPTION)
(120 HOURS)**

L. Volk, Academic Coordinator

The Personnel Psychology/Human Resources (PP/HR) option is designed to provide human resource professionals, and those preparing for a career in human resources, the tools to be effective managers. 120 credit hours are required, including completion of WSU UCORE requirements, CAS requirements, and a combination of social sciences courses totaling 40 upper-division hours from three academic areas (psychology, human development, and management). The GPA for the 40 hours must be a 2.00 minimum. Students declare the General Social Sciences major (Gen S) and receive a Bachelor of Arts in Social Sciences with an Option in Personnel Psychology/Human Resources.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
Electives ¹	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
Social Sciences [SSCI]	3

Second Year

<i>First Term</i>	<i>Hours</i>
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Psych 306	4
Electives	8

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Diversity [DIVR]	3
Psych 308	3
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
H D 406	3
MGMT 301	3
PSYCH 311	4

Area 1 Electives ²	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Area 1 Electives ²	3
Area 2 Electives ²	3
Area 3 Electives ²	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
Area 1 Electives ²	3
Area 2 Electives ²	3
Area 3 Electives [M] ²	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
Area 3 Electives [M] ²	3
Integrative Capstone [CAPS]	3
Electives	9

¹ Students must complete a total of 120 hours, including 40 hours of upper-division (300-400 level) required by the PPHR option. The remaining hours may be taken in the electives, the UCOREs, or by electing to take more than the minimum required in the three areas. Among the 300-400 level course work in the areas, two courses, each at 3 hours, must have a [M] designation.

² Area 1 electives: PSYCH 309, PSYCH 350, PSYCH 412, PSYCH 470, or PSYCH 495. Area 2 electives: H_D 301, H_D 350, H_D 385, H_D 403, or H_D 430. Area 3 electives: MGMT 401[M], MGMT 450, I_BUS 453[M], MGMT 455[M], MGMT 456, MGMT 485, MGMT 487, or MGMT 496.

**GENERAL STUDIES - SOCIAL SCIENCES/
HUMANITIES PLAN A
(120 HOURS)**

T. Whitacre, Coordinator

This division of general studies is for students whose primary interest in the humanities or social sciences requires programs and course selections which are not possible within single academic units 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 which fulfills an academic or career goal and includes prerequisites consistent with the 300-400-level course work. In addition, each student will satisfy the General Education Requirements and any additional requirements of the College of Arts and Sciences.

Plan A—Primary/Secondary Concentration
Primary concentration: a minimum of 24 semester credits, including at least 15 300-400-level credits, must be completed in a single humanities or social sciences department or published program with a minimum 2.00 primary concentration gpa. The degree (Gen H or Gen S) will depend on the primary concentration.

Secondary concentration: a minimum of 15 semester credits, including at least 6 300-400-level credits, must be completed in another academic department, program or area published in the catalog with a minimum 2.00 gpa.

For a list of approved Plan A areas, please contact the Liberal Arts General Studies office.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
Social Sciences [SSCI]	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Primary Concentration	3
Secondary Concentration	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR] ¹	3
Primary Concentration	3
Secondary Concentration	3
Electives	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level Primary Concentration ²	3
Elective	3
Primary Concentration	3
Secondary Concentration	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Primary Concentration ²	3
300-400-level Secondary Concentration ²	3
Electives	6
Integrative Capstone [CAPS]	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Primary Concentration	6
300-400-level Secondary Concentration	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
300-400-level Primary Concentration	3
Electives	12

¹ Students must take a total of 40 hours of upper-division (300-400 level). The areas require 21 upper-division hours. The UCORE requires 3 upper-division hours. The remaining 16 hours may be taken in the electives, the UCOREs, or by electing to take more than the minimum required in the areas.

² Students must take a total of 40 hours of upper-division (300-400 level). The areas require 21 upper-division hours. The UCORE requirements include 3 upper-division hours. The remaining 16

hours may be taken in the electives, the UCOREs, or by electing to take more than the minimum required in the areas. Among the 300-400 level course work in the areas, two courses, each at 3 hours, must have a [M] designation.

GENERAL STUDIES - SOCIAL SCIENCES/ HUMANITIES PLAN B (120 HOURS)

T. Whitacre, Coordinator

Humanities: A combination of humanities courses totaling at least 39 hours involving three academic areas with a minimum of 9 hours in each of the three areas. At least 21 of the 39 hours must be at the 300-400 level and the gpa for the 39 hours must be a 2.00 minimum. Students declare the General Humanities major (Gen H) and receive a Bachelor of Arts in Humanities.

Social Sciences: A combination of social sciences courses totaling at least 39 hours involving three academic areas with a minimum of 9 hours in each of the three areas. At least 21 of the 39 hours must be at the 300-400 level and the gpa for the 39 hours must be a 2.00 minimum. Students declare the General Social Sciences major (Gen S) and receive a Bachelor of Arts in Social Sciences.

For a list of approved Plan B areas, please contact the Liberal Arts General Studies office.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
Social Sciences [SSCI]	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Area 1	3
Area 2	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives	4

<i>Second Term</i>	<i>Hours</i>
Area 1	3
Area 2	3
Diversity [DIVR] ¹	3
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level Area 1 ¹	3
Area 2	3
Area 3	3
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Area 2 ¹	3
300-400-level Area 3 ¹	3
Integrative Capstone [CAPS]	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400 Any Area ¹	9
Electives	6

<i>Second Term</i>	<i>Hours</i>
300-400 Any Area ¹	3
Electives	12

¹ Students must take a total of 40 hours of upper-division (300-400 level). The areas require 21 upper-division hours. The UCORE requirements include 3 upper-division hours. The remaining 16 hours may be taken in the electives, the UCOREs, or by electing to take more than the minimum required in the areas. Among the 300-400 level course work in the areas, two courses, each at 3 hours, must have a [M] designation.

GENERAL STUDIES - 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 Arts and Sciences. 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 Teaching and Learning.

Minors

American Indian Studies

M. Holloman, Coordinator

The minor in American Indian Studies requires 18 semester hours which shall include a required 9 hour core (ANTH 320, CES 171 and HISTORY 308) and 9 hours of electives (ANTH 327, 331, 333, 435, CES 372, 373, 379, 470, 475, FINE ART 301, HISTORY 410, or MUS 265). At least 9 of the credits must be taken at WSU and at least 9 hours must be at the 300-400 level. A minimum of 12 credits must be taken for a letter grade and a minimum gpa of 2.00 is required in the minor coursework.

Religious Studies

M. Myers, Coordinator

For a minor in religious studies, a student must take at least 18 semester hours of work, of which at least half must be 300-400-level taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. The minor

includes the core (minus the Seminar in Religious Studies) and three courses from the required list of comparative religion.

Certificates

Certificate in American Indian Studies

Michael. Holloman, Coordinator

The certificate in American Indian Studies requires 18 semester hours which shall include a required core (9 hours) and 9 hours of electives. 15 of the credits must be taken at WSU, and 9 hours must be at the 300-400-level. A minimum of 12 credits must be taken for a letter grade and a grade of C or better must be earned in each of the required and recommended courses in order to qualify for the certificate. Any currently enrolled degree-seeking student is eligible to enroll in the certificate program. Other students must meet the existing admissions standards for non-degree seeking students. The university undergraduate certificate fee will apply. Students must complete Anth 320, CES 171, and Hist 308. The remaining 9 hours are chosen from the following elective courses: Anth 327, 331, 333, 435, CES 372, 373, 379, 470, 475, FA 301, Mus 265. Other courses in American Indian studies may be added to the elective pool as they become available. Contact Michael Holloman, coordinator, for more information.

General Studies — Sciences

Thompson 309 509-335-7911

Director, A. M. Rodriguez-Vivaldi; Associate Director, L. Hufford.

General Studies - Sciences is for students who have varied interests that may cut across the usual departmental boundaries and who wish to play a role in deciding on a suitable curriculum of study. General Studies- Sciences seeks to prepare students for a wide variety of opportunities after graduation ranging from professional and graduate school to entry into business and industry. Graduates of General Studies- Sciences are expected to: 1) have a thorough understanding and knowledge of their major area of study; 2) understand and critically analyze research and journals from their field of study; 3) communicate clearly about their field to a wide variety of audiences, and 4) understand that they will need to engage in lifelong learning to stay current in their field. The degree offered is the Bachelor of Science. The degree is not identified with a specific subject-matter field on the diploma.

Students work with specific academic advisors in the College of Arts and Sciences to plan individual programs of study leading towards the Bachelor of Science degree. If you are interested in pursuing General Studies - Sciences, you must meet with the appropriate advisor as soon as possible. The School of Biological Sciences administers two options under General Studies- Sciences: General Studies—Biological Sciences and General Studies—Basic Medical Sciences. Two other options, General

Studies- Mathematics, and General Studies-Physical Sciences are advised by the Department of Mathematics and the Department of Physics & Astronomy, respectively. For more information on specific advisors and how to contact them, go to <http://cas.wsu.edu/academics/advisors/index.html>.

Each of the four options may follow one of two plans of study, Plan A or Plan B, with both plans leading up to 120 credit hours for the degree:

Plan A—Primary/Secondary Concentration:

Primary concentration: a minimum of 24 semester credits, including at least 15 300-400-level credits, must be completed in biological sciences, in mathematics, or in a single physical science with a minimum 2.00 primary concentration gpa.

Secondary concentration: a minimum of 15 semester credits, including at least 6 300-400-level credits, must be completed in another academic department, program or area published in the catalog with a minimum 2.0 minor concentration gpa.

Students who complete a Plan A curriculum will receive a Bachelor of Science degree. The transcript (not the diploma) will identify a subject matter in general biological sciences (Gen B), general basic medical sciences (Gen BMS), general mathematics (Gen M), or general physical sciences (Gen P), depending on the primary concentration.

Plan B—Three Related Areas in Biological Sciences or Physical Sciences:

A combination of biological sciences or physical sciences courses of at least 39 credits in three or more related academic areas; 9 credits in each academic area are required and 21 300-400-level hours must be completed with at least a 2.0 gpa in these courses. The related areas in general biological sciences include biology, biochemistry, botany, genetics and cell biology, microbiology, zoology, and approved biology-based courses in agriculture. The related areas in general physical sciences include astronomy, chemistry, geology, mathematics, physics, and approved courses in computer sciences and engineering. Students who complete a Plan B curriculum receive a Bachelor of Science degree.

Students in the program must also satisfy the UCORE and College of Arts and Sciences graduation requirements and take at least 40 of a total 120 semester hours in 300-400 level courses. Honors students must complete the Honors College requirements which replace the UCORE requirements, but must satisfy the College of Arts and Sciences graduation requirements.

Options

General Studies—Biological Sciences is an option for students who want a curriculum of study that cuts across disciplines but has biology at the core of integrative studies. This degree has two plans of study (Plan A or Plan B). Both require prerequisites of one year biology, one semester introductory calculus, one year general chemistry, and one semester organic chemistry. The academic areas from which courses may be drawn include biology, biochemistry, botany, genetics and cell biology, microbiology, zoology, and approved biology-based courses in agriculture. However,

students may not use General Studies Biological Sciences as part of a double major with either biology or zoology. Students will work with their academic advisor in the School of Biological Sciences to plan individual courses of study for this option of the Bachelor of Science degree.

General Studies—Basic Medical Sciences supports students who aim for a career in health fields, including professional training in medicine, dentistry, and pharmacy, and want a curriculum of study that cuts across the boundaries of existing majors. This degree has two plans of study (Plan A or Plan B). Either will help students to meet the requirements for admission to medical, dental, or pharmacy schools, or other health science professional programs. Both options require BIOLOGY 106, BIOLOGY 107, BIOLOGY/MBIOS 301, MBIOS 303, MATH 140/171, CHEM 105, CHEM 106, CHEM 345, CHEM 348, and PHIL 365. Plan A has an additional genetics and biochemistry requirement (MBioS/Biology 301 and MBioS 303). Plan B requires genetics, biochemistry and microbiology (MBioS/Biology 301, 303, and 305)

Plan A students are required to have a primary and secondary concentration. The primary concentration is biological sciences and requires at least 15 upper-division semester credits. A minimum of eight elective course credits to fulfill the biological sciences requirement may be chosen from BIOLOGY 315, BIOLOGY 321, BIOLOGY 324, BIOLOGY 350, BIOLOGY 352, BIOLOGY 353, BIOLOGY 393, BIOLOGY 405, BIOLOGY 418, MBIOS 304, MBIOS 305, MBIOS 401, MBIOS 413, MBIOS 414, MBIOS 423, MBIOS 440, MBIOS 442, MBIOS 446, NEURO 301, NEURO 403, NEURO 404, or NEURO 430. The secondary concentration is chemistry and requires at least 15 semester credits, including six at the upper-division (CHEM 345 and CHEM 348).

Plan B requires courses from three related areas of biological sciences (BIOLOGY, MBIOS, and NEURO) encompassing 39 semester credits, including at least 21 upper-division credits. Twenty credits of elective courses must come from the following list and include courses from each of the three disciplinary areas (BIOLOGY, MBIOS, and NEURO) to provide students with breadth and depth of training in the life sciences: BIOLOGY 233, BIOLOGY 251, BIOLOGY 315, BIOLOGY 321, BIOLOGY 324, BIOLOGY 331, BIOLOGY 350, BIOLOGY 352, BIOLOGY 353, BIOLOGY 393, BIOLOGY 405, BIOLOGY 418, MBIOS 304, MBIOS 360, MBIOS 401, MBIOS 402, MBIOS 413, MBIOS 414, MBIOS 420, MBIOS 423, MBIOS 427, MBIOS 440, MBIOS 441, MBIOS 442, MBIOS 446, NEURO 301, NEURO 403, NEURO 404, and NEURO 430. Students will work with their academic advisor in the School of Biological Sciences to plan individual courses of study for the B.S. General Studies—Basic Medical Sciences.

General Studies- Mathematical Sciences is an option for students who want a curriculum of study that cuts across disciplines but has Mathematics at the core of integrative studies. This degree has two plans of study (Plan A or Plan B). Both require prerequisites of three semesters of calculus and linear algebra. Students will work with the academic advisor in the Department of Mathematics to plan individual courses of study for this option of the Bachelor of Science degree.

General Studies- Physical Sciences is an option for students who want a curriculum of study that cuts across disciplines but has Physics or another Physical Science such as Chemistry at the core of integrative studies. This degree has two plans of study (Plan A or Plan B). Both require prerequisites of one year calculus, one year calculus-based physics, and one year general chemistry. Students who plan a major concentration in chemistry should also include quantitative and organic chemistry. Physical geology is a prerequisite for 300-400-level geology courses. Students will work with the academic advisor in the Department of Physics & Astronomy to plan individual courses of study for this option of the Bachelor of Science degree.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

GENERAL STUDIES - BASIC MEDICAL SCIENCES PLAN A (120 HOURS)

At least 40 of the 120 hours for the degree must be at the 300-400-level.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI] ¹	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 140 [QUAN] or 171 [QUAN] ²	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
Communication [COMM] or Written Communication [WRTG]	3
MBIOS 301	4
Electives ³	3

<i>Second Term</i>	<i>Hours</i>
CHEM 346	3
Social Sciences [SSCI]	3
Electives ³	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
MBIOS 303	4
PHYSICS 101 ⁴	4
Electives ³	3

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
PHIL 365, or Humanities [HUM]	3
PHYSICS 102	4
Electives ³	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
Degree Program Elective	3-4
Degree Program Elective [M] Electives ³	2-4 12
<i>Second Term</i>	<i>Hours</i>
Degree Program Elective [M] Integrative Capstone [CAPS] Electives ³	2-4 3 10

¹ CHEM 101 may be taken prior to CHEM 105.
² MATH 107 may be taken the first semester as a prerequisite to other math courses and as a co-requisite to CHEM 105. In addition to either MATH 140 or 171 a statistics course such as MATH 212, Introduction to Statistical Methods, is highly recommended, and, for some programs, required.
³ Students are encouraged to pursue a minor in other areas of more in-depth science minor.
⁴ An elective may be substituted for PHYSICS 101 and 102 if it is not required for entrance to a graduate or professional program.

GENERAL STUDIES - BASIC MEDICAL SCIENCES PLAN B (120 HOURS)

At least 40 of the 120 hours for the degree must be at the 300-400-level.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI] ¹	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 140 [QUAN] or 171 [QUAN] ²	4

Second Year

<i>First Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
CHEM 345	4
MBIOS 301	4
PHYSICS 101 ³	4

<i>Second Term</i>	<i>Hours</i>
CHEM 346	3
MBIOS 305	3
MBIOS 306	2
PHYSICS 102 ³	4
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Degree Program Elective	3-4
Diversity [DIVR]	3
MBIOS 303	4
Electives ⁴	6

<i>Second Term</i>	<i>Hours</i>
PHIL 365, or Humanities [HUM]	3

Degree Program Elective Electives ⁴	6-8 6
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Fourth Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Degree Program Elective	3-4
Degree Program Elective [M] Electives ⁴	2-4 8

<i>Second Term</i>	<i>Hours</i>
Degree Program Elective	3-4
Degree Program Elective [M] Integrative Capstone [CAPS] Electives ⁴	2-4 3 6

¹ CHEM 101 may be taken prior to CHEM 105.
² MATH 107 may be taken the first semester as a prerequisite to other math courses and as a co-requisite to CHEM 105. In addition to either MATH 140 or 171 a statistics course such as MATH 212, Introduction to Statistical Methods, is highly recommended, and, for some programs, required.
³ An elective may be substituted for PHYSICS 101 and 102 if it is not required for entrance to a graduate or professional program.
⁴ Students are encouraged to pursue a minor in other areas of more in-depth science minor.

GENERAL STUDIES - BIOLOGICAL/MATHEMATICAL/PHYSICAL SCIENCES PLAN A AND PLAN B (120 HOURS)

The Biological/Mathematical/Physical Sciences plan within 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 300-400-level major course work. In addition, each student will satisfy the University Core Requirements and any additional requirements of the College of Arts and Sciences. At least 40 of the 120 hours for the degree must be at the 300-400-level.

Plan A—Primary/Secondary Concentration
 Primary concentration: a minimum of 24 semester credits, including at least 15 300-400-level credits, must be completed in biological sciences, in mathematics or in a single physical science with a minimum 2.00 primary concentration gpa. Students who complete one of the above primary concentrations will receive a Bachelor of Science degree with a primary concentration in general biological sciences (Gen B), general mathematics (Gen M) or general physical sciences (Gen P).

Secondary concentration: a minimum of 15 semester credits, including at least 6 300-400-level credits, must be completed in another academic department, program or area published in the catalog 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. 9 credits in each department or program

area are required and 21 300-400-level 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 primary concentration in general biological sciences (Gen B).

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 quantitative and organic chemistry. Physical geology is a prerequisite for 300-400-level geology courses.)

General Mathematics (Gen M): three semesters of calculus and linear algebra.

Department of Geology

Please see the School of Environment in this catalog for information about Geology.

Paul G. Allen School of Global Animal Health

globalhealth.wsu.edu
Paul G. Allen Center for GAH; 245 SE Ott Road
509-335-1086
globalhealth@wsu.edu

Regents' Professor, Director, and Creighton Chair, G. Palmer; Associate Director and Regents' Professor, T. F. McElwain; Professors, T. E. Besser, D. R. Call, T. Marsh, W. M. Sischo; Associate Professors, K. A. Brayton, J. Celli, M. Memon, J. Yoder; Assistant Professors, H. Aguilar-Carreno, M. Davis, L. Knodler, K. Lahmers, A. Lau, A. Omsland, D. H. Shah, V. Vadyvaloo; Affiliate Professors, D. A. Moore, S. Kurtz, A. S. Dhillon, J. T. Lafrance; Affiliate Associate Professors, R. Quinlan, S. Roy; Affiliate Assistant Professors, T. Bankhead, A. Nicola, M. Quinlan; Adjunct Faculty, J. Futse, M. F. Galletti, G. Kaufman, E. S. Marshall, B. Martin, I. O. Olatoye, S. Ramabu.

The Paul G. Allen School for Global Animal Health (Allen School) provides innovative solutions to global infectious disease challenges through research, education, global outreach, and application of disease control at the animal-human interface. It advances science, people, and policy to discover novel approaches for disease intervention and delivery of preventive health care for animals and humans. Graduate study leading to the Master of Science and Doctor of Philosophy degrees is offered for individuals with strong backgrounds in biological, economic, engineering, physical, and social sciences. The objectives of the program are to provide the graduate student with

a broad knowledge of and research experience in global animal health with concentration in their specific disciplines placed in the global context of disease prevention and control. The curriculum is research intensive emphasizing the identification of knowledge gaps that constrain progress in improved global health, acquisition of contemporary and innovative investigative skills to address these gaps, and understanding of policy pathways to direct and enhance implementation of health solutions. Specialization includes animal and zoonotic disease epidemiology and pathogenesis, economic burden of disease and effect on food security, emerging and endemic disease surveillance and diagnosis, infectious diseases epidemiology and pathogenesis, vaccine discovery and development, implementation strategy and evaluation, and animal health policy and metrics.

The program offers flexibility for students with backgrounds in any of the core disciplines to pursue advanced training in global animal health, with independent study and original research in areas of the student's own interests. The interdisciplinary nature of the program assures the student of interaction with scientists representing a wide range of research interests in global health and provides the student with a broad choice of specialized facilities which are available in the cooperating academic units.

Description of Courses

GLOBAL ANIMAL HEALTH

GLANHLTH

500 Animal Health and Food System Policy and US State Government 1 Policy-making process relating to trade, animal health and food systems at the state and provincial levels.

501 Animal Health and Food System Policy and US National Government 1 Policy-making process relating to trade, animal health and food systems at the national level.

502 Animal Health and Food System Policy and Intergovernmental Organizations 1 International policy-making emphasizing the impact of international standards and policy of food safety, animal health, trade and public health.

Global Studies

ip.wsu.edu

**International Programs, Bryan 105
509-335-6204**

Director, Global Learning, C. Oakley

Global studies examines economic, political, social, cultural, and scientific practices in a trans-national and cross-cultural perspective. An undergraduate minor in global studies encourages a student in any major discipline to think in terms of the globalization that marks the contemporary world. The program of study is designed to provide an exciting interdisciplinary global perspective on the arts, humanities, social sciences, and sciences. The minor is flexible and complements majors

from across the University, affording students the opportunity to reach beyond their majors, or to take courses related to their majors outside of the context of the United States.

The global studies minor gives students from all major disciplines a competitive edge in the global job market. Graduates in any field find that the unique combination of flexible coursework gives them the skills and background to work in their chosen fields in an international environment. It helps build the attributes of the successful global citizen, someone who is capable of understanding and mastering the complexity of diverse intercultural contexts.

Minors

Global Studies

The minor requires 18 credit hours and must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Students should select one track from the three listed in the course requirements, and one module from those listed within each track. Some courses may be substituted with the approval of the Director of Global Studies. In particular, many course equivalents may be taken through a study abroad program, and students are encouraged to discuss these with the Director of Global Studies. Additional courses may be included within the minor as developed in the university curriculum.

TRACK I - Language and Civilization: Choose one from COM 321, ENGLISH 222, FINE ART 202, FOR LANG 101, 110, 120, 130, or 220. Choose 3 courses from one of the following modules:

-Regional and Comparative Literatures/Film: CHINESE or SPAN 111, CHINESE130, ENGLISH 333, 334, 335, FORLANG 410, FRENCH, GERMAN, or SPANISH 110, FRENCH, GERMAN, RUSSIAN, or SPANISH 130, FRENCH or RUSSIAN 430.

-Aesthetics and Values: ANTH 303, FINE ART 301, 302, 304, HISTORY 340, 341, PHIL 207, 220, 260, 314, 315, POL S 333, 437, 438, SOC 455, WOMEN ST 375.

-Art, Music and Folklore: ANTH 301, 303, 404, FINE ART 404, 405, MUS 163, 265, 360, 361, 362, 363, PHIL 430.

-Evolution of Civilizations: ANTH 330, 336, FRENCH, GERMAN, RUSSIAN, or SPANISH 120, FRENCH, GERMAN, RUSSIAN, or SPANISH 121, HISTORY 270, 273, 306, 331, 370. 373, 374, SOC 415, 430.

-Language: 2 semesters of second year foreign language required.

TRACK II - Global Communities: Choose one from ANTH 203, CES 212, FOR LANG 120, 220, PHIL 101, POL S 102, 103, or WOMEN ST 332. Choose 5 courses from one of the following modules:

-Globalization: ANTH 417, 418, COM 321, ECONS 327, 427, 428, FRENCH, GERMAN, or SPANISH 361, HISTORY 491, I BUS 375, 380, POL S 314, 435, 472, WOMEN ST 316.

-Populations and Cultural Ecology: ANTH 309, 316, 350, 370, POSYCH 466, SOC 332, 415, WOMEN ST 402.

-Conflict and Cooperation: CES 302, HISTORY 386, 387, 388, POL S 428, 424, 427, 429, PSYCH 403, SOC 363, 480, SPANISH 362, WOMEN ST 300.

-Social Justice: ANTH 418, 494, CES 302, 401, CRM J, 381, 405, PHIL 445, 470, POL S 428, SHS 250, SOC 363, SPANISH 362, WOMEN ST 330.

-Language: 2 years of high school or 2 semesters of university foreign language courses required. Additional foreign language study is strongly recommended.

TRACK III - Technology and Global Society: Choose one from ARCH 202, CROP SCI 360, ENVR SCI 101, FINE ART 331, FOR LANG 120, 220, GEOLOGY 210, NATRS 202. Choose 5 courses from one of the following modules:

-The Global Environment: ANTH 309, 370, CE 401, HISTORY 409, PHIL 370, POL S 430, SOC 415.

-Global Resources and Human Survival: BIOLOGY 474, CES 401, CROP SCI 201, 360, HISTORY 495, NATRS 441, 312, SOIL SCI 345.

-Science and Societies: ANTH 469, BIOLOGY 401, HISTORY 380, 382, PHIL 350, 365, PHYSICS 408, PSYCH 492.

-Language: None required but foreign language study is strongly recommended.

Department of Health Policy and Administration

hpa.wsu.edu

Academic Center Bldg., Suite 411

509-358-7980

hpa@wsu.edu

Chair and Professor, J. S. Coyne; Associate Professor, J. Kennedy; Assistant Professor, S. Murphy; Clinical Associate Professor, G. Smith.

The Department of Health Policy and Administration (HPA) offers the Master of Health Policy and Administration degree at WSU Spokane. The mission of the Department of Health Policy and Administration is: 1) to offer a world-class graduate education to the next generation of health administrators, policy analysts, and health services researchers; and 2) to generate new knowledge and competencies that improve access, quality, efficiency, and equity of health services, both domestically and internationally. The vision of the WSU Department of Health Policy and Administration is to expand and improve our nationally recognized health administration education program and to enhance our portfolio of extramurally funded research.

The 53 credit-hour curriculum includes: Introductory courses (Introduction to the Health Care System; Health Care Cost Accounting; Health Care Finance; Health Care Law; Health Care Management; Biostatistics and Epidemiology for the Health Sciences; Marketing for Health Care Organizations); core courses (Health Care Economics; Health Care Policy and Politics; Health Care Human Resources Management; Research and Evaluation Methods; Health Care Information Systems); elective and professional skills development courses; 3-credit internship; capstone course (Strategic Management and Marketing); and 4-credit required graduate project or thesis.

Before students may enroll in the Program, they must satisfy two undergraduate prerequisites: basic financial accounting (e.g., ACCTG 230, Introduction

to Financial Accounting) and microeconomics (e.g., ECONS 101, Fundamentals of Microeconomics). Waiver exams are available and may be arranged through the department. Prerequisites must be completed prior to enrollment in any HPA courses.

The graduate program in Health Policy and Administration is accredited by the Commission on Accreditation of Healthcare Management Education (CAHME). According to the Association of University Programs in Health Administration Directory of Programs, "[CAHME] is recognized by the Council for Higher Education Accreditation (CHEA) which oversees accreditation of the nation's colleges and universities, and by the Department of Education, as the only accrediting agency in the field of health services administration. Accreditation by [CAHME] is the most important assurance that a graduate program meets the quality standards developed by the profession and the health services industry."

The HPA Program is also admitted to the Western Interstate Commission for Higher Education (WICHE) Western Regional Graduate Program (WRGP). According to WICHE, WRGP "consists of very high quality masters and doctoral degree programs which tend not to be widely available throughout the West." Admission of the HPA Program means that residents of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming are eligible to enroll at Washington resident rates of tuition. The WSU Health Policy and Administration Program is the only health administration program admitted to WRGP of the four CAHME-accredited programs in the WRGP region.

Students who have at least one year of residency in one of these 15 western states are automatically enrolled under WICHE/WRGP status when they are admitted to the HPA program. Part-time students are eligible to participate in WRGP if they have been admitted to a WRGP program.

Admission standards conform to the requirements of the WSU Graduate School. An undergraduate gpa of 3.0 or better is expected. In addition, GRE or GMAT scores are required for admission to the HPA Program, except for applicants holding a professional doctoral degree (e.g., MD, JD, DDS) or PhD from a US accredited school. Significant weight is given to GRE aptitude (verbal and quantitative combined) total scores of at least 1000, or a GMAT aptitude score of at least 500. However, indications of academic ability as expressed by undergraduate grade point average and professional experience are of greater importance than specific undergraduate background and GRE or GMAT scores.

For additional information, please call (509) 358-7980 or visit <http://www.hpa.spokane.wsu.edu>.

Description of Courses

HEALTH POLICY AND ADMINISTRATION

HPA

- 500 Introduction to the Health Care System** 3 Orientation to history and organization of the health care system.
- 501 Health Care Policy and Politics** 3 History, methods, results and evaluation of health-care-related policy and politics.

502 Law and Ethics of Health Management 3 Private health law and ethics, including professional liability, relationship of physician and patient, malpractice reform, health institutions, and health access.

503 Government Regulation of Health Services 3 Public law regulation; health care quality, personhood and individual autonomy, life/death decisions, antitrust, health care financing and cost control.

509 Health Care Economics 3 The economics of allocating, financing and delivering health care services. Cooperative: Open to UI degree-seeking students.

510 Health Care Cost Accounting 3 Basic cost-accounting concepts, principles, and applications in the health care setting.

511 Health Care Finance 3 Aspects of health care financial management fundamentals and managerial accounting for strategic financial management.

512 Health Management Decision Science 3 Application of decision science technology to risk-analysis problems in healthcare for both investor-owned and non-profit entities.

515 Health Care Management 3 Introduction to the knowledge, skills, and values associated with the practice of health management.

516 Health Quality Management 3 Overview of the total field of health quality, including strategic quality management programs, quality assurance, quality control, and design.

517 Health Care and Human Resources Management 3 Managing human resources and health professionals in diverse health care environments such as hospitals, clinics, home health care agencies and pharmaceutical firms.

519 Biostatistics and Epidemiology for the Health Sciences 3 Application of quantitative methods to problems in the health sciences; statistical analysis software.

520 Research and Evaluation Methods 3 Basic research and evaluation methods for health care professionals.

530 Health Care Information Systems 3 Key attributes of health care information systems and their evolution in health care environment.

570 Marketing for Health Care Organizations 3 Basic marketing concepts, principles, and issues related to marketing public and private health care.

572 Health Care Ethics 3 Ethical issues affecting health care institutions, professionals and consumers.

573 Comparative International Health Care 3 Analysis of key attributes of health care in selected countries and comparisons with the US health care system.

574 Rural Health Care in America 3 The unique characteristics, professional opportunities, problems and reform alternatives in rural health care.

579 Mental Health Policy and Law 3 Professions regulation, negligence, consent, privacy; civil commitment, treatment rights, guardianship, trial competency, insanity defense, sex offenders, execution capacity, entitlements, discrimination.

580 Disability and Aging Policy 3 Policy aspects of disability, aging and chronic illness; including work disability, health and long term care, rationing, gender and class.

590 Strategic Management and Marketing 3 Key components and processes in strategic planning.

597 Internship V 1-5 May be repeated for credit; cumulative maximum 5 hours. Student experience in professional work settings. S, F grading.

599 Special Topics in Health Policy and Administration V 1-3 May be repeated for credit; cumulative maximum 9 hours.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

Department of History

libarts.wsu.edu/history/
Wilson-Short 301
509-335-5139

Professor and Department Chair, R. Sun; Professors, P. Boag, C. Goucher, S. Hoch, S. Kale, L. Mercier, S. Peabody, O. Svingen, M. Tolmacheva; Associate Professors, R. Bauman, B. Farley, N. Kawamura, R. McCoy, D. Pietz, J. Sanders, J. Spohnholz, M. Sutton, X. Wang; Assistant Professors, E. Anderson, L. Hatter, J. Thigpen, J. Tishken, Ashley Wright; Clinical Faculty, L. Gerber, T. Jordan; Instructors, Y. Berliner, R. Chan, K. Faunce, K. Fry, F. Hill, M. Kovel, J. Middaugh, C. Stratton, S. Stratton; Emeritus, D. Stratton, L. Tuner-Rahman, C. Weller, C. Wenlinger.

Offerings in the field of history may be classified as American, Asian, European, and Latin American.

The Department of History's Undergraduate Degree Program is designed to produce several outcomes. We expect students who complete the requirements for an undergraduate major in History to: 1) express sophisticated and abstract concepts clearly in writing; 2) be familiar with the nature of historical argument and methodologies; 3) frame research topics and do research at an appropriate undergraduate level; 4) have a mastery of the broad outlines of historical developments, themes, issues, and patterns; 5) develop critical thinking skills that will allow and encourage them to become life-long learners.

A major in history can be used in government service, the new specialty of public history teaching, several areas of business and industry, and many other fields. It can also be used in preparation for study of the law, the ministry, archival work, and librarianship. Double majors or complementary minors combining history with other fields are easily arranged.

The department offers courses of study leading to the degrees of Bachelor of Arts in History, Bachelor of Arts in Social Studies, Master of Arts in History, and Doctor of Philosophy. In cooperation with others, the department participates in the interdisciplinary Program in American Studies leading to the degree of Doctor of Philosophy.

Preparation for Graduate Study

Students who have had basic undergraduate training in 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 schedule of studies.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

HISTORY - EDUCATION OPTION (123 HOURS)

Students who wish to earn a teaching credential must apply to the Teacher Preparation Program in the College of Education. They should consult with an advisor in history about choosing additional electives that may apply toward a minor or second major and that complement a History endorsement.

To certify in the History Education option, a student must have earned at least a 2.50 cumulative gpa.

The History Education major consists of 42 hours: 36 hours of History, including Hist 101, 102, 110, 111; one course from two of the following four sets: Hist 230, 231, 270, 271, 272 273, 275; and one more non-western/global course (for a total of three in this category); 21 hours of 300-400-level History, which must include 300, 422, 469; and 480. Econs

102, Pol S 101, and Psych 105 are also required to meet state certification guidelines (these can also fulfill GERS). History courses and courses cross-listed with History do not count as GERS.

Students must have one year of a foreign language at the college level or two years at the high school level.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 101	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3 or 4

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS]	3
ECONS 102 [SSCI], POL S 101 [SSCI], or PSYCH 105 [SSCI] ¹	3
HISTORY 102	3

Second Year

<i>First Term</i>	<i>Hours</i>
ECONS 102 [SSCI], POL S 101 [SSCI], or PSYCH 105 [SSCI] ¹	3
ENGLISH 201 [WRTG], 301 [WRTG], or 302 ²	3
HISTORY 110 [HUM]	3
HISTORY 200-level course ³	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
ECONS 102, POL S 101, or PSYCH 105 ¹	3
HISTORY 111	3
HISTORY 200-level course ²	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level HISTORY Electives ⁴	6
HISTORY 300 [M]	3
TCH LRN 301	3

<i>Second Term</i>	<i>Hours</i>
300-400-level HISTORY Elective ⁴	3
HISTORY 422	3
Integrative Capstone [CAPS]	3
TCH LRN 317	2
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level HISTORY Elective ⁴	3
HISTORY 469 [M]	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

<i>Second Term</i>	<i>Hours</i>
ED PSYCH 468	3
HISTORY 480	3
TCH LRN 467	3
TCH LRN 469	2
TCH LRN 470	3

Fifth Year

<i>First Term</i>	<i>Hours</i>
TCH LRN 415	16

¹ POL S 101 and ECONS 102 are state requirements for teacher certification in history and are recommended to fulfill UCORE or College of Arts and Sciences requirements; PSYCH 105 is required for admission to the Teacher Preparation Program.

² One from Engl 201, 301, 302 is required for admission to the Teacher Preparation Program.

³ Choose two from two categories: 230, 231; 270, 271; 272, 273; 275.

⁴ History education majors must choose their 12 hours of 300-400 electives from the following: one from HISTORY 411, 413, 414, 415, 416, one from HISTORY 412, 417, 418, 419, one from European history course list (see advisor) and one from world history course list (see advisor).

HISTORY - GENERAL OPTION (120 HOURS)

36 semester hours of history is required including 6 hours of US history, 6 hours of European history, and 9 hours of Non-Western/Global history; 21 hours at the 300-400-level, which must include HISTORY 300 and 469; and a 12 hour concentration (at least 6 hours 300-400-level) in the same or in related disciplines with the advisor's approval.

It is assumed that prior to the junior year the student will have completed courses meeting UCORE and College of Arts and Sciences requirements for graduation.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3 or 4
Electives	4

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
Social Sciences [SSCI]	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
100-200-level HISTORY Electives ¹	6
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives	3

<i>Second Term</i>	<i>Hours</i>
100-200-level Degree Program Course ²	3
100-200-level HISTORY Electives ¹	6
Creative & Professional Arts [ARTS]	3
Foreign Language, if necessary, or Elective	3 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
100-200-level Degree Program Course ²	3
300-400-level HISTORY Electives ¹	6
Foreign Language, if necessary, or Elective	3 or 4
HISTORY 300 or HISTORY Elective (any level) ¹	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Degree Program Course ²	3
300-400-level Electives	6
300-400-level HISTORY Elective	3
HISTORY 300	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Degree Program Course ²	3
300-400-level Electives	6
300-400-level HISTORY Electives ¹	6

<i>Second Term</i>	<i>Hours</i>
300-400-level Electives	6
HISTORY 469	3
Integrative Capstone [CAPS]	3

¹ History Electives must include 6 hours US history, 6 hours European history, and 9 hours Non-Western/Global history.

² Courses in the same or in related disciplines with the advisor's approval; students are encouraged to explore, in consultation with their advisor, a double-major or strong minor in a complementary subject field.

HISTORY - PRE-LAW OPTION (120 HOURS)

36 semester hours in history is required including 6 hours of US history, 6 hours of European history, and 9 hours of Non-Western/Global history; 12 hours of 100-200 level HISTORY; 3 hours of additional HISTORY; 21 hours of 300-400-level, which must include HISTORY 300 and 469. Included in the program of study below are 30 hours of courses in communication, social sciences and humanities, economics and business that are valuable preparation for study of the law. In addition to these requirements, students are urged to elect, in consultation with their advisor, courses that complement the curriculum's broad based liberal arts education.

To certify in the history pre-law option, a student must have earned at least a 2.50 cumulative gpa.

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 that students will have completed courses meeting UCORE and College of Arts and Sciences requirements for graduation.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3 or 4
Electives	4

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or	

SCIENCE 101 [SCI]	4
COM 102 [COMM]	3
Diversity [DIVR]	3
Pre-Law Option ¹	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
100-200-level Hist Electives ²	6
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Pre-Law Option ¹	6

<i>Second Term</i>	<i>Hours</i>
100-200-level HISTORY Electives ²	6
Foreign Language, if necessary, or Elective	3 or 4
Pre-Law Option ¹	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level HISTORY Elective ³	3
Foreign Language, if necessary, or Elective	3 or 4
HISTORY 300 or HISTORY Elective (any level) ³	3
Pre-Law Option ¹	6

<i>Second Term</i>	<i>Hours</i>
300-400-level Electives	6
300-400-level HISTORY Elective ³	3
HISTORY 300 or HISTORY Elective ³	3
Pre-Law Option ¹	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level HISTORY Electives ³	6
300-400-level Pre-Law Option ¹	3
300-400-level Electives	6

<i>Second Term</i>	<i>Hours</i>
300-400-level HISTORY Elective ³	3
HISTORY 469	3
Integrative Capstone [CAPS]	3
300-400-level Electives	3

¹ Pre-Law requirements (may also fulfill UCORE requirements) – Political Science: POL S 300 and two courses from 101, 102, 198 or 206; Business/accounting: two courses from ECONS 101, 102, 198, ACCTG 230, B LAW 210 or FIN 323; Social Sciences/Humanities: one course each from [ANTH 101 or 198], [PHIL 201, 260, 360, 370 and 470], [PSYCH 105 or 198] and [SOC 101 or 198]; English: one course from ENGLISH 201, 301 or 402.

² 100-200 level History electives. Choose from 101, 102, 110, 111, 230, 231, 270, 272, 273, 275.

³ 300-400 level history electives. The following courses are recommended to fulfill upper-division requirements: European History: 341, 342, 343, 440, 441, 444, 445, 446, 447, 450, 453, 455, 459, 488, 489; American/U.S. History: 414, 415, 416, 417, 418, 419, 420, 423.

SOCIAL STUDIES - EDUCATION OPTION (135 HOURS)

Social Studies is a major for students who plan to earn both a BA and a teaching endorsement in the multidisciplinary fields of history and the social sciences: anthropology, economics, geography, political science, psychology, sociology. Social

Studies majors who wish to earn a teaching credential must apply to the Teacher Preparation Program in the College of Education. They should consult with an advisor in history about choosing additional electives that may apply toward a minor or second major and that complement a Social Studies endorsement.

To certify in Social Studies, a student must have earned at least a 2.50 cumulative gpa.

The social studies education major consists of 63 hours: lower-division (30 hours) to include HISTORY 101, 102, 110, 111; one course from two of the following four sets: HISTORY 230 231, 270, 271, 272 273, 275; one from AANTH 101, 198, 203, 260; ECONS 102; POL S 101; SOC 101. Upper-division (30 hours): 15 hours of history, to include 422, one European, one non-western/global, and one American/U.S. course; 15 hours of social sciences, to include one from ECONS 320, 327, 416, 427, 430 [T]; one from geography (ANTH 309, HISTORY 319, 495); one from POL S 300, 316, 427, 450, 455 or CRM J 320; and 6 additional hours from ANTH 307, 316, 320, 330, 331, 350; PSYCH 310, 324, 361, 470; SOC 320, 351, 384, 430; HISTORY 480 is also required. An approved seminar is also required but may double-count with the upper-division courses above.

As social studies is an interdisciplinary major, 21 credits may double count to fulfill UCORE and major requirements.

Students must have one year of a foreign language at the college level or two years at the high school level.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 101	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3 or 4
Electives	3

<i>Second Term</i>	<i>Hours</i>
ANTH 101 [DIVR]	3
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS]	3
HISTORY 102	3
SOC 101 [SSCI]	3

Second Year

<i>First Term</i>	<i>Hours</i>
ECONS 102	3
HISTORY 110 [HUM]	3
HISTORY 200-level course ¹	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
POL S 101 [SSCI] or PSYCH 105 [SSCI] ²	3

<i>Second Term</i>	<i>Hours</i>
ENGLISH 201 [WRTG], 301 [WRTG], or 302 ³	3
HISTORY 111	3
HISTORY-200 level course ¹	3
POL S 101 [SSCI] or PSYCH 105 [SSCI] ²	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level HISTORY Electives ⁴⁵	6
300-400-level ECONS Elective from list	3

ANTH/PSYCH/SOC Electives from list ⁵	3
TCH LRN 301	3
<i>Second Term</i>	
ANTH/PSYCH/SOC Electives from list	3
Geography Elective from list	3
HISTORY 422	3
POL S Elective from list	3
TCH LRN 317	2

Fourth Year

<i>First Term</i>	
300-400-level HISTORY Elective ⁴⁵	3
Integrative Capstone [CAPS] ⁶	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

<i>Second Term</i>	
300-400-level HISTORY Elective ⁴⁵	3
ED PSYCH 468	3
HISTORY 480	3
TCH LRN 467	3
TCH LRN 469	2
TCH LRN 470	3

Fifth Year

<i>First Term</i>	
TCH LRN 415	16

¹ Choose 2 from 2 categories: 230, 231; 270, 271; 272, 273; 275.

² PSYCH 105 is required for admission to the Teacher Preparation Program.

³ One from Engl 201, 301, 302 is required for admission to the Teacher Preparation Program.

⁴ Social studies majors must choose their 12 hours of 300-400 electives from the following: one from European history list, one from world history list, one from American/U.S. history list and one additional elective.

⁵ An approved seminar, HISTORY 469 or SOC 320, may double-count as a major course.

⁶ Integrated Capstone course may double-count as a major course.

Minors

History

A minor in history requires 18 hours, 9 of which must be in 300-400-level courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. A grade of C or better is required in all course work for the minor.

Description of Courses

HISTORY

HISTORY

- 101 [HUM] Classical and Christian Europe** 3 Survey of Europe, from 1000 B.C.E. to 1650 C.E. including Greece and Rome, Medieval Europe, the Renaissance and Reformation.
- 102 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.

105 [ROOT] The Roots of Contemporary Issues 3 Foundational first-year course that explores the deep historical roots of global contemporary issues relevant to students' lives in the 21st century. Credit not granted for both HISTORY 105 and 305.

110 [HUM] American History to 1877 3 Social, economic, cultural history of British mainland colonies/United States to 1877.

111 [HUM] American History Since 1877 3 Social, economic, cultural history of United States, 1877 to present.

120 [DIVER] World History I 3 Integrated study of political, social, cultural, economic, environmental and religious systems among peoples and civilization prior to 1500 CE.

121 [HUM] World History II 3 Integrated study of political, social, cultural, economic, environmental and religious systems among peoples and civilization after 1500 CE.

150 [DIVER] Peoples of the United States 3 Examination of the peoples of the United States from the beginnings of the colonial era to the present.

201 Asian Pacific American History 3 Historical experience of Asian/Pacific Americans since the 19th century. (Crosslisted course offered as CES 211, HISTORY 201).

205 African American History 3 History of African Americans in the US with emphasis upon major themes of the Black experience. (Crosslisted course offered as CES 235, HISTORY 205, WOMEN ST 235).

216 American Cultures 3 Introduction to the interdisciplinary study of American cultures and the field of American studies. (Crosslisted course offered as AMER ST 216, ENGLISH 216, HISTORY 216, WOMEN ST 216).

230 [HUM] Latin America, The Colonial Period 3 Overview of the most significant events, social and ethnic groups, practices, and institutions of colonial Latin America.

231 [HUM] Latin America, The National Period 3 Analysis of challenges faced by Latin America in nation-building after independence throughout the nineteenth century, through case studies.

270 [DIVER] India: History and Culture 3 Survey of South Asian history, societies and cultures - development of civilization and contemporary societies of India and South Asia. (Crosslisted course offered as HISTORY 270, ASIA 270).

271 Southeast Asian History: Vietnam to Indonesia 3 Historical introduction to Southeast Asian social, religious, political, economic and cultural institutions including Vietnam, Thailand, Burma, the Philippines and Indonesia. (Crosslisted course offered as HISTORY 271, ASIA 271).

272 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. (Crosslisted course offered as HISTORY 272, ASIA 272).

273 Foundations of Islamic Civilization 3 Main ideas and institutions that have characterized Islamic civilization since its founding, presented thematically. (Crosslisted course offered as HISTORY 273, ASIA 273).

274 [DIVER] Introduction to African History 3 Survey of the history of Africa from human origins to present.

275 [DIVER] Introduction to East Asian Culture 3 Survey of East Asia (China, Japan, Korea, and others) history from 1766 BCE to the present. (Crosslisted course offered as HISTORY 275, ASIA 275).

280 Race and the Law in American History 3 Introduction to the role of the law in American race-relations since 1750. (Crosslisted course offered as CES 280, HISTORY 280).

298 [DIVER] History of Women in American Society 3 Exploration of the many roles women have played in American society from the Colonial period through the twentieth century. (Crosslisted course offered as HISTORY 298, WOMEN ST 298).

300 [M] Writing about History 3 Course Prerequisite: Certified major in History; sophomore standing. Historical topics, use of sources, analytical thought, and precision in language.

305 [ROOT] Roots of Contemporary Issues For Transfer Students 3 Course Prerequisite: Junior standing. Historical roots of global contemporary issues relevant to students' lives in the 21st century. Credit not granted for both HISTORY 105 and 305.

306 Cultures and Peoples of the Middle East 3 Contemporary Arab cultures in a historical perspective within the framework of Western-Middle Eastern relations. (Crosslisted course offered as ANTH 306, ASIA 306, HISTORY 306).

308 North American Indian History, Precontact to Present 3 History of North American Indian peoples from circa 1350 to present. (Crosslisted course offered as HISTORY 308, CES 375).

313 Black Freedom Struggle 3 Historic exploration of black resistance focusing on nationwide movement that developed following World War II. (Crosslisted course offered as CES 335, HISTORY 313).

314 [DIVER] American Roots: Immigration, Migration, and Ethnic Identity 3 An analysis of immigration to migration within the US including political and social consequences and the experiences of ethnic groups since the early 19th century. (Crosslisted course offered as HISTORY 314, CES 304).

315 Poverty and Policy in American History 3 Course Prerequisite: Junior standing. Poverty in America and attempts to ameliorate it including race/ gender and poverty and poverty policy.

319 Geographical History of the US 3 Perspectives on the geographical history of the U.S. from early times to the present.

- 320 [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.
- 321 US Popular Culture, 1800 to 1930** 3 Sports, early movies and radio, vaudeville, minstrel shows, circuses, Wild West shows, music, and other popular arts in historical context.
- 322 US Popular Culture Since 1930** 3 Movies, radio, television, sports, music, and other popular arts in historical context.
- 326 Abraham Lincoln and the Lincoln Legacy** 3 Broad overview of the life, presidency and legacy of Abraham Lincoln.
- 331 [HUM] Latin American Cultural History** 3 Analysis of the contact between Native Americans, Europeans, Africans, and others and the cultural ramifications that have ensued.
- 335 Women in Latin American History** 3 Survey of women's changing roles throughout Latin America from pre colonial to present. (Crosslisted course offered as HISTORY 335, WOMEN ST 335).
- 336 History of Sexualities** 3 Historical analysis of the social construction of sexualities in intersection with race and class within national and transnational contexts. (Crosslisted course offered as WOMEN ST 336, HISTORY 336).
- 337 Women in the Ancient World** 3 Role of women in ancient Egypt, Mesopotamia, Israel, Greece, and Rome; focus on the formation of western attitudes toward women. (Crosslisted course offered as HISTORY 337, WOMEN ST 337).
- 340 Ancient Greece** 3 History and culture of pre Christian GREEK civilization.
- 341 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 History of England to 1485** 3 English history; intellectual and cultural development.
- 350 European Women's History, 1400-1800** 3 Women's experiences in Europe from the Renaissance to the Enlightenment and the ideas and roles that shaped their opportunities. (Crosslisted course offered as HISTORY 350, WOMEN ST 350).
- 355 History of European Popular Culture** 3 The transformation of Europe's popular culture (music, games, stories, beliefs) through social, religious, print, and industrial revolutions.
- 370 History of Ancient and Medieval India** 3 Historical development to 1500 CE of states, religions, caste society, gender customs and social ecology in India. (Crosslisted course offered as HISTORY 370, ASIA 370).
- 373 [HUM] Chinese Civilization** 3 Growth of Chinese civilization from the Bronze Age to the present. (Crosslisted course offered as HISTORY 373, ASIA 373).
- 374 Japanese Civilization** 3 Overview of the evolution of Japanese culture and society from ancient times to the present. (Crosslisted course offered as HISTORY 374, ASIA 374).
- 381 Science in Western Civilization Through Newton** 3 Development of Western science and its influence on European culture and society.
- 382 Science in Western Civilization from Newton to Einstein** 3 Development of modern science and its influence on Western culture and society.
- 386 World War II in Europe** 3 Causes for war; military operations; economic mobilization; social and cultural change; occupation and resistance; the Holocaust; the legacy of war.
- 387 World War II in Asia and the Pacific** 3 Imperial rivalries in Asia; Japanese militarism; military, ideological and social aspects of the war; the atomic bomb; memory of the war. (Crosslisted course offered as HISTORY 387, ASIA 387).
- 388 US and Vietnam** 3 Course and consequences of US involvement in Indo-China, focusing on the causes and conduct of the US Vietnam conflict from 1945-1997.
- 390 U.S. Military History** 3 American military history from 1630 to the present. Themes will include civil military relations, the conduct of war, and political-military relations.
- 395 Topics in History** 3 May be repeated for credit; cumulative maximum 6 hours. Analytical study of selected historical movements and events.
- 396 Topics in African History** 3 May be repeated for credit; cumulative maximum 9 hours. Analytical study of selected African historical movements and events.
- 398 [DIVR] History of Women in the American West** 3 The multicultural history of women in the west through women's literature, archives, and oral history. (Crosslisted course offered as HISTORY 398, WOMEN ST 398).
- 399 [DIVR] Lesbian and Gay History: Culture, Politics and Social Change in the US** 3 Course Prerequisite: HISTORY 110, HISTORY 111, WOMEN ST 101, or WOMEN ST 201. History and theory of same-sex sexuality in the United States including identity formation, community development, politics and culture. (Crosslisted course offered as HISTORY 399, WOMEN ST 399).
- 400 History in Media** 3 Representation of historical people and events through different media e.g., text, film, video, and computers.
- 407 Religion and American Culture** 3 American religions from pre-contact times to the present focusing on the evolution of religious faiths.
- 409 American Environmental History** 3 Course Prerequisite: Junior standing. A history of environmental change, ideas of nature, natural resource development, conservation politics, science and environmental policy.
- 410 History of American Indian Sovereignty and Federal Indian Law** 3 The history of sovereignty and Federal Indian Law against the backdrop of treaties and trust responsibility. (Crosslisted course offered as HISTORY 410, ANTH 410, POL S 410).
- 411 American Diplomatic History, 1776-1914** 3 Policies and principles characteristic of American diplomacy from 1776 to 1914. Credit not granted for both HISTORY 411 and HISTORY 511.
- 412 American Diplomatic History in the 20th Century** 3 Credit not granted for both HISTORY 412 and HISTORY 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 HISTORY 415 and HISTORY 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 HISTORY 416 and HISTORY 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 HISTORY 417 and HISTORY 517.
- 418 United States, 1914-1945** 3 America through World War I, cultural tensions of the Twenties, and the crises of Depression and WWII. Credit not granted for both HISTORY 418 and HISTORY 518.
- 419 United States, 1945-Present** 3 International and domestic impact of the Cold War, era of McCarthyism, American aspirations, tensions and conflicts in the post-industrial era. Credit not granted for both HISTORY 419 and HISTORY 519.
- 421 The American West** 3 Multicultural exploration of the frontier experience and western America; environment, economic development, gender, class and race emphasized. (Crosslisted course offered as HISTORY 421, WOMEN ST 421).
- 422 History of the Pacific Northwest** 3 Political, social economic and environmental history of the Pacific Northwest. Fulfills the teaching certification requirement for Washington state history. Credit not granted for both HISTORY 422 and HISTORY 522.
- 423 Radicals, Reformers, and Romantics: The Impact** 3 Changing thought and its impact in the United States from colonial times to the present. Credit not granted for both HISTORY 423 and HISTORY 523.
- 425 The City in History** 3 Course Prerequisite: Junior standing. Description and comparison of the city through history in European and one or more non-Western cultures.

- 426 Workers Across North America** 3 Course
Prerequisite: Junior standing. International interactions between workers and labor unions in Mexico, Canada and the US. (Crosslisted course offered as CES 426, HISTORY 426).
- 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 HISTORY 427 and HISTORY 527. Cooperative: Open to UI degree-seeking students.
- 430 [M] History of Mexico** 3 War of independence, 19th century Mexico and the liberal-conservative struggle; modern Mexico since the Revolution of 1910. Credit not granted for both HISTORY 430 and HISTORY 530.
- 432 20th Century Latin America** 3 Contemporary developments, policies and trends in the Latin American states. Credit not granted for both HISTORY 432 and HISTORY 532.
- 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. Credit not granted for both HISTORY 433 and HISTORY 533.
- 434 Revolution in Latin America** 3 Social and political development in Central America; reasons for dictatorships and revolutionary movements; comparison with other Latin American regions. Credit not granted for both HISTORY 434 and HISTORY 534.
- 435 European Expansion Overseas, 1400-1800** 3 Course Prerequisite: Junior standing. The factors underlying European overseas expansion before 1800 and its impact on indigenous societies and world trading patterns.
- 436 [CAPS] Imperialism in the Modern World** 3 Course Prerequisite: Junior standing. History of imperialism (colonial, economic, territorial, cultural) since 1800 as a global phenomenon.
- 438 Topics in Public History** V 1-3 May be repeated for credit; cumulative maximum 3 hours. Public history applications, methods and careers in specific public history fields.
- 439 Slavery, Abolition and Emancipation in World History** 3 Course Prerequisite: Junior standing. History of slavery and abolition as a world-wide phenomena; trends and debates in historiographical literature. Credit not granted for both HISTORY 439 and HISTORY 539.
- 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.
- 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.
- 442 The Renaissance** 3 Course Prerequisite: Junior standing. Political, cultural, and religious history of Europe, 1300-1500.
- 445 The Reformation** 3 Political, cultural, and religious history of Europe, 1500-1650.
- 447 Europe in the French Revolutionary and Napoleonic Era, 1789 to 1815** 3 Credit not granted for both HISTORY 447 and HISTORY 547.
- 448 Modern Europe as Reflected In Art** 3 Early Modern Europe as reflected in architecture and the visual arts.
- 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 HISTORY 449 and HISTORY 549.
- 450 [M] Europe Since 1945** 3 Europe from the end of World War II to the present; the Cold War, European integration, social and intellectual life. Credit not granted for both HISTORY 450 and HISTORY 550.
- 453 Conservatism, Liberalism, and Socialism: Europe, 1815-1870** 3 The consolidation of industrial society and the nation-state in 19th-century Europe. Credit not granted for both HISTORY 453 and HISTORY 553.
- 454 Nationalism and National Conflict: Europe, 1870-1914** 3 The rise of Europe to world predominance and the crisis of the European order. Credit not granted for both HISTORY 454 and HISTORY 554.
- 455 The Great War 1914 - 1920** 3 Political, social and cultural history of the first global war from the Sarajevo assassination through the post-war peace settlements.
- 459 Modern Britain** 3 Britain and the Empire from the Napoleonic wars to the present. Credit not granted for both HISTORY 459 and HISTORY 559.
- 462 History of Imperial Russia** 3 History and culture of Imperial Russia from Peter the Great to the 1905 revolution. (Crosslisted course offered as HISTORY 462, RUSSIAN 462).
- 463 [M] History of the Soviet Union** 3 The Russian revolutions and the Soviet regime: 1905 to the present. (Crosslisted course offered as HISTORY 463, RUSSIAN 463).
- 464 Comparative Genocide** 3 Course Prerequisite: Junior standing. Study of the concepts, history, and consequences of genocide in the global perspective through theoretical and case study analysis. Credit not granted for both HISTORY 464 and HISTORY 564.
- 466 History of the Cold War, 1944-present** 3 Course Prerequisite: Junior standing. Exploration of the 50 year cold conflict between the US and USSR and its political, social, economic, and cultural consequences for the world.
- 467 Modern France** 3 The history of France from the revolution of 1789 to the present. Credit not granted for both HISTORY 467 and HISTORY 567.
- 468 Hitler and Nazi Germany** 3 Origins and rise of Nazism; state, society and culture in the Third Reich; Nazi racial ideology; world war; the Holocaust. Credit not granted for both HISTORY 468 and HISTORY 568.
- 469 [M] Seminar in History** 3 May be repeated for credit. Course Prerequisite: HISTORY 300 with a C or better; certified major in History.
- 472 [M] The Middle East Since World War I** 3 Course Prerequisite: Junior standing. Developments in the Middle East since World War I including nationalism, fundamentalism, and revolution. (Crosslisted course offered as HISTORY 472, ASIA 472).
- 473 The Middle East and the West** 3 Course Prerequisite: Junior standing. East-west tensions in the context of historical relations between the Middle East and West Europe since the rise of Islam. (Crosslisted course offered as HISTORY 473, ASIA 473).
- 474 Modern South Asia: Community and Conflict** 3 Historical transformation of communities and communal conflicts in modern South ASIA from 1500 to present; themes: caste, religion, geography, environment and economy. (Crosslisted course offered as HISTORY 474, ASIA 474).
- 475 Mao to Deng: The People's Republic of China, 1949 - 1999** 3 The major political, social, economic and cultural developments during the People's Republic of China. (Crosslisted course offered as HISTORY 475, ASIA 475, POL S 475).
- 476 [M] Revolutionary China, 1800 to Present** 3 Continuity and change in the political, social, cultural and economic experience of China since 1800. (Crosslisted course offered as HISTORY 476, ASIA 476, POL S 476).
- 477 [M] Modern Japanese History** 3 Examination of political, socioeconomic and cultural changes and the international crises in modern Japan since the 19th century. (Crosslisted course offered as HISTORY 477, ASIA 477).
- 479 History of East Asian Economic Development Since 1945** 3 The historical relationships between politics and economics in East Asian since 1945. (Crosslisted course offered as HISTORY 479, ASIA 479).
- 480 Methods of Teaching Social Studies** 3 Course Prerequisite: Certified major in History or Social Studies. Methods, resources, selection of content, past and present issues in social studies education.
- 483 Technology and Social Change to 1950** 3 Course Prerequisite: Junior standing. The emergence of modern technological society with emphasis on the period 1750-1950.
- 486 United States Foreign Relations** 3 Ends and means in foreign policy; organization, management, control, and current policy issues. (Crosslisted course offered as POL S 427, HISTORY 486).
- 489 [M] Recent Political Thought** 3 The development of political thought since Machiavelli. (Crosslisted course offered as POL S 438, HISTORY 489).
- 491 History of World Trade** 3 Course Prerequisite: Junior standing. The evolution of the institutions, conditions, and consequences of world trade after 1000.

- 492 Cultural Appetites: Food in World History** 3 Course Prerequisite: Junior standing. What food selection and preparation reveals about cultural integration around the world from the medieval era to the present.
- 494 Global Environmental History** 3 Historical dynamics of human communities and their ecological settings.
- 495 Space, Place, and Power in History: Historical Geography in Global Perspective** 3 Course Prerequisite: Junior standing. Introduction to the discipline of historical geography; geographical and spatial approaches to European, North American, and Asian history.
- 496 Topics in American Studies** 3 May be repeated for credit; cumulative maximum 9 hours. Same as AMER ST 596.
- 497 Seminar** 3 May be repeated for credit; cumulative maximum 6 hours.
- 498 History Internship** V 1-12 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Certified major or minor in History. Participation as intern in public or private sectors. Credit not granted for both HISTORY 498 and HISTORY 598.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 509 Field Course: Foundations in US History** 3 May be repeated for credit; cumulative maximum 12 hours. Chronological readings in US history.
- 510 Field Course in American History** 3 May be repeated for credit. Readings and interpretive problems of American history.
- 511 American Diplomatic History, 1776-1914** 3 Policies and principles characteristic of American diplomacy from 1776 to 1914. Credit not granted for both HISTORY 411 and HISTORY 511.
- 512 American Diplomatic History in the 20th Century** 3 Credit not granted for both HISTORY 412 and HISTORY 512.
- 513 Theory and Method in American Studies** 3 Major theories and methods currently used by American studies scholars; key concepts in cultural analysis. (Crosslisted course offered as AMER ST 513, ENGLISH 513, HISTORY 513).
- 515 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 HISTORY 415 and HISTORY 515.
- 516 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 HISTORY 416 and HISTORY 516.
- 517 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 HISTORY 417 and HISTORY 517.
- 518 United States, 1914-1945** 3 America through World War I, cultural tensions of the Twenties, and the crises of Depression and WWII. Credit not granted for both HISTORY 418 and HISTORY 518.
- 519 United States, 1945-Present** 3 International and domestic impact of the Cold War, era of McCarthyism, American aspirations, tensions and conflicts in the post-industrial era. Credit not granted for both HISTORY 419 and HISTORY 519.
- 520 Field Course in the American West** 3 May be repeated for credit; cumulative maximum 9 hours. Readings and interpretive problems in the history of the American West.
- 521 The American West** 3 Multicultural exploration of the frontier experience and western America; environment, economic development, gender, class and race emphasized. (Crosslisted course offered as HISTORY 421, WOMEN ST 421).
- 522 History of the Pacific Northwest** 3 Political, social economic and environmental history of the Pacific Northwest. Fulfills the teaching certification requirement for Washington state history. Credit not granted for both HISTORY 422 and HISTORY 522.
- 523 Radicals, Reformers, and Romantics: The Impact** 3 Changing thought and its impact in the United States from colonial times to the present. Credit not granted for both HISTORY 423 and HISTORY 523.
- 524 Seminar in the American West** 3 May be repeated for credit; cumulative maximum 9 hours. Research seminar in the history of the American West.
- 525 Seminar in American History** 3 May be repeated for credit. Cooperative: Open to UI degree-seeking students.
- 527 [M] Public History: Theory and Methodology** 3 An introduction to the broad range of non-traditional careers in history. Credit not granted for both HISTORY 427 and HISTORY 527. Cooperative: Open to UI degree-seeking students.
- 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.
- 529 Interpreting History through Material Culture** 3 May be repeated for credit; cumulative maximum 6 hours. Historical interpretation to work on major historic preservation and museum projects.
- 530 [M] History of Mexico** 3 War of independence, 19th century Mexico and the liberal-conservative struggle; modern Mexico since the Revolution of 1910. Credit not granted for both HISTORY 430 and HISTORY 530.
- 532 20th Century Latin America** 3 Contemporary developments, policies and trends in the Latin American states. Credit not granted for both HISTORY 432 and HISTORY 532.
- 533 History of Cuba and the Caribbean** 3 Historical development of the Caribbean, with emphasis on Cuba, from the Spanish arrival to Castro's revolution. Credit not granted for both HISTORY 433 and HISTORY 533.
- 534 Revolution in Latin America** 3 Social and political development in Central America; reasons for dictatorships and revolutionary movements; comparison with other Latin American regions. Credit not granted for both HISTORY 434 and HISTORY 534.
- 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.
- 539 Slavery, Abolition and Emancipation in World History** 3 History of slavery and abolition as a world-wide phenomena; trends and debates in historiographical literature. Credit not granted for both HISTORY 439 and HISTORY 539.
- 540 Seminar in History** 3 May be repeated for credit.
- 547 Europe in the French Revolutionary and Napoleonic Era, 1789 to 1815** 3 Credit not granted for both HISTORY 447 and HISTORY 547.
- 549 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 HISTORY 449 and HISTORY 549.
- 550 [M] Europe Since 1945** 3 Europe from the end of World War II to the present; the Cold War, European integration, social and intellectual life. Credit not granted for both HISTORY 450 and HISTORY 550.
- 553 Conservatism, Liberalism, and Socialism: Europe, 1815-1870** 3 The consolidation of industrial society and the nation-state in 19th-century Europe. Credit not granted for both HISTORY 453 and HISTORY 553.
- 554 Nationalism and National Conflict: Europe, 1870-1914** 3 The rise of Europe to world predominance and the crisis of the European order. Credit not granted for both HISTORY 454 and HISTORY 554.
- 559 Modern Britain** 3 Britain and the Empire from the Napoleonic wars to the present. Credit not granted for both HISTORY 459 and HISTORY 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 Field Course in Early Modern European History** 3 Readings and interpretive problems in early modern European history (1450 - 1750).

- 562 History of Imperial Russia** 3 History and culture of Imperial Russia from Peter the Great to the 1905 revolution. (Crosslisted course offered as HISTORY 462, RUSSIAN 462).
- 563 [M] History of the Soviet Union** 3 The Russian revolutions and the Soviet regime: 1905 to the present. (Crosslisted course offered as HISTORY 463, RUSSIAN 463).
- 564 Comparative Genocide** 3 Study of the concepts, history, and consequences of genocide in the global perspective through theoretical and case study analysis. Credit not granted for both HISTORY 464 and HISTORY 564.
- 567 Modern France** 3 The history of France from the revolution of 1789 to the present. Credit not granted for both HISTORY 467 and HISTORY 567.
- 568 Hitler and Nazi Germany** 3 Origins and rise of Nazism; state, society and culture in the Third Reich; Nazi racial ideology; world war; the Holocaust. Credit not granted for both HISTORY 468 and HISTORY 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. Cooperative: Open to UI degree-seeking students.
- 570 World History Theory and Methods** 3 May be repeated for credit; cumulative maximum 9 hours. Historiographic overview of the field of world history.
- 571 Topics in World History** 3 May be repeated for credit; cumulative maximum 6 hours. Readings in themes and literature of a global approach to history.
- 572 [M] The Middle East Since World War I** 3 Developments in the Middle East since World War I including nationalism, fundamentalism, and revolution. (Crosslisted course offered as HISTORY 472, ASIA 472).
- 573 Field Course in African History** 3 May be repeated for credit; cumulative maximum 6 hours. Readings and interpretive problems in African history.
- 574 Modern South Asia: Community and Conflict** 3 Historical transformation of communities and communal conflicts in modern South ASIA from 1500 to present; themes: caste, religion, geography, environment and economy. (Crosslisted course offered as HISTORY 474, ASIA 474).
- 575 Field Course in Women's History** 3 May be repeated for credit; cumulative maximum 6 hours. Readings and interpretive problems in women's history.
- 576 [M] Revolutionary China, 1800 to Present** 3 Continuity and change in the political, social, cultural and economic experience of China since 1800. (Crosslisted course offered as HISTORY 476, ASIA 476, POL S 476).
- 577 [M] Modern Japanese History** 3 Examination of political, socioeconomic and cultural changes and the international crises in modern Japan since the 19th century. (Crosslisted course offered as HISTORY 477, ASIA 477).
- 578 Field Course in Asian History** 3 May be repeated for credit; cumulative maximum 9 hours. Readings and interpretive problems in Asian history.
- 580 Historiography** 3
- 595 The Teaching of History in College** 3 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. American Studies Summer Institute. (Crosslisted course offered as AMER ST 596, HISTORY 596). Credit not granted for both HISTORY 496 and HISTORY 596.
- 597 Seminar in History** V 2-3 May be repeated for credit.
- 598 History Internship** V 1-12 May be repeated for credit; cumulative maximum 12 hours. Participation as intern in public or private sectors. Credit not granted for both HISTORY 498 and HISTORY 598.
- 599 History Colloquium** 1 May be repeated for credit; cumulative maximum 4 hours. Weekly discussions and presentations on historical topics or current faculty and graduate student research. S, F grading.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

The Honors College

honors.wsu.edu
Honors Hall 130
509-335-4505

M. Grant Norton, Dean.

The mission of the Honors College is to offer students of high ability and initiative an enriched, four-year core curriculum that satisfies university graduation requirements and promotes global competencies. The Honors College helps students develop genuine intellectual curiosity and a life-long love of learning through a series of courses and independent work. Honors students acquire the broad foundations of liberal learning in the natural and social sciences, the arts and humanities, and cultures of the world. In addition, the Honors College requires a proficiency in foreign language and encourages education abroad as premier vehicles for acquiring key competencies for an increasingly globalized society and economy.

Specifically, as a general education program, the Honors College expects that its graduates will be able to: (1) construct a reasoned and evidence-based position on an issue that takes into account their own and others' views; (2) use the library catalog, databases, and the Internet to find relevant information while critically evaluating the quality of those information resources; (3) demonstrate respect for different cultural systems and traditions and their contributions to society; (4) choose the appropriate methodology and theoretical framework to solve a problem or answer a question in their discipline; (5) write and speak effectively in different contexts for a variety of audiences; (6) learn to apply quantitative tools and draw conclusions; and (7) demonstrate proficiency in a foreign language.

Courses offered through the Honors College are open only to students enrolled in the program. For admissions, see the Honors College section of the catalog.

Honors College Requirements

A bachelor's degree earned through the Honors College requires approximately the same number of total semester hours as required by the University Common Requirements (UCORE). Students who complete the Honors College requirements are not required to complete the University Common Requirements for graduation. Students who transfer from Honors without completing the Honors College requirements will be responsible for fulfilling the UCORE.

Honors College students are required to complete the courses specified in the schedule of studies. The mathematics requirement for students in the Honors College can be met in a number of ways (see footnote 1). In addition, students complete a three-credit Honors Thesis in the junior or senior year. A few majors will fulfill this requirement through design projects in their field. Each student must choose a thesis advisor, complete a significant piece of writing, and make a public presentation. Students who present an outstanding thesis may receive a "Pass with Distinction" on their final transcript. The Honors Certificate of Global Competencies requires a thesis with an international topic. In addition, students must participate in a study

abroad experience and complete at least six credits while abroad.

The Honors College requires its students to demonstrate proficiency in a foreign language. With sufficient high school preparation, an online examination will be administered upon entrance to the Honors College. If additional preparation in a foreign language is necessary, students will work with an Honors advisor to develop an appropriate course of study.

For continued enrollment in the Honors College, students must maintain a 3.2 cumulative gpa. Any graded courses used to fulfill Honors College graduation requirements must receive a grade of C or better. Students who satisfactorily complete all Honors College requirements with a cumulative gpa of 3.2 will receive an Honors Certificate of Completion provided they have completed a minimum of 15 graded credits of Honors courses. Certification will be noted on the transcript.

Each semester, students enrolled in the Honors College take one to two Honors courses in addition to their major courses.

First Year

- English 298
- Math requirement¹
- Foreign Language competency requirement²
- Lab science course³

Sophomore or Junior Year

- HONORS 270 Principles and Research Methods in Social Sciences
- HONORS 280 Contextual Understanding in the Arts and Humanities
- HONORS 290 Science as a Way of Knowing
- HONORS 398 Honors Thesis Proposal Seminar

Junior or Senior Year

- HONORS 370 Case Study: Global Issues in Social Science
- HONORS 380 Case Study: Application of Arts and Humanities to Global Issues
- HONORS 390 Case Study: Application of Science to Global Issues
- HONORS 450 Honors Thesis⁴

¹Students who qualify for Calculus II (MATH 172) on the basis of the math placement test receive credit for MATH 171 and thereby fulfill this requirement. Other students take the math required by their major. Honors College accepts: MATH 140, 171, 202, 205, 206, 212, and 251 and 252 combined. Check with an Honors College advisor for any questions concerning the math requirement.

²Assessed proficiency in a second language at the intermediate level. May be completed at any time before graduation. Check with an Honors advisor for specifics.

³Science majors complete required lab sciences

⁴Three credits required. The Honors College will accept credits required for other departmental theses or projects. Please check with an Honors advisor.

Timing Optional with Student:

Optional: HONORS 430 (Education Abroad Practicum and Research).

Certificates

Honors Certificate of Global Competencies

The Certificate of Global Competencies is an elective certificate for Honors students whose international interests and/or career objectives can be enhanced by an integrated program of language study, academic coursework, and study abroad. Students receive a notation on their transcript IN ADDITION to the Honors Certificate of Completion. The Certificate of Global Competencies builds on the courses required for the Honors Certificate of Completion. Students who enter with good foreign language preparation usually will not require extra time to complete both certificates. Fifteen graded credits are required for the Certificate of Global Competencies. A grade of C or better must be earned in each of the required, elective and transfer courses in order to qualify for the certificate. The university undergraduate certificate fee will apply. Students are strongly encouraged to work with an Honors advisor to plan an appropriate schedule of studies. The certificate entails requirements in four areas: 1. Foreign language competence: 3-6 graded credits at the 204 level or higher. 2. Education abroad: 6-9 graded credits from one term abroad or longer in an approved program. A "term" may include a summer session with a full academic load. A typical semester abroad in an approved program will result in 12-15 WSU credits. 3. HONORS 430 and presentation (3-6 credits, graded): May be completed through coursework abroad or at WSU. HONORS 430 includes an oral presentation scheduled at the Honors College during the first semester following the completion of HONORS 430. 4. Honors Thesis (HONORS 450, 3 credits, S,F): Your Honors Thesis must incorporate an international perspective significantly developed in the thesis. See an Honors advisor for approval of the international component.

Description of Courses

UNIVERSITY HONORS

- Chem 116 – Chemical Principles Honors II
- EconS 198 – Economics Honors
- Engl 298 – Writing and Research Honors
- Math 182 – Honors Calculus II
- Math 230 – Honors Introductory Linear Algebra
- Math 283 – Honors Calculus III
- Phys 205 – Physics Honors I
- Phys 206 – Physics Honors II
- Sci 298 – Sciences for Honors Students I
- Sci 299 – Sciences for Honors Students II
- see University Honors (U H) courses below -

HONORS

198 Honors First-Year Experience 1 Making a successful transition to college including advising, schedule planning and undergraduate research opportunities. S, F grading.

270 Principles and Research Methods in Social Science 3 Scholarship in social sciences; exposure to theoretical frameworks.

280 Contextual Understanding in the Arts and Humanities 3 Scholarship in the arts/humanities; exposure to theoretical frameworks.

290 Science as a Way of Knowing 3 Course Prerequisite: Any B, BSCI, P, PSCI, or SCI lab or concurrent enrollment. Exploration of how scientific knowledge is acquired, refined and advanced; hands-on experience with scientific scholarship. Recommended preparation: For science or engineering majors.

301 University Scholars Lecture Series 1 May be repeated for credit; cumulative maximum 3 hours. Themed lecture series and discussion seminar.

370 Case Study: Global Issues in Social Sciences 3 Course Prerequisite: HONORS 270 or ECON 198. Using research skills to analyze a global case study or international perspective in the social sciences.

380 Case Study: Global Issues in the Arts and Humanities 3 Course Prerequisite: HONORS 280. Using research skills to analyze a global case study or international perspective in the arts/humanities.

390 Case Study: Global Issues in the Sciences 3 Course Prerequisite: HONORS 290, SCIENCE 299, CHEM 116, MATH 182, PHYSICS 205, or PHYSICS 206. Using research skills to analyze a global case study or international perspective in the sciences.

398 Honors Thesis Proposal Seminar 1 Course Prerequisite: Sophomore standing. Seminar to complete the honors thesis proposal for HONORS 450. S, F grading.

399 Honors Thesis Seminar 1 Course Prerequisite: HONORS 398. Seminar to complete honors thesis for HONORS 450. S, F grading.

430 Education Abroad Research V 1-4 May be repeated for credit; cumulative maximum 6 hours. Special assignments and research related to education abroad.

450 Honors Thesis or Project V 1-4 May be repeated for credit; cumulative maximum 4 hours. Thesis or project directed by student's major department. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

Department of Horticulture

horticulture.wsu.edu
Johnson Hall 149
509-335-9502

Professor and Department Chair, N. R. Knowles; Regents Professor, B. W. Poovaiah; Professors, J. K. Fellman, M. Keller, D. R. Layne, V. I. Lohr, P. P. Moore, S. Musacchi; Associate Professors, P. K. Andrews, B. R. Bondada, L. K. Chalker-Scott, A. Dhingra, K. M. Evans, R. L. Hummel, D. S. Main, C. A. Miles, N. C. Oraguzie, C. P. Peace, M. J. Pavek, M. D. Whiting; Assistant Professor, M. M. Moyer; Adjunct/Affiliate

Faculty: G. W. Apel, C. Benedict, C. R. Brown, C. J. Coyne, E. A. Curry, J. R. Davenport, G. E. Edwards, L. E. Hadwiger, I. Hanrahan, T. C. Koenig, J. P. Mattheis, J. R. McFerson, R. McGee, D. W. Moran, M. K. Mullinix, K. D. Patten, D. R. Rudell, J. M. Tarara, R. K. Thornton, T. D. Waters, M. J. Willett, C. Wohleb, W. H. Wolfe, Y. Zhu.

The Department of Horticulture offers programs of study leading to the degrees of Bachelor of Science in Integrated Plant Sciences, Bachelor of Science in Agricultural and Food Systems, Master of Science in Horticulture, and Doctor of Philosophy in Horticulture. A minor in Horticulture is also available.

INTEGRATED PLANT SCIENCES AND AGRICULTURAL AND FOOD SYSTEMS

The science of plant life from molecule to market is the focus of the new Integrated Plant Sciences (IPS) Degree program. Delivered collaboratively by departments within the College of Agricultural, Human, and Natural Resource Sciences, the IPS degree provides students with an exciting depth and breadth of knowledge that crosses a variety of plant science disciplines, including crop and soil sciences, horticulture, landscape architecture, entomology, plant pathology, and food science. Students pursuing a Bachelor of Science degree in Integrated Plant Sciences may choose among seven majors highly sought by employers in the state, nationally, and internationally: Agricultural Biotechnology, Field Crop Management; Fruit and Vegetable Management; Landscape, Nursery, and Greenhouse Management; Landscape Design and Implementation; Turfgrass Management; or Viticulture and Enology. More information regarding IPS is available under the Integrated Plant Sciences catalog section and <http://ips.wsu.edu>.

The department is also involved with the College of Agricultural, Human and Natural Resource Sciences interdisciplinary Agricultural and Food Systems Degree Program. The Agricultural and Food Systems (AFS) program is an exciting, college-wide, interdisciplinary program that offers a Bachelor of Science degree with five majors and a Master of Science degree. Majors available through AFS include Agricultural Technology and Production Management, Agricultural Education, Organic Agriculture Systems, Agricultural and Food Business Economics, and Agriculture and Food Security. More information regarding AFS is available under the Agricultural and Food Systems catalog section and <http://afs.wsu.edu>.

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 student club activities.

Agricultural Biotechnology

The Agricultural Biotechnology major is designed for students interested in careers such as laboratory or research technicians in plant biotechnology, breeding, genetics, entomology, plant pathology, molecular biology, or physiology, as well as for students preparing for advanced degrees in these areas. The program emphasizes the development and application of new technology to ensure a

safe and abundant food and fiber supply. Students may find employment in industry, government, or university labs.

Fruit and Vegetable Management

The Fruit and Vegetable Management major offers specialization in the science and practice of growing, harvesting, handling, storing, processing, and marketing tree fruits, small fruits, and vegetables. Graduates can look forward to careers as growers and farm managers, production field advisors, sales representatives in the horticultural services industry, managers of produce firms, and brokers and marketers of fruit and vegetable products.

Landscape, Nursery, and Greenhouse Management

The Landscape, Nursery, and Greenhouse Management major is a horticulture-based program that prepares students for opportunities in plant propagation, the production and marketing of potted crops, bedding plants, trees, shrubs, and cut flowers, and in landscape plant management. This is an exciting major for students interested in owning or managing a nursery or greenhouse, attending graduate school in horticulture, working for university extension offices and research greenhouses, maintaining landscapes and parks, or working as wholesale horticultural-product brokers.

Landscape Design and Implementation

Students interested in careers in designing and building residential, commercial, public, and institutional landscapes, using both plant material and non-living elements such as walls and fountains, should consider the Landscape Design and Implementation major. In addition to the IPS core courses, students will take courses in landscape architecture and horticulture.

Viticulture and Enology

The Viticulture and Enology major was created for students interested in wine-grape growing and winemaking, as well as contributing to critical research and development opportunities in the wine industry. This program offers the technical, scientific, and practical experience needed to gain the essential skills for producing high quality grapes and premium table wines. It prepares students for successful careers in the wine industry in Washington and beyond.

Undergraduate Transfer Students

Students planning to transfer to Washington State University should take courses which meet the University Common Requirements (UCORE), and that meet the core requirements for Integrated Plant Sciences and Agricultural and Food Systems. Students are strongly encouraged to consult with an advisor within the Department of Horticulture for further guidance.

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 horticulture includes course work outlined under one of the majors with a strong emphasis in plant sciences, chemistry, environmental science, genetics, mathematics, and statistics.

LANDSCAPE ARCHITECTURE

Please see the School of Design and Construction in this catalog for information about Landscape Architecture.

Minors

Horticulture

A minimum of 16 hours in HORT is required, of which at least 9 hours must be in 300-400-level courses excluding HORT 399 and 499 and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. HORT/CROP SCI 202 and 251 are highly recommended. All pass, fail enrollments, and up to 2 credits of HORT 499, must be approved by the department chair.

Description of Courses

HORTICULTURE

HORT

102 Introduction to Cultivated Plants 3

Exploring cultivated plant classification and morphology, crop reproduction, basic plant processes, and the biotic and abiotic factors which can influence these processes. (Crosslisted course offered as HORT 102, CROP SCI 102).

150 [BSCI] Plants and Society 3 (2-3) Plant production systems are used to explore and understand the interrelationships between living systems, the environment, and modern civilization.

202 Crop Growth and Development 4 (3-3) Morphology, anatomy, growth and development of agronomic and horticultural crops. (Crosslisted course offered as HORT 202, CROP SCI 202). Recommended preparation: HORT 102; BIOLOGY 106, 107, or 120.

231 Landscape Plant Materials I 3 (2-3) Characteristics, identification, nomenclature, ecology, selection, and use of landscape plants, including flowering annuals, deciduous woody plants, and broadleaf evergreens. Recommended preparation: BIOLOGY 120 or HORT 202.

232 Landscape Plant Materials II 3 (2-3) Characteristics, identification, growth, ecology, selection, and use of landscape plants, including conifers, evergreens, interior plants, herbaceous perennials, and flowering woody plants. Recommended preparation: BIOLOGY 120 or HORT 202.

251 Plant Propagation 4 (3-3) Course Prerequisite: BIOLOGY 106, BIOLOGY 107, BIOLOGY 120, or HORT 202. Principles and methods of multiplying herbaceous and woody plants and their handling up to useable size.

310 Pomology 3 Course Prerequisite: BIOLOGY 106, BIOLOGY 107, BIOLOGY 120, or HORT 202. Botany, history, production, and uses of temperate-zone tree and small fruit crops. Cooperative: Open to UI degree-seeking students.

- 313 Viticulture** 3 Course Prerequisite: BIOLOGY 106, BIOLOGY 107, BIOLOGY 120, or HORT 202. Botanical relationships, plant characteristics, fruiting habits, location, culture, marketing, and utilization of grapes, berries, and other small or bush fruits. Field trip required. (Crosslisted course offered as HORT 313, VIT ENOL 313). Cooperative: Open to UI degree-seeking students.
- 320 Olericulture** 3 Science, business, and art of vegetable crop production: culture, fertility, growth, physiology, handling, marketing; garden, commercial, greenhouse, tropical, specialty vegetables. Recommended preparation: BIOLOGY 106, BIOLOGY 107, BIOLOGY 120, or HORT 202. Cooperative: Open to UI degree-seeking students.
- 321 Olericulture Laboratory** 1 (0-3) Course Prerequisite: Concurrent enrollment in HORT 320. Production principles and practices of vegetable crops; plant characteristics, cultivars, nutrition, growth, and development. Field trip required. Cooperative: Open to UI degree-seeking students.
- 322 Fruit and Vegetable Harvesting and Processing Technology** 3 (2-3) Course Prerequisite: MATH GER, or MATH 107. Technologies for harvesting, handling, storing, processing, and packaging of value-added fruit and vegetable products. Field trip required.
- 326 Vineyard and Winery Equipment Systems** 3 (2-3) Course Prerequisite: HORT 313. Overview of machinery systems used in vineyards and wineries. Field trip required. (Crosslisted course offered as HORT 326, VIT ENOL 326).
- 331 Landscape Plant Installation and Management** 3 (2-3) Principles and practices for installation and management of interior and exterior landscapes; specifications, site preparation transplanting, growth control, problem diagnosis. Recommended preparation: BIOLOGY 106, BIOLOGY 107, BIOLOGY 120, HORT 202, HORT 231, or HORT 232.
- 332 Interior Landscaping** 3 Design, selection, installation, management, and maintenance of plantings within buildings; effects of interior plants on people and the environment. Recommended preparation: 3 hours BIOLOGY or HORT. Cooperative: Open to UI degree-seeking students.
- 346 Landscape Irrigation Systems** 3 (2-3) System component selection; layout, installation, operation of irrigation systems for turf and landscape plantings; basic system hydraulics; efficient water use.
- 357 Greenhouse Management and Crop Production** 3 Importance of greenhouse structure and operational systems to quality plant production; production requirements for spring greenhouse crops. Recommended preparation: 3 hours BIOLOGY or HORT. Cooperative: Open to UI degree-seeking students.
- 358 Greenhouse Management and Crop Production Lab** 1 (0-2) Course Prerequisite: Concurrent enrollment in HORT 357. Production practices for spring greenhouse crops. Cooperative: Open to UI degree-seeking students.
- 399 Professional Work Experience** V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Certified IPS major or by interview. Planned and supervised work experience. (Crosslisted course offered as HORT 399, VIT ENOL 399). S, F grading.
- 409 Seminar in Viticulture and Enology** 1 Current topics and recent developments in the field of viticulture and enology. (Crosslisted course offered as HORT 409, VIT ENOL 409).
- 413 Advanced Viticulture** 3 Course Prerequisite: BIOLOGY 420; HORT 313; SOIL SCI 201. Wine and juice grape production in eastern Washington; wine and fruit physiology, climate and soils, and fruit quality. (Crosslisted course offered as HORT 413, VIT ENOL 413). Cooperative: Open to UI degree-seeking students.
- 416 Advanced Horticultural Crop Physiology** 3 Course Prerequisite: BIOLOGY 106, BIOLOGY 107, BIOLOGY 120, or HORT 202; junior standing. Physiological processes related to growth, development, and productivity of horticultural crops; advances in recombinant DNA technology; the impact on horticultural practices. Credit not granted for both HORT 416 and HORT 516. Recommended preparation: BIOLOGY 420.
- 418 [M] Post-harvest Biology and Technology** 3 (2-3) Course Prerequisite: BIOLOGY 420. Physical and physiological basis for handling and storage practices; perishable organ ontogeny and physiological disorders; post-harvest environment requirements. Field trip required. Credit not granted for both HORT 418 and HORT 518. Recommended preparation: HORT 202. Cooperative: Open to UI degree-seeking students.
- 421 Fruit Crops Management** 3 Course Prerequisite: 6 hours HORT, BIOLOGY, or VIT ENOL. Current research and management strategies for production and quality of temperate-zone fruit crops. Credit not granted for both HORT 421 and HORT 521. Recommended preparation: HORT 310 or HORT 313.
- 425 [CAPS] [M] Trends in Horticulture** 3 Course Prerequisite: Junior standing. Critical examination of current impacts and future trends in horticulture.
- 435 Chemistry and Biochemistry of Fruit and Wine** 3 Course Prerequisite: BIOLOGY 420; MBIOS 303; MBIOS 305. Study of the chemistry and biochemistry of fruits; biochemistry and physiology of individual fruit compounds, aspects of processing including winemaking. (Crosslisted course offered as HORT 435, VIT ENOL 435). Recommended preparation: Analytical chemistry.
- 444 Plant Breeding I** 2 Genetic principles underlying plant breeding and an introduction to plant breeding. (Crosslisted course offered as CROP SCI 444, HORT 444).
- 445 [M] Plant Breeding** 4 Course Prerequisite: MBIOS 301. Genetic principles underlying plant breeding and an introduction to the principles and practices of plant breeding. (Crosslisted course offered as CROP SCI 445, HORT 445).
- 480 Plant Genomics and Biotechnology** 3 Course Prerequisite: BIOLOGY 420. Advanced concepts in plant genomics and biotechnology with emphasis on approaches, techniques, and application. (Crosslisted course offered as HORT 480 and CROP SCI 480). Recommended preparation: MBIOS 301 or CROP SCI 444.
- 488 Anatomy and Physiology of Grapevines and Berries** 3 Course Prerequisite: BIOLOGY 420; HORT 313. Understanding of structural and functional relationships used to sustain vine health and produce high quality grapes. (Crosslisted course offered as HORT 488, VIT ENOL 488).
- 495 Research Experience** V 1-4 May be repeated for credit; cumulative maximum 12 hours. Planned and supervised undergraduate research experience. (Crosslisted course offered as CROP SCI 495, HORT 495, SOIL SCI 495).
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 503 Advanced Topics in Horticulture** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Current topics and research techniques in horticulture.
- 509 Seminar** 1 May be repeated for credit; cumulative maximum 12 hours. Continuous enrollment required for regularly enrolled graduate students in horticulture. Recent developments in horticulture. S, F grading.
- 510 Graduate Seminar** 1 May be repeated for credit; cumulative maximum 4 hours. Literature reviews and research progress reports.
- 513 Advanced Viticulture** 3 Wine and juice grape production in eastern Washington; wine and fruit physiology, climate and soils, and fruit quality. (Crosslisted course offered as HORT 413, VIT ENOL 413). Cooperative: Open to UI degree-seeking students.
- 516 Advanced Horticultural Crop Physiology** 3 Physiological processes related to growth, development, and productivity of horticultural crops; advances in recombinant DNA technology; the impact on horticultural practices. Credit not granted for both HORT 416 and HORT 516. Recommended preparation: BIOLOGY 420.
- 518 [M] Post-harvest Biology and Technology** 3 (2-3) Physical and physiological basis for handling and storage practices; perishable organ ontogeny and physiological disorders; post-harvest environment requirements. Field trip required. Credit not granted for both HORT 418 and HORT 518. Recommended preparation: HORT 202. Cooperative: Open to UI degree-seeking students.
- 521 Fruit Crops Management** 3 Current research and management strategies for production and quality of temperate-zone fruit crops. Credit not granted for both HORT 421 and HORT 521. Recommended preparation: HORT 310 or HORT 313.

535 Chemistry and Biochemistry of Fruit and Wine 3 Study of the chemistry and biochemistry of fruits; biochemistry and physiology of individual fruit compounds, aspects of processing including winemaking. (Crosslisted course offered as HORT 435, VIT ENOL 435). Recommended preparation: Analytical chemistry.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

VITICULTURE & ENOLOGY

VIT ENOL

113 Introduction to Vines and Wines 3 The importance of viticulture (grape growing) and enology (winemaking); wine quality. Cooperative: Open to UI degree-seeking students.

313 Viticulture 3 Course Prerequisite: BIOLOGY 106, BIOLOGY 107, BIOLOGY 120, or HORT 202. Botanical relationships, plant characteristics, fruiting habits, location, culture, marketing, and utilization of grapes, berries, and other small or bush fruits. Field trip required. (Crosslisted course offered as HORT 313, VIT ENOL 313). Cooperative: Open to UI degree-seeking students.

326 Vineyard and Winery Equipment Systems 3 (2-3) Course Prerequisite: HORT 313. Overview of machinery systems used in vineyards and wineries. Field trip required. (Crosslisted course offered as HORT 326, VIT ENOL 326).

399 Professional Work Experience V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Certified IPS major or by interview. Planned and supervised work experience. (Crosslisted course offered as HORT 399, VIT ENOL 399). S, F grading.

409 Seminar in Viticulture and Enology 1 Current topics and recent developments in the field of viticulture and enology. (Crosslisted course offered as HORT 409, VIT ENOL 409).

413 Advanced Viticulture 3 Course Prerequisite: BIOLOGY 420; HORT 313; SOIL SCI 201. Wine and juice grape production in eastern Washington; wine and fruit physiology, climate and soils, and fruit quality. (Crosslisted course offered as HORT 413, VIT ENOL 413). Cooperative: Open to UI degree-seeking students.

422 Sensory Evaluation of Food and Wine 3 Course Prerequisite: STAT 212; FS 110 or VIT ENOL 113. Theory, principles and application of sensory evaluation techniques in appearance, aroma, flavor and texture of foods and wine. (Crosslisted course offered as FS 422, VIT ENOL 422). Cooperative: Open to UI degree-seeking students.

435 Chemistry and Biochemistry of Fruit and Wine 3 Course Prerequisite: BIOLOGY 420; MBIOS 303; MBIOS 305. Study of the chemistry and biochemistry of fruits; biochemistry and physiology of individual fruit compounds, aspects of processing including winemaking. (Crosslisted course offered as HORT 435, VIT ENOL 435). Recommended preparation: Analytical chemistry.

465 Wine Microbiology and Processing 3 Course Prerequisite: MBIOS 303; MBIOS 305. Technical principles related to the processing and fermentation of wines with an emphasis on microbiology. (Crosslisted course offered as FS 465, VIT ENOL 465). Recommended preparation for graduate students: MBIOS 303; MBIOS 305; MBIOS 306. Cooperative: Open to UI degree-seeking students.

466 Wine Microbiology and Processing Laboratory 1 (0-3) Course Prerequisite: FS 465 or concurrent enrollment; MBIOS 304. Hands-on winemaking; application of chemical microbiological methods for wine analysis. Field trip required. (Crosslisted course offered as FS 466, VIT ENOL 466). Cooperative: Open to UI degree-seeking students.

488 Anatomy and Physiology of Grapevines and Berries 3 Course Prerequisite: BIOLOGY 420; HORT 313. Understanding of structural and functional relationships used to sustain vine health and produce high quality grapes. (Crosslisted course offered as HORT 488, VIT ENOL 488).

496 Internship in a Winery 2 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Sophomore standing. Industrial assignments at a regional, national or international winery. (Crosslisted course offered as FS 496, VIT ENOL 496). Cooperative: Open to UI degree-seeking students. S, F grading.

School of Hospitality Business Management

business.wsu.edu/Hospitality/
Todd Hall 342
509-335-5766

Director and W. Terry Umbreit Distinguished Chair, N. Swanger; Ivar Haglund Distinguished Professor, D.

Reynolds; Taco Bell Distinguished Professor, D. Gursoy; Craig Schafer Fellow and Associate Professor, H. J. Kim; Associate Professor, C. Chi; Culinary Educator, J. Harbour; Executive Chef and Catering Services Manager, J. Callison; Culver Hospitality Relations Manager, M. Snyder; Instructors, W. Maynard, T. Leib; Professors Emeriti, L. Kreck, D. Rutherford, D. Smith, W. Terry Umbreit.

The school provides specialized instruction dealing with the major organizational, managerial, financial, and technical issues relative to hospitality and tourism operations of hospitality businesses. The school prepares graduates for managerial responsibilities in hospitality and tourism operations both here and abroad. The curriculum provides a sound business education on the fundamental features of operating in various segments within the industry. It includes courses in general education, business, and hospitality management. The program of study leads to a degree of Bachelor of Arts in Hospitality Business Management.

The School of Hospitality Business Management will produce graduates who:

- Complete their 1000-hour industry requirement, earning employer evaluation scores of 80% or higher.
- Apply qualitative and quantitative hospitality business skills to solve problems.
- Identify service gaps and propose solutions for service recovery, while considering multiple stakeholders.
- As members of a team, through a group project, evaluate a hotel's position and present acceptable findings and/or solutions considering the implications for multiple stakeholders.

International Learning Requirement

Students within the College of Business must complete one of the following International Learning Requirement options*:

1) Study abroad for 6 or more credit hours. Two smaller study abroad programs may be cumulated to meet the entire six credit hour requirement. International students in the College of Business (not including WSU Online students) will meet their study abroad requirement through their study in the United States.

2) Complete a major or minor in a foreign language or Global Studies. Honors College students that meet their demonstrated proficiency in a foreign language will also be deemed to have met the College of Business Global Learning requirement

3) Complete a certificate with a major international component such as the Asia Program certificate

4) Complete any two of the following requirements:

- a. a brief study abroad program of less than 6 credit hours,
- b. an international internship approved by the International Business Institute (maximum of three credit hours)

c. an accepted international course as approved through the International Business Institute. (See your advisor for a list of classes)**, or

d. a College of Business international course including IBUS 380, any International Business Institute 300 or 400 level course, any cross-listed course offered by the International Business Institute, (see your advisor for classes) or

e. an accepted petition to the International Business Institute to allow the use of extensive international travel experiences at the collegiate level for up to three credit hours towards

the International Learning Requirement. Normally such an experience will be at least 3 months in duration. Credit for IBUS 498 or 499 may be given upon pre-approval.

5) Complete a minimum of one year international experience in any of the following areas: military service, Peace Corps, Volunteer work with an organization, missionary work, or other. Documentation is required for approval.

* Interpretations regarding the proposed policy will be made by the administrative head of the International Business Institute.

** Other courses may also be used under this guideline if approved through the International Business Institute.

Transfer Students

A student planning to transfer to hospitality business management from a two-year program should have made appropriate academic progress before transferring. In addition, the student should have 400-500 hours (one summer) of gainful employment in the hospitality industry. However, it is strongly advised that the student utilize both summers in related employment before entering WSU.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

HOSPITALITY BUSINESS MANAGEMENT (120 HOURS)

To be eligible for certification as a major in hospitality business management, students must have earned at least 60 semester hour of credit and completed the following certification courses with a gpa of 2.50 or higher: ACCTG 230, 231; B LAW 210; MGTOP 215; ECONS 101, 102; ENGLISH 101; MATH 201, MATH 202; MIS 250, and have a WSU cumulative gpa of 2.5. All students must apply for certification on-line. Students will also be ranked based on space availability and academic performance. Students are eligible to petition for consideration of alternative criteria.

All students majoring in hospitality business management must complete at least 60 credit hours of their course work outside of the College of Business. MGTOP 215 may be counted as four credits towards this requirement. 1,000 hours of work experience is also required by the School of Hospitality Business Management.

In order for hours to count for the requirement, they must meet the following criteria:

1. Hours must be worked after high-school graduation
2. All hours must be documented as paid
3. Hours must be worked at a company whose primary source of revenue is derived from hospitality services
4. The employer evaluation for the hours must reflect an average of 70% across the ratings criteria on the form

Residence Requirements: 1) At least 50% of business core and major specialization course requirements must be taken at WSU; 2) At least nine 300-400-level business, economics, or hospitality

courses must be taken in residence at WSU; and 3) The last 30 hours of course work must be taken at WSU.

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.

Only general elective courses that are not UCORES, not core/major requirements, and not a course offered by the CBE may be taken pass, fail.

An honors senior project is required for Honors students.

First Year

<i>First Term</i>	<i>Hours</i>
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 201	3
SOC or PSYCH [SSCI] (SOC 101, 102 150 preferred)	3

<i>Second Term</i>	<i>Hours</i>
COM 102 [COMM], COMSOC 235 [COMM], or H D 205 [COMM]	3 or 4
ECONS 101 or 102	3
HBM 182	1
Humanities [HUM]	3
MATH 202 [QUAN]	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
Diversity [DIVR]	3
HBM 280	3
Electives	2 or 3

<i>Second Term</i>	<i>Hours</i>
ACCTG 231	3
B LAW 210	3
MGTOP 215	4
MIS 250	3
POL S Elective	3
Complete Writing Portfolio	
Consider studying abroad this summer	

Third Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
FIN 325	3
HBM 358	3
MGMT 301	3
MKTG 360	3

<i>Second Term</i>	<i>Hours</i>
300-400-level Business Elective	3
HBM 381 [M]	3
HBM 491	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	4 or 3
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Business Elective	3
ECONS 305, 323, or 423	3
HBM 320	1

HBM 494 [M]	3
MGMT 450	3
Electives	2

<i>Second Term</i>	<i>Hours</i>
ENGLISH 402 or 403	3
HBM 495 [CAPS]	3
Electives	7

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

WINE BUSINESS MANAGEMENT (120 HOURS)

To be eligible for certification as a major in wine business management, students must have earned at least 60 semester hour of credit and completed the following certification courses with a gpa of 2.50 or higher: ACCTG 230, 231; B LAW 210; MGTOP 215; ECONS 101, 102; ENGLISH 101; MATH 201, MATH 202; MIS 250, and have a WSU cumulative gpa of 2.5. All students must apply for certification on-line. Students will also be ranked based on space availability and academic performance. Students are eligible to petition for consideration of alternative criteria.

All students majoring in hospitality business management must complete at least 60 credit hours of their course work outside of the College of Business. MGTOP 215 may be counted as four credits towards this requirement. 1,000 hours of work experience is also required by the School of Hospitality Business Management.

In order for hours to count for the requirement, they must meet the following criteria:

1. Hours must be worked after high-school graduation
2. All hours must be documented as paid
3. Hours must be worked at a company whose primary source of revenue is derived from hospitality services
4. The employer evaluation for the hours must reflect an average of 70% across the ratings criteria on the form

Residence Requirements: 1) At least 50% of business core and major specialization course requirements must be taken at WSU; 2) At least nine 300-400-level business, economics, or hospitality courses must be taken in residence at WSU; and 3) The last 30 hours of course work must be taken at WSU.

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.

Only general elective courses that are not UCORES, not core/major requirements, and not a course offered by the CBE may be taken pass, fail.

An honors senior project is required for Honors students.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 120 [BSCI]	4
CHEM 101 [PSCI]	4
ECONS 101 [SSCI] or 102 [SSCI]	3

ENGLISH 101 [WRTG]	3
HBM 182	1

<i>Second Term</i>	<i>Hours</i>
CHEM 102	4
COM 102 [COMM], COMSOC 235 [COMM], or H D 205 [COMM]	3 or 4
HISTORY 105 [ROOT]	3
MATH 201	3
SOC 101 [SSCI], 102 [SSCI], or 150 [SSCI]	3

Second Year

<i>First Term</i>	<i>Hours</i>
ACCTG 230	3
Creative & Professional Arts [ARTS]	3
MATH 202 [QUAN]	3
MIS 250	3
VIT ENOL 113	3

<i>Second Term</i>	<i>Hours</i>
ACCTG 231	3
B LAW 210	3
ECONS 101 or 102	3
HORT 202	4
MGTOP 215	4
Complete Writing Portfolio	
Domestic/International Hospitality & Wine Internship ¹	

Third Year

<i>First Term</i>	<i>Hours</i>
FIN 325	3
FRENCH 120 [HUM]	3
HBM 358	3
MGMT 301	3
MKTG 360	3

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
HBM 381	3
MGTOP 340 or MGMT 450	3
MKTG 477, COMSTRAT 312, or COMSTRAT 380	3
POL S Elective	3
Domestic/International Hospitality & Wine Internship ¹	

Fourth Year

<i>First Term</i>	<i>Hours</i>
ECONS 305, 323, or 423	3
HBM 494	3
I BUS 453 or I BUS 482	3
MKTG 490	3
Electives	2

<i>Second Term</i>	<i>Hours</i>
ENGLISH 402 or 403	3
FS 422	3
HBM 320	1
HBM 350	3
MGMT 491 [CAPS] or ENTRP 492	3
Domestic/International Hospitality & Wine Internship ¹	

¹ The non-credit internships correspond to the 1,000 hours of work experience required by the School of Hospitality Business Management.

Minors

Hospitality Business Management

To be eligible to certify in the hospitality business management minor, students must be certified in a major and have a cumulative gpa of 2.5. The minor in hospitality business management requires a minimum of 19 hours, 9 of which must be 300-400 level with an overall gpa of at least a 2.5 in the required courses. The required courses are ACCTG 230, HBM 182 or 320, and 5 College of Business or Hospitality Business Management courses of which at least nine hours must be Hospitality Business Management courses at the 300-400 level. Nine hours must be 300-400 level courses taken in residence at WSU or though WSU-approved education abroad or educational exchange courses and they may not include any 498 or 499 courses. Up to 6 hours may be transferred from another institution. Students must ensure that they meet all course prerequisites before seeking admission to any College of Business course.

In addition, students must complete 400 hours of internship/industry experience to earn the minor. In order for hours to count for the requirement, they must meet the following criteria:

1. Hours must be worked after high-school graduation;
2. All hours must be documented as paid;
3. Hours must be worked at a company whose primary source of revenue is derived from hospitality services; and
4. The employer evaluation for the hours must reflect an average of 70% across the ratings criteria on the form.

Description of Courses

HOSPITALITY BUSINESS MANAGEMENT

HBM

131 Introduction to Hospitality Business Management 3 Historical development and organizational structure of the hospitality service industries. Cooperative: Open to UI degree-seeking students.

158 Basic Restaurant Operations and Service 3 General restaurant operating concepts, dining room service procedures and food safety; sanitation principles.

182 Introduction to Industry Experience 1 Preparation for work in hospitality/business organizations; resume writing, interview skills, use of Career Services, career dress.

235 [SSCI] Travel, Society, and Business 3 Social, cultural, economic, and environmental practices and principles in global travel and tourism. Cooperative: Open to UI degree-seeking students.

258 Fundamentals of Cooking 3 (1-6) Practical applications of cooking techniques, dining room service, and restaurant operations including safety, sanitation, flow of goods and industry trends.

275 Special Topics V 1-15 May be repeated for credit. S, F grading.

280 Hospitality Systems 3 Management functions relating to the planning and operational policies of various hotel departments.

298 Internship Experience V 1 (0-3) to 12 (0-36) May be repeated for credit; cumulative maximum 12 hours. Cooperative educational internship with a hospitality business, government, or non-profit organization. S, F grading.

301 Introduction to Event Planning 3 Course Prerequisite: ACCTG 230; certified major in the College of Business, or certified minor in Hospitality Business Management. Overview of event planning industry, including components, interrelationships, economics, and theory.

320 Industry Experience 1 Course Prerequisite: ACCTG 230; certified major in the College of Business, or certified minor in Hospitality Business Management. Final employment preparation to include mock traditional/panel interviews, resume/cover letter critiques, etiquette dinner, and networking. S, F grading.

350 Beverage Management 3 Beverage operations; detailed study of wines and spirits; consideration of social impacts such as trends in consumption.

358 Foodservice Systems and Control 3 Course Prerequisite: ACCTG 230; certified major in the College of Business, or certified minor in Hospitality Business Management. Operational control processes, control systems, and cost analysis procedures in food and beverage management.

381 [M] Hospitality Leadership and Organizational Behavior 3 Course Prerequisite: ACCTG 230; certified major in the College of Business, or certified minor in Hospitality Business Management. Focusing on interpersonal skills and group dynamics; covers key hospitality leadership and management issues. Cooperative: Open to UI degree-seeking students.

383 Meeting and Convention Management 3 Course Prerequisite: HBM 301; certified major in the College of Business, or certified minor in Hospitality Business Management. Theory and practice of meeting/convention/event management, including goals, organization on- and off-site operations, evaluation.

384 Managed Services 3 Course Prerequisite: ACCTG 230; certified major in the College of Business, or certified minor in Hospitality Business Management. Management systems of the segment of the hospitality industry relating to contract and self-operated management companies. Field trip required.

458 Advanced Culinary Management and Catering 3 Course Prerequisite: HBM 258; certified major in the College of Business, or certified minor in Hospitality Business Management. Advanced kitchen/dining room management with emphasis on culinary skill development and the planning and administration of catering events.

- 480 [M] Marketing Strategy and Development** 3 Course Prerequisite: MKTG 360; certified major in the College of Business, or certified minor in Hospitality Business Management. Theory and practice; problems in guest relations, special sales efforts, intramural promotion, research.
- 491 Operational Analysis** 3 Course Prerequisite: ACCTG 231; MGTOP 215; FIN 325; HBM 280; certified major in the College of Business, or certified minor in Hospitality Business Management. Using management tools in analyzing operational effectiveness of hotel and restaurant organizations.
- 494 [M] Service Operations Management** 3 Course Prerequisite: ACCTG 230; certified major in the College of Business, or certified minor in Hospitality Business Management. Design and management of service delivery systems through operations management topics from a service perspective.
- 495 [CAPS] Case Studies and Research** 3 Course Prerequisite: HBM 358; HBM 491; HBM 494; certified major in the College of Business, or certified minor in Hospitality Business Management; junior standing. Use of the case method and computerized statistical programs in the analysis of administrative practices of organizations.
- 497 Special Topics** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: ACCTG 230; certified major in the College of Business, or certified minor in Hospitality Business Management. Topics of special interest within the area of hotel and restaurant administration.
- 498 Hospitality Business Management Internship** V 1-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission. Cooperative educational internship with a business, government or nonprofit organization. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Course Prerequisite: By department permission. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 535 International Tourism Strategy and Planning** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Tourism components; social, economic, and cultural effects on societies; the management of tourism businesses.
- 581 Services Management** 3 Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Design and management of service systems in hospitality operations; control of customer interaction, personnel activities and inventory.
- 582 Hospitality Operations Analysis** 3 Yield/revenue management and managerial accounting concepts within the hospitality industry.
- 591 Service Management Seminar** 3 Course Prerequisite: Admission to PhD programs in business. Survey of selected concepts, frameworks, theory, issues and empirical research in service management.
- 592 Current Issues in Travel and Tourism** 3 Course Prerequisite: Admission to PhD programs in business. Current issues, practices, principles and theory, research and methodologies that govern travel and tourism behavior.
- 597 Special Topics** 3 Course Prerequisite: Admission to PhD programs in business. Strategic business policy, concepts, and practices in hospitality management.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Course Prerequisite: Admission to the MBA, Master of Accounting, or Business PhD programs. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Course Prerequisite: Admission to PhD programs in business. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Human Development

hd.wsu.edu
Johnson Tower 501
509-335-8439

Professor and Chair, T. Power; Professors, L. Hill, L. Parker, K. Peterson, M. Tate; Associate Professors, C. Blodgett, B. Boyd, M. Bumpus, M. K. Deen, M. Diversi, D. Handy, J. Lanigan, J. McGuire, K. Rodgers, Y. Sano, S. Smith, M. Young; Assistant Professors, C. Bolkan, B. Cooper, R. Cooper, J. Edwards, P. Pendry; Instructors, D. Bayly, V. Fischer, M. Garcia, E. Greggain, L. Krupke, A. Lawrence, J. McReynolds, D. Nelson, J. Pittman, N. Porter, R. Sage, A. Shepherd, M. Wandschneider; Professors Emeriti, J. Dillman, G. Tan.

Students seeking a bachelor of arts degree in this department focus on human development across the lifespan as it occurs within the family, linked to a variety of contexts within communities. The program centers on understanding the complexity of physical, social, cognitive, and emotional development with an 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 family and consumer sciences teacher in junior high or senior high school.

In addition to the teaching certifications, the department offers four certificates: early childhood, adolescence, gerontology, and family studies. Students choosing these certificates are prepared to work in a wide range of careers working with children, adolescents, older adults, and/or families in a variety of professional settings. These may include positions in foster parent programs, adoption agencies, childcare or Head Start programs, teen centers, juvenile justice programs, nursing homes or other community-based programs for the elderly, and family services agencies.

We expect our graduating students will demonstrate: 1) an understanding of social, emotional, cognitive, and physical development across the lifespan in the family context; 2) an understanding of how contextual systems interact to influence family and individual development; 3) the ability to critically select, evaluate, and utilize information to understand and benefit individuals and families; 4) writing, listening, and speaking appropriate for human development related occupations; 5) application of human development knowledge and skills in professional settings.

Students completing a human development degree may complete a certified minor or approved certificate of study in another department. A minor or certificate of study should be selected in consultation with a human development faculty advisor, preferably by the end of the third semester.

The human development degree provides preparation for graduate work leading to teaching, research, counseling, or administrative positions in academia, social services, or family therapy.

The department also administers an interdisciplinary doctoral program in Prevention Science. Students in the program learn to develop, evaluate, and disseminate scientifically-based programs to promote the well-being of children, youth, and their families. The program is offered in collaboration with the Colleges of Communication, Education, and Nursing, as well as WSU Extension. Graduates are prepared for careers as faculty members, program evaluators, research analysts, and research associates to work in a range of settings including universities, research institutes, social service agencies, and consulting firms.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

HUMAN DEVELOPMENT - FAMILY AND CONSUMER SCIENCES OPTION (120 HOURS)

The Bachelor of Arts degree in Human Development requires a cumulative gpa of 2.5 or better and a C minimum grade in all H D courses, including substitutions. Of the 42 hours required for the major, a minimum of 21 must be taken in residence at WSU.

At least 40 of the total hours required for this bachelor's degree must be in 300-400-level courses.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 140 [BSCI]	3
ENGLISH 101 [WRTG]	3
H D 201	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3 or 4

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
H D 202 ¹	3
H D 204	3
Physical Sciences [PSCI] with lab ²	4
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>	<i>Hours</i>
AMDT Elective ³	3
ENGLISH 201 [WRTG], or Communication [COMM] or Written Communication [WRTG] ³	3
H D 203 ¹	3
Humanities [HUM]	3
Electives	2

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
H D 302	3
TCH LRN 301	3
TCH LRN 317 ¹	2
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
AG ED 440 ¹	2
AMDT Elective ³	3
H D 320 [M]	3
H D 350 ¹	3
H D 479 ¹	3

<i>Second Term</i>	<i>Hours</i>
H D 406 ¹	3
H D 409 ¹	3
H D 480 ¹	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

Fourth Year

<i>First Term</i>	<i>Hours</i>
ED PSYCH 468	3
H D 410 [M] ¹	3
Integrative Capstone [CAPS]	3
TCH LRN 467	3
TCH LRN 469	2
TCH LRN 470	3

<i>Second Term</i>	<i>Hours</i>
H D 407	8
TCH LRN 415	8

¹ Courses are only offered during this semester each year.

² CHEM 101 strongly recommended.

³ Select two from: AMDT 211, 216, 317.

HUMAN DEVELOPMENT - GENERAL OPTION (121 HOURS)

The Bachelor of Arts degree in Human Development requires a cumulative gpa of 2.5 or better and a

C minimum grade in all H D courses, including substitutions. Of the 42 hours required for the major, a minimum of 21 must be taken in residence at WSU.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
H D 201	3
HISTORY 105 [ROOT]	3
Social Sciences [SSCI] ¹	3
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ²	3 or 4

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
H D 202 ³	3
H D 204	3
Quantitative Reasoning [QUAN]	3 or 4
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
H D 203 ³	3
Humanities [HUM]	3
Minor Elective ⁴	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
H D Elective	3
Minor Elective ⁴	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI] ⁵	4 or 3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level H D Elective	3
H D Emphasis 320 [M] or 420 [M] ³	3
Minor Elective ⁴	3
300-400-level Electives	6

<i>Second Term</i>	<i>Hours</i>
300-400-level H D Elective	3
H D Emphasis 320 [M] or 420 [M] ³	3
Minor Electives ⁴	6
300-400-level Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level H D Elective	3
H D 410 [M]	3
Integrative Capstone [CAPS]	3
Minor Elective ⁴	3
300-400-level Electives	3

<i>Second Term</i>	<i>Hours</i>
300-400-level H D Elective	3
H D 310 [M] ³	3
H D 446 or 498 ⁶⁷	4 or 6
H D 497	2
Electives	3

¹ PSYCH 105 [SSCI] or SOC 101 [SSCI] are strongly recommended.

² BIOLOGY 140 [BSCI] is strongly recommended.

For a total of 7 units—one Biological Science [BIOS] and one Physical Science [PSCI] UCORE course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

³ Courses are only offered during this semester each year.

⁴ A minor must be decided at the end of the third semester.

⁵ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

⁶ H D 446 requires a half-day each day, 5 days a week for a semester and can be put into the schedule any time after taking H D 342.

⁷ The internship course (H D 498) can be taken during the summer semester of the junior or senior year. H D 497 should be taken no more than one to two semesters before taking the internship.

Minors**General Human Development**

The minor requires 18 hours, 9 of which must be in 300-400-level courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. The minor in Human Development requires H D 101 and 204 and 12 additional H D elective hours selected from H D 201 or 202 or 203; 300, 301, 302, 305, 340, 341, 350, 360, 385, 403, 406, 408, 412 and 430. Students must achieve a cumulative gpa of 2.5 or better in courses used to fulfill requirements for the Human Development minor.

Certificates**Adolescence/Aging/Early Childhood Development and Care/Family Studies**

The department of Human Development offers certificates in adolescence, aging, early childhood development and care, and family studies. Each certificate reflects a high standard of training and experience in a specific area of human development. Non-human development majors are required to complete any prerequisites for the internship requirement. The requirements for each certificate include 6 hours in H D core courses that support the area of certification, 15 hours in required and optional courses and 4 hours of internship that reflect the area of certification. Students must maintain an overall gpa of 2.5 in those courses that count toward the certificate. For specific requirements in any of these certificates, contact the department of Human Development.

Human Services Case Management and Administration (Vancouver only)

The Certificate in Human Services Case Management and Administration, administered by the Department of Human Development, is designed to assist students in building a theoretical and applied understanding of working with people in a variety of human service settings including, but not limited to, social service agencies, health care agencies, non-profits, and educational institutions.

Students are able to concentration on either case management, which is focused on those wanting to work with clients, or administration, which is developed for those interested in managerial and supervisory roles. To be admitted into the Certificate Program, students must be (1) certified in their WSU major or be a non-degree-seeking student, (2) have at least a cumulative GPA of 2.0, and (3) completed 60 semester credits. The certificate is awarded based upon successful completion of 6 courses (at least 3 credits each for a total of 18 semester credit hours). A final grade of "C" or better is required for each course to be applied to the certificate. Credit hours for the certificate must include at least nine hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Students must obtain approval of their course selections from the program chair in Human Development.

Description of Courses

HUMAN DEVELOPMENT

H D

- 101 [SSCI] Human Development Across the Lifespan** 3 Overview of lifespan development from a psychosocial ecological perspective; individuals, families, organizations, and communities and their interrelationships.
- 200 Introduction to the Field of Human Development** 2 Introduction to the multidisciplinary field of human development and the research and outreach of faculty in this field.
- 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 Course Prerequisite: H D 101, 201, or 340. 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.
- 204 [SSCI] Family Systems: Understanding Family Interaction** 3 Introduction to the study of family processes: family generational, emotional, boundary, rule, and ritualistic systems. (Crosslisted course offered as H D 204, WOMEN ST 204).
- 205 [COMM] Developing Effective Communication and Life Skills** 4 (3-2) Enhancing interpersonal communication, leadership, and team skills through action-based learning.
- 275 Special Topics in Human Development: Study Abroad** V 1-6 May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 hours. S, F grading.
- 300 Child Abuse and Neglect** 3 Course Prerequisite: Sophomore standing. Overview of causes, identification, reporting, and treatment of children who are abused and/or neglected.
- 301 Family Stress and Coping** 3 Course Prerequisite: Sophomore standing. Examination of the nature and course of family crisis, using a family systemic approach, including principles used in intervention strategies.
- 302 Parent-Child Relationships** 3 Course Prerequisite: Sophomore standing. Parenting in contemporary society with focus on reciprocity of parent-child relationships and diversity of families.
- 305 Gerontology** 3 Course Prerequisite: Sophomore standing. Examination and analysis of social context of aging including public policy, implications of demographic shifts, and quality-of-life issues.
- 310 [M] Research Approaches to Human Development** 3 Course Prerequisite: Junior standing; certified major in Human Development. Overview of research techniques in human development; methods of evaluating research products.
- 320 [M] Resource Management, Consumerism, and Problem Solving** 3 Course Prerequisite: Sophomore standing. Styles of managing material, human and environmental resources with families; analysis of consumer role; interaction of consumers, government, market: various approaches to problem solving with individuals and families; effects on communities, families, and individuals. (Crosslisted course offered as H D 320, WOMEN ST 320).
- 334 [SSCI] Principles of Community Development** 3 Course Prerequisite: Sophomore standing. Factors influencing how communities grow and decline and the ways in which social interventions influence these outcomes.
- 340 Development in Context** 3 Course Prerequisite: Sophomore standing. In-depth study of contextual influences (i.e., culture, place, family, school) on early years of human development; application of multi-cultural perspectives/practices.
- 341 Learning and Guidance in Early Childhood** 3 Course Prerequisite: H D 101, 201, or 340; sophomore standing. Theories of child guidance; understanding of child behavior; strategies and techniques for effective group and individual guidance of young children.
- 342 Curriculum for Early Childhood Programs** 4 (3-3) Course Prerequisite: H D 201 or 340; HD 341; sophomore standing. Planning and implementation of developmentally appropriate curriculum for use in programs serving young children.
- 350 [DIVR] Diversity in Contemporary Families** 3 Course Prerequisite: Sophomore standing. Preparation for students in human service professions to work with ethnic, cultural, economic, language, gender, religious and other types of diversity.
- 360 Death and Dying** 3 Course Prerequisite: Sophomore standing. Death and dying throughout life and in different contexts; manner of death, grief, and legal and ethical considerations.
- 385 Perspectives in Human Services** 3 Course Prerequisite: Sophomore standing. In-depth study of human service practice, theoretical perspectives and strategies for delivery of appropriate services to diverse clientele.
- 403 [CAPS] Families in Poverty** 3 Course Prerequisite: Junior standing. Examining poverty in US and globally; description of groups most often poor; identification of effective solutions and successful interventions.
- 406 Work and Family** 3 Course Prerequisite: Junior standing. Issues related to work and family; workplace environments; fostering effective policy responses to family needs; role of work-family coordination.
- 407 Student Teaching for Family and Consumer Sciences** V 4-16 Course Prerequisite: TCH LRN 415; junior standing; by permission only. Supervised teaching in public schools, including seminars reflecting on effective teaching. S, F grading.
- 408 Advanced Adolescent Development** 3 Course Prerequisite: Junior standing. In-depth examination of theories and research; developmental issues and prevention and intervention programs for school-aged child and adolescent.
- 410 [M] Public Policy Issues Impacting Families and Individuals** 3 Course Prerequisite: Junior standing; certified major in Human Development. Family policy issues in a changing society; ecological perspective; relationship of public policy to communities, organizations, families, and individuals. Recommended: H D 310.
- 412 Adult Development and Learning** 3 Course Prerequisite: Junior standing. Understanding growth and change in adulthood with application of effective learning and teaching practices with adult populations.
- 420 Application of Human Development Theories** 3 Course Prerequisite: Junior standing. In-depth examination of theories and their use in understanding individual development in context of family and community.
- 430 Professional and Grant Writing Skills** 3 Course Prerequisite: H D 385; junior standing. Examination and development of skills important for effective professionals; communication, leadership, ethical behavior, cultural competence, grant writing, evaluation, and others.
- 446 Practicum in Early Childhood Programs** 6 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: H D majors or H D certificate students; H D 201 or 340; H D 341; H D 342; junior standing; by permission only. Supervised teaching; emphasis on skill building in working with diverse groups of children and building partnerships with families.

- 449 Seminar in Early Childhood Education** 3 Course Prerequisite: H D 201 or 340; junior standing. Identification and examination of current issues and trends in early childhood education with emphasis on child, family, and community concerns.
- 464 Administration of Early Childhood Programs** 3 Course Prerequisite: H D 201 or 340; junior standing. Organization, administration, and management of early childhood programs; finance, program development, service delivery, personnel concerns, resource development, and evaluation.
- 479 Planning and Evaluation in Human Development** 3 Course Prerequisite: Junior standing. Design, implementation and evaluation of community/school programs; needs assessment; appropriate curriculum resource identification; outcomes development; includes individual and program evaluation.
- 480 Instructional Strategies in Human Development** 3 Course Prerequisite: Junior standing. Identification and use of instructional strategies; evaluation of strategies to determine appropriate use and effectiveness with a variety of learners.
- 482 Child Assessment and Evaluation** 3 Course Prerequisite: H D 201 or 340; junior standing. Understanding aspects of assessment and evaluation of young children; selection, administration, summary development, ethics and professional responsibilities, evaluation and follow-up.
- 485 Participation in Human Development Research** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By permission only. Supervised participation in faculty research including data collection, analysis, literature review, preparation of findings. S, F grading.
- 486 Special Topics in Human Development: Study Abroad** V 1-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: Sophomore standing. S, F grading.
- 487 Special Topics in Human Development** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Sophomore standing. Assessment and evaluation of families and children.
- 495 Instructional Practicum** V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By permission only. Opportunity to assist with instruction; experience in further study of topic, organization of material, grading, management of resources. S, F grading.
- 497 Professional Preparation** 2 Course Prerequisite: H D 310; junior standing; by permission only. Educational knowledge and personal skills/abilities matched to careers; expanded knowledge of human development professions; professional self-presentation; professional/ethical conduct.
- 498 Field Placement** V 1 (0-3) to 8 (0-24) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: H D majors or H D certificate students; H D 385 or H D 497; by permission only. Self-initiated, supervised work experience with appropriate private organizations, businesses, or government agencies; interaction with professionals in related fields.
- 499 Special Problems** V 1-4 May be repeated for credit. Course Prerequisite: By permission only. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 511 Theory and Substance of Human Development I** 3 Human development theories; application to life span development, cultural variations, resources, problem solving, interaction of families and individuals with other systems.
- 513 Research Methods in Human Development I** 3 Introduction to process of research and methods in human development; techniques of research, data collection, and data analysis procedures. Cooperative: Open to UI degree-seeking students.
- 514 Research Methods in Human Development II** 3 Course Prerequisite: H D 513. Integration of formal decision making into the social science research process; procedures appropriate for experimental, quasi-experimental and field research. Cooperative: Open to UI degree-seeking students.
- 520 Adolescence** 3 In-depth examination of theories and research, developmental issues and prevention and intervention programs for school-aged children and adolescents.
- 535 Program Development in Child and Family Studies** 3 Analysis and development of program delivery systems, curricula and evaluation models. Cooperative: Open to UI degree-seeking students.
- 540 Effective Intervention Programs** 3 Course Prerequisite: H D 535. Innovative effective prevention and intervention programs from theoretical, applied, and outcome evaluation perspectives.
- 550 Seminar on Family Relationships** 3 Survey of family studies topics and issues examined from a research point of view.
- 558 Parent-Child Relationships** 3 The reciprocal interactions among family members will be examined; theoretical perspectives and empirical findings will be explored in terms of implications for education and practice.
- 560 Seminar in Child Development** 3 Survey of literature on selected areas in child development; discussion of research and application related to current issues and trends.
- 561 Advanced Curriculum for Early Childhood Programs** 3 Opportunity to explore curriculum practices in early childhood education; discussion, evaluation and adaptation of curricula based on current research.
- 562 Administration and Leadership in Programs** 3 Examining early childhood administrator role; analysis and application of research to administration, developing concrete skills necessary for successful administration.
- 580 Families, Community and Public Policy** 3 Course Prerequisite: H D 560. Analysis of family policy research; role of family policy research in public policy and knowledge building processes. Cooperative: Open to UI degree-seeking students.
- 586 Special Topics in Human Development** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Assessment and evaluation of families and children.
- 598 Professional Internship** 3 Supervised individual experiences with related organizations, businesses, or government agencies; opportunities for interaction with professionals in related fields. S, F grading.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

The Humanities

libarts.wsu.edu/english/
Avery 202
509-335-2581

Academic Coordinator, L. McCormick.

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 masterpieces of literature, music, art, and related fields. The courses numbered 101, 302, 303, and 304 provide a survey of western civilization from ancient times to the modern era. English majors may substitute Humanities courses for any literature elective requirement in their option.

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, 302, 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.

Minors

Humanities

The humanities minor is particularly appropriate for communication students with international interests, foreign languages majors seeking to broaden their studies beyond their major language, and history and business majors with interests in international arts and literature. The student must complete a minimum of 18 hours in courses listed under "Humanities" of which at least half must be 300-400-level taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Description of Courses

HUMANITIES

HUMANITY

- 101 [HUM] Humanities in the Ancient World** 3 Integrated humanities: literature, philosophy, history, and art of the ancient world. (Crosslisted course offered as HUMANITY 101, FOR LANG 102).
- 103 [HUM] Mythology** 3 The theory of mythology and use of myths in art, literature, and music; Greco-Roman and one other.
- 120 Traditional Chinese Culture** 3 Cultural development of China from early times through the golden age of Chinese civilization. Taught in English. (Crosslisted course offered as CHINESE 120, ASIA 120, HUMANITY 120).
- 130 Global Literature in Translation** 3 Taught in English. An introduction to the study of international literature; stories, cultures, and literary devices. (Crosslisted course offered as FOR LANG 130, HUMANITY 130).
- 131 [DIVR] Masterpieces of Asian Literature** 3 Introduction to Asian literature. Taught in English. (Crosslisted course offered as CHINESE 131, ASIA 131, HUMANITY 131, JAPANESE 131). Cooperative: Open to UI degree-seeking students.
- 301 Diversity Lecture Series** 1 Guest lecturers in the humanities explore themes in cultural diversity.
- 302 [HUM] [M] Humanities in the Middle Ages and Renaissance** 3 Integrated humanities; exploring great works and themes of the European Middle Ages and Renaissance, including art, architecture, music, philosophy, and literature. (Crosslisted course offered as HUMANITY 302, FOR LANG 302).
- 303 [M] Reason, Romanticism, and Revolution** 3 Integrated humanities; literature, philosophy, music, art, 1700 to World War I; revolutionary changes which led to the 20th century. (Crosslisted course offered as HUMANITY 303, FOR LANG 303).

304 [HUM] 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. (Crosslisted course offered as HUMANITY 304, FOR LANG 304).

320 [DIVR] [M] Issues in East Asian Ethics 3 Philosophical foundations of ethical thought in East Asia; informed responses to modern ethical dilemmas. Taught in English. (Crosslisted course offered as JAPANESE 320, ASIA 320, CHINESE 320, HUMANITY 320). Cooperative: Open to UI degree-seeking students.

335 The Bible as Literature 3 Historical and literary approach to texts of the Jewish and Christian scriptures; emphasis on history, interpretation, and influence.

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).

350 Sacred Texts and Cultures of World Religions 3 Sacred and literary texts, spiritual practices, and cultural origins and values of six world religious traditions from an intercultural perspective.

410 Love in the Arts 3 Course Prerequisite: Junior standing. Concepts of love around the world and in history through literature, art, music, dance, and theater.

450 Representations of the Holocaust 3 Course Prerequisite: Junior standing. How the Holocaust is represented and enters public memory through documentaries, memoirs, works of fiction, poetry, film, museums and monuments.

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

Program in Integrated Plant Sciences

ips.wsu.edu
Hulbert Hall 423
509-335-8406

Program Director, K. Kidwell; Academic Directors, J. Harsh, T. Henick-Kling, R. Knowles, H. Pappu, S. Sheppard, D. Smith; Professors, J. Davenport, C. Edwards, J. Fellman, A. Felsot, M. Flury, W. Johnston, V. Lohr, W. Pan, B. W. Poovaiyah, J. Reganold, L. Schrader; Associate Professors, P. Andrews, B-K. Baik, K. Brooks, K. Evans, R. Hummel, L. Lavine, D. Main, M. Neff, N. Oraguzie, B. Scarfo, K. A. Struckmeyer, D. Brown, C. Ross, P. Waite, K. Williams; Assistant Professors, B. R. Bondada, I. Burke, A. Dhingra, A-M. Fortuna, M. Kumar, C. Peace, O. Sleipness; Adjunct Faculty, G. Apel, C. Brown, C. Coyne, E. Curry, T. Koenig, J. Mattheis, J. McFerson, M. Mullinix, D. Rudell, S. Snowdon, J.

Tarara, R. Thornton, M. Willett, W. Wolfe, Y. Zhu; Emeriti, W. Ackley, M. Ahmedullah, W. Anderson, L. Askham, B. Barritt, D. Bienz, W. Hendrix, L. Hiller, W. Iritani, C. Johnson, R. Kunkel, F. Larsen, R. Maleike, R. Norton, M. Patterson, J. Roberts, K. Schekel, R. Thornton. Academic Coordinator, Cristie Crawford (cristie.crawford@wsu.edu).

The science of plant life from molecule to market is the focus of the Integrated Plant Sciences (IPS) Degree program. The degree is delivered collaboratively by departments within the College of Agricultural, Human, and Natural Resource Sciences. The IPS degree provides students with an exciting depth and breadth of knowledge that encompasses a variety of plant science disciplines, including crop and soil sciences, horticulture and landscape architecture, entomology, plant pathology, and food science. Students pursuing a Bachelor of Science degree in Integrated Plant Sciences may choose among seven majors highly sought by employers in the state and nationally: Agricultural Biotechnology; Field Crop Management; Fruit and Vegetable Management; Landscape, Nursery, and Greenhouse Management; Landscape Design and Implementation; Turfgrass Management; or Viticulture and Enology.

Bachelor of Science in Integrated Plant Sciences

IPS majors explore the science of plant development and production from the perspectives of a variety of disciplines. All students in the program take a core set of interdisciplinary courses selected specifically to give them a solid foundation on which they can build expertise in a specific area.

In addition to WSU's Six Learning Goals of the Baccalaureate, successful IPS graduates also will be able to:

- Apply scientific and quantitative reasoning to address real world problems in plant production and management systems.
- Understand the growth and development of horticultural and agronomic crop plants, current management practices, and factors that influence yield, aesthetics, and end-use quality.
- Integrate skills, facts, concepts, principles and research methods from plant and other sciences in order to actively participate in a wide variety of environmental and agricultural activities, including research, outreach, education, and management.
- Understand and appreciate the importance of horticultural and agronomic crop plants to global society, and use this knowledge to contribute to the welfare of global society.
- Obtain, evaluate, and apply scholarly information to expand understanding and knowledge-base of the plant sciences.
- Communicate effectively to a broad range of audiences using appropriate traditional and emerging technological media.
- Appreciate the breadth and depth of professional opportunities in plant sciences.

The hands-on possibilities within the IPS degree are numerous. Students are required to participate in Experiential Education which includes undergraduate research projects, work as part-time employees with research and extension personnel, and/or participate in professional internships to put their classroom training to work. Student clubs also provide a variety of ways to interact with peers, faculty, and staff within the college, yet another way to enrich the educational experience.

Scholarships

Scholarships for IPS majors are available on a competitive basis and are awarded based on ability, need, and interest in a career path in plant sciences. In order to certify in an IPS major, a student must have a minimum of 24 credits with a minimum cumulative gpa of 2.0. For complete information about all majors within the IPS degree programs, please see the IPS webpage at: <http://ips.wsu.edu>.

Transfer Students

Students planning to transfer into the IPS program should take courses that meet the University Common Requirements (UCORE), and that also meet the IPS core requirements when possible. Students are strongly encouraged to consult with an advisor within the IPS program for further guidance.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

AGRICULTURAL BIOTECHNOLOGY (120 HOURS)

The Agricultural Biotechnology major is a designed for students interested in careers as laboratory or research technicians in plant biotechnology, breeding, genetics, entomology, plant pathology, molecular biology, or physiology, as well as for students preparing for advanced degrees in these areas. The program emphasizes the development and application of new technology to ensure a safe and abundant food and fiber supply. Students may find employment in industry, government, or university labs.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
ENGLISH 101 [WR TG]	3
HORT 102	3
MATH 140 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107 or BIOLOGY 120	4
ECONS 101 [SSCI] or ECONS 102 [SSCI]	3
HISTORY 105 [ROOT]	3
HORT 202	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
Creative & Professional Arts [ARTS]	3
Humanities [HUM]	3
IPM 201 ¹	2
STAT 212 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
CHEM 106 [PSCI]	4
COMST 102 [COMM] or H D 205 [COMM]	3 or 4
ENTOM 340	3
SOIL SCI 201	3
Electives (Rec [M] course)	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ANTH 203 or ANTH 309	3
CHEM 345	4
MBIOS 301	4
PL P 429	3

<i>Second Term</i>	<i>Hours</i>
CROPS 425	3
CROPS 495	3
Diversity [DIVR]	3
MBIOS 303	4
Electives	4

Fourth Year

<i>First Term</i>	<i>Hours</i>
HORT 480	3
Integrative Capstone [CAPS]	3
MBIOS 478	3
STAT 412	3
Elective	3

<i>Second Term</i>	<i>Hours</i>
400-500-level Seminar in CAHNRS	1
CROPS 411 [M] or HORT 416	3
MBIOS 401	3
MBIOS 404	3
Electives	4

¹ IPM 452 can be taken as an alternative to IPM 201.

FIELD CROP MANAGEMENT (120 HOURS)

The Field Crop Management major is ideal for students interested in agronomy, crop production, and plant, soil, and pest management. Crop scientists (or agronomists) are involved in improving food, feed, and fiber production. Graduates qualify for careers in agribusiness, corporate and technical farm management, professional consulting, research, and sales positions.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 101 [PSCI] or 105 [PSCI]	4
ENGLISH 101 [WR TG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
CHEM 102 or 106	4
Creative & Professional Arts [ARTS]	3
ECONS 102 [SSCI]	3
MATH 140 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
ANTH 203 [DIVR] or Diversity [DIVR]	3
BIOLOGY 120 or 107	4
HORT 102	3
Humanities [HUM]	3
SOIL SCI 201	3

<i>Second Term</i>	<i>Hours</i>
Advisor Specified Course	4
ENTOM 340 ¹	3
H D 205 [COMM] or COM 102 [COMM]	3 or 4
HORT 202	4

Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Advisor Specified Course (Rec [M])	4
CROP SCI 305	3
ECONS 350 or ECONS 352	3
Electives	7

<i>Second Term</i>	<i>Hours</i>
CROP SCI 411 [M]	3
CROP SCI 495, 497, 498, or 499	3
IPM 452 ²	2
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
Advisor Specified Course	4
CROP SCI 403	3
Integrative Capstone [CAPS]	3
PL P 429	3

<i>Second Term</i>	<i>Hours</i>
CROP SCI 412	1
SOIL SCI 441	3
STAT 212	4
300-400-level Electives	7

¹ ENTOM 343 can be taken as an alternative to ENTOM 340.

² IPM 201 can be taken as an alternative to IPM 452.

FRUIT AND VEGETABLE MANAGEMENT (120 HOURS)

The Fruit and Vegetable Management major offers specialization in the science and practice of growing, harvesting, handling, storing, processing, and marketing tree fruits, small fruits, and vegetables. Students will learn the most efficient and sustainable management practices involving state-of-the-art production systems for the diverse fruit and vegetable crops produced in the Pacific Northwest and beyond. Graduates can look forward to careers as growers and farm managers, production field advisors, sales representatives in the horticultural services industry, managers of produce firms, and brokers and marketers of fruit and vegetable products.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 101 [PSCI] or 105 [PSCI]	4
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WR TG]	3
HISTORY 105 [ROOT]	3
HORT 102	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI], 107 [BSCI], or 120 [BSCI]	4
CHEM 102 or 106	4
Creative & Professional Arts [ARTS]	3
HORT 202	4

Second Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106, 107, or 120	4

H D 205 [COMM] or COM 102 [COMM] 3 or 4
 SOIL SCI 201 3
 STAT 212 [QUAN], MATH 140 [QUAN],
 171 [QUAN], or 202 [QUAN] 3 or 4

Second Term *Hours*
 Fruit & Veg Mgt Elective 2
 HORT 251 4
 Humanities [HUM] 3
 Sustainability Elective¹ 3
 Electives 3
 Complete Writing Portfolio

Third Year

First Term *Hours*
 ANTH 203 [DIVR] or Diversity [DIVR] 3
 HORT 310 3
 HORT 313 3
 IPM 201² 3
 Pest Management Elective³ 3

Second Term *Hours*
 ENTOM 340⁴ 3
 Environmental HORT Elective 3
 HORT 416 or CROP SCI 411 [M] 3
 Electives 6

Third Term *Hours*
 (Summer Session) HORT 399 3

Fourth Year

First Term *Hours*
 HORT 320 3
 HORT 321 1
 HORT 418 [M] 3
 PL P 300 or PL P 429 2 or 3
 Sustainability Elective¹ 3
 Open Elective 3

Second Term *Hours*
 400-500-level Seminar in CAHNRS 1
 Advanced Fruit or Vegetable Elective⁵ 3
 HORT 425 [M] [CAPS] 3
 Pest Management Elective³ 3
 SoilS 441 3

¹ Sustainability Elective (at least 2 courses): ENVR SCI 375, SOIL SCI 101, 150, 301 [M], or 345.

² IPM 452 can be taken as an alternative to IPM 201.

³ Pest Management Elective (at least 2 courses): CROP SCI 305, ENTOM 375, IPM 462 [M], or 452.

⁴ ENTOM 343 can be taken as an alternative to ENTOM 340.

⁵ Advanced Fruit or Vegetable Elective (at least 1 course): HORT 413, 421 [M], or 490.

LANDSCAPE DESIGN AND IMPLEMENTATION (120 HOURS)

Students interested in careers in designing and building residential, commercial, public, and institutional landscapes, using both plant material and non-living elements such as walls and fountains, should consider the Landscape Design and Implementation major. In addition to the IPS core courses, students will take courses in landscape architecture and horticulture. Through hands-on experience in course activities and participation

in a professional practicum, students will learn to design, install, and maintain aesthetic outdoor environments that enrich people's lives.

First Year

First Term *Hours*
 BIOLOGY 106 [BSCI], 107 [BSCI],
 or 120 [BSCI] 4
 ENGLISH 101 [WRGT] 3
 HISTORY 105 [ROOT] 3
 HORT 102 3
 LND ARCH 101 3

Second Term *Hours*
 Creative & Professional Arts [ARTS] 3
 H D 205 [COMM] or COM 102 [COMM] 3 or 4
 HORT 202 4
 LND ARCH 102 3
 SOIL SCI 201 3

Second Year

First Term *Hours*
 BIOLOGY 106, 107, or 120 4
 CHEM 101 [PSCI] 4
 HORT 231 3
 LND ARCH 262 3

Second Term *Hours*
 CHEM 102 4
 Hort 232 3
 Humanities [HUM] 3
 LND ARCH 263 3

STAT 212 [QUAN], MATH 140 [QUAN],
 171 [QUAN], or 202 [QUAN] 3 or 4
 Complete Writing Portfolio

Third Year

First Term *Hours*
 CROP SCI 301 [M] 3
 ECONS 101 [SSCI] or 102 [SSCI] 3
 ENTOM 343¹ 3
 LDI Elective² 3
 LDI Elective [M]² 3

Second Term *Hours*
 HORT 331 3
 IPM 452³ 2
 LDI Electives² 2
 LND ARCH 365 4
 Electives 3

Fourth Year

First Term *Hours*
 ANTH 203 [DIVR], or Diversity [DIVR] 3
 HORT 346 1
 Integrative Capstone [CAPS] 3
 LND ARCH 366 4
 LND ARCH 399 2
 PL P 300 2

Second Term *Hours*
 400-500-level Seminar in CAHNRS 1
 HORT 416 3
 LDI Electives² 6
 LND ARCH 367 3
 LND ARCH 399 1

¹ ENTOM 340 can be taken as an alternative to Entom 343.

² LDI Electives: Electives to Customize the LDI Major: (Choose a minimum of 14 credits, including one [M] course)--Ecology or Environment Science Electives: (choose a minimum of 3 credits): BIOLOGY 330, 462, LND ARCH 380, NATRS 300, 450 [M], or 454 [M].

--Hort Electives: (choose a minimum of 3 credits): HORT 251, 332, 340, 341, 357, 358, 425 [M], CROP SCI 305, or 317. --Other Electives: (Choose a minimum of 3 credits): ACCTG 230, B LAW 210, COM 245, CST M 102, 252, MGTOP 101, or 340.

³ IPM 201 can be taken as an alternative to IPM 452.

LANDSCAPE, NURSERY, AND GREENHOUSE MANAGEMENT (120 HOURS)

The Landscape, Nursery, and Greenhouse Management major is a horticulture-based program that prepares students for opportunities in landscape plant management and in the propagation, production, marketing, and use of potted crops, bedding plants, trees, shrubs, and cut flowers. This is an exciting major for students interested in owning or managing a nursery or greenhouse; attending graduate school in horticulture; working for university extension offices and research greenhouses, maintaining public gardens, aboretums, landscapes, and parks; or working as wholesale horticultural-product brokers. Students in this major are encouraged to gain hands-on experience and earn scholarships through participation in the Horticulture Club.

First Year

First Term *Hours*
 BIOLOGY 106 [BSCI], 107 [BSCI],
 or 120 [BSCI] 4
 ENGLISH 101 [WRGT] 3
 HISTORY 105 [ROOT] 3
 HORT 102 3
 Electives 2

Second Term *Hours*
 COM 102 [COMM] or H D 205 [COMM] 3 or 4
 Creative & Professional Arts [ARTS] 3
 HORT 202 4
 SOIL SCI 201 3
 Electives 2

Second Year

First Term *Hours*
 BIOLOGY 106, 107, or 120 4
 CHEM 101 [PSCI] or 105 [PSCI] 4
 HORT 231 3
 Humanities [HUM] 3

Second Term *Hours*
 CHEM 102 or 106 4
 HORT 232 3
 HORT 251 4
 Electives 3
 Complete Writing Portfolio

Third Year

First Term *Hours*
 ANTH 203 [DIVR], or Diversity [DIVR] 3
 ECONS 101 [SSCI] or 102 [SSCI] 3
 Horticulture Electives¹ 3

MATH 140 [QUAN], 171 [QUAN], 202 [QUAN], or STAT 212 [QUAN] Electives	3 or 4 3
<i>Second Term</i>	
Advanced Plant Science Elective ²	3
ENTOM 340 ³	3
HORT 331	3
Horticulture Electives ¹	3
IPM 452 ⁴	2
Elective	1
<i>Third Term</i>	
(Summer Session) HORT 399	3

Fourth Year

<i>First Term</i>	
Advanced Plant Science Elective [M] ²	3
Horticulture Elective ¹	3
PL P 300 or 429	2 or 3
Electives	6
<i>Second Term</i>	
400-500-level Seminar in CAHNRS	1
HORT 357	3
HORT 416	3
HORT 425 [M] [CAPS]	3
SOIL SCI 301 or 441	3
Electives	2

¹ HORT Electives (10 credits): CROP SCI 301 [M], 305, 317, HORT 310, 313, 320, 332, 340, 341, 346, or 358.

² Advanced Plant Science Electives (6 credits, including one [M] course unless student has taken two other [M] courses): BIOLOGY 301, 318, 332, 372 [M], 409, 462, HORT 418 [M], CROP SCI/HORT 444, 445 [M], NATRS 300, 450 [M], 454 [M], or 464.

³ ENTOM 343 can be taken as an alternative to ENTOM 340.

⁴ IPM 201 can be taken as an alternative to IPM 452.

**TURFGRASS MANAGEMENT
(120 HOURS)**

The Turfgrass Management major is geared toward students interested in pursuing careers as golf course managers, athletic field managers, or personnel managers in those venues. Students will take courses in turf management, turf production, plant pathology, entomology, soil fertility, and plant breeding to learn how to maintain healthy turfgrass systems. Additionally, students gain hands-on experience at the Palouse Ridge Golf Course, a new 18-hole championship golfing facility at the Pullman campus.

First Year

<i>First Term</i>	
ANTH 203 [DIVR], or Diversity [DIVR]	3
CHEM 101 [PSCI]	4
CROP SCI 104	1
ENGLISH 101 [WRTG]	3
HORT 102	3
<i>Second Term</i>	
BIOLOGY 106 [BSCI]	4
CHEM 102	4
HISTORY 105 [ROOT]	3
HORT 202	4

Second Year

<i>First Term</i>	
BIOLOGY 120 or 107	4
Creative & Professional Arts [ARTS]	3
CROP SCI 317	1
H D 205 [COMM] or COM 102 [COMM]	3 or 4
SOIL SCI 201	3
<i>Second Term</i>	
AGTM 412	3
CROP SCI 318	1
ECONS 102 [SSCI]	3
Humanities [HUM]	3
IPM 452 ¹	2
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	
AGTM 315	3
CROP SCI 301 [M]	3
CROP SCI 305	3
STAT 212 [QUAN]	4
Electives	3
<i>Second Term</i>	
CROP SCI 302, HORT 232, or HORT 331	3
ENTOM 340 ²	3
SOIL SCI 441	3
Electives	7

Fourth Year

<i>First Term</i>	
AGTM 314 or HORT 346	3
CROP SCI 495, 497, 498, or 499	3
Integrative Capstone [CAPS]	3
PL P 429	3
SOIL SCI 442	3
<i>Second Term</i>	
ACCTG 230, ECONS 350 or 352, or MGTOP 301	3
CROP SCI 401	3
CROP SCI 411 [M]	3
CROP SCI 412	1
CROP SCI 444	2
Electives	3

¹ IPM 201 can be taken as an alternative to IPM 452.

² ENTOM 343 can be taken as an alternative to ENTOM 340.

**VITICULTURE AND ENOLOGY
(120 HOURS)**

The Viticulture and Enology major was created for students interested in wine-grape growing and winemaking, as well as contributing to critical research and development opportunities in the wine industry. This program offers the technical, scientific, and practical experience needed to gain the essential skills for producing high quality grapes and premium table wines. It prepares students for successful careers in the wine industry in Washington and beyond.

First Year

<i>First Term</i>	
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
HORT 102	3
MATH 140 [QUAN]	4
<i>Second Term</i>	
BIOLOGY 106 [BSCI]	4
CHEM 106	4
H D 205 [COMM] or COM 102 [COMM]	3 or 4
HORT 202	4

Second Year

<i>First Term</i>	
BIOLOGY 120 or 107	4
CHEM 345	4
Creative & Professional Arts [ARTS]	3
VIT ENOL 113	3
<i>Second Term</i>	
ANTH 203 [DIVR], or Diversity [DIVR]	3
ECONS 101 [SSCI] or 102 [SSCI]	3
Humanities [HUM]	3
SOIL SCI 201	3
STAT 212	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	
BIOLOGY 320, or BIOLOGY 318 and 319	4
MBIOS 303	4
PL P 300	2
VIT ENOL 313	3
Elective	1
<i>Second Term</i>	
ENTOM 340 ¹	3
IPM 452 ²	2
MBIOS 305	3
VIT ENOL 413	3
Electives	3
<i>Third Term</i>	
VIT ENOL 399 or 496	2

Fourth Year

<i>First Term</i>	
Specialization Electives ³	6
VIT ENOL 326	3
VIT ENOL 409	1
VIT ENOL 465	3
<i>Second Term</i>	
HORT 416	3
HORT 425 [M] [CAPS]	3
Specialization Electives ³	3
VIT ENOL 422	3
VIT ENOL 435 or 488	3

¹ ENTOM 343 can be taken as an alternative to ENTOM 340.

² IPM 201 can be taken as an alternative to IPM 452.

³ Specialization Electives for V&E Major--(Choose a minimum of 12 credits, including one [M] from the following lists, advisor approval required)--VIT ENOL, FS, and HORT Electives: VIT ENOL 435, 466,

488, FS 303, 416, 460, 462, 470, HORT 251, 322, 418 [M], or 421 [M]. --Other Electives: AGTM 315, 433 [M], CHEM 220/222, CROP SCI 305, 403 [M], ECONS 351, ENVR SCI 486, GEOLOGY 322, 323, HBM 350, MBIOS 301, 306, MKTG 360, SOIL SCI 301 [M], 345, 374, 414, 415, 421, 441, 442, or 468.

Department of Integrative Physiology and Neuroscience

www.vetmed.wsu.edu/depts-vcapp/
Veterinary and Biomedical Research Bldg (VBR) 206
509-335-6624

Professor and Chair, S. Simasko; Regents Professor, J. M. Krueger, W. S. Ritter; Professors, J. W. Harding, K. Mealey, J. Panksepp, R. C. Ritter, B. K. Slinker, B. A. Sorg; Associate Professors, S. Appleyard, R. L. Brown, M. Chandra, W. Dong, H. Jansen, D. Lin, R. Newberry, L. Sprunger, M. Varnum, A. Vasavada, G. Wayman; Assistant Professors, K. Czaja, I. Karatsoreos, J. Peters, B. Tanner, J. Xu; Clinical Professor, P. Talcott; Clinical Assistant Professors, C. Faux, S. Gizerian, S. Lahmers, S. Lampa, P. Meighan, S. Meighan, P. D. Wilson.

The Department of Integrative Physiology and Neuroscience (IPN) offers a course of study leading to the degrees of Master of Science and Doctor of Philosophy in Veterinary Science. These degrees are designed to provide broad training in specific aspects of veterinary science and related disciplines to prepare students for careers in teaching, research, and service. The curriculum is research intensive emphasizing the acquisition of theoretical understanding of a field and or research skills in preparation for a career in teaching and research. The veterinary science degree allows for maximum flexibility within the curriculum. Students will design their degree plan in consultation with a faculty mentor, emphasizing the specialty fields of anatomy, pharmacology or physiology. It is required that a student contact and arrange for a faculty mentor prior to admission to the program.

The objectives for the Ph.D. level training are to prepare the candidate for a career as an independent investigator (i.e., can compete for extramural private and federal funds as the principal investigator).

Applicants are admitted directly into the Ph.D. from either a masters degree or bachelors degree from an accredited higher education institution. To be eligible for admission, candidates must meet general Washington State University requirements outlined in the Graduate Study Bulletin in effect at the time of their admission, as well as the current graduate veterinary science program requirements. Applicants for admission to the Graduate Program in Veterinary Science must have a minimum grade point average of 3.0 (A=4.0) either on the basis of the last 60 graded semester or 90 graded quarter hours of undergraduate study or basic science portion of a graduate or professional curriculum (usually the first 60 credit hours). Applicants will have completed courses in inorganic chemistry, organic chemistry, biochemistry, calculus, physics and a minimum of three courses in different areas of the biological sciences. It is advisable that applicants

have a basic statistics course prior to entering the veterinary science program.

Applications for admission to the program must include a completed graduate school application, Graduate Record Exam (GRE) test scores (subject tests are not required), official transcripts for all college-level course work, three letters of recommendation from references capable of judging aptitude and capability for graduate study by the applicant, a statement by the applicant that describes career goals and research interests, a writing sample, and a resume or curriculum vitae (CV). For students whose native language is not English, TOEFL scores are also required. Inquiries should be directed to the Department of IPN, Veterinary Science Degree Program, Washington State University, Pullman, WA 99164-7620 or email grad.neuro@vetmed.wsu.edu. Students normally begin their studies in the fall semester, which starts the latter part of August. The priority deadline for completed applications for admission to the program is December 31. Applicants are offered admission on a rolling basis, but may be notified of acceptance as late as April 15. Students may still apply for admission after December, but graduate stipends may not be available for late applicants.

Description of Courses

VETERINARY PHYSIOLOGY AND PHARMACOLOGY

VET PH

308 Functional Anatomy of Domestic Animals 4 (3-3) Course Prerequisite: BIOLOGY 107; junior standing. Macroscopic functional morphology of domestic animals.

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. Cooperative: Open to UI degree-seeking students. S, F grading.

505 Design and Analysis of Biomedical Experiments 4 Design of experiments with application to clinical and basic biomedical research; choosing, applying, and evaluating appropriate data analysis methods.

555 General and Cellular Physiology 4 (3-3) Physiochemical mechanisms of cellular function. (Crosslisted course offered as VET PH 555, PHARMSCI 555). Recommended preparation: Concurrent enrollment in MBIOS 513.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. Cooperative: Open to UI degree-seeking students. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Interdisciplinary

Description of Courses

INTERDISCIPLINARY

INTERDIS

490 McNair Preparation for Graduate School

1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Junior standing. Preparation for McNair Scholars and others for graduate study. No credit earned toward degree; not qualified for financial aid. S, F grading.

580 Leadership Development V 1-3 Course Prerequisite: By permission only. Meetings and workshops designed to develop professional and leadership skills for doctoral students.

590 Preparation for College Teaching 2 Cross-discipline instructional development for graduate teaching assistants; course development teaching techniques, university policies and procedures. S, F grading.

591 Interdisciplinary Studies 1 May be repeated for credit. Contemporary issues in interdisciplinary education and research. Open to all interested students.

597 Preparing the Future Professoriate 2 Course Prerequisite: By permission only. Understanding and contextual knowledge of the professoriate and issues facing higher education.

598 Interdisciplinary Seminar 1 May be repeated for credit; cumulative maximum 3 hours. Seminar on theory and practice of advanced interdisciplinary doctoral study.

698 Continuous Enrollment Status 0 This course (no credit earned) satisfies continuous enrollment status for graduate students who are not otherwise enrolled.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Landscape Architecture

Please see the School of Design and Construction Management in this catalog for information about Landscape Architecture.

Liberal Arts

www.cas.wsu.edu

Description of Courses

LIBERAL ARTS

LIB A

497 Internship V 2-16 May be repeated for credit; cumulative maximum 16 hours. Course Prerequisite: Junior standing. Student experiential activities as paid or unpaid intern in business, education, non-profit, industry, or government organizations.

Program in Materials Science and Engineering

materials.wsu.edu

French Administration, Room 324
509-335-8231

Professors, A. Bandyopadhyay, S. Bose, G. S. Collins, I. Dutta, D. P. Field, Y. Gupta, K. W. Hipps, M.G. Kuzyk, K. G. Lynn, U. Mazur, M. D. McCluskey, J. L. McHale, M. G. Norton, M. P. Wolcott, C. S. Yoo, H. Zbib, K. Zhong; Associate Professors, J. A. Brozik, A. E. Clark, S. L. Dexheimer, M. S. Mesarovic; Assistant Professors, K. Englund, Y. Gu, J. Leachman, L. Scudiero, N. Wall, V. Yadama, J. W. Zhang.

Materials science includes the principles and practice of designing, synthesizing, characterizing, preparing, and fabricating useful materials. The Materials Science and Engineering Program accepts qualified bachelor's and master's graduates in the sciences and engineering who now wish to pursue graduate research for a Ph.D. in the area where the disciplines overlap. Materials science is an interdisciplinary program and this feature is emphasized in the research activities.

Requirements for the Materials Science Ph.D. include a minimum of 72 credit hours of which at least 21 hours are graded course work. The common ground for all participants in materials science is covered by the core of courses (15 credits)

required of all students. The core provides a general overview to the field as well as advanced courses in thermodynamics, solid state physics, applied mathematics, and materials characterization. All students must attend the materials science seminar series (at least 6 credits), which provides an opportunity to find out the current research activities in the program and associated departments. After completion of the core of courses, students then select additional courses (a minimum of 6 credit hours) in areas that are applicable to their research program. These courses can come from any area of physical science, engineering, and mathematics.

All students complete an original research dissertation (MATSE 800). Minimum 20 credits. 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

MATERIALS SCIENCE

MATSE

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.

505 Advanced Materials Science 3 Broad baseline in materials science including relationships between structure and properties. (Crosslisted course offered as MSE 505, MATSE 505).

506 Biomaterials 3 Overview of the different types of materials used in biomedical applications such as implants and medical devices. Credit not granted for both MSE 406 and MSE 506. (Crosslisted course offered as MSE 506 and MATSE 506.)

513 Crystal Plasticity 3 Dislocation theory; slip; climb; mechanical properties of polycrystalline materials and application to important deformation processes. (Crosslisted course offered as MSE 513, ME 513, MATSE 513). Cooperative: Open to UI degree-seeking students.

516 Phase Transformations 3 Thermodynamics, nucleation, interface motion, mechanisms and kinetics of chemical reactions between solid metals and their environment. (Crosslisted course offered as MSE 516, MATSE 516).

521 Statistics of Microstructures 3 Stereology, orientation and spatial distributions, percolation, measurement techniques and application to modeling of microstructures. (Crosslisted course offered as MSE 521, MATSE 521). Recommended preparation: MATH 540.

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.

593 Seminar in Materials Science 1 May be repeated for credit; cumulative maximum 6 hours. Presentation and discussion of topics in materials science taken from research in progress or current literature.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Mathematics

math.wsu.edu

Neill 103

509-335-3926

Professor and Department Chair, K. A. Ariyawansa; Professors, K. A. Ariyawansa, N. Dasgupta, M. A. Evans, R. H. Dillon, A. C. Genz, M. A. Jacroux, V. K. Jandhyala, A. Khapalov, L. Knott, H. Li, V. S. Manoranjan, J. McDonald, D. B. Slavitt, M. Tsatsomeros, D. S. Watkins, W. A. Webb, D. J. Wollkind, H. Yin; Associate Professors; T. Asaki, S. Cooper, M. G. Hudelson, B. Krishnamoorthy, A. Panchenko, F. G. Pascual, M. F. Schumaker, K. Vixie; Assistant Professors, A. Dimitrov, H. Dong, S. Lapin, S. Liu, E. Schwartz, N. Voulgarakis, x. Wang; Adjunct Professor, K. D. Cooper; Clinical Professors, D. Johnson and K. Vincent; Permanent Instructor, C. Jacobs; Senior Instructors, J. Martin, E. Remaley, C. Smith; Professors Emeriti, J. R. Alldredge, D. C. Barnes, T. P. Bogyo, D. W. DeTemple, R. A. Johnson, M. J. Kallaher, D. C. Kent, J. E. Kucera, C. Long, C. B. Millham, R. Miffllin, S. C. Saunders, H. C. Wiser.

The Department of Mathematics provides undergraduate instruction and training in all major fields of mathematics and statistics. The numerous service courses taught by the department reflect the growing importance of mathematics and statistics in an increasing number of other disciplines.

Undergraduate training for mathematics majors is provided at WSU in the following five options: actuarial science, applied mathematics, secondary mathematics teaching with certification, secondary mathematics teaching without certification, and theoretical mathematics. The options prepare students for careers related to the respective fields. 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. Talented undergraduate majors in mathematics are given individual and small group instruction outside of class, sometimes resulting in research publications.

We expect that students graduating with a mathematics degree will be able to: 1) use their mathematics skills within the context of a strong, fundamental general education, 2) use the fundamentals of the life and physical sciences, 3) apply a fundamental knowledge and practical understanding of mathematics, 4) continue learning in both traditional and non-traditional educational settings, and 5) communicate effectively.

All students who enroll in mathematics courses are responsible for satisfying the prerequisite(s). With only a few exceptions, WSU undergraduate students are required to take the WSU Math Placement Assessment (MPA) prior to enrolling in their first college-level mathematics course. See <http://www.math.wsu.edu/placement/welcome.php> placement for more information.

Graduate study and specialization are offered by the department in both classical and modern areas of mathematics and statistics. A PhD student has four choices: a PhD in Mathematics, PhD in Mathematics-Applied Mathematics option, a PhD in Mathematics with an Education Emphasis, or a PhD in Mathematics-Statistics Option. The first involves doing mathematical research, the Applied Mathematics option focuses on applied mathematical research, the Education Emphasis option involves research on the teaching and learning of mathematics, and the Statistics option involves statistical research. Master's degrees in mathematics are available in the same four areas. Additionally, a Master's degree in Financial Mathematics is available. At the masters level the department offers the following degrees: a MS in Mathematics, MS in Mathematics-Applied Mathematics Option, MS in Mathematics-Computational Finance Option, and a MS in Statistics..

Preparation for Graduate Study

As preparation for work toward an advanced degree in mathematics or statistics, a student should have completed the equivalent of one of the schedules of study. 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 Chair of the Mathematics Graduate Studies Committee (gradinfo@math.wsu.edu) for advice and assistance in the development of their plans.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

MATHEMATICS (120 HOURS)

Mathematics Major Core Requirements

In addition to the UCORE requirements and the College of Arts and Sciences requirements, a mathematics major is required to take MATH 171, 172 (or 182), 220 (or 230), 273 (or 283), 300, 301, 315, 360 (or 443), 398, 401, 402, 420, 421, four additional 300-400 level MATH courses specified by a chosen option, CPT S 121 or 251, PHYSICS 201, and ENGLISH 402 (or 403 for non-native English

speakers). These core courses are required for all mathematics major options, except the Secondary Mathematics Teaching Option, where CPT S 121 or 251, MATH 402 and 420 are not required. MATH 216, 303, and 330 are required; ENGLISH 201 (or 301) is required instead of 402; and MATH 320 may be substituted for 421. Courses required for the major may not be taken pass/fail, and a 2.0 minimum GPA is required.

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.

2. Applications are evaluated, and certification decided, by a faculty committee.

3. Applicants must have an overall gpa of at least 2.0.

4. The mathematics core consists of MATH 171, 172, and 220. This core (or its equivalent for transfer students) must be completed before application.

5. Students with at least a 2.5 gpa in the mathematics core will be certified automatically. Those with less than a 2.0 gpa 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 gpa or gpa 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.

THIRD AND FORTH YEAR MATHEMATICS OPTIONS REQUIREMENTS

Mathematics majors must complete the courses specified by one of the following options:

Actuarial Science Option

Required Courses: Math 360, 416, 423, 443, and one of 456 or 490 (Introduction to Stochastic Calculus. Suggested Courses: ACCTG 230 and 231, ECONS 101 and 102, FIN 325 and 350, and MATH 448 provide additional background for actuarial exams. MATH 499 (1-2 credits) provides additional preparation for the first two actuarial exams. Note: A minor in Business Administration is required if you plan to take FIN 325 and 350.

Applied Mathematics Option

Required Courses: In addition to the core requirements, at least four upper-division courses in mathematics that form a coherent program within the Applied Mathematics Option. These courses must be approved by your advisor.

Theoretical Mathematics Option

Required Courses: Four of: MATH 302, 303, 325, 415, 441 and 453.

Secondary Mathematics Teaching Option

See separate schedule of studies below.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
CPT S 121 or 251	3 or 4
Creative & Professional Arts [ARTS]	3
MATH 172	4
MATH 220 or 230	2 or 3
Social Sciences [SSCI] ¹	3

Second Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI] ¹	3
MATH 273	2
MATH 300 [M]	3
PHYSICS 201 [PSCI]	4
Elective ²	3

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
MATH 301	3
MATH 315	3
MATH 360	3
Electives	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 402 [WRTG], or Communication [COMM]	3
MATH 420	3
MATH Option Course ³	3
Elective ²	6

<i>Second Term</i>	<i>Hours</i>
Humanities [HUM]	3
MATH 398	1
MATH 421 [M]	3
MATH Option Course ³	3
Electives ²	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
MATH 401 [M]	3
MATH Option Course ³	3
Elective ²	6

<i>Second Term</i>	<i>Hours</i>
MATH 402 [M]	3
MATH Option Course ³	3
Electives ²	8

¹ Actuarial Science Option students should take ECONS 101, 102.

² See Mathematics Options list for suggested electives.

³ See Mathematics Options list for required option courses.

**MATHEMATICS - SECONDARY TEACHING
OPTION WITH CERTIFICATION
(134 HOURS)**
Mathematics Major Core Requirements

In addition to the UCORE requirements and the College of Arts and Sciences requirements, a mathematics major is required to take MATH 171, 172 (or 182), 220 (or 230), 273 (or 283), 300, 301, 315, 360 (or 443), 398, 401, 402, 420, 421, four additional 300-400 level MATH courses specified by a chosen option, CPT S 121 or 251, PHYSICS 201, and ENGLISH 402 (or 403 or non-native English speakers). These core courses are required for all mathematics major options, except the Secondary Mathematics Teaching Option, where CPT S 121 or 251, MATH 402 and 420 are not required, MATH 216, 303, and 330 are required, ENGLISH 201 (or 301) is required instead of 402, and MATH 320 may be substituted for 421. Courses required for the major may not be taken pass/fail, and a 2.0 minimum GPA is required.

**SECONDARY MATHEMATICS TEACHING
OPTION WITH CERTIFICATION**

Required Courses: MATH 216, 303, 330, 431, 432 and two additional 3-credit 300-400 level Math classes. Mathematics major core courses CPT S 121 or 251, Math 402 and 420 are not required. Students must take ENGLISH 201 (or 301) instead of ENGLISH 402. Students may substitute MATH 320 for 421.

TCH LRN Requirements: Secondary education teacher certification also requires PSYCH 105, ED PSYCH 468, TCH LRN 301, 317, 415, 464, 465, 466, 467, 469 and 470. A TCH LRN advisor must be consulted for approval and sequencing.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
Humanities [HUM]	3
MATH 172	4
MATH 220 or 230	2 or 3
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
ENGLISH 201 [WRTG]	3
MATH 216	2
MATH 300 [M]	3
PHYSICS 201 [PSCI]	4

<i>Second Term</i>	<i>Hours</i>
Biological or Physical Sciences Elective	4
Diversity [DIVR]	3
MATH 273	3
MATH 301	3
TCH LRN 301	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
MATH 303	3
MATH 330 [M]	3
MATH 360	3
MATH 401 [M] or 431	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
MATH 315	3
MATH 320 or 421 [M]	3
MATH 398	1
MATH Elective	3
Electives	3

<i>Third Term</i>	<i>Hours</i>
(Summer) TCH LRN 317	2

Fourth Year

<i>First Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
MATH 401 [M]	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

<i>Second Term</i>	<i>Hours</i>
ED PSYCH 468	3
MATH 432	3
TCH LRN 467	3
TCH LRN 469	2
TCH LRN 470	3

Fifth Year

<i>First Term</i>	<i>Hours</i>
TCH LRN 415 (Student Teaching)	16

**SECONDARY MATHEMATICS TEACHING
OPTION WITHOUT CERTIFICATION
(120 HOURS)**

Required Courses: MATH 216, 303, 330, 431, 432 and two additional 3-credit 300-400 level Math classes. Mathematics major core courses CPT S 121 or 251, Math 402 and 420 are not required. Students must take ENGLISH 201 (or 301) instead of ENGLISH 402. Students may substitute MATH 320 for 421.

Recommended Courses: Four additional courses form the following – MATH 302, 325, 340, 351, 364, 415, 420, and 441.

TCH LRN requirements: Since this option is without certification, there are no TCH LRN requirements.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
Humanities [HUM]	3
MATH 172	4
MATH 220 or 230	2 or 3
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
ENGLISH 201 [WRTG]	3
MATH 216	3
MATH 300 [M]	3
PHYSICS 201 [PSCI]	4

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
MATH 273	2
MATH 301	3
MATH 360	2
Electives	6

Third Year

<i>First Term</i>	<i>Hours</i>
MATH 303	3
MATH 315	3
MATH 330 [M]	3
MATH 431	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Electives	3
MATH 320 or 421 [M]	3
MATH 398	1
MATH Electives ¹	9

Fourth Year

<i>First Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
MATH 401 [M]	3
MATH Elective ¹	3
Electives	6

<i>Second Term</i>	<i>Hours</i>
MATH 402	3
MATH Electives ¹	6
Electives	4

¹ MATH Elective courses must be 3-credit 300-400-level MATH courses.

Minors
Mathematics

A mathematics minor requires a minimum of 19 hours of approved mathematics courses, including MATH 171, 172, and one of 220 or 273. An additional 9 hours of 300-400-level credits must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Courses required for the minor may not be taken pass/fail and a minimum 2.0 gpa is required in all courses taken for the minor. Check with the Mathematics Department for a current list of approved courses.

Statistics

The minor in statistics requires 16 credit hours which must be approved. Only courses which do not have significant overlap in statistical content will be approved as counting toward the minor. At least 9 of the 16 hours must be 300-400-level course work and at least 9 of the 16 hours must be from courses carrying a STAT prefix. 9 hours of

upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Students are encouraged to have the courses they wish to count toward a statistics minor approved by the Program as early in their studies as possible.

Certificates

Certificate in Quantitative Biology

The certificate in quantitative biology requires 28 credit hours including Math/Biol 340 and Math/Biol 494. In addition to the two required courses, students must take at least 12 hours of courses in mathematics, statistics, or computer science of which at least 8 hours must be at the 300-level or above and at least 12 hours of life sciences courses of which at least 8 hours must be at the 300-level or above. A list of recommended courses is provided in the departments. The requirement for 300-level or above may include independent research credits. However, no more than 4 hours of S, F graded coursework (including Math/Biol 494 and 499) may count towards the 28 credits. No more than 7 out of the 28 credits may be transfer credits. Students must earn a cumulative GPA of 2.5 and no less than a C for graded courses used to fulfill the requirements of the certificate. A faculty coordinator shall be designated to oversee the certificate approval process.

Description of Courses

MATHEMATICS

MATH

- 101 Intermediate Algebra** 3 Fundamental algebraic operations and concepts. (This material is currently available on the Pullman campus through a 3 credit course, MATH 99, taught by the Institute for Extended Learning, Community Colleges of Spokane). No credit earned toward degree.
- 103 Algebra Methods and Introduction to Functions** 3 Course Prerequisite: ALEKS math placement score of 30%. Fundamental algebraic operations and concepts, linear systems and inequalities, polynomial and rational functions, introduction to exponential and logarithmic functions.
- 105 [QUAN] Exploring Mathematics** 3 Course Prerequisite: MATH 101 with a C or better, MATH 103 with a C or better, or ALEKS math placement score of 40%. Nature and scope of modern mathematics, and its relationships to other disciplines.
- 106 College Algebra** 3 Course Prerequisite: MATH 101 with a C or better, or Math 103 with a C or better, or ALEKS math placement score of 55%. Graphs, properties and applications of polynomial, rational, exponential and logarithmic functions. Credit not normally granted for both MATH 106 and 107.
- 107 Precalculus** 4 Course Prerequisite: MATH 101 with a C or better, MATH 103 with a C or better, or ALEKS math placement score of 50%. Graphs, properties, and applications of polynomial, rational, exponential, logarithmic, and trigonometric functions. Credit not normally granted for both MATH 107 and either MATH 106 or 108.
- 108 Trigonometry** 2 Course Prerequisite: MATH 106 with a C or better. Graphs, properties and applications of trigonometric functions. Credit not normally granted for both MATH 108 and 107.
- 110 Mathematics Tutorial for MATH 106/108** 1 (0-3) Course Prerequisite: Concurrent enrollment in either MATH 106 or MATH 108. Student-centered group tutorial focusing on mathematics skill improvement necessary for success in MATH 106 or MATH 108. S, F grading.
- 111 Mathematics Tutorial for MATH 201** 1 Course Prerequisite: Concurrent enrollment MATH 107. Student-centered group tutorial focusing on skill improvement for success in MATH 201. S, F grading.
- 115 Math 105 Tutorial** 2 Tutorial for MATH 105 focusing on concept development and mastery; skill proficiency. S, F grading.
- 116 Math 106 Tutorial** 2 Tutorial for MATH 106 focusing on concept development and mastery; skill proficiency. S, F grading.
- 140 [QUAN] Calculus for Life Scientists** 4 (3-3) Course Prerequisite: MATH 106 with a C or better and MATH 108 with a C or better, or MATH 107 with a C or better, or ALEKS math placement score of 70%. Differential and integral calculus with emphasis on life science applications. Credit not normally granted for more than one of MATH 140, 171, 202, 206.
- 151 Calculus for Middle School Teachers** 3 Course Prerequisite: MATH 106 with a C or better, or ALEKS math placement score of 65%. Differential and integral calculus in relation to middle school mathematics and real world problems through visualization, hands-on activities and technology.
- 171 [QUAN] Calculus I** 4 (3-3) Course Prerequisite: MATH 106 with a C or better and MATH 108 with a C or better, or MATH 107 with a C or better, or ALEKS math placement score of 80%. 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) Course Prerequisite: MATH 171 with a C or better. Techniques and applications of one-variable calculus; estimations; series, derivative of a vector function.
- 182 Honors Calculus II** 4 (3-3) Course Prerequisite: MATH 171 with a C or better; by department permission only. Single variable calculus, series, with emphasis on conceptual development and problem solving.
- 201 Mathematics for Business and Economics** 3 Course Prerequisite: MATH 101 with a C or better, MATH 103 with a C or better, or ALEKS math placement score of 55%. Mathematical analysis using polynomial, exponential, and logarithmic functions; linear systems, linear programming and probability, for business and economic applications.
- 202 [QUAN] Calculus for Business and Economics** 3 Course Prerequisite: MATH 106 with a C or better, MATH 107 with a C or better, MATH 201 with a C or better, or ALEKS math placement score of 65%. 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 [QUAN] Statistical Thinking** 3 Course Prerequisite: MATH 101, 103, or ALEKS math placement score of 40%. Scientific explanation; correlations and causality; presenting statistical evidence; graphical and numerical methods; chance and gambling; the bell-shaped distribution. (Crosslisted course offered as STAT 205, MATH 205).
- 206 Calculus for Architects** 3 Calculus of elementary functions; trigonometry; applications to architecture. Credit not normally granted for more than one of MATH 140, 171, 202, 206.
- 212 [QUAN] Introduction to Statistical Methods** 4 (3-2) Course Prerequisite: MATH 101, 103, 106, 108, 140, 171, 201, or ALEKS math placement score of 40%. Introduction to descriptive and inferential statistics: t-tests, chi-square tests, one-way ANOVA, simple linear regression and correlation. (Crosslisted course offered as STAT 212, MATH 212).
- 216 Discrete Structures** 3 Course Prerequisite: MATH 107 with a C or better, MATH 108 with a C or better, or MATH 140, 171, 172, 182, or 202. Discrete mathematics, trees, graphs, elementary logic, and combinatorics with application to computer science. (Crosslisted course offered as MATH 216, CS 216). Recommended preparation: Programming course.
- 220 Introductory Linear Algebra** 2 Course Prerequisite: MATH 171 or concurrent enrollment. Elementary linear algebra with geometric applications. Credit not normally granted for more than one of MATH 220 and 230.
- 230 Honors Introductory Linear Algebra** 3 Course Prerequisite: MATH 171 or concurrent enrollment. An introduction to linear algebra with an emphasis on conceptual development. Credit not normally granted for more than one of MATH 220 and 230.
- 251 Fundamentals of Elementary Mathematics I** 3 (2-2) Course Prerequisite: Math 101 with a C or better, Math 103 with a C or better, Math 106 with a C or better, or ALEKS math placement score of 45%. Comprehensive development of number systems emphasizing place-value, integers, rational numbers, and associated algorithms; methods of problem solving.

- 252 [QUAN] Fundamentals of Elementary Mathematics II 3** (2-2) Course Prerequisite: MATH 251 with a C or better. Inquiry-based approach to fundamental concepts: measurement, geometrical constructions, similarity, congruence, symmetry, probability, counting principles, measures of central tendency, and distributions. Required preparation: One year of high school geometry.
- 273 Calculus III 2** Course Prerequisite: MATH 172 with a C or better, or MATH 182 with a C or better. Calculus of functions of several variables.
- 283 Honors Calculus III 2** Course Prerequisite: MATH 182 or by department permission. Multivariable calculus with emphasis on conceptual development and problem solving.
- 300 [M] Mathematical Computing 3** (2-3) Course Prerequisite: MATH 220 or MATH 230. Examination of some current computer software for solving mathematical problems. Recommended preparation: MATH 315.
- 301 Introduction to Mathematical Reasoning 3** Course Prerequisite: MATH 220 with a C or better, or MATH 230 with a C or better. Mathematical arguments and the writing of proofs.
- 302 Theory of Numbers 3** Course Prerequisite: MATH 172 with a C or better, or MATH 182 with a C or better; MATH 301 with a C or better. Divisibility properties of integers; congruences; Diophantine equations; quadratic residues.
- 303 [M] Geometry for the Middle School Teacher 3** Course Prerequisite: MATH 220 with a C or better or MATH 230 with a C or better. Topics in 2D and 3D geometry including technology-based reasoning and exploration, deductive arguments, transformational and proportional reasoning, and non-Euclidean geometries.
- 315 Differential Equations 3** Course Prerequisite: MATH 273 with a C or better or Math 283 with a C or better; and MATH 220 with a C or better or concurrent enrollment, or MATH 230 with a C or better or concurrent enrollment. Linear differential equations and systems; series, numerical and qualitative approaches; applications.
- 320 [M] Elementary Modern Algebra 3** Course Prerequisite: MATH 220 with a C or better or MATH 230 with a C or better. Algebra as a deductive system; number systems; groups, rings, and fields.
- 325 Elementary Combinatorics 3** Course Prerequisite: MATH 220 with a C or better or MATH 230 with a C or better. Introduction to combinatorial theory: counting methods, binomial coefficients and identities, generating functions, occurrence relations, inclusion-exclusion methods.
- 330 Methods of Teaching Secondary School Mathematics 3** Course Prerequisite: MATH 301 or concurrent enrollment. New curricula and pedagogical techniques for secondary school mathematics.
- 340 Introduction to Mathematical Biology 3** Course Prerequisite: MATH 140 with a C or better, or MATH 172 with a C or better, or MATH 182 with a C or better; BIOLOGY 101, BIOLOGY 102, BIOLOGY 106, or BIOLOGY 107. Mathematical biology and development of mathematical modeling for solutions to problems in the life sciences. (Crosslisted course offered as MATH 340, BIOLOGY 340).
- 351 Algebraic Thinking for the Middle School Teacher 3** Course Prerequisite: MATH 252 with a C or better. Algebraic reasoning, classes of functions, translation among models, analytical rule, tables of data, context and coordinate graphs.
- 360 Probability and Statistics 3** Course Prerequisite: MATH 172 or MATH 182. Probability models, sample spaces, random variables, distributions, moments, comparative experiments, tests, correlation and regression in engineering applications. (Crosslisted course offered as STAT 360, MATH 360). Credit not granted for both MATH/STAT 360 and MATH 370. Cooperative: Open to UI degree-seeking students.
- 364 Principles of Optimization 3** Course Prerequisite: MATH 202, MATH 220, or MATH 230. Algebra of linear inequalities; duality; graphs, transport networks; linear programming; special algorithms; nonlinear programming; selected applications.
- 370 Introductory Statistics for Engineers 3** Course Prerequisite: MATH 172 or MATH 182. Probability axioms, probability models, random variables, expectation, confidence intervals, hypothesis testing, analysis of variance, control charts. (Crosslisted course offered as STAT 370, MATH 370). Credit not granted for both MATH/STAT 360 and MATH/STAT 370.
- 375 Vector Analysis 3** Course Prerequisite: MATH 315. Line integrals, gradient, curl, divergence; Stokes' theorem, potential functions.
- 398 Mathematical Snapshots 1** Course Prerequisite: MATH 172 or MATH 182. Character, life work, and historical importance of mathematicians from various eras and branches of mathematics.
- 401 [M] Introduction to Analysis I 3** Course Prerequisite: MATH 301 with a C or better. Properties of sets and sequences of real numbers; limits, continuity, differentiation and integration of functions; metric spaces.
- 402 [M] Introduction to Analysis II 3** Course Prerequisite: MATH 401. Sequences of functions, power series, multivariable calculus, inverse and implicit function theorems, Lagrange multipliers, change of variable in multiple integrations.
- 403 Geometry for Secondary Teachers 3** Course Prerequisite: MATH 301 with a C or better. Geometry as a deductive system of logic; postulational systems; projective and non-Euclidean geometries.
- 415 Intermediate Differential Equations 3** Course Prerequisite: MATH 315. Linear systems; qualitative theory (existence, uniqueness, stability, periodicity); boundary value problems; applications.
- 416 Simulation Methods 3** Course Prerequisite: MATH 360; CPT S 121, CPT S 251, or MATH 300. Model formulation and simulation in business, industry, and government; simulation languages; analysis of simulation output; applications. Credit not granted for both MATH 416 and MATH 516. Required preparation must include probability and statistics and programming experience.
- 420 Linear Algebra 3** Course Prerequisite: MATH 220 with a C or better, or MATH 230 with a C or better; MATH 301 with a C or better. Advanced topics in linear algebra including similarity transformations, canonical forms, bilinear forms.
- 421 [M] Algebraic Structures 3** Course Prerequisite: MATH 301 with a C or better. Properties of algebraic structures and their homomorphisms, semi-groups, groups, rings, unique factorization domains, fields.
- 423 Statistical Methods for Engineers and Scientists 3** Hypothesis testing; linear, multilinear, and nonlinear regression; analysis of variance for designed experiments; quality control; statistical computing. Credit not normally granted for both STAT 423 and 430. (Crosslisted course offered as STAT 423, MATH 423). Recommended preparation: One 3-hour 300-level STAT course.
- 425 Conceptual Aspects of Mathematics 3** Course Prerequisite: By instructor permission. Exploration of conceptual models for thinking about mathematical ideas; activities and discussions of mathematical thinking and instruction. (Crosslisted course offered as TCH LRN 425, MATH 425).
- 430 Statistical Methods in Engineering 3** Random variables, sampling, hypothesis testing; linear, multilinear, and nonlinear regression; analysis of variance for designed experiments; statistical computing. Credit not normally granted for both MATH 430 and 442.
- 431 Intersections of Culture and Mathematics 3** Course Prerequisite: MATH 301 with a C or better. Gender/race/ethnicity differences; social consequences; cultural influences on development and learning of mathematics; role of women, people of color in mathematics. Credit not granted for both MATH 431 and MATH 531.
- 432 Mathematics for College and Secondary Teachers 3** Course Prerequisite: MATH 301 with a C or better. Pre-algebra, algebra functions and geometry examined from an advanced perspective, for secondary and lower level college teachers. Credit not granted for both MATH 432 and MATH 532.
- 440 Applied Mathematics I 3** Course Prerequisite: MATH 315. Partial differential equations; Fourier series and integrals; Bessel functions; calculus of variations; vector calculus; applications. Credit not granted for both MATH 440 and MATH 540. Required preparation must include differential equations.

- 441 Applied Mathematics II** 3 Course Prerequisite: MATH 315. Complex variable theory including analytic functions, infinite series, residues, and conformal mapping; Laplace transforms; applications. Credit not granted for both MATH 441 and MATH 541. Required preparation must include differential equations.
- 443 Applied Probability** 3 Course Prerequisite: MATH 172 or MATH 182; MATH 220 or MATH 230. Axioms of probability theory; random variables; expectation; generating function; law of large numbers; central limit theorem; Markov chains. (Crosslisted course offered as STAT 443, MATH 443).
- 448 Numerical Analysis** 3 Course Prerequisite: MATH 315; CPT S 121, CPT S 251, or MATH 300. Fundamentals of numerical computation; finding zeroes of functions, approximation and interpolation; numerical integration (quadrature); numerical solution of ordinary differential equations. (Crosslisted course offered as MATH 448, CPT S 430, CPT S 530). Required preparation must include differential equations and a programming course.
- 453 Graph Theory** 3 Course Prerequisite: MATH 220 or MATH 230. Graphs and their applications, directed graphs, trees, networks, Eulerian and Hamiltonian paths, matrix representations, construction of algorithms. (Crosslisted course offered as MATH 453, CPT S 453). Required preparation must include linear algebra. Required preparation must include linear algebra.
- 456 Introduction to Statistical Theory** 3 Course Prerequisite: STAT 430 or 443. Sampling distributions; hypothesis testing and estimation; maximum likelihood; likelihood ratio tests; theory of least squares; nonparametrics. (Crosslisted course offered as STAT 456, MATH 456). Recommended preparation: One 3-hour 400-level STAT or probability course.
- 464 Linear Optimization** 3 Course Prerequisite: MATH 273 or MATH 283. Linear and integer programming; optimization problems; applications to economic and military strategies; rectangular games; minimax theory.
- 466 Optimization in Networks** 3 Course Prerequisite: MATH 364. Formulation and solution of network optimization problems including shortest path, maximal flow, minimum cost flow, assignment, covering, postman, and salesman. Credit not granted for both MATH 466 and MATH 566. Required preparation must include linear programming.
- 486 Mathematical Modeling in the Natural Science** 3 Course Prerequisite: MATH 315. Development of mathematical models for solutions of problems in the physical and life sciences. Credit not granted for both MATH 486 and MATH 586. Required preparation must include differential equations.
- 490 Topics in Mathematics** V 1-3 Course Prerequisite: By instructor permission. Special topics in mathematics.
- 494 Seminar in Mathematical Biology** 1 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MATH 140 with a C or better, or MATH 172 with a C or better, or MATH 182 with a C or better; BIOLOGY 101, BIOLOGY 102, BIOLOGY 106, or BIOLOGY 107. Oral presentation of research approaches, research results and literature review of mathematical biology including mathematical modeling of biological systems. (Crosslisted course offered as MATH 494, BIOLOGY 494). Cooperative: Open to UI degree-seeking students. S, F grading.
- 497 Instructional Practicum** V 1-2 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: By instructor permission. May be repeated for credit; cumulative maximum 2 hours. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 500 Proseminar** 1 May be repeated for credit; cumulative maximum 2 hours. S, F grading.
- 501 Real Analysis** 3 Metric spaces, convergence, continuous functions, infinite series, differentiation and integration of functions of one and several variables. Required preparation must include advanced calculus or real analysis.
- 502 Introduction to Functional Analysis** 3 Course Prerequisite: MATH 501. Normed linear spaces, Banach spaces, introduction to Hilbert space, linear operators. Required preparation: Advanced linear algebra.
- 503 Complex Analysis** 3 Course Prerequisite: MATH 501. Analytic functions, complex integration, Taylor and Laurent series, conformal mapping, Riemann surfaces and analytic continuation. Cooperative: Open to UI degree-seeking students.
- 504 Measure and Integration** 3 Course Prerequisite: MATH 501. Lebesgue measure, Lebesgue integration, differentiation, L spaces, general measure and integration, Radon-Nikodym Theorem, outer measure and product measures.
- 505 Abstract Algebra** 3 Groups, rings, fields, and homological algebra. Required preparation must include abstract algebra.
- 507 Advanced Theory of Numbers** 3 May be repeated for credit; cumulative maximum 6 hours. Analytic and algebraic number theory.
- 508 Topics in Applied Analysis** 3 Course Prerequisite: MATH 502. Advanced treatment of applications using techniques from fundamental analysis, convexity, analytic function theory, asymptotics, and differential equations.
- 511 Advanced Linear Algebra** 3 Vector spaces, inner products, unitary equivalence, similarity, Jordan forms, normality, spectral theory, singular value decomposition, norms and inequalities. Required preparation must include advanced linear algebra.
- 512 Ordinary Differential Equations** 3 Existence of solutions; linear systems; qualitative behavior, especially stability; periodic solutions. Required preparation must include a year-long sequence in advanced calculus or real analysis. Cooperative: Open to UI degree-seeking students.
- 516 Simulation Methods** 3 Model formulation and simulation in business, industry, and government; simulation languages; analysis of simulation output; applications. Credit not granted for both MATH 416 and MATH 516. Required preparation must include probability and statistics and programming experience.
- 525 General Topology** 3 Sets, metric spaces, topological spaces; continuous mappings, compactness, connectedness, local properties, function spaces, and fundamental groups. Required preparation must include a year-long sequence in advanced calculus or real analysis. Cooperative: Open to UI degree-seeking students.
- 531 Intersections of Culture and Mathematics** 3 Gender/race/ethnicity differences; social consequences; cultural influences on development and learning of mathematics; role of women, people of color in mathematics. Credit not granted for both MATH 431 and MATH 531.
- 532 Mathematics for College and Secondary Teachers** 3 Course Prerequisite: By instructor permission. Pre-algebra, algebra functions and geometry examined from an advanced perspective, for secondary and lower level college teachers. Credit not granted for both MATH 432 and MATH 532.
- 533 Teaching College Mathematics** 1 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Graduate standing in Mathematics. Theory and practice of mathematics instruction at the collegiate level.
- 534 Theories of Learning in Mathematics** 3 Math learning theories, including behaviorism, information processing, constructivism, situated cognition, communities of practice; influence on teaching and learning mathematics.
- 535 Research Paradigms in Mathematics Education** 3 Course Prerequisite: MATH 534. Current research paradigms in math education research; critique research designs used in current mathematics education research article; design and carry out a research project.
- 536 Statistical Computing** 3 (2-3) Generation of random variables, Monte Carlo simulation, bootstrap and jackknife methods, EM algorithm, Markov chain Monte Carlo methods. (Crosslisted course offered as STAT 536, MATH 536). Recommended preparation: One 3-hour 400-level probability or STAT course. Cooperative: Open to UI degree-seeking students.
- 540 Applied Mathematics I** 3 Partial differential equations; Fourier series and integrals; Bessel functions; calculus of variations; vector calculus; applications. Credit not granted for both MATH 440 and MATH 540. Required preparation must include differential equations.

- 541 Applied Mathematics II 3** Complex variable theory including analytic functions, infinite series, residues, and conformal mapping; Laplace transforms; applications. Credit not granted for both MATH 441 and MATH 541. Required preparation must include differential equations.
- 543 Approximation Theory 3** Univariate polynomial and rational approximation techniques; approximation using splines and wavelets; selected topics in multivariate approximation; algorithms for approximation. Required preparation must include numerical analysis. Cooperative: Open to UI degree-seeking students.
- 544 Advanced Matrix Computations 3** Advanced topics in the solution of linear systems and eigenvalue problems, including parallel matrix computations. (Crosslisted course offered as MATH 544, CPT S 531). Required preparation must include numerical analysis. Required preparation must include numerical analysis. Cooperative: Open to UI degree-seeking students.
- 545 Numerical Analysis of Evolution Equations 3** Discretization and numerical solution of partial differential equations of evolution; stability, consistency, and convergence; shocks; conservation of forms. Required preparation must include numerical analysis.
- 546 Numerical Analysis of Elliptic PDEs 3** Methods of discretizing elliptic partial differential equations and solving the resulting systems of equations; error analysis. Required preparation must include numerical analysis. Cooperative: Open to UI degree-seeking students.
- 548 Numerical Analysis 3** Fundamentals of numerical computation; finding zeroes of functions, approximation and interpolation; numerical integration (quadrature); numerical solution of ordinary differential equations. (Crosslisted course offered as MATH 448, CPT S 430, CPT S 530). Required preparation must include differential equations and a programming course.
- 553 Graph Theory 3** Graphs and their applications, directed graphs, trees, networks, Eulerian and Hamiltonian paths, matrix representations, construction of algorithms. (Crosslisted course offered as MATH 453, CPT S 453). Required preparation must include linear algebra. Required preparation must include linear algebra.
- 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.
- 560 Partial Differential Equations I 3** Partial differential equations and other functional equations: general theory, methods of solution, applications. Required preparation must include a year-long sequence in advanced calculus or real analysis. Cooperative: Open to UI degree-seeking students.
- 561 Partial Differential Equations II 3** Course Prerequisite: MATH 560. Continuation of MATH 560.
- 563 Mathematical Genetics 3** Mathematical approaches to population genetics and genome analysis; theories and statistical analyses of genetic parameters. (Crosslisted course offered as MATH 563, BIOLOGY 566). Required preparation must include multivariate calculus, genetics, and statistics. Cooperative: Open to UI degree-seeking students.
- 564 Nonlinear Optimization I 3** Theory and algorithms for unconstrained nonlinear optimization problems, including line search, trust region, conjugate gradient, Newton and quasi-Newton methods. Required preparation must include advanced multivariate calculus, and a programming language. Recommended preparation: MATH 464, 544.
- 565 Nonlinear Optimization II 3** Course Prerequisite: MATH 564. Theory and algorithms for constrained linear and nonlinear optimization including interior point, quadratic programming, penalty, barrier and augmented Lagrangian methods.
- 566 Optimization in Networks 3** Formulation and solution of network optimization problems including shortest path, maximal flow, minimum cost flow, assignment, covering, postman, and salesman. Credit not granted for both MATH 466 and MATH 566. Required preparation must include linear programming.
- 567 Integer and Combinatorial Optimization 3** Theory and applications of integer and combinatorial optimization including enumerative, cutting plane, basis reduction, relaxation and matching methods. Required preparation must include linear optimization.
- 568 Statistical Theory I 3** Probability spaces, combinatorics, multidimensional random variables, characteristic function, special distributions, limit theorems, stochastic processes, order statistics. (Crosslisted course offered as STAT 548, MATH 568). Recommended preparation: Calculus III and one 3-hour 400-level probability course.
- 569 Statistical Theory II 3** Continuation of STAT 548. Statistical inferences; estimation and testing hypotheses; regression analysis; sequential analysis and nonparametric methods. (Crosslisted course offered as STAT 549, MATH 569). Recommended preparation: STAT 548.
- 570 Mathematical Foundations of Continuum Mechanics I 3** The basic mathematical theory of continuum mechanics and its relation to perturbation techniques and stability methods. Required preparation must include differential equations and advanced calculus or real analysis.
- 571 Mathematical Foundations of Continuum Mechanics II 3** Course Prerequisite: MATH 570. Continuation of MATH 570.
- 574 Topics in Optimization 3** May be repeated for credit; cumulative maximum 12 hours. Advanced topics in the theory and computing methodology in optimization with emphasis on real-life algorithmic implementations. Required preparation must include advanced multivariable calculus and a programming language. Cooperative: Open to UI degree-seeking students.
- 575 Asset Pricing in Financial Engineering 3** Mathematical methods for various models on valuation of stocks and options, with rigorous mathematical analysis on pricing and hedging techniques. Recommended preparation: Advanced calculus and some knowledge on differential equations.
- 576 Quantitative Risk Management 3** Fundamental concepts in modern risk theory and mathematical methods in quantitative risk management; coherent risk measures, volatility modeling, multivariate dependence analysis using copulas, risk aggregation and allocation, and extreme value theory.
- 579 Mathematical Modeling in the Biological and Health Sciences 3** Techniques, theory, and current literature in mathematical modeling in the biological and health sciences, including computational simulation. (Course offered as BIOLOGY 579, MATH 579).
- 581 Topics in Mathematics V 1-3** May be repeated for credit. Topics in mathematics. Cooperative: Open to UI degree-seeking students.
- 583 Topics in Applied Mathematics V 1-3** May be repeated for credit. Topics in applied mathematics. Cooperative: Open to UI degree-seeking students.
- 586 Mathematical Modeling in the Natural Science 3** Development of mathematical models for solutions of problems in the physical and life sciences. Credit not granted for both MATH 486 and MATH 586. Required preparation must include differential equations.
- 590 Topics in Mathematics Education V 1-3** May be repeated for credit; cumulative maximum 6 hours. Topics in mathematics education.
- 597 Mathematics Instruction Seminar 1** May be repeated for credit; cumulative maximum 5 hours. Introduction to the teaching of university mathematics. S, F grading.
- 600 Special Projects or Independent Study V 1-18** May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V 1-18** May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

STATISTICS

STAT

205 [QUAN] Statistical Thinking 3 Course Prerequisite: MATH 101, 103, or ALEKS math placement score of 40%. Scientific explanation; correlations and causality; presenting statistical evidence; graphical and numerical methods; chance and gambling; the bell-shaped distribution. (Crosslisted course offered as STAT 205, MATH 205).

212 [QUAN] Introduction to Statistical Methods 4 (3-2) Course Prerequisite: MATH 101, 103, 106, 108, 140, 171, 201, or ALEKS math placement score of 40%. Introduction to descriptive and inferential statistics: t-tests, chi-square tests, one-way ANOVA, simple linear regression and correlation. (Crosslisted course offered as STAT 212, MATH 212).

360 Probability and Statistics 3 Course Prerequisite: MATH 172 or MATH 182. Probability models, sample spaces, random variables, distributions, moments, comparative experiments, tests, correlation and regression in engineering applications. (Crosslisted course offered as STAT 360, MATH 360). Credit not granted for both MATH/STAT 360 and MATH 370. Cooperative: Open to UI degree-seeking students.

370 Introductory Statistics for Engineers 3 Course Prerequisite: MATH 172 or MATH 182. Probability axioms, probability models, random variables, expectation, confidence intervals, hypothesis testing, analysis of variance, control charts. (Crosslisted course offered as STAT 370, MATH 370). Credit not granted for both MATH/STAT 360 and MATH/STAT 370.

410 Topics in Probability and Statistics 3 May be repeated for credit; cumulative maximum 6 hours. Current topics in probability and statistics of mutual interest to faculty and students. Credit not granted for both STAT 410 and STAT 510. Recommended preparation: One 3-hour 300-level STAT course.

412 Statistical Methods in Research I 3 Course Prerequisite: STAT 212, MATH 140, 171, or 202. Intermediate statistical methods, design and analysis of research studies: completely randomized and randomized block designs, multiple regression, categorical data analysis. Cooperative: Open to UI degree-seeking students.

422 Sampling Methods 3 Course Prerequisite: STAT 212, 360, or 370. Simple and stratified random sampling; systematic sampling; cluster sampling; double sampling, area sampling. Cooperative: Open to UI degree-seeking students.

423 Statistical Methods for Engineers and Scientists 3 Hypothesis testing; linear, multilinear, and nonlinear regression; analysis of variance for designed experiments; quality control; statistical computing. Credit not normally granted for both STAT 423 and 430. (Crosslisted course offered as STAT 423, MATH 423). Recommended preparation: One 3-hour 300-level STAT course.

430 Statistical Methods in Engineering 3 Course Prerequisite: MATH 172 or 182; MATH 220. Random variables, sampling, hypothesis testing; linear, multilinear, and nonlinear regression; analysis of variance for designed experiments; statistical computing. Credit not normally granted for both MATH 430 and 442.

443 Applied Probability 3 Course Prerequisite: MATH 172 or MATH 182; MATH 220 or MATH 230. Axioms of probability theory; random variables; expectation; generating function; law of large numbers; central limit theorem; Markov chains. (Crosslisted course offered as STAT 443, MATH 443).

456 Introduction to Statistical Theory 3 Course Prerequisite: STAT 430 or 443. Sampling distributions; hypothesis testing and estimation; maximum likelihood; likelihood ratio tests; theory of least squares; nonparametrics. (Crosslisted course offered as STAT 456, MATH 456). Recommended preparation: One 3-hour 400-level STAT or probability course.

508 Environmental Spatial Statistics 3 Theoretical introduction and practical training in spatial data analysis for graduate students in the environmental sciences. (Crosslisted course offered as SOIL SCI 508, STAT 508). Required preparation must include undergraduate statistics through applied multiple regression. Cooperative: Open to UI degree-seeking students.

510 Topics in Probability and Statistics 3 May be repeated for credit; cumulative maximum 6 hours. Current topics in probability and statistics of mutual interest to faculty and students. Credit not granted for both STAT 410 and STAT 510. Recommended preparation: One 3-hour 300-level STAT course.

512 Analysis of Variance of Designed Experiments 3 (2-2) Principles of experimental design and analysis and interpretation of data. Recommended preparation: One 3-hour 300-level STAT course.

516 Time Series 3 ARIMA models; identification, estimation, diagnostics, and forecasting; seasonal adjustments, outlier detection, intervention analysis and transfer function modeling. (Crosslisted course offered as MGTOP 516, STAT 516). Recommended preparation: STAT 443.

519 Applied Multivariate Analysis 3 Multivariate normal distribution, principal components, factor analysis, discriminant function, cluster analysis, Hotteling's T2 and MANOVA. (Crosslisted course offered as MGTOP 519, STAT 519). Recommended preparation: STAT 443.

520 Statistical Analysis of Qualitative Data 3 Binomial, Poisson, multinomial distribution; contingency tables, Fisher's tests, log-linear models; ordinal data; applications in biology, business, psychology, and sociology. Recommended preparation: Linear Algebra or Calculus I and one 3-hour 300-level STAT course. Cooperative: Open to UI degree-seeking students.

522 Biostatistics and Statistical Epidemiology 3 Rigorous approach to biostatistical and epidemiological methods including relative risk, odds ratio, cross-over designs, survival analysis and generalized linear models. Recommended preparation: Linear Algebra or Calculus I and one 3-hour 300-level STAT course. Cooperative: Open to UI degree-seeking students.

523 Statistical Methods for Engineers and Scientists 3 Hypothesis testing; linear, multilinear, and nonlinear regression; analysis of variance for designed experiments; quality control; statistical computing. Credit not normally granted for both STAT 423 and 430. (Crosslisted course offered as STAT 423, MATH 423). Recommended preparation: One 3-hour 300-level STAT course.

530 Applied Linear Models 3 (2-2) The design and analysis of experiments by linear models. Recommended preparation: One 3-hour 300-level STAT course.

533 Theory of Linear Models 3 Theoretical basis of linear regression and analysis of variance models; a unified approach based upon the generalized inverse. Recommended preparation: Linear Algebra and one 3-hour 400-level STAT theory course. Cooperative: Open to UI degree-seeking students.

535 Regression Analysis 3 Conceptual development of regression; estimation, prediction, tests of hypotheses, variable selection, diagnostics, model validation, correlation, and nonlinear regression. Recommended preparation: One 3-hour 400-level STAT course. Cooperative: Open to UI degree-seeking students.

536 Statistical Computing 3 (2-3) Generation of random variables, Monte Carlo simulation, bootstrap and jackknife methods, EM algorithm, Markov chain Monte Carlo methods. (Crosslisted course offered as STAT 536, MATH 536). Recommended preparation: One 3-hour 400-level probability or STAT course. Cooperative: Open to UI degree-seeking students.

544 Applied Stochastic Processes 3 Poisson and Markov processes; queuing theory; auto-covariance; stationarity; power spectra; harmonic analysis; linear mean-square predictions. Recommended preparation: One 3-hour 400-level STAT or Applied Probability course. Cooperative: Open to UI degree-seeking students.

- 548 Statistical Theory I** 3 Probability spaces, combinatorics, multidimensional random variables, characteristic function, special distributions, limit theorems, stochastic processes, order statistics. (Crosslisted course offered as STAT 548, MATH 568). Recommended preparation: Calculus III and one 3-hour 400-level probability course.
- 549 Statistical Theory II** 3 Continuation of STAT 548. Statistical inferences; estimation and testing hypotheses; regression analysis; sequential analysis and nonparametric methods. (Crosslisted course offered as STAT 549, MATH 569). Recommended preparation: STAT 548.
- 556 Introduction to Statistical Theory 3** Sampling distributions; hypothesis testing and estimation; maximum likelihood; likelihood ratio tests; theory of least squares; nonparametrics. (Crosslisted course offered as STAT 456, MATH 456). Recommended preparation: One 3-hour 400-level STAT or probability course.
- 565 Analyzing Microarray and Other Genomic Data** 3 Statistical issues from pre-processing (transforming, normalizing) and analyzing genomic data (differential expression, pattern discovery and predictions). Recommended preparation: Linear Algebra and one 3-hour 300-level STAT course. Cooperative: Open to UI degree-seeking students.
- 572 Quality Control** 3 Simple quality assurance tools; process monitoring; Shewhart control charts; process characterization and capability; sampling inspection; factorial experiments. Recommended preparation: One 3-hour 300-level STAT or probability course.
- 573 Reliability** 3 Probabilistic modeling and inference; product-limit estimator; probability plotting; maximum likelihood estimation with censored data; regression models for accelerated life testing. Recommended preparation: One 3-hour 300-level STAT or probability course.
- 590 Statistical Consulting Practicum V** 1-2 May be repeated for credit; cumulative maximum 6 hours. Theory and practice of statistical consulting, participation in consulting session. Recommended preparation: STAT 512 and STAT 530. S, F grading.
- 600 Special Projects or Independent Study V** 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V** 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

School of Mechanical and Materials Engineering

www.mme.wsu.edu
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Professor and School Director, M. R. Kessler; Professors, A. Bandyopadhyay, S. Bose, J. L. Ding, I. Dutta, P. Dutta, D. P. Field, S. Jayaram, K. G. Lynn, M. G. Norton, C. Pezeshki, C. D. Richards, R. F. Richards, L. V. Smith, H. M. Zbib, W. Zhong; Associate Professors, U. Jayaram, S. Mesarovic; J. McCloy; Assistant Professors, G. Ameta, S. Banerjee, J. Leachman, L. Li, J. Liu, P. Soman; Tri-Cities: Professor, W. C. Kinsel; Assistant Professor, C. Mo; Bremerton: Clinical Professor, M. Pitts; Everett: Clinical Professor, Brad Thompson; Clinical Associate Professor, X. Bi.

The School of Mechanical and Materials Engineering offers programs in Mechanical Engineering (Pullman, Tri-Cities, Bremerton, and Everett campuses), and Materials Science and Engineering (Pullman). Each program is detailed as follows.

MECHANICAL ENGINEERING

Mechanical engineering is concerned with (a) the use and economical conversion of energy from natural sources into other useful energy to provide power, light, heat, cooling and transportation, (b) the design and production of machines to lighten the burden of human 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 for graduates exist in the areas of mechanical design, systems design, equipment development, manufacturing, CAD/CAM, project engineering, production management, applied research, and sales and service.

The mission of the mechanical engineering program is to provide a broad education in mechanical engineering that prepares our students for successful professional practice and advanced studies. The educational objectives of the undergraduate mechanical engineering program are as follows: (1) graduates in ME shall possess a sound understanding in and be able to apply scientific principles, mathematics and engineering science to solutions of engineering problems that will allow them to be successful in the profession or in pursuing graduate studies; (2) graduates in ME shall be ready-to-work, have technical knowledge, hands-on experience, communication and critical thinking skills that will allow them to function successfully as members of technical teams in the global arena; and (3) graduates in ME shall have an appreciation of the economic, social, environmental and ethical impact of their professional activities and a desire for lifelong learning.

The undergraduate 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 interwoven throughout the program. The courses in the fourth year emphasize the integration of fundamental engineering principles into various applications in mechanical engineering. The students also take

two electives tailored to their interests and career goals. The undergraduate program is completed with courses in integrated design of mechanical and thermal systems as well as 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.

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). The school participates in the interdisciplinary programs leading to the Master of Science in Engineering and Doctor of Philosophy (Engineering Science).

MATERIALS SCIENCE AND ENGINEERING

The mission of the materials science and engineering program is to provide excellence in education, research, and service in the field of materials science and engineering through educational programs that graduate students with strong backgrounds in scientific and engineering problem-solving methods. Materials science and engineering is the application of methods and principles of the pure sciences to study 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) experimental techniques for characterizing physical, chemical and structural properties of materials, and (c) 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, biomaterials, 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.

The educational objectives of the undergraduate materials science and engineering program are as follows: (1) graduates in MSE shall possess a sound understanding of and be able to apply scientific principles, mathematics and materials science and engineering to solutions of engineering problems that will allow them to be successful in the profession or in pursuing graduate studies; (2) graduates in MSE shall be ready-to-work, have technical knowledge, hands-on research experience, and communication skills that will allow them to function individually and as members of interdisciplinary teams and the greater professional community; and (3) graduates in MSE shall understand the economic, social, environmental and ethical impact of their professional activities and a desire for lifelong learning.

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 interdisciplinary programs leading to the Doctor of Philosophy (Engineering Science, Materials Science and Engineering).

TRANSFER STUDENTS

The School 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 strongly recommended prior to transfer to minimize the time required at Washington State University to complete the bachelor's degree requirements.

The certification into the mechanical engineering or materials science and engineering programs is processed by the School. The certification requirements are described in the WSU catalog. Details for certification can also be obtained by contacting the School directly.

GRADUATE STUDY

Applicants should have a Bachelor of Science degree from an accredited program in mechanical engineering or materials science and engineering. Students with bachelor degrees in other engineering disciplines, mathematics, and the physical sciences are routinely admitted but may be required to meet additional course requirements.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

MATERIALS SCIENCE AND ENGINEERING (120 HOURS)

Certification Requirements:

Certification into the Bachelor of Science program in Materials Science and Engineering is limited to 21 students per entering class. Students who have completed at least 30 semester hours of graded course work with an overall minimum 2.0 gpa and who have completed the following courses with a minimum grade of 2.0 in each course: CHEM 105, CHEM 106, ENGLISH 101, MATH 171, 172, and PHYSICS 201 or their equivalents are eligible. When it becomes necessary to limit enrollment, the overall gpa as well as the gpa for the prerequisite courses listed above, will be important factors.

Students need to submit an application for certification to the Undergraduate Students Services office, Sloan 205 or electronically to newcoug@mme.wsu.edu. The application deadline is the Monday after finals week in December and May for the fall and the spring semesters respectively. For additional details, contact the school's office of student services.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
Creative & Professional Arts [ARTS]	3

ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
MSE 110	2

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI]	3
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 172	4
PHYSICS 201	4

Second Year

<i>First Term</i>	<i>Hours</i>
CE 211	3
Humanities [HUM]	3
MATH 220	2
MATH 273	2
MSE 201	3
PHYSICS 202	4

<i>Second Term</i>	<i>Hours</i>
CE 215	3
CPT S 121 or E E 221	2
Diversity [DIVR]	3
ECONS 102 [SSCI]	3
MATH 315	3
ME 220	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
E E 304	2
MSE 302	3
MSE 316	3
MSE 320 [M]	3
MSE 402	3
STAT 360 or 370	3

<i>Second Term</i>	<i>Hours</i>
ME 310	2
MSE 321	3
MSE 323	2
MSE 401	3
MSE 403	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
ME 416 [CAPS]	3
MSE 413	3
MSE 425 [M]	3
Engineering and Science Elective ¹	3

<i>Second Term</i>	<i>Hours</i>
ENGLISH 402 [WRTG]	3
MSE Elective ²	3
Technical Elective ³	3
Engineering and Science Elective ¹	3

¹ Six credits from BIOLOGY 301, BIO ENG 481, CE 341, E E 214, ME 212, 303, 313, 316, 348, 404, 414, 449, 461, 472, CHEM 331, 332, 336, 345, 346, 347, PHYSICS 303, 304, 463, MBIOS 303, any 400 or 500-level MSE, or any 500-level ME (except Integrated Capstone course in MSE).

² Any 400 or 500-level MSE course.

³ Upper-division CE, CH E, CHEM, CPT S, E E, MATH, MSE, ME, PHYSICS, or STAT course (except Integrated Capstone courses in Engineering).

MECHANICAL ENGINEERING (125 HOURS)

Criteria for Certification – Mechanical Engineering Program

1) The School of Mechanical and Materials Engineering will establish the total number of students to be certified into the Mechanical Engineering program.

2) Students should apply for certification in the semester after they have completed the following five courses: MATH 171, MATH 172, CHEM 105, PHYSICS 201, and CE 211. Students must have a minimum 2.5 cum gpa and a C or better grade for each of the five courses listed above to be considered for certification.

3) Students need to submit an application for certification to the Undergraduate Student Services office, Sloan 205 or electronically to newcoug@mme.wsu.edu. The application deadline is the Monday after finals week in December and May for the fall and the spring semester respectively.

4) The applicants will be ranked based on the average gpa of the math, science, and engineering courses completed. For those who are borderline, the semester and cumulative gpa will be considered and used as a reference. In addition to gpa, other factors may also be taken into consideration, such as the number of math, science, and engineering courses taken at WSU. The committee has the authority to weigh these factors in its decision for certification.

5) Students who are deficient under the University's Educational Policies & Procedures are subject to decertification. The undergraduate studies committee will determine the eligibility and probation conditions for decertified students who will be permitted to apply for recertification.

6) Any further questions should be addressed to the Student Service Office locate in Sloan 205 or newcoug@mme.wsu.edu.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
ENGR 120	2
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Hours</i>
Biological Sciences [BSCI]	3
CHEM 106	4
Creative & Professional Arts [ARTS]	3
MATH 172	4
ME 116	2

Second Year

<i>First Term</i>	<i>Hours</i>
CE 211	3
CPT S 121, 251, 253, or E E 221	2
ECONS 102 [SSCI]	3
MATH 220	2
MATH 273	2
PHYSICS 201	4

<i>Second Term</i>	<i>Hours</i>
CE 215	3
MATH 315	3
ME 212	3
ME 216	2

ME 220	1
PHYSICS 202	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
E E 304	2
MATH/STAT 370	3
ME 301	3
ME 303	3
ME 313	3
MSE 201	3

<i>Second Term</i>	<i>Hours</i>
Humanities [HUM]	3
ME 305	2
ME 310	2
ME 311	1
ME 316 [M]	3
ME 348	3
ME 404	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
ME 401	3
ME 402	3
ME 414	3
Technical Elective ¹	3

<i>Second Term</i>	<i>Hours</i>
ENGLISH 402 [WRTG]	3
ME 406 [M]	3
ME 416 [CAPS]	3
Technical Elective ¹	3

¹ Technical Elective in ME or MSE. (MSE 440 excluded).

Minors**Materials Science And Engineering**

A minor in materials science and engineering requires 16 credits which must include ME 220 and MSE 201. An additional 12 credits must be chosen from MSE 302, 401, 402, 403, 404, 406, 413, ME 310, ME 311, or E E 496. 9 hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Mechanical Engineering

A minor in mechanical engineering requires 16 credits of 300-400-level ME courses, including two of the following four courses: ME 303, 348, 404, 414. 9 hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Description of Courses**MECHANICAL ENGINEERING****ME**

116 Engineering Computer-aided Design and Visualization 2 (0-6) Course Prerequisite: MATH 171 or concurrent enrollment. Introduction to 3-D solid modeling, parts, drawings, assemblies, multi-body parts, sketch editing, sheet metal, weldments, surface and mold tools.

212 Dynamics 3 Course Prerequisite: MATH 172 or 182 with a grade of C or better; CE 211 with a grade C or better. Kinematics and kinetics of particles and rigid bodies; introduction to mechanical vibration. Cooperative: Open to UI degree-seeking students.

216 Integrated CAD Design 2 (0-6) Course Prerequisite: ME 116 with a C or better; CE 215 or concurrent enrollment. CAD based analysis for engineering design, the application of motion, FEA and CFD, CAD simulations to the engineering design process.

220 Materials Laboratory 1 (0-3) Course Prerequisite: CE 215 or concurrent enrollment. Mechanical behavior of materials and application to engineering structures.

301 Fundamentals of Thermodynamics 3 Course Prerequisite: PHYSICS 201 with a grade of C or better. Thermodynamic properties of matter, ideal and real gases, work and heat, first and second laws and their application to engineering systems. Cooperative: Open to UI degree-seeking students.

303 Fluid Mechanics 3 Course Prerequisite: ME 212. Fluid statics, laminar and turbulent flow, similitude, pipe flow, boundary layers, lift and drag and measurement techniques. Cooperative: Open to UI degree-seeking students.

305 Thermal and Fluids Laboratory 2 (1-3) Course Prerequisite: ME 301; ME 303; MATH 370 or concurrent enrollment; certified major in Mechanical Engineering, Materials Science Engineering, Civil Engineering, or Electrical Engineering. Instrumentation, data acquisition, and theory verification in the thermal and fluid sciences.

310 Manufacturing Processes 2 Course Prerequisite: MSE 201; certified major in Mechanical Engineering, Materials Science Engineering, Civil Engineering, or Electrical Engineering. Manufacturing processes, material fabrication, and nontraditional processing.

311 Manufacturing Processes Laboratory 1 (0-3) Course Prerequisite: ME 310 or concurrent enrollment; certified major in Mechanical Engineering, Materials Science Engineering, Civil Engineering, or Electrical Engineering. Manufacturing processes laboratory in machining, welding, forming; manufacturing project.

313 Engineering Analysis 3 (2-3) Course Prerequisite: MATH 315 or concurrent enrollment; CE 215; E E 221, CPT S 121, or CPT S 251. Analysis and modeling of engineering problems utilizing numerical and mathematical techniques and computers. Cooperative: Open to UI degree-seeking students.

316 [M] Systems Design 3 Course Prerequisite: CE 215; ME 216; certified major in Mechanical Engineering, Materials Science Engineering, Civil Engineering, or Electrical Engineering. Systems and component design; product development from specifications to manufacturing; team-based CAD design projects; engineering economics; engineering professional skills.

348 Dynamics Systems 3 Course Prerequisite: ME 212; ME 313; certified major in Mechanical Engineering, Materials Science Engineering, Civil Engineering, or Electrical Engineering. Fundamentals of vibration analysis, control systems, system modeling and dynamics analysis.

401 Mechatronics 3 (2-3) Course Prerequisite: E E 304; ME 348. Integration of mechanical and microprocessor-based systems; control theory implemented with data acquisition systems; sensors; actuators, signal conditioning, programmable logic controllers.

402 Thermal Systems Design 3 Course Prerequisite: ME 404; certified major in Mechanical Engineering, Materials Science Engineering, Civil Engineering, or Electrical Engineering. Design and analysis of thermofluid systems using principles of thermodynamics, fluid mechanics and heat transfer.

404 Heat Transfer 3 Course Prerequisite: ME 301; ME 303; certified major in Mechanical Engineering, Materials Science Engineering, Civil Engineering, or Electrical Engineering. Conduction, radiation, and convection heat transfer; analytical, numerical, experimental results for solids, liquids, and gases; heat exchanger design. Cooperative: Open to UI degree-seeking students.

406 [M] Experimental Design 3 (1-6) Course Prerequisite: ME 220; ME 305; ME 316; ME 404. Designing, conducting, and reporting of experimental investigations involving mechanical equipment. Recommended preparation: ME 348.

407 Computational Fluid Dynamics 3 Course Prerequisite: ME 303. Basic concepts and applications of computational fluid dynamics to the analysis and design of fluid systems and components.

413 Mechanics of Solids 3 Course Prerequisite: CE 215; MSE 201. Elasticity, elastic stress distributions; plastic deformation of single and polycrystals; introduction to dislocation theory and its applications; creep, fracture, fatigue. (Crosslisted course offered as MSE 413, ME 413).

414 Machine Design 3 Course Prerequisite: CE 215; certified major in Mechanical Engineering, Materials Science Engineering, Civil Engineering, or Electrical Engineering. Optimal design of machinery; analysis for prevention of machine elements failure. Recommended preparation: ME 220.

- 416 [CAPS] Mechanical Systems Design 3** (1-6) Course Prerequisite: ME 316; ME 348; ME 404; ME 414 or concurrent enrollment; senior standing. Integrative design in mechanical engineering; multidisciplinary design project considering both technical and non-technical contexts; organizational dynamics and communications.
- 419 Air Conditioning 3** Course Prerequisite: ME 404. Principles of heat and moisture transfer; air motion and purity in buildings; design of systems. Cooperative: Open to UI degree-seeking students.
- 431 Design of Solar Thermal Systems 3** Course Prerequisite: ME 301; ME 303; ME 404; certified major in Mechanical Engineering, Materials Science Engineering, Civil Engineering, Electrical Engineering, or Architecture. Design of solar thermal systems for heating and cooling of buildings, heating of water, electrical generation, industrial processes and distillation.
- 436 Combustion Engines 3** Course Prerequisite: ME 303. Internal combustion engines; spark ignition engines, diesels, and gas turbines.
- 439 Applied Aerodynamics 3** Course Prerequisite: ME 303. Aerodynamic lift and drag; circulation; boundary layers, application to subsonic aircraft wing design.
- 449 Mechanical Vibration 3** Course Prerequisite: ME 348. Vibrating systems and noise producing mechanisms; design for noise and vibration control. Cooperative: Open to UI degree-seeking students.
- 461 Introduction to Nuclear Engineering 3** Course Prerequisite: Certified major in engineering or physical sciences; senior standing; MATH 315. Applied nuclear physics; application to the nuclear fuel cycle and nuclear reactor core design; nuclear reactor systems and safety. (Crosslisted course offered as ME 461, CHE 461).
- 472 Finite Element Methods in Design 3** Course Prerequisite: ME 414. Design of selected mechanical systems components using finite element analysis.
- 473 Advanced CAD and Geometric Modeling 3** (2-3) Course Prerequisite: ME 316. Parametric and feature based CAD/CAM; geometric modeling and its mathematical basis; integration of CAD with design processes and other software.
- 474 Design for Manufacture and Modern Manufacturing Strategies 3** Course Prerequisite: ME 310. Design for manufacture and assembly; modern manufacturing philosophies and practices; lean manufacturing; manufacturing cost and time analysis; quality control.
- 475 Manufacturing Enterprise Systems -- Automation and Product Realization 3** (2-3) Course Prerequisite: ME 313; ME 316. Manufacturing automation and product realization; role of information technology and electronic data in manufacturing enterprise systems; product life-cycle management (PLM) and related tools and processes; sustainable and green manufacturing.
- 481 Control Systems 3** Course Prerequisite: ME 348. Analysis and design of feedback control systems. Cooperative: Open to UI degree-seeking students.
- 483 Topics in Mechanical Engineering V 1** (0-4) to 4 (0-16) May be repeated for credit; cumulative maximum 7 hours. Contemporary topics in materials engineering.
- 495 Internship in Mechanical Industry V 3-6** May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Certified major in Mechanical Engineering, Materials Science Engineering, Civil Engineering, or Electrical Engineering. 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. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Continuum Mechanics 3** Unified presentation of principles common to all branches of solid and fluid mechanics; viscous fluids, elasticity, viscoelasticity, and plasticity.
- 502 Sustainability Assessment for Engineering Design 3** Sustainability assessment, including environmental, societal, and economic assessment, in design and planning for entire product life cycle.
- 503 Systems Design Approaches for Sustainability 3** Sustainability in systems design methodologies; systems modeling and decision-making for sustainability; multidisciplinary design optimization; research topics.
- 509 MEMS Engineering 3** (2-3) Introduction to the design, fabrication and application of microelectromechanical systems. (Crosslisted course offered as ME 509, MSE 509).
- 513 Crystal Plasticity 3** Dislocation theory; slip; climb; mechanical properties of polycrystalline materials and application to important deformation processes. (Crosslisted course offered as MSE 513, ME 513, MATSE 513). Cooperative: Open to UI degree-seeking students.
- 514 Thermodynamics of Solids 3** Thermodynamic properties of solid solutions; models for substitutional and interstitial solutions; configurational and non-configurational contributions; calculation of phase diagrams. (Crosslisted course offered as MSE 514, ME 514).
- 515 Advanced Heat Transfer 3** Derivation of the energy conservation equation; laminar and turbulent forced convection heat transfer with internal and external flow; free convection. Cooperative: Open to UI degree-seeking students.
- 516 Conduction and Radiation Heat Transfer 3** Principles of conduction and radiation heat transfer with focus on solving conduction and radiation problems of engineering interest.
- 517 Thin Films 3** Materials science aspect of thin films, including growth, characterization, and properties for electrical, mechanical, corrosion, and optical behavior. (Crosslisted course offered as MSE 517, ME 517).
- 520 Multiscale Modeling in Thermomechanics of Materials 3** Multiscale problems in thermomechanics of materials; practical and computational aspects of homogenization, granular materials, dislocation plasticity and atomistic methods. (Crosslisted course offered as ME 520, MSE 520).
- 521 Fundamentals of Fluids I 3** Governing equations of fluid mechanics accompanied by applications of Navier-Stokes equation to simple flow situations, boundary layer analysis. Cooperative: Open to UI degree-seeking students.
- 526 Statistical Thermodynamics 3** Microscopic development of equilibrium; classical and quantum particle statistics; statistical description of real and ideal gases, solids, and liquids. Cooperative: Open to UI degree-seeking students.
- 527 Macroscopic Thermodynamics 3** Advanced thermodynamics from macroscopic viewpoint; basic postulates, equilibrium, stability, property relations; application to thermal-fluid and solid mechanics; irreversible thermodynamics. Cooperative: Open to UI degree-seeking students.
- 530 Elasticity 3** Theory of kinematics of solid deformable bodies; conservation laws applied to an elastic continuum; generalized linear stress-strain behavior with applications. (Crosslisted course offered as ME 530, MSE 530). Cooperative: Open to UI degree-seeking students.
- 531 Theory of Plasticity 3** The fundamentals of the theory of plasticity; the classical theory of plasticity; the classical theory and modern continuum theories of large elasto-plastic deformations. (Crosslisted course offered as ME 531, MSE 531).
- 532 Finite Elements 3** Theory of finite elements; applications to general engineering systems considered as assemblages of discrete elements. (Crosslisted course offered as CE 532, ME 532). Cooperative: Open to UI degree-seeking students.
- 534 Mechanics of Composite Materials 3** Analysis of micromechanical and macromechanical behavior of composite materials with emphasis on fiber-reinforced composite; prediction of properties; stiffness and strength theories; laminated beams and plates; dynamic behavior; environmental effects. (Crosslisted course offered as ME 534, MSE 534). Cooperative: Open to UI degree-seeking students.
- 537 Fracture Mechanics and Mechanisms 3** Fracture mechanics and mechanisms and the microstructural origins of toughness in metals, polymers and composites. (Crosslisted course offered as MSE 537, ME 537).

- 540 Advanced Dynamics of Physical Systems** 3 Newtonian dynamics, rotating coordinate systems; Lagrangian and Hamiltonian mechanics; gyroscopic mechanics, other applications. Cooperative: Open to UI degree-seeking students.
- 556 Numerical Modeling in Fluid Mechanics** 3 Fundamental concepts in development of numerical models for fluid flow with applications to steady and unsteady flows. Cooperative: Open to UI degree-seeking students.
- 565 Nuclear Reactor Engineering** 3 Reactor power distribution; thermal and exposure limits; critical heat flux and pressure design; neutronic/thermal hydraulic relationships; transient/accident analysis.
- 574 Foundations of CAD** 3 Topics fundamental to the creation of CAD, engineering visualization, and virtual reality based engineering software. Cooperative: Open to UI degree-seeking students.
- 575 Geometric Modeling** 3 Study of the mathematics behind the creation of complex shapes for CAD using curves, surfaces, and solids.
- 579 Advanced Topics in Mechanical Engineering** V 1-3 May be repeated for credit.
- 581 Control Systems** 3 Analysis and design of feedback control systems. Cooperative: Open to UI degree-seeking students.
- 598 Seminar** 1 May be repeated for credit. Current research interests. S, F grading.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.
- MATERIALS SCIENCE AND ENGINEERING**
- MSE**
- 110 Introduction to Materials Science** 2 Introduction to the science and technology of metals, polymers, ceramics and composites.
- 201 Materials Science** 3 Course Prerequisite: CHEM 106; PHYSICS 201 or concurrent enrollment. Structure of materials, phase equilibrium, phase transformations, and mechanical properties.
- 302 Electronic Materials** 3 Course Prerequisite: CHEM 105; PHYSICS 202 or concurrent enrollment. Structure of materials, electronic structure of solids; thermal, electrical, dielectric, and magnetic properties of materials; semiconductors processing.
- 316 Thermodynamics and Kinetics of Materials** 3 Course Prerequisite: MSE 201. Laws of thermodynamics, solution thermodynamics, free energy composition diagrams, mechanisms and kinetics of diffusion; solidification behavior, interfaces and phase boundaries, phase transformations in solids, oxidation, and corrosion.
- 320 [M] Materials Structure - Properties Lab** 3 (1-6) Course Prerequisite: MSE 201 or concurrent enrollment. Principles and techniques of optical metallography and other laboratory methods used in modern materials science and engineering.
- 321 Materials Characterization** 3 Course Prerequisite: MSE 201. Properties of x-rays, scattering and diffraction; crystal structures; x-ray diffraction methods, transmission electron microscopy and scanning electron microscopy.
- 323 Materials Characterization Lab** 2 (1-3) Course Prerequisite: MSE 321 or concurrent enrollment. Laboratory exercises on materials characterization: x-ray, TEM, SEM.
- 401 Metallic Materials** 3 Course Prerequisite: MSE 201. Major alloy systems and manufacturing processes; materials selection.
- 402 Polymeric Materials** 3 Course Prerequisite: MSE 201. Structural characterization, syntheses, and reactions of polymeric materials; relationships between structure and properties, viscoelasticity, deformation, and physical behavior of polymers. Cooperative: Open to UI degree-seeking students.
- 403 Ceramic Materials** 3 Course Prerequisite: MSE 201. Processing, characteristics, microstructure, and properties of ceramic materials.
- 404 Engineering Composites** 3 Course Prerequisite: MSE 201. Basic concept in design and specifications of engineering composites.
- 406 Biomaterials** 3 Course Prerequisite: MSE 201. Overview of the different types of materials used in biomedical applications such as implants and medical devices. Credit not granted for both MSE 406 and MSE 506. (Crosslisted course offered as MSE 506 and MATSE 506.)
- 413 Mechanics of Solids** 3 Course Prerequisite: CE 215; MSE 201. Elasticity, elastic stress distributions; plastic deformation of single and polycrystals; introduction to dislocation theory and its applications; creep, fracture, fatigue. (Crosslisted course offered as MSE 413, ME 413).
- 425 [M] Senior Thesis I** 3 (0-9) Course Prerequisite: MSE 320; MSE 323, senior standing; certified major in Materials Science Engineering. Research in materials science and engineering.
- 426 [M] Senior Thesis II** 3 (0-9) Course Prerequisite: MSE 320; MSE 323, senior standing; certified major in Materials Science Engineering. Research in materials science and engineering.
- 440 Materials: The Foundations of Society and Technology** 3 Course Prerequisite: Junior standing. History of materials; role that materials have played in human development; modern societal, technological, and economic impact of materials.
- 483 Topics in Materials Engineering** V 1 (0-4) to 4 (0-16) May be repeated for credit; cumulative maximum 7 hours. Contemporary topics in materials engineering.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 503 Advanced Topics in Materials Engineering** V 1-3 May be repeated for credit; cumulative maximum 6 hours.
- 505 Advanced Materials Science** 3 Broad baseline in materials science including relationships between structure and properties. (Crosslisted course offered as MSE 505, MATSE 505).
- 506 Biomaterials** 3 Overview of the different types of materials used in biomedical applications such as implants and medical devices. Credit not granted for both MSE 406 and MSE 506. (Crosslisted course offered as MSE 506 and MATSE 506.)
- 508 Polymer Nanocomposites and Functionalities** 3 Structures, properties, fabrication and applications of nano-scale material and their polymer nanocomposites; functionalities including flame retardant, electrically, thermal and damping properties.
- 509 MEMS Engineering** 3 (2-3) Introduction to the design, fabrication and application of microelectromechanical systems. (Crosslisted course offered as ME 509, MSE 509).
- 513 Crystal Plasticity** 3 Dislocation theory; slip; climb; mechanical properties of polycrystalline materials and application to important deformation processes. (Crosslisted course offered as MSE 513, ME 513, MATSE 513). Cooperative: Open to UI degree-seeking students.

- 514 Thermodynamics of Solids 3** Thermodynamic properties of solid solutions; models for substitutional and interstitial solutions; configurational and non-configurational contributions; calculation of phase diagrams. (Crosslisted course offered as MSE 514, ME 514).
- 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** Thermodynamics, nucleation, interface motion, mechanisms and kinetics of chemical reactions between solid metals and their environment. (Crosslisted course offered as MSE 516, MATSE 516).
- 517 Thin Films 3** Materials science aspect of thin films, including growth, characterization, and properties for electrical, mechanical, corrosion, and optical behavior. (Crosslisted course offered as MSE 517, ME 517).
- 520 Multiscale Modeling in Thermomechanics of Materials 3** Multiscale problems in thermomechanics of materials; practical and computational aspects of homogenization, granular materials, dislocation plasticity and atomistic methods. (Crosslisted course offered as ME 520, MSE 520).
- 521 Statistics of Microstructures 3** Stereology, orientation and spatial distributions, percolation, measurement techniques and application to modeling of microstructures. (Crosslisted course offered as MSE 521, MATSE 521). Recommended preparation: MATH 540.
- 523 Ceramics Processing 3** Fundamentals of ceramic processing science for thin films and bulk ceramics.
- 530 Elasticity 3** Theory of kinematics of solid deformable bodies; conservation laws applied to an elastic continuum; generalized linear stress-strain behavior with applications. (Crosslisted course offered as ME 530, MSE 530). Cooperative: Open to UI degree-seeking students.
- 531 Theory of Plasticity 3** The fundamentals of the theory of plasticity; the classical theory of plasticity; the classical theory and modern continuum theories of large elasto-plastic deformations. (Crosslisted course offered as ME 531, MSE 531).
- 534 Mechanics of Composite Materials 3** Analysis of micromechanical and macro-mechanical behavior of composite materials with emphasis on fiber-reinforced composite; prediction of properties; stiffness and strength theories; laminated beams and plates; dynamic behavior; environmental effects. (Crosslisted course offered as ME 534, MSE 534). Cooperative: Open to UI degree-seeking students.
- 537 Fracture Mechanics and Mechanisms 3** Fracture mechanics and mechanisms and the microstructural origins of toughness in metals, polymers and composites. (Crosslisted course offered as MSE 537, ME 537).
- 543 Polymer Materials and Engineering 3** Preparation and structure-property relationship of polymer materials with emphasis on fracture mechanics and toughening. (Crosslisted course offered as CE 593, MSE 543). Required preparation must include MSE 402. Required preparation must include MSE 402.
- 544 Natural Fibers 3** Structural aspects and properties of natural fibers including anatomy, ultrastructure, and chemistry. (Crosslisted course offered as CE 594, MSE 544).
- 545 Polymer and Composite Processing 3** Polymer and composite processing from fundamental principles to practical applications. (Crosslisted course offered as CE 595, MSE 545).
- 546 Engineered Wood Composites 3** Theory and practice of wood composite materials, manufacture and development. (Crosslisted course offered as CE 596, MSE 546).
- 547 Polymers and Surfaces for Adhesion 3** Physical chemistry of polymers and surfaces needed to understand interface morphology, adhesion mechanisms and bond performance. (Crosslisted course offered as CE 597, MSE 547). Required preparation must include MSE 402, or 404. Required preparation must include MSE 402 or 404.
- 548 Natural Fiber Polymer Composites 3** Fundamentals, development and application of composite materials produced from polymers reinforced with natural fibers and wood as major components. (Crosslisted course offered as CE 598, MSE 548).
- 549 Nondestructive Testing of Structural Materials 3** Principles of nondestructive testing applied to wood-based materials, steel, concrete, and masonry. (Crosslisted course offered as CE 536, MSE 549).
- 592 Transmission Electron Microscopy 3** Development of the principles and applications of electron optics in microscopy.
- 600 Special Projects or Independent Study V 1-18** May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V 1-18** May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

Department of Military Science

rotc.wsu.edu
Avery 405
509-335-2591

Professor and Department Chair, Lieutenant Colonel T. Plotner.

The Department of Military Science is the formal designation of the Army ROTC program at Washington State University. It is designed to educate, train, and motivate qualified students to serve as commissioned officers in the U.S. Army upon graduation. The military science department offers academic, professional, and technical education and training that complements the educational programs and goals at WSU.

The military science curriculum comprises a two-year basic course (first-year and sophomore years) and a two-year advanced course (junior and senior years). The basic course is open to all WSU students. Enrollment in the advanced course is offered only with the approval of the department chair.

At WSU, military science courses emphasize training in a practical environment. Students learn leadership skills through classroom instruction, on-campus leadership labs, and summer training opportunities. The goal of this training is to develop leadership goals applicable in both military and civilian occupations. During the summer between the junior and senior year of academic study, enrolled cadets must attend the Leadership Development and Assessment Course at Fort Lewis, WA. This is a 28 day leadership practicum administered by Officers and NCOs of the U.S. Army that develops and assesses the leadership capabilities of the cadets.

Competitive, merit-based scholarships are available to deserving individuals. These scholarships pay either Tuition and associated fees, or Room and Board. Scholarship winners also receive \$1200/year for books (\$600 each semester). Basic course cadets on an ROTC scholarship and advanced course cadets receive a monthly tiered stipend ranging from \$300/month for first-year students to \$500/month for seniors. High school students may apply for a four-year Army ROTC scholarship in the fall of their senior year (high school) if they are interested in pursuing a military career. Students at WSU may apply for two- or three-year scholarships if they have a similar interest. Scholarships are also available for those students interested in pursuing commissioned service in the National Guard or Army Reserve, without a full-time commitment to active duty upon graduation.

Upon successful completion of the advanced course and graduation from WSU, cadets are commissioned as U.S. Army officers and serve in either the active Army, the Army Reserve, or the Washington National Guard.

Minors

Military Science

A Military Science minor requires 18 hours of approved Military Science courses, with at least 9

hours of 300-400-level credits taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Students must take the following courses to complete this minor: MIL SCI 101, 102, 201, 202, 301, 302, 401, and 402.

Description of Courses

MILITARY SCIENCE

MIL SCI

- 101 The United States Army** 1 Role of the Army in contemporary society.
- 102 National and International Role of the Army** 1 Role of the Army in today's international affairs.
- 110 Cougar Rangers I** 1 Military adventure training, pioneering activities, military skills and small unit tactics. Field trip required.
- 111 Cougar Rangers II** 1 Military adventure training, pioneering activities, military skills and small unit tactics. Field trip required.
- 201 Introduction to Leadership** 2 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.
- 301 Applied Leadership and Management** 3 Course Prerequisite: By instructor permission. Troop leadership procedures emphasizing instruction in military professionalism and ethics; practical aspects of tactics and leadership practicum.
- 302 Small Unit Tactics and Military Leadership** 3 Course Prerequisite: By instructor permission. Preparation, delivery, and critique of practical oral presentations; leadership of small units; offensive and defensive operations.
- 320 Leadership Development Assessment** 6 (0-18) Course Prerequisite: MIL SCI 301; MIL SCI 302. By interview only. Intensive study and internship in military tactics, command and leadership; held at Fort Lewis, WA. S, F grading.
- 396 Leader Internship** 6 Course Prerequisite: Junior standing. By interview only. Fully funded non-committal leader internship and Army orientation; provides leader training and assessment. May be taken as MGTOP 498, POL S 497, PE ACTIV 201, or ED AD 499 with permission. S, F grading.
- 401 Advanced Military Leadership** 3 Course Prerequisite: By instructor permission. Historical and legal basis of military justice; small unit management; military professionalism and ethics.
- 402 Advanced Military Management and Practicum** 3 Course Prerequisite: By instructor permission. 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. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

School of Molecular Biosciences

molecular.biosciences.wsu.edu
Biotechnology-Life Sciences 102
509-335-1276

Director and Professor, J. Nilson; Senior Associate Director and Professor, M. Konkel; Associate Director of Graduate Programs and Professor, M. Hunzicker-Dunn; Associate Director of Undergraduate Programs and Associate Professor, W. Davis; Associate Director of Alumni Relations and Clinical Associate Professor, M. Sanchez-Lanier; Assistant Director DDP and Clinical Associate Professor, N. McCabe; Assistant Director of Undergraduate Laboratories and Clinical Associate Professor, C. Helmick; Regents Professors, M. Griswold, M. Smerdon; Professors, J. Alderete, M. Black, R. Brosemer, T. Hassold, P. Hunt, , M. Kahn, K. H. Kim, N. Magnuson, S. Muralidharan, R. Reeves, L. Xun; Associate Professors, L. Gloss, C. Haseltine , C. Her, K. Roberts (Spokane), E. Shelden, S. Sylvester (Vancouver), J. Watts, J. Wyrick; Assistant Professors, W. An, W. Chai (Spokane), C. Cooper (Vancouver), , M. Hess (Tri-Cities), J. Oatley, S. Wang, , P. Ye; Additional Graduate Faculty, H. Aguilar-Carreno, K. Brayton, W. Brown, J. Browse, D. Call, J. Harding, C. H. Kang, B. Lange, A. Lau, A. Nicola, J. Pru, B. Rodgers, T. Spencer, L. Thomashow, G. Thorgaard, V. Vadyvaloo; Clinical Associate Professor, P. Mixer; Clinical Assistant Professors, T. Farmerie, M. Rolfmeier, J. Stanton.

Molecular biosciences can be viewed as a dynamic continuum in which approaches derived from biology, chemistry, and physics are utilized to address the fundamental mechanisms of living things. The School of Molecular Biosciences (SMB) offers undergraduate majors in biochemistry, genetics and cell biology, and microbiology. The School of Molecular Biosciences also offers undergraduate minors in biochemistry, genetics and cell biology, microbiology, molecular biology, and pre-genetics counseling. Requirements for these majors and minors are detailed below.

At the graduate level, the school offers programs leading to the degrees of Master of Science in Molecular Biosciences and Doctor of Philosophy (Molecular Biosciences). The School also offers a Professional Science Masters degree in Molecular Biosciences that can be earned either on the Pullman Campus or through WSU Online.

At the undergraduate level, we expect that our graduating students will possess: 1. an understanding of the major concepts in the molecular biosciences and an awareness of how these concepts are integrated from the molecular through the organismal level; 2) the necessary critical thinking and quantitative reasoning skills, and the ability to apply those skills, to identify and solve biological problems at the cellular, molecular, and structural levels; 3) the skills necessary to

effectively communicate, both orally and in writing, key scientific findings in the molecular biosciences to lay and professional audiences; 4) the scientific literacy necessary to become an informed citizen of a diverse, ever changing, global society, and to engage in a lifetime of scientific learning; and 5) the relevant ethics education and exposure necessary to encourage the highest levels of professionalism and humanism..

STUDENTS PURSUING PRE-MEDICINE, PRE-DENTAL, PRE-PHARMACY, OR PRE-VETERINARY MEDICINE

The majors in the School of Molecular Biosciences provide a perfect home for the student who is interested in pursuing professional education after graduating from WSU. Our degrees have been designed to prepare students to succeed in these professional programs, as well as on the latest versions of the standardized examinations for admission to professional programs. Pre-professional students majoring in SMB are co-advised by a faculty member in the School and a professional advisor from the University College Prehealth Advising Office.

Students from all three SMB undergraduate majors have been successful in gaining admission to professional programs in medicine and dentistry. The Biochemistry degree is a perfect match for Pre-pharmacy students, and highly motivated students should consider our 7 year Fast track B.S. Biochemistry-Pharm.D. program offered in cooperation with the WSU School of Pharmacy. Pre-veterinary medicine students can elect to pursue any SMB major; for highly motivated students the School offers a 7 year Fast track B.S. Microbiology to DVM program offered in cooperation with the WSU College of Veterinary Medicine. Students interested in either of these fast track programs should contact the School for more information.

BIOCHEMISTRY

Biochemistry is an interdisciplinary science that involves the application of methods and theories of chemistry to the study of biological phenomena. An undergraduate major in biochemistry prepares you for a variety of careers in industry, education, public service, and the health professions, or for graduate study and research in biochemistry, biophysics, molecular biology, and many related fields. Students have training opportunities in a wide range of research areas including protein biochemistry, membrane structure and function, molecular biology of gene regulation in animals, plants, and microorganisms, enzymatic reaction mechanisms, signal transduction, DNA repair, reproductive biology, DNA-protein interactions, plant and natural product biochemistry, and structural biology including NMR spectroscopy and x-ray crystallography.

The program offers two curricular options leading to the Bachelor of Science in Biochemistry. The biochemistry/biophysics option provides increased emphasis on chemistry, physics, mathematics, and physical biochemistry, and yields a minor in chemistry. The biochemistry/molecular biology option provides increased emphasis on molecular and cell biology.

GENETICS AND CELL BIOLOGY

Genetics and cell biology are interdisciplinary sciences that are fundamental to all fields of modern biology. The program affords students the

opportunity to study with scientists who represent a wide range of research interests in plant, animal, and microbial genetics and cell biology. Undergraduates who major in genetics and cell biology will be well prepared to work as high-level technicians in the biotechnology industry or in university and government laboratories. An undergraduate degree also prepares students for entry into graduate school programs leading to the Master's and PhD degrees in a variety of areas in agriculture, basic science, and medically-related fields such as genetic counseling or public health.

MICROBIOLOGY

Microbiology is both a basic and an applied science that studies microorganisms and their activities. It is concerned with their form, structure, reproduction, physiology, and identification. It includes the study of their distribution in nature, their relationship to each other and to other living things, their beneficial and detrimental effects on human beings, and the physical and chemical changes they make in their environment. Employment opportunities in industrial, government, hospital, and private laboratories and agencies are excellent for qualified graduates. Areas in which the unit 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.

The Microbiology degree program offers options in molecular biology and medical technology, leading to the Bachelor of Science degree in Microbiology. A one-year internship in an accredited school of medical technology is required after graduation for those interested in becoming certified medical technologists.

CERTIFICATION REQUIREMENTS:

A student must meet the following three requirements to be eligible to certify as a SMB major in biochemistry, genetics and cell biology, and microbiology:

- Complete BIOLOGY 106, BIOLOGY107, CHEM 105 and CHEM 106, or transfer equivalents, with a minimum grade of C.
- Earn a minimum cumulative gpa of at least 2.50
- Earn a minimum of 24 semester hours.

Students must maintain a minimum cumulative gpa of 2.50 for all WSU courses to remain certified in a SMB degree program. A certified major who falls below the minimum requirements will be decertified according to Academic Regulation 56.

GRADUATION REQUIREMENTS:

A grade of C or better is required in all MBIOS courses taken to meet graduation requirements. None of these courses may be taken pass/fail.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

BIOCHEMISTRY - BIOPHYSICS OPTION (120 HOURS)

A grade of C or better is required in all MBIOS courses taken to meet graduation requirements.

None of these courses may be taken pass/fail.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 106 (accelerated)	3
MATH 108 (accelerated)	2

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 or 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
Communication [COMM] or Written Communication [WRTG]	3
MATH 172	4
MBIOS 301	4

<i>Second Term</i>	<i>Hours</i>
CHEM 348	4
MBIOS 303	4
PHYSICS 201	4
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
Humanities [HUM]	3
PHYSICS 202	4
MBIOS 305	3

<i>Second Term</i>	<i>Hours</i>
CHEM 347	3
Diversity [DIVR]	3
MBIOS 304	3
MBIOS 401	3
MBIOS 465	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
CHEM 220	2
CHEM 222	2
MBIOS 413 or 513	3
MBIOS 466 or PHYSICS 466	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Lab Elective ¹	3
MBIOS 414	3
MBIOS 454 [M]	3
MBIOS 494 [M][CAPS]	3
Electives	6

¹ Lab Elective: minimum of 3 credits selected from MBIOS 402, 411, 430, 498, 499; BIOLOGY 251, 315, 353.

BIOCHEMISTRY - MOLECULAR BIOLOGY OPTION (120 HOURS)

A grade of C or better is required in all MBIOS courses taken to meet graduation requirements. None of these courses may be taken pass/fail.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 106 (accelerated)	3
MATH 108 (accelerated)	2

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 or 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345	4
Communication [COMM] or Written Communication [WRTG]	3
MBIOS 301	4
PHYSICS 101 or 201	4

<i>Second Term</i>	<i>Hours</i>
CHEM 348	4
MBIOS 303	4
PHYSICS 102 or 202	4
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
Humanities [HUM]	3
MBIOS 305	3
STAT 212 or 412	3 or 4
Electives	3

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
MBIOS 304 [M]	3
MBIOS 401	3
MBIOS 465	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Lab Elective ¹	3 or 4
MBIOS 404	3
MBIOS 413 or 513	3
Electives	5

<i>Second Term</i>	<i>Hours</i>
MBIOS 414	3
MBIOS 454 [M]	3
MBIOS 494 [M][CAPS]	3
Lecture Elective ²	3
Electives	3

¹ Lab Elective: minimum of 3 credits from MBIOS 402, 411, 430, 498, 499; BIOLOGY 251, 315, 353.

² Lecture elective: select one from MBIOS 410, 423, 426, 440, 442, 450, 466, 478; PHYSICS 466.

GENETICS AND CELL BIOLOGY – MOLECULAR BIOLOGY OPTION (120 HOURS)

A grade of C or better is required in all MBIOS courses taken to meet graduation requirements. None of these courses may be taken pass/fail.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 106 (accelerated)	3
MATH 108 (accelerated)	2

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 or 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345 ¹	4
Humanities [HUM]	3
MBIOS 301	4
PHYSICS 101 or 201	4

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
MBIOS 303	4
PHYSICS 102 or 202	4
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
MBIOS 304	3
MBioS 305	3
STAT 212 or 412	3 or 4
Electives	3

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
Lecture Elective ²	3
MBIOS 401	3
Electives	4

Fourth Year

<i>First Term</i>	<i>Hours</i>
Lab Elective ³	3 or 4
MBIOS 404	3
MBIOS 423	3
MBIOS 478	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
MBIOS 402 [M]	3
MBIOS 442 or BIOLOGY 476	3
MBIOS 494 [M] [CAPS]	3
Electives	8

¹ CHEM 345 and 348 recommended for professional or graduate degrees.

² Lecture elective: select one from BIOLOGY 476, 519; MBIOS 410, 413, 426, 440, 442, 503.

³ Lab Elective: minimum of 3 credits selected from MBIOS 411, 430, 454, 498, 499; BIOLOGY 251, 315, 321, 353, 372, 420.

MICROBIOLOGY – MEDICAL TECHNOLOGY OPTION (120 HOURS)

A grade of C or better is required in all MBIOS courses taken to meet graduation requirements.

None of these courses may be taken pass/fail.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 106 (accelerated)	3
MATH 108 (accelerated)	2

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 or 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345 ¹	4
Creative & Professional Arts [ARTS]	3
Humanities [HUM]	3
MBIOS 301	4

<i>Second Term</i>	<i>Hours</i>
MBIOS 303	4
MBIOS 305	3
Social Sciences [SSCI]	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
MBIOS 304	3
PHYSICS 101	4
STAT 212 or 412	3 or 4
Electives	3

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
MBIOS 410	3
MBIOS 450	3
PHYSICS 102	4
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 418	4
MBIOS 404	3
MBIOS 430 [M]	3
MBIOS 440	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
MBIOS 411 [M]	3
MBIOS 442	3
MBIOS 494 [M] [CAPS]	3
Electives	5

¹ CHEM 345 and 348 recommended for professional or graduate degrees.

MICROBIOLOGY – MOLECULAR BIOLOGY OPTION (120 HOURS)

A grade of C or better is required in all MBIOS courses taken to meet graduation requirements. None of these courses may be taken pass/fail.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 106 (accelerated)	3
MATH 108 (accelerated)	2

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 or 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345 ¹	4
Creative & Professional Arts [ARTS]	3
Humanities [HUM]	3
MBIOS 301	4

<i>Second Term</i>	<i>Hours</i>
MBIOS 303	4
MBIOS 305	3
Social Sciences [SSCI]	3
Electives	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
MBIOS 304	3
PHYSICS 101	4
STAT 212 or 412	3 or 4
Electives	2

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
MBIOS 410	3
MBIOS 450	3
PHYSICS 102	4
Electives	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Lecture Elective ²	3
MBIOS 404	3
MBIOS 430 or 411 [M]	3
MBIOS 440	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Lab Elective ³	3 or 4
MBIOS 442	3
MBIOS 494 [M] [CAPS]	3
Electives	6

¹ CHEM 345 and 348 recommended for professional or graduate degrees.

² Lecture elective: select one from MBIOS 342, 401, 413, 426, 446; BIOLOGY 418, ENTOM 343, FS 416.

³ Lab Elective: minimum of 3 credits selected from MBIOS 402, 411 or 430, 454, 498, 499; BIOLOGY 251, 315, 353; ENTOM 344; FS 417.

Minors

Biochemistry

A minor in biochemistry requires 17 hours including CHEM 348; MBIOS 303, 304, 413; MBIOS 414, 465, or CHEM 331. A grade of C or better is required in all courses used in the minor. None of these courses may be taken pass/fail. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Genetics and Cell Biology

A minor in genetics and cell biology requires 16 hours under the genetics and cell biology degree program at the 300-400-level, including MBioS 301, 401, and 423. Additional credits may be selected from BIOLOGY 321, MBIOS 402, 404, 426, 478, PHIL 365. 9 hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. A grade of C or better is required in all course work for the minor.

Microbiology

A minor in microbiology requires a minimum of 16 credit hours including MBIOS 305, 304 or 306, and the remaining selected from: MBIOS 342, 404, 410, 411, 426, 430, 440, 442, 446, 450, 548, FS 416. 9 hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. A grade of C or better is required in all course work for the minor.

Molecular Biology

A minor in molecular biology requires 20 hours including the following courses: MBIOS 301, 305, 303, 304; MBIOS 401 or 450; MBIOS 404, 413, or 440. A grade of C or better is required in all course work for the minor. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. A student whose major is in the School of Molecular Biosciences cannot be granted a minor in molecular biology.

Pre-Genetic Counseling

A minor in pre-genetic counseling requires 19 - 23 hours including MBIOS 301, 423, PHIL 365, PSYCH 321, 440 or 444, 445, one of MATH 360, PSYCH 311, STAT 212, or 412. A grade of C or better is required in all course work for the minor. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Certificates

Molecular Biosciences

The Certificate in Molecular Biosciences requires a minimum of 18 hours. Students are expected to have already completed courses equivalent to one year of first-year chemistry for science majors; one

year of first-year biology for science majors; and one semester of organic chemistry; all through an accredited institution of higher education before working towards this certificate. The 15 hour core is: MBIOS 101 or 305 and 306, or 304 and 305; MBIOS 301; MBIOS 303; and MBIOS 320. 3 hours of electives are selected from: ANTH 468, BIOLOGY 140, BIOLOGY 330, CRM J 320, MBIOS 342, PHIL 103, or 365. A grade of C or better must be earned in all classes that apply towards this certificate. Most of the courses required for this certificate have prerequisites. Please consult the catalog to assure that these prerequisites have been met prior to registering for courses.

Description of Courses

MOLECULAR BIOSCIENCES

MBIOS

101 [BSCI] Introductory Microbiology 4 (3-3) Course Prerequisite: Not intended for majors in the School of Molecular Biosciences. Microbiology for the informed citizen as it impacts humans and their environment. Not for students needing BIOLOGY 106 and 107.

210 Your Future in Life Sciences 2 Exploration of career options in biological sciences with faculty and outside speakers; guide to preparing resume and career plans. (Crosslisted course offered as SCIENCE 210, BIOLOGY 210, MBIOS 210). S, F grading.

301 General Genetics 4 Course Prerequisite: BIOLOGY 106 or 120; BIOLOGY 107; CHEM 101 or 105; CHEM 102 or 106. Principles of modern and classical genetics. (Crosslisted course offered as MBIOS 301, BIOLOGY 301).

303 Introductory Biochemistry 4 Course Prerequisite: CHEM 102 or 345. Modern biochemistry for undergraduates in the biological sciences. Cooperative: Open to UI degree-seeking students.

304 Microbiology and Molecular Biology Laboratory 3 (1-6) Course Prerequisite: MBIOS 303 or concurrent enrollment, or MBIOS 305 or concurrent enrollment. Basic microbiology and molecular biology techniques.

305 General Microbiology 3 Course Prerequisite: BIOLOGY 107; CHEM 102 or 345. Structure, function, nutrition, physiology, and genetics of microbes and their application to immunology, pathology, microbial diversity, and environmental microbiology. Recommended preparation: MBIOS 303.

306 General Microbiology Laboratory 2 (0-6) Course Prerequisite: MBIOS 305 or concurrent enrollment. Laboratory for MBIOS 305.

320 [BSCI] DNA and Society 3 The role of DNA in natural processes and diseases; impact of biotechnology on health care, agriculture, industry, and our lives. Recommended preparation: One college-level course in biology highly recommended.

342 Microbial Ecology 3 Course Prerequisite: BIOLOGY 106 or 120; CHEM 102 or concurrent enrollment, or CHEM 345 or concurrent enrollment. Discussion of microorganism behavior in nature and microbial activities influence on ecological balance.

360 [M] Cell and Molecular Laboratory 2 (0-6) Course Prerequisite: MBIOS 301; MBIOS 303 or concurrent enrollment. Laboratory methods in cell biology, genetics and molecular biology.

401 Cell Biology 3 Course Prerequisite: MBIOS 301; MBIOS 303. Cellular structure and function; membrane biochemistry and transport; cell-cell communication; regulation of cell cycle and apoptosis; cell signaling; cancer biology. Credit not granted for both MBIOS 401 and MBIOS 501. Recommended preparation: Introductory genetics and biochemistry coursework; concurrent enrollment with MBIOS 529 highly recommended.

402 [M] Genetics Laboratory 3 (1-6) Course Prerequisite: MBIOS 301; MBIOS 304. Basic principles of modern and classical genetics utilizing several species.

404 Molecular Biology 3 Course Prerequisite: MBIOS 301; MBIOS 303; MBIOS 305 or concurrent enrollment. Introduction of prokaryotic and eukaryotic genome organization and gene expression, modern molecular techniques, experimental approaches, genome and gene function and analyses.

405 Cell Biology of Disease 3 Course Prerequisite: MBIOS 301; MBIOS 303. Discussion of human diseases characterized by cell biological defects, using popular press and research articles as a source of information. Credit not granted for both MBIOS 405 and 505.

410 Medical Microbiology 3 Course Prerequisite: MBIOS 305; MBIOS 404 or concurrent enrollment. Microbial pathogens and their relationship to disease.

411 [M] Diagnostic Medical Bacteriology 3 (1-6) Course Prerequisite: MBIOS 304; MBIOS 410 or concurrent enrollment. Techniques and tests for the identification of bacteria pathogenic for humans.

413 General Biochemistry 3 Course Prerequisite: MBIOS 303; junior standing. Structure and function of proteins, nucleic acids and biological membranes; principles of enzymology; biochemical methodology. Credit not granted for both MBIOS 413 and MBIOS 513. Recommended preparation: Introductory biochemistry coursework.

414 General Biochemistry 3 Course Prerequisite: MBIOS 413. Metabolism of carbohydrates, proteins, fats, bioenergetics; photosynthesis; control of metabolic processes. Credit not granted for both MBIOS 414 and MBIOS 514.

423 Human Genetics 3 Course Prerequisite: MBIOS 301. Exploration of individual and population genetics leading to critical discussion of current social, medical, and scientific issues.

- 426 Microbial Genetics** 3 Course Prerequisite: MBIOS 301; MBIOS 303. Genetics of bacteria, bacteriophages and plasmids; regulation of gene expression; genetic manipulation of microorganisms.
- 430 [M] Combined Immunology and Virology Laboratory** 3 (1-6) Course Prerequisite: MBIOS 304; MBIOS 305; concurrent enrollment MBIOS 440 or 442. Fundamental principles in immunology including the cultivation and characterization of viruses using laboratory techniques.
- 440 Immunology** 3 Course Prerequisite: MBIOS 305. Principles of basic immunology. Credit not granted for both MBIOS 440 and MBIOS 540. Recommended preparation: Introductory microbiology coursework; concurrent enrollment with MBIOS 548 highly recommended.
- 442 General Virology** 3 Course Prerequisite: MBIOS 301; MBIOS 303 or concurrent enrollment. The biology of bacterial, animal, and plant viruses. Credit not granted for both MBIOS 442 and MBIOS 542. Recommended preparation: Introductory genetics and biochemistry coursework; concurrent enrollment with MBIOS 548 highly recommended. Cooperative: Open to UI degree-seeking students.
- 446 Epidemiology** 3 Course Prerequisite: Junior standing. Study of diseases in human populations; concepts of etiology, disease rates, susceptibility and risk factors, screening for disease, and prevention. Cooperative: Open to UI degree-seeking students.
- 450 Microbial Physiology** 3 Course Prerequisite: MBIOS 303; MBIOS 304; MBIOS 305. Basic microbial physiology and its relevance to the processes of applied microbiology. Credit not granted for both MBIOS 450 and MBIOS 550. Recommended preparation: Introductory genetics, biochemistry or microbiology coursework.
- 454 [M] Biochemistry Laboratory** 3 (1-6) Course Prerequisite: MBIOS 303; MBIOS 304. Techniques related to the structural and functional analysis of macromolecules including proteins, lipids and carbohydrates.
- 465 Principles of Biophysical Chemistry** 3 Course Prerequisite: MBIOS 303; MATH 140 or 171; PHYSICS 102 or 202. Biochemical reactions and processes, molecular recognition, coupled reactions, enzyme catalysis, analysis of macromolecular structure by electrophoresis, sedimentation, viscosity, and spectroscopy.
- 466 Physical Biochemistry** 3 Course Prerequisite: MBIOS 465; MATH 172 or 182; PHYSICS 202. Techniques for the study of biological structure and function; spectroscopy, magnetic resonance, diffusion, sedimentation, electron microscopy, diffraction and scattering. Credit not granted for both MBIOS 466 and MBIOS 566. Recommended preparation: Introductory biophysical or physical chemistry coursework.
- 478 Bioinformatics** 3 (2-3) Course Prerequisite: MBIOS 301, 303, or CPT S 355. Computer analysis of protein and nucleic acid sequences, functional genomics and proteomics data; modeling biological networks and pathways. Credit not granted for both MBIOS 478 and MBIOS 578. Recommended preparation: Introductory genetics or biochemistry coursework.
- 490 Special Topics in Molecular Biology V** 1-2 May be repeated for credit; cumulative maximum 6 hours. Current topics discussed by experts in the field.
- 494 [CAPS] [M] Senior Project in Molecular Biosciences** 3 Course Prerequisite: Certified major in Biochemistry, Genetics and Cell Biology, or Microbiology; senior standing. Written paper and seminar presentation on laboratory research project.
- 495 Internship Training V** 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By permission only. Experience in work related to specific career interests. S, F grading.
- 498 Directed Research V** 1-4 May be repeated for credit. Introduction to laboratory research; requires written report and oral presentation.
- 499 Special Problems V** 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Cell Biology** 3 Cellular structure and function; membrane biochemistry and transport; cell-cell communication; regulation of cell cycle and apoptosis; cell signaling; cancer biology. Credit not granted for both MBIOS 401 and MBIOS 501. Recommended preparation: Introductory genetics and biochemistry coursework; concurrent enrollment with MBIOS 529 highly recommended.
- 503 Advanced Molecular Biology I** 3 DNA replication and recombination in prokaryotes and eukaryotes; recombinant DNA methods and host/vector systems; genome analysis; transgenic organisms. Recommended preparation: Introductory genetics and biochemistry coursework.
- 504 Advanced Molecular Biology II** 3 Gene expression and regulation in prokaryotes and eukaryotes, including transcription, RNA processing, and translation; chromatin structure; DNA repair. Recommended preparation: Introductory genetics and biochemistry coursework.
- 505 Cell Biology of Disease** 3 Course Prerequisite: MBIOS 301; MBIOS 303. Discussion of human diseases characterized by cell biological defects, using popular press and research articles as a source of information. Credit not granted for both MBIOS 405 and 505.
- 507 Critical Analysis of Scientific Literature** 2 Course Prerequisite: MBIOS 503; MBIOS 513 or concurrent enrollment. Dissection and discussion of current molecular bioscience papers to foster development of critical reading of primary literature.
- 508 Quantitative Approaches in Molecular Biosciences** 2 Quantitative methods and techniques using examples from the current molecular biosciences primary literature. Recommended preparation: One semester of calculus.
- 513 General Biochemistry** 3 Structure and function of proteins, nucleic acids and biological membranes; principles of enzymology; biochemical methodology. Credit not granted for both MBIOS 413 and MBIOS 513. Recommended preparation: Introductory biochemistry coursework.
- 514 General Biochemistry** 3 Course Prerequisite: MBIOS 513. Metabolism of carbohydrates, proteins, fats, bioenergetics; photosynthesis; control of metabolic processes. Credit not granted for both MBIOS 414 and MBIOS 514.
- 528 Molecular and Cellular Reproduction** 3 (2-2) State of the art concepts of the molecular, cellular, and physiological aspects of mammalian reproduction. (Crosslisted course offered as MBIOS 528, ANIM SCI 558). Cooperative: Open to UI degree-seeking students.
- 529 Selected Topics in Cell Biology** 1 Selected topics in cell biology using current literature. Recommended preparation: Concurrent enrollment with MBIOS 501 highly recommended.
- 540 Immunology** 3 Principles of basic immunology. Credit not granted for both MBIOS 440 and MBIOS 540. Recommended preparation: Introductory microbiology coursework; concurrent enrollment with MBIOS 548 highly recommended.
- 541 Research Seminar** 1 May be repeated for credit; cumulative maximum 2 hours. Literature reviews and research reports. S, F grading.
- 542 General Virology** 3 The biology of bacterial, animal, and plant viruses. Credit not granted for both MBIOS 442 and MBIOS 542. Recommended preparation: Introductory genetics and biochemistry coursework; concurrent enrollment with MBIOS 548 highly recommended. Cooperative: Open to UI degree-seeking students.
- 548 Selected Topics in Immunology & Virology** 1 May be repeated for credit. Selected topics in immunology and virology using the current literature. May be repeated for credit; cumulative maximum 2 hours. Recommended preparation: Concurrent enrollment with MBIOS 540 or 542.
- 549 Seminar in Immunology** 1 May be repeated for credit; cumulative maximum 2 hours. Seminar series on advances in immunology. May be repeated for credit; cumulative maximum 2 hours. Recommended preparation: MBIOS 540 or concurrent enrollment.

- 550 Microbial Physiology** 3 Basic microbial physiology and its relevance to the processes of applied microbiology. Credit not granted for both MBIOS 450 and MBIOS 550. Recommended preparation: Introductory genetics, biochemistry or microbiology coursework.
- 561 Biochemical Signaling in Plants, Animals and Microorganisms** 3 Course Prerequisite: MBIOS 513. New research on intra and extra cellular biochemical signaling, including communication in plants and hormone action in animals. (Crosslisted course offered as MBIOS 561, MPS 561).
- 566 Physical Biochemistry** 3 Techniques for the study of biological structure and function; spectroscopy, magnetic resonance, diffusion, sedimentation, electron microscopy, diffraction and scattering. Credit not granted for both MBIOS 466 and MBIOS 566. Recommended preparation: Introductory biophysical or physical chemistry coursework.
- 568 Advanced Topics in Molecular Biosciences** V 1-3 May be repeated for credit. Course Prerequisite: MBIOS 513 or concurrent enrollment. Recent research in selected areas of molecular biosciences.
- 574 Protein Biotechnology** 3 Biotechnology related to the isolation, modification and large scale commercial production, patenting and marketing of useful recombinant proteins and products. (Crosslisted course offered as MBIOS 574, CHE 574). Recommended preparation: MBIOS 513.
- 578 Bioinformatics** 3 (2-3) Computer analysis of protein and nucleic acid sequences, functional genomics and proteomics data; modeling biological networks and pathways. Credit not granted for both MBIOS 478 and MBIOS 578. Recommended preparation: Introductory genetics or biochemistry coursework.
- 579 Molecular Biosciences Seminar** V 1-2 May be repeated for credit; cumulative maximum 10 hours. Required of all graduate students in molecular biosciences. S, F grading.
- 580 Science Information Literacy** 2 Efficient methods to locate and effectively use a wide variety of information resources that will be useful in the work world.
- 583 Professional Skills Seminar** 1 Covers many aspects of professionalism, including professional behavior, professional dress, and professional sensitivity in social settings.
- 584 Medical Genetics** 3 The mechanisms of human heredity and how these mechanisms can influence human health.
- 593 Research Proposal** 2 May be repeated for credit; cumulative maximum 4 hours. Written and oral presentation of an area in molecular biosciences. May be repeated for credit; cumulative maximum 4 hours.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Program in Molecular Plant Sciences

mps.wsu.edu
324 French Administration Bldg.
509-335-1716

Chair, M. M. Neff; Professors, J. A. Browse, G. E. Edwards, J. K. Fellman, K. S. Gill, H. D. Grimes, L. A. Hadwiger, S. H. Hulbert, M. L. Kahn, C. H. Kang, N. R. Knowles, N. G. Lewis, T. W. Okita, B. W. Poovaiah, M. Tegeder, D. von Wettstein; Associate Professors, I. C. Burke, A. Dhingra, A. Kalyanaraman, M. Knoblauch; Assistant Professors, J. W. Busch, A. B. Cousins, A. A. Elling, H. A. Hellmann, H. Kirchhoff, B. M. Lange, A. J. McCubbin, S. Roje, J. J. Wyrick; Adjunct Professors, K.G. Campbell, P. A. Okubara, C. M. Steber, L. S. Thomashow; Associate Scientist, D. R. Gang.

Graduate study leading to the Doctor of Philosophy degree is offered as an interdepartmental curriculum by graduate faculty from the Departments of Crop and Soil Science, Electrical Engineering and Computer Science, Horticulture and Landscape Architecture, Molecular Biosciences, Plant Pathology, Biological Sciences, and the Institute of Biological Chemistry. The objectives of the program are to provide the graduate student with a broad knowledge in molecular plant sciences 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, 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 and biochemistry, one semester each of molecular plant sciences 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 include courses in molecular biology, advanced molecular plant sciences, plant morphology and anatomy, and metabolism. To meet the minimum requirements of core course credit in the Graduate School, elective courses are chosen as approved by the student's advisor 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 molecular plant sciences or to any participating faculty member. Should the latter route be followed, preference for the Program in Molecular Plant Sciences must be indicated and, if possible, the research area of interest identified.

The program offers flexibility for students with varied backgrounds in chemistry, biochemistry, molecular plant sciences, molecular biology, botany, genetics, biology, and the agricultural sciences to pursue advanced training in molecular plant sciences, 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 molecular 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.

Students are typically supported by the program during the first academic year. Financial support during subsequent years will be managed by the administering academic unit. 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 MPS and cooperating departments and programs. In addition, a seminar is held weekly during each semester.

Description of Courses

MOLECULAR PLANT SCIENCES

MPS

515 Seminar in Molecular Plant Sciences

1 May be repeated for credit; cumulative maximum 4 hours. A cross-discipline seminar, including botany, crop and soils sciences, horticulture, plant pathology, and molecular plant sciences. S, F grading.

525 Plant Molecular Genetics 3 Introduction to plant genome organization and gene expression while acquiring knowledge of modern molecular techniques and experimental approaches.

561 Biochemical Signaling in Plants, Animals and Microorganisms 3 Course Prerequisite: MBIOS 513. New research on intra and extra cellular biochemical signaling, including communication in plants and hormone action in animals. (Crosslisted course offered as MBIOS 561, MPS 561).

570 Advanced Topics in Molecular Plant Sciences 1 May be repeated for credit; cumulative maximum 3 hours. Oral presentation of a current research paper. S, F grading.

587 Advanced Topics in Plant Biochemistry 3 Course Prerequisite: MBIOS 514. Same as MBIOS 571.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Dissertation and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

800 Doctoral Research, Dissertation and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

School of Music

libarts.wsu.edu/music/
Kimbrough 260
509-335-3898

Regents Professor and Director of the School of Music, G. Yasinitzky; Professors, G. Berthiaume, D. Jarvis, L. Wiest; Associate Professors, M. Arksey, R. Hare, K. McCarthy, J. Savage, D. Turnbull, J. Wiecek; Assistant Professors, M. Aubin, S. Blasco, R. Boden-Luethi, D. Luethi, D. Pham, K. Savage; Clinical Associate Professors, S. Converse, A. Yasinitzky; Clinical Assistant Professors, C. Dickey, D. Hower; Senior Instructor, S. Scott; Instructors, B. Carter, B. Edwards, D. Hagegan, D. Hungerford, M. Mielke, J. Schneider, D. Snider, F. Snider, B. Ward, C. Wurst.

The School of Music prepares students for careers in music with degrees in performance, composition, and music education.

Vision

Music and its effective presentation are inextricable from the essential qualities of every world culture. WSU's School of Music, long recognized for excellence in performance and pedagogy, will therefore contribute to the advancement of music through widely visible and impactful creative activity, scholarship and research in selected aspects of music. It will sustain such advancement of the field through preparation of the next generation of societal leaders whose involvement in music will range from appreciation of and support for music's value and centrality to its creation in professional performance, composition, and music education.

Mission

The School of Music supports the university's land-grant mission and tradition of service to society, while contributing substantially to the College of Arts and Sciences in creative activity, research and scholarship towards improving Cultural Understanding and International and Intercultural Relations. The mission focuses on:

- Advancing the field of music through internationally/nationally recognized achievements in composition, performance, recording, articles, books, conference presentations, and leadership in music education.
- Providing students university-wide superior musical experiences and preparing future professionals in music for successful careers as performers, composers, music educators, scholars, and leaders in a global society.
- Contributing to the cultural life of the university and region through the regular presentation of inspired and meaningful musical events.

See School of Music website for complete plan of Vision/Mission/Values/ Goals at <http://libarts.wsu.edu/music>.

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 the use of practice facilities. The 100-level performance studies 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 department chair (audition required).

Individual instruction in performance studies is offered at the 300- and 400-level for music majors and, by special permission of the department chair, to advanced non-music majors who meet all requirements for music majors as listed below. All students enrolled in 200-400-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 applied jury examinations at the end of each term. A small tuition charge is assessed per 200-400-level course, not dependent on total credits. 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 300-400-level performance studies unless these criteria are met. In addition, each music major must

pass the piano proficiency exam, as a precondition to upper-division standing.

Performance studies may not be taken on a pass-fail basis.

Bachelor of Arts

This program is designed to offer a broad musical understanding within a liberal arts background. We expect that our graduating students be able to: 1) demonstrate mastery of music theory (an understanding of organizational patterns of music and their interaction, and of musical forms and structures and the ability to employ this understanding in aural, verbal, and visual analyses); 2) competently perform on an instrument of choice (including voice) and effectively communicate on the literature for that instrument and for appropriate ensembles, and demonstrate a basic performance proficiency on the piano; 3) critically evaluate the history and development of music through the present time and place music in historical, cultural and stylistic contexts; 4) comprehend the basics of non-Western music and/or jazz, and demonstrate a rudimentary capacity to create derivative or original music both extemporaneously and in written form; and 5) work independently on a variety of musical problems by combining their capabilities in performance, analysis, composition and improvisation, and history and repertoire. Students often elect a minor in another field.

Bachelor of Music

This program offers majors for specialization in performance, composition and music education. The curriculum is designed to prepare students as professional musicians, teachers, and practitioners of music. We expect that our graduating students be able to: 1) demonstrate mastery of music theory (an understanding of organizational patterns of music and their interaction, and of musical forms and structures and the ability to employ this understanding in aural, verbal, and visual analyses); 2) competently perform on an instrument of choice (including voice) and effectively communicate on the literature for that instrument and for appropriate ensembles, and demonstrate a basic performance proficiency on the piano; 3) critically evaluate the history and development of music through the present time and place music in historical, cultural and stylistic contexts; 4) comprehend the basics of non-Western music and/or jazz, and demonstrate a rudimentary capacity to create derivative or original music both extemporaneously and in written form; and 5) work independently on a variety of musical problems by combining their capabilities in performance, analysis, composition and improvisation, and history and repertoire.

Music Performance and Composition

This major offers professional preparation in music with specialization in performance or composition. The curriculum is designed to prepare students to become professional performers in their respective major instrument or voice, or professional composers. Students following options in performance or composition are required to present an acceptable senior recital in the major performance medium, or compositions for composition majors. Students following options in performance are also required to present an acceptable junior recital in the major performance

medium. Students pursuing Performance in Jazz Studies are limited to specific major performance instruments as stated in the degree description.

Music Education

This program offers professional preparation in music with specialization in music education. The curriculum is designed to prepare students as professional teachers of music. Students following any of the music education or elective studies options are required to present an acceptable senior half recital in the major performance medium. Students following any of the music education options must have a minimum gpa of 2.5 in all of the following areas: cumulative gpa, 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 music education options must also certify as majors in the College of Education.

Bachelor of Music in Music Education, option without endorsement

This degree provides valuable, current, and marketable options for students seeking pre-professional training in music, and in music education. Students in this option may opt to apply for the MA program of study in music at WSU where they may elect to complete courses required for a teaching endorsement and state certification. Admission to graduate school and the School of Music graduate program following completion of this degree is determined by application on an individual basis.

Master of Arts in Music

Please consult the current WSU Graduate Study Bulletin. For students pursuing the combined BM/MA with teacher certification in Music, please consult the department.

Schedule of Studies

Normal progress in all music degree curricula requires enrollment during the first 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 audition early must do so during the first week of classes in the term. Normal progress also assumes placement in 200-level music theory. Theory placement tests will be administered as part of the performance audition. Students who do not qualify for 300-level performance studies and 200-level theory studies as first-year students 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 24 semester hours; cumulative gpa of 2.0; completion of 10 hours with a cumulative gpa of 2.0 and a grade of C or better in those courses selected: MUS 151, 181, 182, 251, 252, 253, 254, and up to four credits of applied study; approval of the appropriate applied study area coordinator; [approval requires two semesters' study as specified by each area: Keyboard at 300 level with grade of B- or better, Brass and Percussion at 300 level with grade of B- or better, Woodwinds at 300 level with grade of B- or better, and Voice at 200 level with

grade of B- or better]; completion of application available from department. Students not passing the upper-division exam after the second attempt will be decertified as music majors.

In addition the College of Education requires 2.5 gpa and C or better in each course listed for the major, minor and professional core, plus a 2.5 cumulative gpa, of students certifying in any of the Bachelor of Music in Music Education curricula.

As indicated in the requirements listed under the various majors and options for the Bachelor of Music degree and the Bachelor of Arts degree in Music, each student must satisfactorily complete all music courses with a minimum 2.5 gpa and a grade of C or better in each music course. Each student is required to pass the piano proficiency exam and the junior and/or senior qualifying exam, with the exception of those students enrolled in the Bachelor of Arts degree (the B.A. degree requires completion of MUS 182 with a C or better). Students must also complete the General Education Requirements plus those for the College of Arts and Sciences.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

BACHELOR OF ARTS IN MUSIC (120 HOURS)

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, 70 credits are devoted to courses outside music, including the University Common Requirements (UCORES). Non-music courses other than those used for the UCORES must be at the 200-level or above. 40 credits of the 120 required for the degree must be in 300-400-level. Music credits beyond the required 50 credits in music add to the number of credits required in the degree. Other requirements include: C or better in all music courses; 2.5 music average; senior qualifying exam; piano proficiency exam or grade of C or better in MUS 182.

First Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
ENGLISH 101 [WRTG]	3
MUS 164	1
MUS 181 ¹	0 or 1
MUS 251 ²	3
MUS 252 ²	1
MUS Ensemble ³	1
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI] ⁴	4
<i>Second Term</i>	
Applied MUS (300-level)	2
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI] ⁴	4
HISTORY 105 [ROOT]	3
MUS 182 ¹	0 or 1
MUS 253 ⁵	3
MUS 254 ⁵	1
MUS Ensemble ³	1

Second Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
Communication [COMM] or Written Communication [WRTG]	3
MUS 351 ²	3
MUS 352 ²	1
MUS Ensemble ³	1
Quantitative Reasoning [QUAN]	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
Creative & Professional Arts [ARTS]	3
MUS 353 ⁵	3
MUS 354 ⁶	1
MUS 359 [HUM] [M] ^{7,6}	3
MUS Ensemble ³	1
Complete Writing Portfolio	
Pass Qualifying Exam	

Third Year

<i>First Term</i>	<i>Hours</i>
200-400-level Non-Music Electives	8
Diversity [DIVR]	3
MUS 360 [M] ⁸	3
MUS Ensemble ³	1

<i>Second Term</i>	<i>Hours</i>
200-400-level Non-Music Electives	9
Humanities [HUM]	3
MUS 361 ⁶	3
MUS Ensemble ³	1

Fourth Year

<i>First Term</i>	<i>Hours</i>
200-400-level Non-Music Elective	8
300-400-level Music Electives	4
Integrative Capstone [CAPS]	3

<i>Second Term</i>	<i>Hours</i>
200-400-level Non-Music Electives	10
300-400-level Music Electives	6

¹ Class piano credits not required in degree.
² Fall only.
³ Chosen from MUS 428-444.
⁴ Two lab sciences required to fulfill the College of Arts and Sciences Requirement.
⁵ Spring only.
⁶ Spring only.
⁷ MUS 359 fulfills the College of Arts and Sciences additional 3-unit requirement.
⁸ Fall only.

MUSIC COMPOSITION DEGREE (120 HOURS)

This major offers professional preparation in music with specialization in composition. The curriculum is designed to prepare students in contemporary classical composition and allied fields.

Requirements include: senior qualifying exam; piano proficiency exam; 2.5 average in all music courses; C or better in all music courses; senior recital.

First Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (200-level)	2
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MUS 164	1
MUS 181 ¹	0 or 1
MUS 251 ²	3
MUS 252 ²	1
MUS Ensemble ³	1

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
Communication [COMM] or Written Communication [WRTG]	3
Humanities [HUM]	3
MUS 182 ¹	0 or 1
MUS 253 ⁴	3
MUS 254 ⁴	1
MUS Ensemble ³	1

Second Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI] ⁵	4
MUS 256	2
MUS 281 ¹	0 or 1
MUS 351 ²	3
MUS 352 ²	1
MUS Ensemble ³	1
Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
MUS 256	2
MUS 353 ⁴	3
MUS 354 ⁴	1
MUS 359 [HUM] [M] ^{6,7}	3
MUS Ensemble (Choral) ⁸	1
Social Sciences [SSCI]	3
Complete Writing Portfolio	3

Third Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
MUS 256	2
MUS 360 [M] ²	3
MUS 451 ⁹	2
MUS Ensemble ³	1
Music Electives	2
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI] ⁵	4

<i>Second Term</i>	<i>Hours</i>
Applied MUS 202 or 302	2
Creative & Professional Arts [ARTS]	3
MUS 361 ⁴	3
MUS 456	4
MUS 483	1
MUS Ensemble ³	1
Music Electives	2

Fourth Year

<i>First Term</i>	<i>Hours</i>
Applied MUS 202 or 302	2
Diversity [DIVR]	3
MUS 455 ²	2
MUS 456	4

MUS 482 ²	1
MUS Ensemble ¹⁰	1
Music Electives	3
<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
MUS 452 ¹¹	2
MUS 456	4
MUS Ensemble ³	1
Music Electives	4
Complete Qualifying Exam	
Composition Half Recital	

- ¹ Class piano credits not required.
- ² Fall only.
- ³ Chosen from MUS 428-444.
- ⁴ Spring only.
- ⁵ Two lab sciences required to fulfill the College of Arts and Sciences Requirement.
- ⁶ Spring only.
- ⁷ MUS 359 fulfills the College of Arts and Sciences additional 3-unit requirement.
- ⁸ Chosen from MUS 423, 428, 431, 433, and 439.
- ⁹ Fall, alternate years only.
- ¹⁰ Chosen from MUS 428-444.
- ¹¹ Spring, alternate years only.

MUSIC EDUCATION - BROAD ENDORSEMENT OPTION (141 HOURS)

Students following any teacher preparation option are required to present an acceptable senior half recital in the major performance medium.

Students following any teacher preparation option must have a minimum gpa of 2.5 in all of the following areas: cumulative gpa, 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 must also certify as majors in the College of Education.

Students must pass the Piano Proficiency Exam, pass the senior qualifying exam, achieve a cumulative 2.5 gpa and a grade of C or better in all music classes, and a 2.5 gpa and a grade of C or better in all College of Education Professional Core courses. Class piano credits are not required for the degree. Instrumentalists must complete 4 credits in vocal performance studies (private lessons and/or ensemble) and vocalists must complete 4 credits of instrumental performance studies. This option provides teacher certification in designated arts: music (choral, instrumental, and general). Requirements include: C or better in all music and education courses; 2.5 music average; 2.5 education average; 2.5 overall average; 4 credits vocal performance for instrumentalists; 4 credits instrumental performance for vocalists; senior qualifying exam, piano proficiency, solo half-recital. Approved performing groups: a minimum of 1 credit during each of 7 semesters, to include at least one semester of MUS 435 for instrumentalists and 428 for vocalists. Include a minimum of 2 credits in choral and 2 credits in instrumental performing groups.

First Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	2

ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
MUS 181 ¹	0 or 1
MUS 251 ²	3
MUS 252 ²	1
MUS Ensemble ³	1
PSYCH 105 [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
ENGLISH 201 [WRTG]	3
HISTORY 105 [ROOT]	3
MUS 164	1
MUS 182 ¹	0 or 1
MUS 253 ⁴	3
MUS 254 ⁴	1
MUS Ensemble ³	1
Quantitative Reasoning [QUAN]	3 or 4

Second Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
Creative & Professional Arts [ARTS]	3
MUS 281 ¹	0 or 1
MUS 351 ²	3
MUS 352 ²	1
MUS 491 ²	2
MUS Ensemble ³	1
TCH LRN 301	3

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
MUS 281 ¹	0 or 1
MUS 353 ⁴	3
MUS 354 ⁴	1
MUS 359 [HUM] [M] ^{4,5}	3
MUS 490 ⁴	3
MUS Ensemble ³	1
TCH LRN 317	2
May Field Experience	
Certify Major, Certify TCH LRN	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
MUS 360 [M] ²	3
MUS 482 ²	1
MUS 488 ⁶	2
MUS Ensemble ³	1
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI] ⁷	4
TCH LRN 464	3
TCH LRN 465	3

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI] ⁷	4
MUS 361 ⁴	3
MUS 483 ⁴	1
MUS 489 ⁸	2
MUS Ensemble ³	1
TCH LRN 466	2

Fourth Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (400-level)	2
Integrative Capstone [CAPS]	3
MUS 435 or 428	1
MUS 455	2
MUS 480 ⁶	3

MUS 493 ⁶	2	<i>Second Term</i>
TCH LRN 470	3	Applied MUS (300-level)
		ENGLISH 201 [WRTG]
<i>Second Term</i>	<i>Hours</i>	Humanities [HUM]
Diversity [DIVR]	3	MUS 164
ED PSYCH 468	3	MUS 182 ¹
MUS 487 ⁸	2	MUS 253 ⁴
MUS 494 ⁸	2	MUS 254 ⁴
TCH LRN 469	2	MUS Ensemble ³
		Quantitative Reasoning [QUAN]

Fifth Year

<i>First Term</i>	<i>Hours</i>
MUS 497	4
TCH LRN 415	12

¹ Class piano credits not required in degree.

² Fall only.

³ Chosen from MUS 428-444.

⁴ Spring only.

⁵ MUS 359 fulfills the College of Arts and Sciences additional 3-unit requirement.

⁶ Fall, alternate years only.

⁷ Two lab sciences required to fulfill the College of Arts and Sciences Requirement.

⁸ Spring, alternate years only.

MUSIC EDUCATION - CHORAL/GENERAL ENDORSEMENT OPTION (135 HOURS)

Students following any teacher preparation option are required to present an acceptable senior half recital in the major performance medium.

Students following any teacher preparation option must have a minimum gpa of 2.5 in all of the following areas: cumulative gpa, 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 must also certify as majors in the College of Education.

Students must pass the Piano Proficiency Exam, pass the senior qualifying exam, achieve a cumulative 2.5 gpa and a grade of C or better in all music classes, and a 2.5 gpa and a grade of C or better in all College of Education Professional Core courses. Class piano credits are not required for the degree. Vocalists must complete 4 credits of vocal performance studies.

This option provides teacher certification in designated arts: Music (choral and general). Requirements include: C or better in all music and education courses; 2.5 music average; 2.5 education average; 2.5 overall average; senior qualifying exam, piano proficiency, solo half-recital. Approved performing groups: a minimum of 1 credit during each of 7 semesters, to include at least one semester of MUS 428 for vocalists.

First Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MUS 181 ¹	0 or 1
MUS 251 ²	3
MUS 252 ²	1
MUS Ensemble ³	1
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>
Applied MUS (300-level)
Creative & Professional Arts [ARTS]
MUS 281 ¹
MUS 351 ²
MUS 352 ²
MUS 491 ²
MUS Ensemble ³
TCH LRN 301

Second Term

Applied MUS (300-level)
MUS 353 ⁴
MUS 354 ⁴
MUS 359 [HUM] [M] ^{4,5}
MUS 490 ⁴
MUS Ensemble ³
TCH LRN 317
May Field Experience
Certify Major, Certify TCH LRN
Complete Writing Portfolio

Third Year

<i>First Term</i>
Applied MUS (300 or 400-level)
MUS 360 [M] ²
MUS 482 ²
MUS 488 ⁶
MUS Ensemble ³
TCH LRN 464
TCH LRN 465

Second Term

Applied MUS (300 or 400-level)
MUS 361 ⁴
MUS 483 ⁴
MUS 489 ⁷
MUS Ensemble ³
Physical Sciences [PSCI] with lab or
SCIENCE 102 [SCI] ⁸
TCH LRN 466
Music Senior Qualifying Exam

Fourth Year

<i>First Term</i>
Applied MUS (400-level)
Biological Sciences [BSCI] with lab or
SCIENCE 101 [SCI] ⁸
MUS 428
MUS 455
MUS 480 ⁶
TCH LRN 470

Second Term

Diversity [DIVR]
ED PSYCH 468
Integrative Capstone [CAPS]
TCH LRN 469

<i>Hours</i>	Fifth Year	<i>Hours</i>
2	<i>First Term</i>	
3	MUS 497	4
3	TCH LRN 415	12
0 or 1		
3		
1		
1		
3		

¹ Class piano credits not required in degree.

² Fall only.

³ A minimum of 4 semesters of vocal ensembles required.

⁴ Spring only.

⁵ MUS 359 fulfills the College of Arts and Sciences additional 3-unit requirement.

⁶ Fall, alternate years only.

⁷ Spring, alternate years only.

⁸ Two lab sciences required to fulfill the College of Arts and Sciences Requirement.

MUSIC EDUCATION - INSTRUMENTAL/GENERAL ENDORSEMENT OPTION (137 HOURS)

Students following any teacher preparation option are required to present an acceptable senior half recital in the major performance medium.

Students following any teacher preparation option must have a minimum gpa of 2.5 in all of the following areas: cumulative gpa, 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 must also certify as majors in the College of Education.

Students must pass the Piano Proficiency Exam, pass the senior qualifying exam, achieve a cumulative 2.5 gpa and a grade of C or better in all music classes, and a 2.5 gpa and a grade of C or better in all College of Education Professional Core courses. Class piano credits are not required for the degree. Instrumentalists must complete 4 credits in instrumental performance studies (private lessons and/or ensemble).

This option provides teacher certification in designated arts: Music (instrumental and general). Requirements include: C or better in all music and education courses; 2.5 music average; 2.5 education average; 2.5 overall average; 4 credits instrumental performance; senior qualifying exam, piano proficiency, solo half-recital. Approved performing groups: a minimum of 1 credit during each of 7 semesters, to include at least one semester of MUS 435 for instrumentalists.

First Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	2
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MUS 181 ¹	0 or 1
MUS 251 ²	3
MUS 252 ²	1
MUS Ensemble ³	1
PSYCH 105 [SSCI]	3

Second Term

<i>Hours</i>	<i>Hours</i>
2	Applied MUS (300-level)
3	ENGLISH 201 [WRTG]
3	Humanities [HUM]
1	MUS 164
0 or 1	MUS 182 ¹

MUS 253 ⁴	3
MUS 254 ⁴	1
MUS Ensemble ³	1
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	
Applied MUS (300-level)	Hours 2
Creative & Professional Arts [ARTS]	3
MUS 281	0 or 1
MUS 351 ²	3
MUS 352 ²	1
MUS 491 ²	2
MUS Ensemble ³	1
TCH LRN 301	3

<i>Second Term</i>	
Applied MUS (300-level)	Hours 2
MUS 353 ⁴	3
MUS 354 ⁴	1
MUS 359 [HUM] [M] ^{4,5}	3
MUS 483 ⁴	1
MUS 490 ⁴	3
MUS Ensemble ³	1
TCH LRN 317	2
May Field Experience	
Certify Major, Certify TCH LRN	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	
Applied MUS (300-level)	Hours 2
MUS 360 [M] ²	3
MUS 482 ²	1
MUS Ensemble ³	1
Physical Sciences [PSCI] with lab or	
SCIENCE 102 [SCI] ⁶	4
TCH LRN 464	3
TCH LRN 465	3

<i>Second Term</i>	
Applied MUS (300-level)	Hours 2
Biological Sciences [BSCI] with lab or	
SCIENCE 101 [SCI] ⁶	4
Diversity [DIVR]	3
MUS 361 ⁴	3
MUS Ensemble ³	1
TCH LRN 466	2

Fourth Year

<i>First Term</i>	
Applied MUS (400-level)	Hours 2
MUS 435	1
MUS 455 ²	2
MUS 480 ⁷	3
MUS 493 ⁷	2
TCH LRN 470	3

<i>Second Term</i>	
ED PSYCH 468	Hours 3
Integrative Capstone [CAPS]	3
MUS 487 ⁸	2
MUS 494 ⁸	2
TCH LRN 469	2

Fifth Year

<i>First Term</i>	
MUS 497	Hours 4
TCH LRN 415	12

¹ Class piano credits not required in degree.
² Fall only.
³ Four semesters of instrumental ensemble required from MUS 434-438 or 440-444.
⁴ Spring only.
⁵ MUS 359 fulfills the College of Arts and Sciences additional 3-unit requirement.
⁶ Two lab sciences required to fulfill the College of Arts and Sciences Requirement.
⁷ Fall, alternate years only.
⁸ Spring, alternate years only.

MUSIC EDUCATION - WITHOUT TEACHING CERTIFICATE OPTION (120 HOURS)

Students following any teacher preparation option are required to present an acceptable senior half recital in the major performance medium.

Students following any teacher preparation option must have a minimum gpa of 2.5 in all of the following areas: cumulative gpa, 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 must also certify as majors in the College of Education. Since this option is likely to lead to enrollment in the MA in Music, students are advised that admission to graduate study requires a 3.0 cumulative gpa.

Students must pass the Piano Proficiency Exam, pass the senior qualifying exam, achieve a cumulative 2.5 gpa and a grade of C or better in all music classes, and a 2.5 gpa and a grade of C or better in all College of Education Professional Core courses. Class piano credits are not required for the degree. Instrumentalists must complete 4 credits in vocal performance studies (private lessons and/or ensemble) and vocalists must complete 4 credits of instrumental performance studies.

This option provides professional preparation in music combined with studies in education. Students may complete teacher certification requirements after completion of this degree through further enrollment as undergraduate second degree candidates, enrollment as post-baccalaureate non-degree students, or as graduate students, each of which requires application for admission. Students planning to seek admission and enroll as graduate students should, at the beginning of their last semester of undergraduate study, complete the necessary form to count selected courses in the final undergraduate semester toward the graduate degree, up to a maximum of 6 credits.

As stated above, this option may lead to one of three paths to achieve teacher certification in designated arts: Music (choral, instrumental, and general). If a student elects to pursue teacher certification, requirements include: C or better in all music and education courses; 2.5 music average; 2.5 education average; 2.5 overall average; 4 credits vocal performance for instrumentalists; 4 credits instrumental performance for vocalists; upper-division exam, piano proficiency, solo half-recital. Approved performing groups: a minimum of 1 credit during each of 7 semesters, to include at least one semester of Mus 435 for instrumentalists and 428 for vocalists. Include a minimum of 2 credits in choral and 2 credits in instrumental performing groups. Note that during the second term of the senior year, only 10 credits are taken toward the

degree. Students must enroll in 12 credits to be full time and may enroll in graduate credits if preparing to enroll in the MA degree program.

First Year

<i>First Term</i>	
Applied MUS (300-level)	Hours 2
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MUS 181 ¹	0 or 1
MUS 251 ²	3
MUS 252 ²	1
MUS Ensemble ³	1
PSYCH 105 [SSCI]	3

<i>Second Term</i>	
Applied MUS (300-level)	Hours 2
ENGLISH 201 [WRTG]	3
Humanities [HUM]	3
MUS 164	1
MUS 182 ¹	0 or 1
MUS 253 ⁴	3
MUS 254 ⁴	1
MUS Ensemble ³	1
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	
Applied MUS (300-level)	Hours 2
Biological Sciences [BSCI] with lab or	
SCIENCE 101 [SCI] ⁵	4
MUS 281	0 or 1
MUS 351 ²	3
MUS 352 ²	1
MUS 491 ²	2
MUS Ensemble ³	1
TCH LRN 301	3

<i>Second Term</i>	
Applied MUS (300-level)	Hours 2
MUS 353 ⁴	3
MUS 354 ⁴	1
MUS 359 [HUM] [M] ^{4,6}	3
MUS 490 ⁴	3
MUS Ensemble ³	1
TCH LRN 317	2
Complete Writing Portfolio	
May Field Experience	
Certify Major, Certify TCH LRN	

Third Year

<i>First Term</i>	
Applied MUS (300 or 400-level)	Hours 2
MUS 258 ²	2
MUS 360 [M] ²	3
MUS 455 ²	2
MUS Ensemble ³	1
TCH LRN 464	3
TCH LRN 465	3

<i>Second Term</i>	
Applied MUS (300 or 400-level)	Hours 2
Creative & Professional Arts [ARTS]	3
MUS 361 ⁴	3
MUS 428 or 435	1
Physical Sciences [PSCI] with lab or	
SCIENCE 102 [SCI] ⁵	4
TCH LRN 466	2
TCH LRN 470	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (400-level)	2
Integrative Capstone [CAPS]	3
MUS 103 or 319	2
MUS Endorsement Electives	4
MUS Ensemble ³	1
Reserve Credit for MA recommended	

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
MUS 482 or 483	1
MUS Electives	2
MUS Endorsement Electives	4
Reserve Credit for MA recommended	

¹ Class piano credits not required in degree.

² Fall only.

³ Music ensembles: A minimum of 1 hour during each of 7 semesters to include at least one semester of MUS 435 and a minimum of four instrumental, or one semester of choral small ensemble and a minimum of four choral.

⁴ Spring only.

⁵ Two lab sciences required to fulfill the College of Arts and Sciences Requirement.

⁶ MUS 359 fulfills the College of Arts and Sciences additional 3-unit requirement.

MUSIC PERFORMANCE - BRASS, PERCUSSION, STRINGS, WINDS OPTION (120 HOURS)

Requirements include: junior and senior qualifying exams; piano proficiency exam; 2.5 average in all music courses; C or better in all music courses; junior and senior recitals.

First Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	4
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI] ¹	4
ENGLISH 101 [WRTG]	3
MUS 181 ²	0 or 1
MUS 251 ³	3
MUS 252 ³	1
MUS Ensemble ⁴	1

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300-level)	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MUS 164	1
MUS 182 ²	0 or 1
MUS 253 ⁵	3
MUS 254 ⁵	1
MUS Ensemble ⁴	1

Second Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	4
Communication [COMM] or Written Communication [WRTG]	3
MUS 351 ³	3
MUS 352 ³	1
MUS Ensemble ⁴	1
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300-level)	4
MUS 281 ²	0 or 1
MUS 353 ⁵	3
MUS 354 ⁵	1
MUS 359 [HUM] [M] ^{5,6}	3
MUS 487, 493, or 494 ⁷	0-2
MUS Ensemble ⁴	1
Quantitative Reasoning [QUAN]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300 or 400-level)	4
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
MUS 360 [M] ³	3
MUS 435	1
MUS Electives	2

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300 or 400-level)	4
MUS 361 ⁵	3
MUS 435	1
MUS Electives	2
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI] ¹	4

Fourth Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300 or 400-level)	4
MUS 455 ³	2
MUS 465 ⁸	2
MUS 482 ³	1
MUS Electives	4
MUS Ensemble ⁴	1

<i>Second Term</i>	<i>Hours</i>
Applied MUS (400-level)	4
Integrative Capstone [CAPS]	3
MUS Electives	4
Mus Ensemble ⁴	1
Electives	2

¹ Two lab sciences required to fulfill the College of Arts and Sciences Requirement.

² Class piano credits not required.

³ Fall only.

⁴ Chosen from Mus 428-444.

⁵ Spring only.

⁶ MUS 359 fulfills the College of Arts and Sciences additional 3-unit requirement.

⁷ Two credits of pedagogy are required in respective area: string (487), wind/percussion (493) or brass (494).

⁸ Fall, alternate years only.

MUSIC PERFORMANCE - KEYBOARD OPTION (120 HOURS)

Requirements include: Accompany a junior, senior, or graduate recital; piano proficiency exam; junior and senior qualifying exams; junior recital; senior recital; 2.5 average in all music courses; C or better in all music courses.

First Year

<i>First Term</i>	<i>Hours</i>
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<i>Hours</i>	Applied MUS 301 or 302	4
	ENGLISH 101 [WRTG]	3
	HISTORY 105 [ROOT]	3
	MUS 164	1
	MUS 251 ¹	3
	MUS 252 ¹	1
	MUS 441	1

<i>Second Term</i>	<i>Hours</i>
Applied MUS 301 or 302	4
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI] ²	4
Humanities [HUM]	3
MUS 253 ³	3
MUS 254 ³	1
MUS 441	1

Second Year

<i>First Term</i>	<i>Hours</i>
Applied MUS 301 or 302	4
Communication [COMM] or Written Communication [WRTG]	3
MUS 351 ¹	3
MUS 352 ¹	1
MUS 441	1
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
Applied MUS 301 or 302	4
MUS 353 ³	3
MUS 354 ³	1
MUS 359 [HUM] [M] ^{3,4}	3
MUS 441	1
MUS 498	2
Music Electives	2
Complete Writing Portfolio	2

Third Year

<i>First Term</i>	<i>Hours</i>
Applied MUS 301/401 or 302/402	4
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
MUS 360 [M] ¹	3
MUS 435	1
MUS 465 ¹⁵	2

<i>Second Term</i>	<i>Hours</i>
Applied MUS 301/401 or 302/402	4
MUS 361 ³	3
MUS 441	1
MUS 483 or 482 ⁶	1
Music Electives	2
Quantitative Reasoning [QUAN]	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Applied MUS 301/401 or 302/402	4
MUS 441	1
MUS 451 ⁷	2
Music Electives	1
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI] ²	4
Secondary Instrument (MUS 319)	2

<i>Second Term</i>	<i>Hours</i>
Applied MUS 401 or 402	4
Integrative Capstone [CAPS]	3
Large Ensemble - MUS 431, 432, 434, 436, 437, 438	1
Music Electives	5

¹ Fall only.

² Two lab sciences required to fulfill the College of Arts and Sciences Requirement.

³ Spring only.

⁴ MUS 359 fulfills the College of Arts and Sciences additional 3-unit requirement.

⁵ Courses are taught alternate years.

⁶ One credit of MUS 482 or 483 is required.

⁷ Fall, alternate years only.

MUSIC PERFORMANCE - KEYBOARD WITH ELECTIVE STUDIES IN PEDAGOGY OPTION (120 HOURS)

Requirements include: Accompany a junior, senior, or graduate recital; piano proficiency exam; junior and senior qualifying exams; junior recital; senior recital; 2.5 average in all music courses; C or better in all music courses.

First Year

<i>First Term</i>	<i>Hours</i>
Applied MUS 302	4
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI] ¹	4
ENGLISH 101 [WRTG]	3
MUS 251 ²	3
MUS 252 ²	1
MUS 441	1

<i>Second Term</i>	<i>Hours</i>
Applied MUS 302	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MUS 164	1
MUS 253 ³	3
MUS 254 ³	1
MUS 441	1

Second Year

<i>First Term</i>	<i>Hours</i>
Applied MUS 302	4
Communication [COMM] or Written Communication [WRTG]	3
MUS 351 ²	3
MUS 352 ²	1
MUS 441	1
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
Applied MUS 302	4
MUS 353 ³	3
MUS 354 ³	1
MUS 359 [HUM] [M] ^{3,4}	3
MUS 441	1
MUS 498	2
Quantitative Reasoning [QUAN]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Applied MUS 302 or 402	4
MUS 360 [M] ²	3
MUS 435	1
MUS 498	2
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI] ¹	4

<i>Second Term</i>	<i>Hours</i>
Applied MUS 302 or 402	4

Creative & Professional Arts [ARTS]	3
MUS 361 ³	3
MUS 441	1
MUS 483 or 482 ⁵	1
MUS 498	2

Fourth Year

<i>First Term</i>	<i>Hours</i>
Applied MUS 302 or 402	4
ED PSYCH 361/490, TCH LRN 301	3
MUS 441	1
MUS 451 ^{3,6}	2
MUS 465 ^{2,6}	2
Secondary Instrument	2

<i>Second Term</i>	<i>Hours</i>
Applied MUS 402	4
Diversity [DIVR]	3
Integrative Capstone [CAPS]	3
Large Ensemble - MUS 431, 432, 434, 436, 437, 438	1
MUS 498	2
Music Electives	1

¹ Two lab sciences required to fulfill the College of Arts and Sciences Requirement.

² Fall only.

³ Spring only.

⁴ MUS 359 fulfills the College of Arts and Sciences additional 3-unit requirement.

⁵ One credit of MUS 482 or 483 is required.

⁶ Courses are taught alternate years.

MUSIC PERFORMANCE - PERCUSSION, SAXOPHONE, STRING BASS, TRUMPET, GUITAR, AND KEYBOARD (JAZZ STUDIES) (120 HOURS)

This option with an emphasis in jazz is available to students whose major instruments are percussion, saxophone, string bass, or trumpet.

Requirements include: junior and senior qualifying exams; piano proficiency exam; 2.5 average in all music courses; C or better in all music courses; junior and senior recitals.

First Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	4
ENGLISH 101 [WRTG]	3
MUS 251 ¹	3
MUS 252 ¹	1
MUS Ensemble 428-444 ²	1
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI] ³	4

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300-level)	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MUS 164	1
MUS 181 ⁴	0-1
MUS 253 ⁵	3
MUS 254 ⁵	1
MUS Ensemble 428-444 ²	1

Second Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300-level)	4

Communication [COMM] or Written Communication [WRTG]	3
MUS 182 ⁴	0-1
MUS 257 ⁶	2
MUS 351 ¹	3
MUS 352 ¹	1
MUS Ensemble 428-444 ²	1
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300-level)	4
MUS 281 ⁴	0-1
MUS 353 ⁵	3
MUS 354 ⁵	1
MUS 359 [HUM] [M] ^{5,7}	3
MUS Ensemble 428-444 ²	1
Quantitative Reasoning [QUAN]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300 or 400-level)	4
Creative & Professional Arts [ARTS]	3
Jazz Ensemble - MUS 438, 439, 440 ²	1
MUS 258 ¹	2
MUS 360 [M] ¹	3
MUS 457 ⁶	2

<i>Second Term</i>	<i>Hours</i>
Applied MUS (300 or 400-level)	4
Diversity [DIVR]	3
Jazz Ensemble - MUS 438, 439, 440 ²	1
MUS 361 ⁵	3
MUS 458 ⁸	2
Secondary Instrument or MUS 319	2

Fourth Year

<i>First Term</i>	<i>Hours</i>
Applied MUS (300 or 400-level)	4
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI] ³	4
Jazz Ensemble - MUS 438, 439, 440 ²	1
MUS 362	3
MUS 482 ¹	1

<i>Second Term</i>	<i>Hours</i>
Applied MUS (400-level)	4
Integrative Capstone [CAPS]	3
Jazz Ensemble - MUS 438, 439, 440 ²	1
MUS Electives	5

¹ Fall only.

² Music Ensembles: a minimum of one credit per semester.

³ Two lab sciences required to fulfill the College of Arts and Sciences Requirement.

⁴ Class piano credits not required in degree.

⁵ Spring only.

⁶ Fall, alternate years only.

⁷ MUS 359 fulfills the College of Arts and Sciences additional 3-unit requirement.

⁸ Spring, alternate years only.

MUSIC PERFORMANCE - VOICE OPTION (120 HOURS)

Requirements include: junior and senior qualifying exams; piano proficiency exam; 2.5 average in all music courses; C or better in all music courses; junior and senior recitals.

First Year

First Term

Applied MUS 303	Hours	4
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI] ¹		4
ENGLISH 101 [WRTG]		3
MUS 181 ²	0 or 1	3
MUS 251 ³		1
MUS 252 ³		1
MUS Ensemble ⁴		1

Second Term

Applied MUS 303	Hours	4
HISTORY 105 [ROOT]		3
Humanities [HUM]		3
MUS 164		1
MUS 182 ²	0 or 1	3
MUS 253 ⁵		1
MUS 254 ⁵		1
MUS Ensemble ⁴		1

Second Year

First Term

Applied MUS 303	Hours	4
Communication [COMM] or Written Communication [WRTG]		3
MUS 351 ³		3
MUS 352 ³		1
MUS 371 ⁶		2
MUS Ensemble ⁴		1

Second Term

Applied MUS 303	Hours	4
MUS 281 ²	0 or 1	3
MUS 353 ⁵		3
MUS 354 ⁵		1
MUS 359 [HUM] [M] ^{5,7}		3
MUS 372 ⁸		2
MUS Ensemble ⁴		1
Complete Writing Portfolio		

Third Year

First Term

Applied MUS 303 or 403	Hours	4
MUS 360 [M] ³		3
MUS 428		1
MUS 491 ³		2
MUS Ensemble ⁴		1
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI] ¹		4

Second Term

Applied MUS 303 or 403	Hours	4
Creative & Professional Arts [ARTS]		3
Diversity [DIVR]		3
MUS 361 ⁵		3
MUS 428		1
MUS 483 ⁵		1
MUS Ensemble ⁴		1

Fourth Year

First Term

Applied MUS 303 or 403	Hours	4
Foreign Language		4
MUS 465 ⁶		2
MUS Ensemble ⁴		1
Quantitative Reasoning [QUAN]		3

Second Term

Applied MUS 403	4
Foreign Language	4
Integrative Capstone [CAPS]	3
MUS Ensemble ⁴	1
Social Sciences [SSCI]	3

¹ Two lab sciences required to fulfill the College of Arts and Sciences Requirement.

² Class piano credits not required.

³ Fall only.

⁴ Chosen from MUS 431 or 432.

⁵ Spring only.

⁶ Fall, alternate years only.

⁷ MUS 359 fulfills the College of Arts and Sciences additional 3-unit requirement.

⁸ Spring, alternate years only.

Minors

Jazz Studies

Required courses: MUS 257, 258, 362, 457, 458, and one 3-credit MUS course; four credits from 438, 439, 440. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Music Minor and Supporting Teaching Endorsements

Choose one of the following options: Option 1 includes MUS 151 and 2 credits from MUS 181, 182, 281 or 2 credits from MUS 102, 202, 302. Option 2 includes MUS 251 and 252. Both options also include MUS 160 and one course from MUS 262, 265, 362, MUS 163 or 363; 4 credits of performance studies, 4 credits performing groups; and 4 credits 300-400-level music electives. Also available are supporting teaching endorsements in music for students whose primary teaching endorsements are in other majors. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Description of Courses

MUSIC

MUS

102 Piano 2 (0-6) May be repeated for credit.

103 Voice 2 (0-6) May be repeated for credit.

151 Music Fundamentals I 3 Notation and performance of music fundamentals: pitch, rhythm, scales, key signatures, and intervals.

152 Music Fundamentals II 3 Notation and performance of music fundamentals: melody, rhythm, scales, intervals, key signatures, triads; preparatory for Mus 251.

153 [ARTS] Musical Style in Composition 3 Introduction to musical style in composition, history, and analysis including theory fundamentals, history survey, and beginning composition.

160 [ARTS] Survey of Music Literature 3 Exploration of predominantly western music through demonstrations, performances, lectures, concerts, and discussions.

161 [ARTS] Introduction to Theatre 3 An introduction to numerous areas of theatre, including: analysis, playwriting, directing, acting, technical theatre, and theatre history.

162 Introduction to Acting 3 Introduction to the fundamentals of acting through exercises, writing, self-awareness, and attending theatre productions.

163 World Music 3 Exploration of music from a global perspective through demonstrations, performances, lectures and discussion.

164 Introduction to Music Technology 1 Introduction to Music Technology 1 Prereq Mus 151; Mus 251 or c//. Music notation software, audio recording and editing, and music specific web design.

181 Class Piano I 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: By permission only. Pedal, sight reading, transposition, playing by ear, chord progressions, melody harmonization and improvisation.

182 Class Piano II 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: MUS 181. Scales, arpeggios, blocked and broken chords; repertoire to complement individual skills, theoretical knowledge and improvisation.

201 Organ 2 (0-6) May be repeated for credit. By audition only.

202 Piano 2 May be repeated for credit. By audition only.

203 Voice 2 May be repeated for credit. Course Prerequisite: Concurrent enrollment in MUS 431, 432, 433, 428 or 439.

204 Horn 2 (0-6) May be repeated for credit.

205 Trumpet 2 (0-6) May be repeated for credit.

206 Trombone 2 (0-6) May be repeated for credit.

207 Euphonium 2 (0-6) May be repeated for credit.

208 Tuba 2 (0-6) May be repeated for credit.

209 Percussion 2 (0-6) May be repeated for credit.

210 Violin 2 (0-6) May be repeated for credit.

211 Viola 2 (0-6) May be repeated for credit.

212 Violoncello 2 (0-6) May be repeated for credit.

213 Contrabass 2 May be repeated for credit.

214 Flute 2 (0-6) May be repeated for credit.

215 Oboe 2 (0-6) May be repeated for credit.

216 Clarinet 2 (0-6) May be repeated for credit.

217 Bassoon 2 (0-6) May be repeated for credit.

218 Saxophone 2 May be repeated for credit.

220 Commercial Guitar 2 (0-6) Broad study of American guitar styles, including jazz, rock, finger style, blues, funk, Brazilian, R&B, folk, bluegrass, country, old-time, and even some European art music.

- 251 Materials and Structures of Music I 3** Materials and Structures of Music I 3 Prereq by examination. Music theory fundamentals; analysis and composition of two-voice counterpoint, diatonic harmony in choral and keyboard texture, and melodic form.
- 252 Applied Theory I 1** (0-3) By examination. Ear training, conducting, rhythmic reading, sight singing, keyboard, dictation.
- 253 Materials and Structures of Music II 3** Course Prerequisite: MUS 251 with a C or better; MUS 252. Analysis and composition of: figured bass, Alberti figures, and choral diatonic and initial chromatic harmony; modulation; alternation and binary forms.
- 254 Applied Theory II 1** (0-3) Course Prerequisite: MUS 251 with a C or better; MUS 252 with a C or better. Ear training, sight singing, keyboard.
- 256 Seminar in Composition 2** May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MUS 251 or concurrent enrollment. By Interview Only. Original writings in small forms.
- 257 Jazz Theory 2** Introduction to jazz theory; chord symbols, extended harmony, scales and modes, voicing, bass lines and substitutions.
- 258 Introduction to Jazz Improvisation 2** May be repeated for credit; cumulative maximum 4 hours. Introduction to jazz improvisation.
- 262 [ARTS] Rock Music: History and Social Analysis 3** History and analysis of rock music related to its African American origins, its societal role, and its diverse development and impact.
- 265 [HUM] Native Music of North America 3** Music and ceremonialism as a reflection of realities in North American native cultures, past and present. (Crosslisted course offered as , CES 271).
- 281 Class Piano III 1** (0-3) May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: MUS 182. Principles, functional keyboard and improvisation.
- 301 Organ V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 302 Piano V 2-4** May be repeated for credit.
- 303 Voice V 2-4** May be repeated for credit. Course Prerequisite: Concurrent enrollment in MUS 431, or concurrent enrollment in MUS 432.
- 304 French Horn V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 305 Trumpet V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 306 Trombone V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 307 Euphonium V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 308 Tuba V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 309 Percussion V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 310 Violin V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 311 Viola V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 312 Violoncello V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 313 Contrabass V 2-4** May be repeated for credit.
- 314 Flute V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 315 Oboe V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 316 Clarinet V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 317 Bassoon V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 318 Saxophone V 2-4** May be repeated for credit.
- 319 Secondary Performance Study 2** May be repeated for credit; cumulative maximum 16 hours. Course Prerequisite: By permission only. Instruction on instruments or voice other than major performing medium.
- 320 Commercial Guitar V 2** (0-6) to 4 (0-12) Broad study of American guitar styles, including jazz, rock, finger style, blues, funk, Brazilian, R&B, folk, bluegrass, country, old-time, and even some European art music.
- 351 Materials and Structures of Music III 3** Course Prerequisite: MUS 253 with a C or better; MUS 254 with a C or better. Voice leading and analysis of functional chromatic harmony; study of common large forms in the 17th, 18th, and 19th century.
- 352 Applied Theory III 1** (0-3) Course Prerequisite: MUS 164 with a C or better; MUS 253 with a C or better; MUS 254 with a C or better. Continued musical development in ear training, sight singing, applied theory, keyboard dictation.
- 353 Materials and Structures of Music IV 3** Course Prerequisite: MUS 351 with a C or better; MUS 352 with a C or better. Vertical, linear and formal relationships of 20th century music; writing, analysis, listening.
- 354 Applied Theory IV 1** (0-3) Course Prerequisite: MUS 351 with a C or better; MUS 352 with a C or better. Continued development in ear training, sight singing, keyboard and dictation, emphasizing 20th century music.
- 359 [HUM] [M] History of Music: Antiquity to 1650 3** Course Prerequisite: MUS 251 with a C or better; MUS 252 with a C or better; ENGLISH 101 with a C or better. Development and change in the musical culture from antiquity to 1650.
- 360 [M] History of Music: 1650 - 1850 3** Course Prerequisite: MUS 251 with a C or better; MUS 252 with a C or better; MUS 359 with a C or better; ENGLISH 101 with a C or better. Development and change in musical culture from 1650 to 1850.
- 361 History of Music: 1850 - Present 3** Course Prerequisite: MUS 251 with a C or better; MUS 252 with a C or better; MUS 360 with a C or better; ENGLISH 101 with a C or better. Development and change in musical culture from 1850 to the present.
- 362 [DIVR] History of Jazz 3** History of jazz in chronological sequence; social and political contexts of the African-American origins of jazz; stylistic developments.
- 363 [DIVR] Women in Music 3** Intersections of gender, class, race, and culture with popular and country music. (Crosslisted course offered as MUS 363, WOMEN ST 363).
- 364 Introduction to Sound Recording Technology 3** Music, audio and recording technology throughout history and its influence on society and culture.
- 371 Diction for Singers I 2** Italian and English; International Phonetic Alphabet; fundamental diction principles, applied to each language and oriented to needs of the singer.
- 372 Diction for Singers II 2** Course Prerequisite: MUS 371. French and German; International Phonetic Alphabet; fundamental diction principles, applied to each language and oriented to needs of the singer.
- 388 Music for the Classroom Teacher 2** Course Prerequisite: Certified major in Elementary Education; MUS 153. Singing, movement, listening and instrumental methods/resources for K-8 grades.
- 401 Organ V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 402 Piano V 2-4** May be repeated for credit.
- 403 Voice V 2-4** May be repeated for credit.
- 404 French Horn V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 405 Trumpet V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 406 Trombone V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 407 Euphonium V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 408 Tuba V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 409 Percussion V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 410 Violin V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 411 Viola V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 412 Violoncello V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 413 Contrabass V 2-4** May be repeated for credit.
- 414 Flute V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 415 Oboe V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 416 Clarinet V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 417 Bassoon V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 418 Saxophone V 2-4** May be repeated for credit.

- 420 Commercial Guitar** V 2 (0-6) to 4 (0-12) Broad study of American guitar styles, including jazz, rock, finger style, blues, funk, Brazilian, R&B, folk, bluegrass, country, old-time, and even some European art music.
- 428 [ARTS] Opera Workshop** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Public performance may be required. Credit not granted for both MUS 428 and MUS 528.
- 431 [ARTS] Concert Choir** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Auditioned choral ensemble studying and performing global music of varying cultures, language, period, style, and tradition. Credit not granted for both MUS 431 and MUS 531.
- 432 [ARTS] University Singers** 1 (0-4) May be repeated for credit. Public performance may be required. Non-auditioned choir consisting of 70+ singers. The majority of this group is made up of non-music majors.
- 433 [ARTS] Vocal Ensembles** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Study, rehearse, perform, and review original works and transcriptions for symphony orchestra; public performance each semester. Credit not granted for both MUS 433 and MUS 533.
- 434 [ARTS] Symphony Orchestra** 1 (0-4) May be repeated for credit. Study, rehearse, perform and review original works and transcriptions for symphony orchestra; public performance each semester.
- 435 Chamber Ensembles** 1 May be repeated for credit. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Public performance may be required. Credit not granted for both MUS 435 and MUS 535.
- 436 [ARTS] Symphonic Band** 1 (0-4) May be repeated for credit. Large ensemble performance of repertoire for band. Public performances.
- 437 [ARTS] Wind Symphony** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Large ensemble; public performances each semester. Credit not granted for both MUS 437 and MUS 537.
- 438 [ARTS] Jazz-Lab Band** 1 (0-4) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Jazz big band. Public performances each semester. Credit not granted for both MUS 438 and MUS 538.
- 439 [ARTS] Vocal Jazz Ensemble** 1 (0-4) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. The majority of this group is made up of non-music majors. Public performances each semester. Credit not granted for both MUS 439 and MUS 539.
- 440 Jazz Combos** 1 (0-4) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Public performances each semester. Credit not granted for both MUS 440 and MUS 540.
- 441 Accompanying** 1 (0-4) May be repeated for credit.
- 444 Marching Band/Varsity Band** 1 (0-4) May be repeated for credit.
- 451 Seminar in Counterpoint** 2 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MUS 351 or concurrent enrollment. Contrapuntal techniques of the 16th and 18th century with original stylistic writing.
- 452 Electronic Music** 2 (1-3) Course Prerequisite: MUS 353 or concurrent enrollment. Introduction to computer-controlled digital, analog, and sampling synthesis; topics include sequencing, waveform editing, and creative projects.
- 455 Seminar in Instrumentation** 2 May be repeated for credit. Course Prerequisite: MUS 351 or concurrent enrollment. Scoring for various instrumental combinations.
- 456 Seminar in Advanced Composition** 4 May be repeated for credit. Course Prerequisite: MUS 351. By Interview Only. Original writing in small and large forms (traditional and experimental).
- 457 Seminar in Jazz Arranging/Composition** 2 Course Prerequisite: MUS 257. Arranging and composing for instrumental jazz ensembles.
- 458 Advanced Jazz Improvisation** 2 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MUS 258. Advanced concepts in jazz improvisation.
- 459 Seminar in Advanced Jazz Composition** V 1 (0-2) to 3 (0-6) May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MUS 457. Creation of works for Jazz Ensembles. Credit not granted for both MUS 459 and MUS 559.
- 465 Seminar in Major Performance Literature** 2 May be repeated for credit; cumulative maximum 6 hours. Survey/performance of solo and chamber literature for voice, keyboard, strings, winds, brass, percussion.
- 470 Marketing and Promotion for the Performing Arts** 2 (1-3) Components and techniques used in the marketing and promotion of the performing arts and the entertainment industry.
- 480 Instrumental Music Education** 3 Course Prerequisite: Certified major in Music. Philosophies, administration, organization, materials and methods for instrumental music education K-12. Credit not granted for both MUS 480 and MUS 580.
- 482 Instrumental Conducting** 1 (0-3) Techniques and patterns in conducting as applied to orchestra and band literature; score preparation and rehearsal techniques for instrumental ensembles.
- 483 Choral Conducting** 1 (0-3) Techniques and patterns in conducting as applied to choral literature; score preparation and rehearsal techniques for choral ensembles.
- 487 String Techniques** 2 (0-6) String techniques, materials and methods for music education majors.
- 488 Choral Methods and Materials I** 2 (0-6) 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 MUS 588.
- 489 Choral Methods and Materials II** 2 Course Prerequisite: MUS 488. Development of skills in choral arranging, curriculum construction, research, and job placement. Credit not granted for both MUS 489 and MUS 589.
- 490 General Music Material/Methods** 4 (3-2) Course Prerequisite: MUS 491. Materials and methods for general music education majors; multiculturalism, collaboration, developmental curriculum and research issues; addressing national standards; observations. Credit not granted for both MUS 490 and MUS 590.
- 491 Voice Pedagogy** 2 (1-3) Anatomy of the singing process; methodology of teaching voices in various learning and teaching styles. Credit not granted for both MUS 491 and MUS 591.
- 493 Wind and Percussion Techniques I** 2 (0-6) Brass, woodwind, and percussion techniques for music education majors.
- 494 Wind and Percussion Techniques II** 2 (0-6) Course Prerequisite: MUS 493. Brass, woodwind and percussion techniques; elementary instrument conducting for music education majors.
- 496 Topics in Music** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Advanced seminar with required projects in music history, literature, pedagogy, theory, composition or performance.
- 497 Directed Student Teaching in Music** V 4-16 Course Prerequisite: By permission only. Supervised teaching in public schools, including seminars reflecting on effective teaching. S, F grading.
- 498 Piano Pedagogy Practicum** 2 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: MUS 202, 302, or 402. Piano Pedagogy Practicum 2 Supervised teaching in Piano Preparatory Lab School, including lesson planning and meetings with coordinator for critiques and suggestions. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

- 501 Organ** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 502 Piano** V 2-4 May be repeated for credit.
- 503 Voice** V 2-4 May be repeated for credit.
- 504 French Horn** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 505 Trumpet** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 506 Trombone** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 507 Euphonium** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 508 Tuba** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 509 Percussion** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 510 Violin** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 511 Viola** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 512 Violoncello** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 513 Contrabass** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 514 Flute** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 515 Oboe** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 516 Clarinet** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 517 Bassoon** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 518 Saxophone** V 2-4 May be repeated for credit.
- 519 Secondary Performance Study** V 1-2 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By permission only. Instruction on instruments or voice other than major performing medium.
- 520 Commercial Guitar** V 2 (0-6) to 4 (0-12) V 2 (0-6) to 4 (0-12) Broad study of American guitar styles, including jazz, rock, finger style, blues, funk, Brazilian, R&B, folk, bluegrass, country, old-time, and even some European art music.
- 522 Graduate Recital** 2 May be repeated for credit; cumulative maximum 4 hours. Private screening and public performance as required within each performance emphasis.
- 528 Opera Workshop** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Public performance may be required. Credit not granted for both MUS 428 and MUS 528.
- 531 Concert Choir** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Auditioned choral ensemble studying and performing global music of varying cultures, language, period, style, and tradition. Credit not granted for both MUS 431 and MUS 531.
- 533 Vocal Ensembles** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Study, rehearse, perform, and review original works and transcriptions for symphony orchestra; public performance each semester. Credit not granted for both MUS 433 and MUS 533.
- 534 Symphony Orchestra** 1 (0-4) May be repeated for credit. Study, rehearse, perform and review original works and transcriptions for symphony orchestra; public performance each semester.
- 535 Chamber Ensembles** 1 May be repeated for credit. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Public performance may be required. Credit not granted for both MUS 435 and MUS 535.
- 537 Wind Symphony** 1 (0-4) May be repeated for credit. Large ensemble; public performances each semester. Credit not granted for both MUS 437 and MUS 537.
- 538 Jazz-Lab Band** 1 (0-4) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Jazz big band. Public performances each semester. Credit not granted for both MUS 438 and MUS 538.
- 539 Vocal Jazz Ensemble** 1 (0-4) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. The majority of this group is made up of non-music majors. Public performances each semester. Credit not granted for both MUS 439 and MUS 539.
- 540 Jazz Combos** 1 (0-4) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By audition only; see <http://libarts.wsu.edu/music/audition/index.htm> for details. Public performances each semester. Credit not granted for both MUS 440 and MUS 540.
- 541 Accompanying** 1 (0-4) May be repeated for credit.
- 550 Seminar in Analysis** 2 May be repeated for credit; cumulative maximum 4 hours. 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.
- 556 Graduate Seminar in Advanced Composition** V 2 (1-2) to 3 (1-3) May be repeated for credit; cumulative maximum 10 hours. The creation of works for either traditional acoustic ensembles or electro-acoustic media.
- 559 Seminar in Advanced Jazz Composition** V 1 (0-2) to 3 (0-6) May be repeated for credit; cumulative maximum 12 hours. Creation of works for Jazz Ensembles. Credit not granted for both MUS 459 and MUS 559.
- 560 Introduction to Graduate Studies in Music** 2 Required of all graduate students in music. Basic bibliographic and research techniques; written presentations related to area of emphasis.
- 561 Seminar in Literature of 20th Century Music** 2 Impressionism, expressionism, neoclassicism, neoromanticism, jazz and recent electronic music.
- 562 Seminar in Major Ensemble Literature** 2 May be repeated for credit; cumulative maximum 6 hours. Ensemble literature for symphony orchestra, choral or jazz ensembles.
- 566 Seminar in Music History** 2 May be repeated for credit; cumulative maximum 6 hours. Various historic periods and composers.
- 575 Advanced Conducting** V 2-3 May be repeated for credit. Rehearsing orchestras, bands, and choruses. Public performance may be required.
- 580 Instrumental Music Education** 3 Philosophies, administration, organization, materials and methods for instrumental music education K-12. Credit not granted for both MUS 480 and MUS 580.
- 586 Seminar in Piano Pedagogy** 2 Course Prerequisite: Mus 502. Materials and methods of teaching experiences.
- 588 Choral Methods and Materials I** 2 (0-6) 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 MUS 588.
- 589 Choral Methods and Materials II** 2 Course Prerequisite: Mus 588. Development of skills in choral arranging, curriculum construction, research, and job placement. Credit not granted for both MUS 489 and MUS 589.
- 590 General Music Material/Methods** 4 (3-2) Materials and methods for general music education majors; multiculturalism, collaboration, developmental curriculum and research issues; addressing national standards; observations. Credit not granted for both MUS 490 and MUS 590.
- 591 Voice Pedagogy** 2 (1-3) Anatomy of the singing process; methodology of teaching voices in various learning and teaching styles. Credit not granted for both MUS 491 and MUS 591.
- 596 Topics in Music** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By permission only. Graduate counterpart of MUS 496; additional requirements.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

Department of Natural Resource Sciences

natural-resources.wsu.edu

Johnson Hall 115
509-335-6166

Please see the School of the Environment in this catalog for information about Natural Resource Sciences.

Program in Naval Science

www.uidaho.edu/navyrotc/
2nd Floor, Hays Hall; University of Idaho
208-885-6333

Professor of Naval Science, Captain Eaton, Commander Greig, Captain Koreis, Lieutenant Hugie, Lieutenant Schemel, Lieutenant Stead.

The Navy-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 commissions in the United States Navy and Marine Corps. Normally, students enter the program at the beginning of their first year; however, selected students may enter up to the beginning of their junior year. Students take up to 24 hours of professional courses taught by the NROTC staff officers. In addition to professional courses, NROTC students must participate in Naval Science Drill each semester. Following graduation and commissioning, new officers are 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.

College Program

Application for this non-scholarship program is made directly to the head of the Department of Naval Science. Students receive their uniforms and naval science textbooks at no cost. When accepted into the Advanced Standing course as juniors, students will begin receiving a monthly stipend of \$350 per month. College Program students may be

nominated by the Professor of Naval Science for a two- or three-year scholarship as first-year students or sophomores, if their academic and military aptitude marks are sufficient to warrant such nomination. The program requires one training cruise during the summer following the junior year. It is an afloat cruise of the same type and with the same pay as described for the Scholarship Program.

Scholarship Program

Naval Science (Navy or Marine-Option) Scholarship students' benefits include tuition, fees, a book allowance, and a monthly stipend of up to \$400. 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 and extra-curricular performance.

A student on scholarship participates in three summer training cruises of three 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 foreign ports. During summer cruises, the students receive one-half the pay of an ensign, in addition to room and board.

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.

Nursing Program

The NROTC program also offers scholarships leading to commissioning in the Navy Nurse Corps. Selected students attend two years of classes at WSU and then transfer to WSU School of Nursing in Spokane, Washington for completion of the BS in Nursing.

Minors

Naval Science

NS 101, 102, 201, 202; four to six courses from the following: NS 301, 302, 311, 401, 402, 412. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Naval Science Courses

WSU students enroll in Naval Science courses through the cooperative program at the University of Idaho. Further information about the cooperative program and about course offerings is available at <http://www.uidaho.edu/registrar/registration/coop>.

Program in Neuroscience

www.vetmed.wsu.edu/neuroscience/
Veterinary and Biomedical Research Bldg (VBR) 207
509-335-6624

Professor, Chair, and Director of MS/PhD in Neuroscience: S. Simasko; Regents Professors, J. M. Krueger, W. S. Ritter, J. W. Wright; Professors, G. Belenky, R. M. Craft, J. W. Harding, M. Morgan, J. Panksepp, R. Quock, R. C. Ritter, M. Schmitter-Edgecombe, B. A. Sorg, H. VanDongen, P. Whitney; Associate Professors, S. Appleyard, R. L. Brown, M. Chandra, W. Dong, H. Jansen, L. Kapas, D. Lin, S. B. Moffett, R. Newberry, C. Portfors, L. Sprunger, D. L. Stenkamp, M. Varnum, A. Vasavada, B. Walker, G. Wayman, J. Wisor; Assistant Professors, A. Coffin, K. Czaja, A. Dimitrov, I. Karatsoreos, J. Peters, E. Szentirmai, J. Xu; Clinical Assistant Professors, S. Gizerian, P. Meighan, S. Meighan.

Neuroscience, the study of the brain and peripheral nervous system, is a multidisciplinary program that sponsors Bachelor of Science, Master of Science, and Doctor of Philosophy degrees, as well as a minor at the undergraduate level. Neuroscience seeks to answer questions that range from molecular and cellular details of neuronal function, to sensory processing and behavior, to the highest levels of human cognition. Findings in this field have provided important insights on both human and animal behavior and health. Discoveries by Washington State University neuroscientists have advanced the understanding of how brain chemicals and nerves function to control behavior and how disturbances in the function of the brain can lead to poor health. Of specific interest in our program are the areas of emotion, eating, sleeping, addiction, remembering, and sensing.

The undergraduate program for majors is designed for students interested in preparing for professional study in the health sciences (such as medical doctor or doctor of veterinary medicine), graduate school, or for those who wish to use their training in laboratory settings in universities, government organizations, or industry.

Computational neuroscience is an option within the undergraduate neuroscience major and links the information processing features of the nervous system with information processing of computer systems. Accordingly, the computational neuroscience track supplements the neuroscience core curriculum with information technology courses. In this way students learn not only of the brain and its information processing mechanisms, but also of modern computer hardware and software technologies. Upon completion of the four-year curriculum, a BS in Neuroscience will be awarded. Furthermore, the program is designed to allow students to acquire breadth in computation subjects or, alternatively, to focus on either software or hardware aspects of computation. Students choosing to acquire breadth in computational subjects will be well prepared for graduate study in most areas of neural and biomedical science, including bioengineering. Students choosing a software or hardware focus may obtain a minor in either computer science or computer engineering.

Specific student learning outcomes for neuroscience majors include:

- Breadth and Depth of Discipline – Demonstrate knowledge in one or more core neuroscience areas.
- Communication – Communicate effectively, both orally and in writing.
- Information Literacy – Effectively (thoroughly) search, evaluate, and cite the appropriate neuroscience literature.
- Quantitative and Symbolic Reasoning – Apply appropriate quantitative tools to data.
- Thinking Critically and Creatively – Implement the “scientific method.”
- Self-in-Society –Be aware of the implications and significance of neuroscience (results, etc.) to society.

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 a neuroscience undergraduate advisor.

7-Year Honors Neuroscience/Veterinary Medicine Degree Program

Academically qualified undergraduate students who meet the highly selective criteria for admission to WSU's Veterinary Medical Program may apply to the 7-year BS/DVM degree program in neuroscience after completion of one year of Honors College coursework at WSU. If accepted into the program, the student will work toward a bachelor of science in neuroscience in the first three years of the program and work toward the doctor of veterinary medicine degree in the following four years. The first three years are a combination of WSU Honors College courses and regular university undergraduate courses that fulfill the pre-veterinary and Neuroscience major requirements. The last four years are the traditional doctor of veterinary medicine program, plus completion of an honors thesis. Prospective applicants must be admitted to the WSU Honors College and enrolled in Honors courses. See the Honors College for additional information.

Preparation for Graduate Study in Neuroscience

The graduate program prepares students for careers in academia, research, and public service. Upon graduation, neuroscience students are credible experts in the areas of their thesis research. The neuroscience graduate faculty experts are nationally and internationally recognized for their contributions to science and society. Doctoral students interested in neuroscience research can pursue their studies with faculty who are unraveling the complexities of:

- Addiction
- Sleep and Performance
- Body Weight and Energy Balance
- Emotion and Well-Being
- Learning and Memory
- Reproduction
- Vision
- Movement

When you graduate with a doctoral or masters degree in neuroscience, a world of opportunity awaits you. You will have, in hand, peer reviewed publications, a NIH-style grant proposal ready for

submission, and the skills to continue on as an independent researcher or as part of a collaborative team. Neuroscience graduates have gone on to excellent jobs in biotechnology and medical device industries, to professional schools (medical, veterinary and law, for example), or to other tier-one research universities to teach and continue their research and studies.

To be eligible for admission, candidates must meet general Washington State University requirements outlined in the Graduate Study Bulletin in effect at the time of their admission, as well as the current graduate neuroscience program requirements.

Applicants are admitted directly to the Ph.D. program from either a masters or bachelors degree from an accredited higher education institution. Applicants for admission to the Graduate Program in Neuroscience must have a minimum grade point average of 3.0 (A=4.0) either on the basis of the last 60 graded semester or 90 graded quarter hours of undergraduate study or basic science portion of a graduate or professional curriculum (first 60 credit hours). Applicants will have completed courses in inorganic and organic chemistry, biochemistry, calculus, physics and a minimum of three courses in different areas of the biological sciences. It is advisable that applicants have a basic statistics course prior to entering the neuroscience program.

Applications for admission to the program must include a completed graduate school application form, GRE test scores (subject tests are not required), official transcripts for all college-level course work, three letters of recommendation from references capable of judging aptitude and capability for graduate study by the applicant, a statement by the applicant that describes career goals and research interests, a writing sample, and a resume; or curriculum vitae (CV). For students whose native language is not English, TOEFL scores are also required. Inquiries should be directed to the Program in Neuroscience, Department of VCAPP, Washington State University, Pullman, WA 99164-7620 or email grad.neuro@wsu.edu.

Students normally begin their studies in the fall semester, which starts the latter part of August. The priority deadline for completed applications for admission to the Neuroscience Program is December 31. Applicants are offered admission on a rolling basis, but may be notified of acceptance as late as April 15. Students may still apply for admission after December, but graduate stipends may not be available for late applicants.

Pre-Admit PhD Program in Neuroscience

Early admission to the Graduate Program in Neuroscience is intended for the academically exceptional WSU undergraduate neuroscience major who intends to pursue a career in neuroscience research. A student nominated for the pre-admit program will have an outstanding record of academic achievement and will have exhibited an aptitude and strong motivation for original research in neuroscience. This program will provide incentives for the best and brightest students in the Undergraduate Program in Neuroscience to remain at WSU for their graduate work. See a neuroscience academic advisor for additional information.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

NEUROSCIENCE - COMPUTATIONAL (BREADTH OF FIELD EMPHASIS) (128 HOURS)

Students may certify in computational neuroscience after completing NEUROSCI 301, and a minimum of 24 semester hours with a 3.0 minimum gpa in BIOLOGY 106, 107, CHEM 105, 106, MATH 171, 172, and PHYSICS 201.

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI] ¹	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN] ¹	4
PSYCH 105 [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI] ¹	4
CHEM 106 ¹	4
CPT S 121	4
MATH 172	4

Second Year

<i>First Term</i>	<i>Hours</i>
CHEM 345 ¹	4
Creative & Professional Arts [ARTS]	3
MATH 220	2
MATH 273	2
NEUROSCI 301	3
PHIL 201 ¹	3

<i>Second Term</i>	<i>Hours</i>
Humanities [HUM]	3
BIOLOGY 107 ¹	4
CPT S 122	4
MBIOS 300 ¹	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
E E 214	3
MATH 216	3
MATH 315	3
NEUROSCI 403 [M] ²	3
PHYSICS 201 ¹	4

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
MBIOS 301 ¹	4
NEUROSCI 404	3
PHYSICS 202 ¹	4

Fourth Year

<i>First Term</i>	<i>Hours</i>
E E 261/262	3 or 1
ENGLISH 402 [WRTG]	3
Integrative Capstone [CAPS]	3
NEUROSCI 495	2
Program Electives (consult advisor)	6

<i>Second Term</i>	<i>Hours</i>
BIO ENG 340	4

BIOLOGY 353	4	E E 262	1
NEUROSCI 430 [M]	4	ENGLISH 402 [WRTG]	3
NEUROSCI 490	1	NEUROSCI 495 or 499	2
Program Electives (consult advisor)	3	Program Electives (consult advisor)	2

¹ Required for entrance into medical or veterinary school.
² Prereq CHEM 345, NEUROSCI 301 and MBIOS 303.

NEUROSCIENCE - COMPUTATIONAL (HARDWARE EMPHASIS) (125 HOURS)

Students may certify in computational neuroscience after completing NEUROSCI 301, and a minimum of 24 semester hours with a 3.0 minimum gpa in BIOLOGY 106, 107, CHEM 105, 106, MATH 171, 172, and PHYSICS 201.

First Year

<i>First Term</i>	<i>Hours</i>	
CHEM 105 [PSCI] ¹	4	
ENGLISH 101 [WRTG]	3	
HISTORY 105 [ROOT]	3	
MATH 171 [QUAN] ¹	4	
PSYCH 105 [SSCI]	3	

<i>Second Term</i>	<i>Hours</i>	
BIOLOGY 106 [BSCI] ¹	4	
CHEM 106 ¹	4	
CPT S 121	4	
MATH 172	4	

Second Year

<i>First Term</i>	<i>Hours</i>	
CHEM 345 ¹	4	
Creative & Professional Arts [ARTS]	3	
MATH 220	2	
MATH 273	2	
NEUROSCI 301	3	
PHIL 201 ¹	3	

<i>Second Term</i>	<i>Hours</i>	
BIOLOGY 107 ¹	4	
CPT S 122	4	
Humanities [HUM]	3	
MBIOS 303 ¹	4	
Complete Writing Portfolio		

Third Year

<i>First Term</i>	<i>Hours</i>	
E E 214	3	
MATH 216	3	
MATH 315 ¹	3	
NEUROSCI 403 [M] ²	3	
PHYSICS 201 ¹	4	

<i>Second Term</i>	<i>Hours</i>	
Diversity [DIVR]	3	
MBIOS 301 ¹	4	
NEUROSCI 404	4	
PHYSICS 202 ¹	4	

Fourth Year

<i>First Term</i>	<i>Hours</i>	
E E 234	3	
E E 261	3	

<i>Second Term</i>	<i>Hours</i>	
BIOLOGY 353	4	
E E 324	4	
Integrative Capstone [CAPS]	3	
NEUROSCI 430 [M]	4	
NEUROSCI 490	1	

¹ Required for entrance into medical or veterinary school.
² Prereq CHEM 345, NEUROSCI 301 and MBIOS 303.

NEUROSCIENCE - COMPUTATIONAL (SOFTWARE EMPHASIS) (123 HOURS)

Students may certify in computational neuroscience after completing NEUROSCI 301, and a minimum of 24 semester hours with a 3.0 minimum gpa in BIOLOGY 106, 107, CHEM 105, 106, MATH 171, 172, and PHYSICS 201.

First Year

<i>First Term</i>	<i>Hours</i>	
CHEM 105 [PSCI] ¹	4	
ENGLISH 101 [WRTG]	3	
HISTORY 105 [ROOT]	3	
MATH 171 [QUAN] ¹	4	
PSYCH 105 [SSCI]	3	

<i>Second Term</i>	<i>Hours</i>	
BIOLOGY 106 [BSCI] ¹	4	
CHEM 106 ¹	4	
CPT S 121	4	
MATH 172	4	

Second Year

<i>First Term</i>	<i>Hours</i>	
BIOLOGY 107 ¹	4	
CHEM 345 ¹²	4	
Creative & Professional Arts [ARTS]	3	
NEUROSCI 301	3	
PHIL 201 ¹	3	

<i>Second Term</i>	<i>Hours</i>	
CPT S 122	4	
MATH 216	3	
MBIOS 303 ¹	4	
PHYSICS 201 ¹	4	
Complete Writing Portfolio		

Third Year

<i>First Term</i>	<i>Hours</i>	
CPT S 440	3	
E E 214	3	
Humanities [HUM]	3	
MBIOS 301 ¹	4	
NEUROSCI 403 [M] ³	3	

<i>Second Term</i>	<i>Hours</i>	
CPT S 223	3	
Diversity [DIVR]	3	
NEUROSCI 404	3	
PHYSICS 202 ¹	4	
PSYCH 490	3	

Fourth Year

<i>First Term</i>	<i>Hours</i>
CPT S 224	2
ENGLISH 402 [WRTG]	3
NEUROSCI 495 or 499	2
Program Electives (consult advisor)	5

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 353	4
CPT S 322	3
Integrative Capstone [CAPS]	3
NEUROSCI 430 [M]	3
NEUROSCI 490	1

¹ Required for entrance into medical or veterinary school.

² Part of the 345-346 year-long sequence. Recommended for medical, dental, or optometry school.

³ Prereq CHEM 345, NEUROSCI 301 and MBIOS 303.

NEUROSCIENCE - GENERAL OPTION (120 HOURS)

Students may certify in general neuroscience (including premed and prevet) after completing NEUROSCI 301 and a minimum of 24 semester hours with a 3.0 minimum gpa in BIOLOGY 106, 107, CHEM 105, 106, MATH 140 or 171, PHYSICS 101, 102.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
Humanities [HUM]	3
NEUROSCI 301	3
PHYSICS 101 or 201	4

<i>Second Term</i>	<i>Hours</i>
CHEM 345 ¹	4
MATH 140 [QUAN] or 171 [QUAN] ²	4
PHYSICS 102 or 202	4
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 315	4
BIOLOGY 438, PSYCH 384, or 390	3
Electives (consult adviser)	8

<i>Second Term</i>	<i>Hours</i>
MBIOS 303	4
NEUROSCI 403 [M]	3

Electives (consult advisor)	8	<i>Second Term</i>	<i>Hours</i>	NEUROSCI or other Electives	2
Fourth Year		CHEM 346 ¹	3	PSYCH 311	4
<i>First Term</i>	<i>Hours</i>	NEUROSCI 404	3	<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3	NEUROSCI or other Electives	9	BIOLOGY 438 [M] (recommended elective)	3
NEUROSCI 495 or 499	2	MCAT in April		NEUROSCI 404	3
NEUROSCI Electives	3	Fourth Year		NEUROSCI 495/499 or other Electives	6
PSYCH 311 ³	4	<i>First Term</i>	<i>Hours</i>	VET PH 308 (recommended elective)	4
Electives (consult advisor)	3	Integrative Capstone [CAPS]	3	Take GRE	
<i>Second Term</i>	<i>Hours</i>	NEUROSCI 403 [M]	3	Fourth Year	
NEUROSCI 430	4	NEUROSCI 495 or 499	2	<i>First Term</i>	<i>Hours</i>
NEUROSCI 490	1	NEUROSCI or other Electives	4	Integrative Capstone [CAPS]	3
NEUROSCI Electives	6	PSYCH 311	4	NEUROSCI 403 [M]	3
300-400-level Electives (consult advisor)	5	<i>Second Term</i>	<i>Hours</i>	NEUROSCI 495 or 499	2
		MBIOS 305	3	NEUROSCI or other Electives	7
		NEUROSCI 430 [M]	4	Apply to Veterinary School	
		NEUROSCI 490	1	<i>Second Term</i>	<i>Hours</i>
		PSYCH 312	4	NEUROSCI 430 [M]	4
		Electives	3	NEUROSCI 490	1
				NEUROSCI or other Electives	6
				300-400-level NEUROSCI or other Electives	5

¹ Part of the 345-346 year-long sequence. Recommended for medical, dental, or optometry school.

² MATH 202 or 206 can substitute.

³ Or statistics course approved by advisor.

NEUROSCIENCE - PRE-MEDICAL AND PRE-DENTAL OPTION (120 HOURS)

Students may certify in general neuroscience (including premed and prevet) after completing NEUROSCI 301 and a minimum of 24 semester hours with a 3.0 minimum gpa in BIOLOGY 106, 107, CHEM 105, 106, MATH 140 or 171, PHYSICS 101, 102.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
Humanities [HUM]	3
NEUROSCI 301	3
PHYSICS 101	4

<i>Second Term</i>	<i>Hours</i>
CHEM 345 ¹	4
MATH 171 [QUAN] or 140 [QUAN]	4
PHYSICS 102	4
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 315	4
BIOLOGY 438, PSYCH 384, or 390	3
MBIOS 301	4
MBIOS 303	4

¹ Part of the 345-346 year-long sequence. Recommended for medical, dental, or optometry school.

NEUROSCIENCE - PRE-VETERINARY OPTION (120 HOURS)

Students may certify in general neuroscience (including premed and prevet) after completing NEUROSCI 301 and a minimum of 24 semester hours with a 3.0 minimum gpa in BIOLOGY 106, 107, CHEM 105, 106, MATH 140 or 171, PHYSICS 101, 102.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 107	4
CHEM 106	4
Creative & Professional Arts [ARTS]	3
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
Humanities [HUM]	3
NEUROSCI 301	3
PHYSICS 101	4

<i>Second Term</i>	<i>Hours</i>
CHEM 345	4
MATH 140 [QUAN]	4
PHYSICS 102	4
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
MBIOS 301	4
MBIOS 303	4

Minors

Neuroscience

Students may apply for a minor in neuroscience once they have completed 60 semester credit hours and have a 2.0 gpa. However, they may take minor coursework at any time as long as they meet the prerequisites. A minor in neuroscience requires 16 credits in Neuroscience, with at least 13 at or above the 300-level. Courses needed to satisfy the minor must include NEUROSCI 301; three credits selected from PSYCH 384, PSYCH 390, or BIOLOGY 438; at least three credits of NEUROSCI 495 or 499; and at least six credits selected from the following: NEUROSCI 403, 404, and 430. Up to five credits of NEUROSCI 495 or 499 may be included. Upon the approval of the student's advisor, a student with a minor in neuroscience may include 500-level courses in the minor program, provided the student meets the graduate study requirements and, prior to registration, obtains the consent of the faculty member(s) teaching the course. Students must maintain a minimum 2.0 gpa to remain certified as a neuroscience minor. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Description of Courses

NEUROSCIENCE

NEUROSCI

138 Neuroscience Seminar 1 May be repeated for credit; cumulative maximum 2 hours. Introduces new students to individual faculty research interests and helps students link personal interests to academic majors. S, F grading.

275 Special Topics: Study Abroad V 1-15 May be repeated for credit. S, F grading.

- 301 Foundations of Neuroscience** 3 Course Prerequisite: CHEM 106; BIOLOGY 107. Structure and function of the nervous system from single neurons to behavior. Credit not granted for both NEUROSCI 301 and 302.
- 302 Foundations of Neuroscience - Honors** 3 Course Prerequisite: CHEM 106; BIOLOGY 107; PHYSICS 101 with a B or better, PHYSICS 201 with a B or better, or PHYSICS 205 with a B or better. Basic concepts, analysis and discussion of the experimental foundations for understanding nervous system function. Credit not granted for both NEUROSCI 301 and 302.
- 305 Neurons, Genes, and Behavior** 3 Course Prerequisite: NEUROSCI 301, 302, MBIOS 301, or PSYCH 372. In-depth exploration of the organization of the brain, and how this organization underlies behavior.
- 403 [M] Cellular Neurobiology** 3 Course Prerequisite: NEUROSCI 301 or NEUROSCI 302; MBIOS 303; certified Neuroscience major or minor. Cellular and molecular interactions occurring within the nervous system.
- 404 Neuroanatomy** 4 (3-3) Course Prerequisite: NEUROSCI 301 or NEUROSCI 302. Fundamental principles of the organization and plans of circuitry of the nervous system.
- 409 Affective Neuroscience** 3 Course Prerequisite: NEUROSCI 301, NEUROSCI 302, or PSYCH 372. Brain mechanisms of human and animal emotions. Credit not granted for both NEUROSCI 409 and NEUROSCI 509.
- 425 Integrated Physiology** 3 Course Prerequisite: NEUROSCI 301, NEUROSCI 302, PSYCH 372, MBIOS 301, or MBIOS 303. Neural regulation of systems physiology examined at the system, cellular, and molecular levels.
- 426 Integrative Physiology - Laboratory** 1 (0-3) Course Prerequisite: Concurrent enrollment in NEUROSCI 425. Optional laboratory component of NEUROSCI 425; Laboratory to complement Integrative Physiology; quantitative and modeling based examination of physiological systems and aspects of their regulation.
- 430 [M] Principles of Neurophysiology** 4 (3-3) Course Prerequisite: BIOLOGY 107; NEUROSCI 301 or NEUROSCI 302; PHYSICS 102, 202 or 206. Advanced exploration of the principles underlying cellular, sensory, motor and integrative functions of the nervous system. Recommended preparation: MBIOS 303.
- 450 Honors Thesis Research** V 1-3 Course Prerequisite: Certified major in Neuroscience; admitted to Honors College. Laboratory research with emphasis on honors thesis or project directed by faculty.
- 480 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 490 Senior Project** 3 Course Prerequisite: Senior standing; certified major in Neuroscience. Research project poster and oral presentation. S, F grading.
- 491 Senior Project-Poster** 1 Course Prerequisite: Senior standing; certified major in Neuroscience. Research project poster or oral presentation. S, F grading.
- 495 Directed Research** V 1-3 May be repeated for credit. Course Prerequisite: Certified major or minor in Neuroscience. Introduction to neuroscience research literature.
- 499 Special Problems** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Certified major or minor in Neuroscience. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 509 Affective Neuroscience** 3 Brain mechanisms of human and animal emotions. Credit not granted for both NEUROSCI 409 and NEUROSCI 509.
- 520 Fundamentals of Neuroscience** 4 (3-3) Functional aspects of the brain from cell membrane to higher integrative processes. Cooperative: Open to UI degree-seeking students.
- 521 Introduction to Veterinary Neurology** 3 (2-3) Course Prerequisite: VET MED 510. Neuroanatomical and neurophysiological bases of veterinary neurology, emphasizing central and peripheral sensory and motor systems. (Crosslisted course offered as VET MED 521, NEUROSCI 521). S, M, F grading.
- 526 Domestic and Exotic Animal Behavior** 2 (1-3) Course Prerequisite: Veterinary Medicine student. Advanced study of animal behavior, emphasizing difference between exotic and domestic animal behavior. (Crosslisted course offered as VET MED 526, NEUROSCI 526). Cooperative: Open to UI degree-seeking students. S, M, F grading.
- 529 Integrative Neuroscience** 3 Basic biochemical processes in the nervous system and their significance for normal and abnormal function.
- 531 Neuroscience Laboratory Rotation** 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. Fourteen-week rotation through each of two research laboratories; learning procedures and techniques in neuroscience. S, F grading.
- 540 Special Topics in Integrative Neuroscience** 3 May be repeated for credit; cumulative maximum 6 hours. Concepts and controversies in neuroscience involving integrative properties of cell systems.
- 541 Special Topics in Cellular and Molecular Neuroscience** 3 May be repeated for credit; cumulative maximum 6 hours. Concepts and controversies in neuroscience that involve nerve cell function and regulation.
- 542 Special Topics in Interdisciplinary Neuroscience** 3 May be repeated for credit; cumulative maximum 6 hours. Concepts and controversies in neuroscience that revolve around traditional approaches to nervous system study.
- 543 Special Topics in Behavioral/Clinical Neuroscience** 3 May be repeated for credit; cumulative maximum 6 hours. Concepts and controversies in neuroscience that involve normal and pathological aspects of behavior.
- 590 Seminar** 1 May be repeated for credit; cumulative maximum 7 hours. Presented by advanced graduate students and faculty (both in VCAPP and around WSU) on their research areas. S, F grading.
- 592 Research Writing and Seminar** 3 May be repeated for credit; cumulative maximum 6 hours. Written and oral communication of scientific information; formal instruction while preparing research proposals and departmental seminar. S, F grading.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

College of Nursing

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Professor and Dean, P. Butterfield; Professor and Associate Dean for Research, C. Corbett; Professor and Associate Dean for Academic Programs, Huey-Ming Tzeng; Professor and Assistant Dean RN/BSN Program, R. Hoeksel; Associate Professor and Director of PhD Program R. Vandermause; Associate Professor and Assistant Dean/Regional Director, G. Guido; Clinical Associate Professor and Director of Undergraduate Education, Ryan Townsend; Professors, M. Haberman, J. Roll; Associate Professors, J. Banasik, K. Daratha, D. Doutrich, L. Eddy, P. Eide, D. Howell, J. Katz, S.

McPherson, J. Purath, M. Schiavenato, L. Schumann, B. Severtsen; Assistant Professors, C. Barbosa-Leiker, S. Benavides-Vaello, K. Caines, J. Dotson, C. Fitzgerald, S. Fleming, C. Holliday, S. Kooienga, G. Oneal, J. Postma, M. Shaw, K. Shishani, D. Smart, C. Van Son, L. Ward; Research Professors, T. Odom-Maryon; Research Associate Professor, Phil Butterfield; Clinical Associate Professors, C. Allen, A. Dupler, J. Lohan; Clinical Assistant Professors, D. Brinker, L. Brown, J. DeWitt-Kamada, N. Lungstrom, A. Mason, M. Rasmor, D. Rondeau; Senior Instructors, S. Perkins, J. Spuck, M. Stucky, L. Wintersteen; Instructors, L. Alexander, M. Allen, K. Anders, M. Aronow, T. Barenz, J. Beebe, C. Brown, S. Campbell, T. Carlton, S. Carollo, M. Castillo, L. Cox, L. Dekker, R. Faubion, K. Foster, A. Fulton, W. Gibson, K. Girmus, M.J. Groebner, L. Hahn, V. Hennessey, E. Hepner, J. Hickman, T. Horntvedt, A. Houchin, L. Jinishian, S. Johnson, M. Jones, L. Kifer, T. Koch, K. Ligon, S. Matar Curnow, S. McFadden, P. Morris, R. O'Brien, C. Oliver, K. Olson, L. Parisot, L. Punch, L. Rahn, B. Richardson, C. Riebe, A. Sanders, D. Scheib, J. Schlittenhart, K. Stevens, K. Townsend, D. Tuning, L. Vehrs, L. Vickers, M. Vulcan, S. Weeks.

BACCALAUREATE PROGRAM

The College of Nursing was established on July 1, 1968 and exists as a joint endeavor of Washington State University, Eastern Washington University, and Whitworth University. Its cooperative undergraduate program was 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) is approximately one year of full time study.

The lower-division courses, for students with no previous preparation in nursing (first year and sophomore years), are offered at Washington State University on the Pullman campus, Eastern Washington University, or Whitworth University. They provide the student with a foundation in the natural and social sciences and the humanities.

The 300-400-level courses, junior and senior years, are offered at the College of Nursing in Spokane, Tri-Cities and Yakima. They provide the professional preparation in nursing. To apply for admission to the college, 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 Nursing Care Quality Assurance Commission and nationally accredited by the Commission on Collegiate Nursing Education. 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 their Prenursing advisor 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 advisors on the Spokane, WSU Tri-Cities, WSU Vancouver, and Yakima campuses.

Learning Outcomes

We expect our graduating students will be able to:

- (1) provide competent nursing care to individuals, families, groups and communities through promotion, maintenance and restoration of health; prevention of illness, and physical, emotional, and spiritual support throughout the life span;
- (2) formulate nursing practice decisions using evolving knowledge and research from nursing science, the biological and behavioral sciences, and the humanities;
- (3) use developmentally appropriate teaching-learning principles to assist clients to achieve their health goals and to assist colleagues to improve the quality of their nursing care;
- (4) provide compassionate, ethical care to individuals of diverse cultures, values, beliefs, and lifestyles;
- (5) demonstrate the values central to nursing practice including: altruism, autonomy, human dignity, integrity, and social justice;
- (6) protect the rights of people to receive optimum care and make informed decisions affecting their health and welfare;
- (7) uphold the standards and values of the profession including accepting responsibility for learning and personal growth;
- (8) interpret professional nursing using perspectives gained from past, present, and future trends in nursing and society;
- (9) advocate for responsible, humane health care policies;
- (10) partner with clients, families, communities and interdisciplinary health care teams to design and provide quality health care;
- (11) participate in revision of health care policy and practice within a rapidly changing global environment;
- (12) demonstrate leadership skills and knowledge of the management process in designing, managing and coordinating care;
- (13) use evolving information technology to monitor and improve the health care of clients; and
- (14) demonstrate knowledge of fiscal dimensions with a variety of current and evolving health care systems.

MASTER OF NURSING PROGRAM

The master's program in nursing at the College of Nursing was established in 1983 and has been accredited by the Commission on Collegiate Nursing Education. The program builds upon an undergraduate baccalaureate degree in nursing and provides a basis for further study at the doctoral level. The program may be completed in two academic years. Provision is made for part-time matriculation over a longer period of time, subject to policies and requirements of Washington State University and the College of Nursing. Students have a specialty in the area of Advanced Population Health. Certification as Nurse Educator or Nurse Administrator is also available, either while completing the Master's degree or in a Post-master's certificate program. A thesis or specified non-thesis option is required.

Students apply to the Graduate School in Pullman, WA. Program information and assignment of a faculty advisor are provided by the Graduate Program office at the College of Nursing.

DOCTOR OF NURSING PRACTICE (DNP) PROGRAM

The Doctor of Nursing Practice program prepares students for leadership positions in advanced nursing practice. Advanced population health nursing,

psychiatric/mental health nurse practitioner, and family nurse practitioner specializations are available. Video-conference classes are available in Spokane, Vancouver, and several other sites across the state.

The DNP program is open to students who hold a Bachelor of Science in Nursing degree from a nationally recognized accrediting agency. Admission is granted on the basis of the student's (1) undergraduate gpa, (2) completion of a course in basic descriptive and inferential statistics, (3) licensure as a registered nurse in Washington state, (4) recommendations relative to professional nursing competence and prediction of success as a graduate student and (5) a satisfactory grade on the GRE Analytical Writing Examination. A written and/or verbal interview, depending on program track, is required for all applicants. A successful TOEFL examination is required for those for whom English is not a primary language.

Students apply to the Graduate School in Pullman, WA. Program information and assignment of a faculty advisor are provided by the Graduate Program Office at the College of Nursing.

We expect that our graduating students: (1) collaborate in the conduct of research with faculty and community of scholars; (2) provide leadership in planning, implementing, coordinating, and evaluating health care delivery; (3) participate in the formulation of health policy appropriate to a diverse and multicultural society; (4) model and influence the values of the profession of nursing; (5) assume responsibility and accountability for enacting the role of an advance practice nurse within the scope of legal, professional, and ethical standards; (6) integrate theories from nursing and other sciences to provide high quality nursing care; (7) provide evidence-based practice in a variety of settings through the promotion, maintenance, and restoration of health and the prevention of illness; (8) deliver culturally competent nursing and health care; and (9) provide direct client care to individuals, families, and or communities consistent with the knowledge and skills appropriate to advance practice nursing.

PHD IN NURSING PROGRAM

The PhD in Nursing Program began in summer 2007, and admits up to 10 students each summer. Required course work is delivered over 7 semesters in a combination of approaches – face-to-face in Spokane, video conference, and online learning. The student presents a dissertation research proposal to meet requirements for the preliminary examination, and completes an independent research study. The program prepares students to advance the discipline of nursing science through a research-focused program emphasizing innovative approaches and leveraged resources to improve health care. Graduates are equipped to become leaders in nursing education and research, critical roles in today's health care environment.

Applicants are required to have (1) a masters degree in nursing or health related field, (2) a gpa of 3.5 or higher in the masters program, (3) completion of a graduate level statistics course, (4) satisfactory statement of goals and match of research interests to college faculty, (5) submission of a scholarly work and vita/resume, (6) a satisfactory grade on the GRE Analytical Writing Examination, (7) 3 letters of reference, and (8) a successful interview. A successful TOEFL examination is required for those for whom

English is not a primary language.

Students apply to the Graduate School in Pullman. Program information, determination of student interests and goals, and assignment of a faculty advisor are provided by the Ph.D. Program office at the College of Nursing. Priority application deadline for summer admission is October 15.

We expect graduates of the PhD in Nursing program to: (1) Contribute to advancing nursing science and practice through clinical research; (2) analyze, construct, and test theoretical frameworks that guide nursing research design, methodology, data analyses, and the transfer of new knowledge into practice; (3) create effective interdisciplinary collaborations to foster research and the transfer of evidence-based knowledge into best clinical practices; (4) synthesize knowledge from a variety of disciplines to create research designs and methods for nursing science and to address ethical, social, cultural, political, and professional issues; (5) implement proven and emerging technologies to enhance nursing research and education; and (6) implement innovative research designs, methodologies, leadership skills, health education, and/or life style modification techniques to address the health care needs of vulnerable populations and disparities in the access to or delivery of health care.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

NURSING (127 HOURS)

Sixty semester hours are required in 300-400-level nursing major courses. Additional 300-400-level 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 300-400-level nursing major include an overall cumulative gpa of 3.00 or higher and a cumulative gpa of 3.00 or higher in prerequisite courses. Achievement at a "proficient" level or above on the Test of Essential Academic Skills (TEAS) is required for all Pre-licensure applicants. Responses to personal interview questions may be used as additional admission criteria.

Part-time schedule of study is available; see advisor.

First Year

First Term	Hours
CHEM 101 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3 or 4

Second Term	Hours
BIOLOGY 102 [BSCI], 106 [BSCI], or 107 [BSCI]	4
CHEM 102	4
Creative & Professional Arts [ARTS]	3
PSYCH 105 [SSCI]	3
SOC 101 or 102	3

Second Year

First Term	Hours
BIOLOGY 251	4
Humanities [HUM]	3
MBIOS 101	4
STAT 212	4

Second Term	Hours
BIOLOGY 140 or 233	3
BIOLOGY 315	4
Communication [COMM] or Written Communication [WRTG]	3
H D 101	3
Complete Writing Portfolio	

Third Year

First Term	Hours
NURS 308	3
NURS 311	4
NURS 315	4
NURS 316	2
NURS 317	3
NURS 328	2

Second Term	Hours
NURS 309	3
NURS 322	2
NURS 323	2
NURS 324	4
NURS 325	5

Fourth Year

First Term	Hours
Integrated Capstone [CAPS]	3
NURS 408	3
NURS 412	1
NURS 414	3
NURS 415	2
NURS 416	3
NURS 417	2

Second Term	Hours
NURS 409	2
NURS 424	3
NURS 425	2
NURS 426	2
NURS 427	3
NURS 430	3

NURSING - REGISTERED NURSES OPTION

Bachelor of Science Option for Registered Nurses: Required courses: NURS 360, 365, 366, 400, 405, 406, 440, 462, 465, 477, 495, Integrated Capstone/upper-division elective.

Description of Courses

NURSING

NURS

308 Professional Development I: Evidence Based Practice 3 Course Prerequisite: Certified major in Nursing. First of professional development series; focus on nursing and health care research, information management, informatics, and development of nursing research.

309 Professional Development II: Ethical Reasoning and Decision Making Processes in Nursing 3 Course Prerequisite: NURS 308; NURS 315 or concurrent enrollment. Continuation of professional development series; moral/ethical reasoning models, decision processes, and philosophical basis of nursing as a discipline.

311 Pathophysiology and Pharmacology in Nursing 4 Course Prerequisite: Certified major in Nursing. Etiology, pathogenesis, clinical manifestations of common human dysfunction; nursing implications for prevention and therapeutic approaches including pharmacologic and non-pharmacologic therapies.

315 Nursing Practice: Health and Illness 4 (0-12) Course Prerequisite: Certified major in Nursing. Introduction to nursing practice and health assessment: professional values, core competencies, core knowledge and role development. S, F grading.

316 Introduction to Nursing Practice in Health and Illness: Theory 2 Course Prerequisite: Certified major in Nursing. Introduction to nursing concepts and holistic assessment including core professional values, knowledge and competencies for nursing practice.

317 Health Assessment 3 (2-2) Course Prerequisite: Certified major in Nursing. Systematic approach to health assessment of adults emphasizing and incorporating use of nursing process and scientific rationale.

318 Growth and Development Across the Life Span 3 Course Prerequisite: Certified major in Nursing. Theoretical and conceptual perspectives on human growth and development across the life span.

322 The Human Experience of Diversity and Health 2 Course Prerequisite: Certified major in Nursing. Explorations of regional, national, and global expressions of health and illness and implications for health care professionals.

323 Nursing in the Genome Era 2 Genome science and application of genetic and genomic concepts to nursing care.

324 Nursing Concepts in Acute and Chronic Illness in the Adult 4 Course Prerequisite: NURS 311; NURS 315; NURS 316; NURS 317. Theoretical concepts of acute and chronic illness in the adult as a basis for critical thinking and decision-making in nursing.

325 Nursing Practice in Acute and Chronic Illness in Adults 5 (0-15) Course Prerequisite: NURS 311; NURS 315; NURS 316; NURS 317; concurrent enrollment in NURS 324. Application of acute/chronic illness concepts in adults as a basis for critical thinking and decision-making in nursing. S, F grading.

328 Introduction to Gerontological Nursing 2 Course Prerequisite: Certified major in Nursing. Professional values, communication, and functional assessment in care of elders; core knowledge and role development of the gerontological nurse.

- 360 Professional Nursing Concepts and Issues 2** Course Prerequisite: Certified major in Nursing. Philosophical, historical, economic, legal/ethical, and professional issues designed for registered nurses to build upon previously acquired professional concepts.
- 365 Nursing Concepts: Assessment and Application of Physiological Concepts to Nursing Practice I 3** Course Prerequisite: Certified major in Nursing. Integration of pathophysiological, assessment, pharmacological nursing concepts with diverse client populations; emphasizing neurological, EENT, skin, musculoskeletal, endocrine, and respiratory systems.
- 366 Nursing Concepts: Assessment and Application of Physiological Concepts to Nursing Practice II 3** Course Prerequisite: Certified major in Nursing. Integration of pathophysiological, assessment, pharmacological nursing concepts with diverse client populations; emphasizing fluid/electrolytes, oncology, GI/GU; cardiovascular; immune system, renal.
- 392 Therapeutic Touch: A Nursing Modality of Caring and Healing 3 (2-3)** Course Prerequisite: Certified major in Nursing. Explores the broad arena of touch as a means of interpersonal communication and as a mechanism for healing using Krieger-Kunz method.
- 398 Special Topics V 1-3** May be repeated for credit; cumulative maximum 6 hours. May be repeated for credit; cumulative maximum 6 hours.
- 400 Nursing Research, Evidence-Based Practice, and Informatics 3** Course Prerequisite: Certified major in Nursing. Application of informatics skills and research processes to evidence-based clinical practice.
- 405 Nursing Leadership 2** Course Prerequisite: Certified major in Nursing. Application of group leadership and management theories to professional nursing practice.
- 406 Nursing Management 3** Course Prerequisite: Certified major in Nursing. Management, leadership, and group theories are utilized and applied to the management of nursing and health care.
- 408 Professional Development III: Leadership and Management 3** Course Prerequisite: NURS 309. Continuation of professional development series; focus on impact of leadership, management, and resource allocation on patient outcomes.
- 409 Professional Development IV: Transition to Practice 2** Course Prerequisite: NURS 408; NURS 414; NURS 415; NURS 416; NURS 417. Continuation of professional development series; focus on transition to practice and nursing across health care systems/delivery within global arena.
- 412 Family and Community as a Context of Care 1 (0-2)** Concepts of family-focused nursing assessment, planning, and interventions with emphasis on referral to appropriate community resources.
- 414 Child and Family Health: Theory 3** Course Prerequisite: NURS 324; NURS 325; concurrent enrollment in NURS 328. Analysis and evaluation of scientific and theory base for nursing care of children and families.
- 415 Children and Families as the Focus of Nursing Care 2 (0-6)** Course Prerequisite: NURS 324; NURS 325. Synthesis and application of underlying science and nursing process with the unique population of children and families. S, F grading.
- 416 Childbearing Health of the Family 3** Course Prerequisite: NURS 324; NURS 325; concurrent enrollment in NURS 328. Care of childbearing families within the context of community; newborn health, and men's and women's reproductive health addressed.
- 417 Nursing Care of Childbearing Families 2 (0-6)** Course Prerequisite: NURS 324; NURS 325. Nursing care of families during the childbearing continuum and/or acute care settings; combination of clinical and seminar. S, F grading.
- 424 Psychiatric/Mental Health Nursing Concepts 3** Course Prerequisite: NURS 414; NURS 415; NURS 416; NURS 417. Healthy to psychopathological states studied within a nursing framework; includes history, theories, legal/ethical issues of psychiatric/mental health nursing.
- 425 Nursing Practice: Psychiatric/Mental Health 2 (0-6)** Course Prerequisite: NURS 414; NURS 415; NURS 416; NURS 417; concurrent enrollment in NURS 424. Clinical application of the nursing process with clients experiencing acute and chronic psychiatric/mental health disruptions. S, F grading.
- 426 Community Health Nursing Theory 2** Course Prerequisite: NURS 414; NURS 415; NURS 416; NURS 417. Synthesis of nursing and public health concepts with emphasis on community as partner and population-focused practice.
- 427 Community Health Nursing Practice 3 (0-9)** Course Prerequisite: NURS 414; NURS 415; NURS 416; NURS 417; concurrent enrollment in NURS 426. Promoting the public's health through application of the public health functions; assessment, policy development, and assurance. S, F grading.
- 430 Senior Practicum 3 (0-9)** Course Prerequisite: NURS 409 or concurrent enrollment; NURS 424 or concurrent enrollment; NURS 425 or concurrent enrollment; NURS 426 or concurrent enrollment; NURS 427 or concurrent enrollment. Clinical and theoretical concepts applied in a concentrated clinical practicum; use of clinical preceptors and student objectives. S, F grading.
- 440 Nursing Concepts: Community Health 2** Synthesis of nursing and public health concepts with focus on community as partner, and population-based practice.
- 455 Cultural Safety and Social Justice in Global Society 3** Balance of power in health professional relationships, cultural safety, social justice, and diversity in global society.
- 456 Narrative Health Care in Clinical Practice 3** Narrative processes of attention, representation, and affiliation experienced by health professional students in clinical encounters.
- 462 Selected Nursing Concepts: Psychiatric/Mental Health 2** Nursing process with individuals and families experiencing psychiatric/mental health disruptions.
- 465 Nursing Practice: Community and Psychiatric Mental Health 3 (0-9)** Course Prerequisite: NURS 462 or concurrent enrollment, or NURS 440 or concurrent enrollment. Application of community health, public health, and psychiatric/mental health nursing concepts to individuals, families, and communities with identified health needs.
- 476 Health Law: Application to Practice 3** Course Prerequisite: Junior standing. Laws, principles and issues related to regulations of health care professionals, practice settings and public and private programs.
- 477 Health Care Ethics V 2-3** Ethical theories including deontology, teleology, virtue ethics and applicability to ethical dilemmas in nursing. Credit not granted for both NURS 477 and NURS 577.
- 478 Plateau Tribes: Culture and Health 3 (2-3)** Course Prerequisite: Certified major in Nursing, Nutrition and Exercise Physiology, or Pharmacy; Junior standing. History, culture, and health care needs of the Plateau Indian tribes; both classroom and practicum experience. Credit not granted for both NURS 478 and NURS 578.
- 479 Advanced Physiology for Clinical Practice 3** Course Prerequisite: Certified major in Nursing. Cellular and system physiology foundational to advanced practice and understanding drug mechanisms of action.
- 481 International Health Care 3** Course Prerequisite: NURS 315. Study abroad experience in global health care; assessment and evaluation skills in planning and implementing culturally appropriate health care for individuals and communities.
- 490 Basic Dysrhythmia Interpretation/Advanced Cardiac Life Support V 1-3** May be repeated for credit; cumulative maximum 6 hours. Basic interpretation of common ECG rhythms, dysrhythmias, and application of ACLS dysrhythmia management guidelines.
- 491 Advanced Cardiac Life Support (ACLS) and Laboratory Value Analysis and Interpretation 3** Course Prerequisite: NURS 311; NURS 324; NURS 325. Analysis/interpretation of common laboratory values; basic interpretation of common ECG rhythms, dysrhythmias, and application of ACLS dysrhythmias management guidelines.
- 492 Essentials of Disaster Management for Nurses 3** Course Prerequisite: Certified major in Nursing; junior standing. Natural and manmade disasters; nursing implications for disaster management; mental health and ethical issues and concerns related to vulnerable populations.

- 495 [CAPS] Nursing Practice: Advanced Clinical Practicum 3** (0-9) Course Prerequisite: Certified major in Nursing. Application and integration of theoretical content in an area of nursing practice of special interest to the student.
- 497 Special Topics in Nursing V** 1-3 May be repeated for credit; cumulative maximum 6 hours.
- 498 Special Topics in Nursing V** 1-3 May be repeated for credit; cumulative maximum 6 hours.
- 499 Special Problems V** 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 503 Scientific Inquiry in Nursing 2** Course prerequisite: Graduate standing in Nursing. Scientific inquiry applied to theoretical and philosophical foundations in nursing.
- 504 Evidence-Based Practice 3** Course prerequisite: NURS 503 or concurrent enrollment, or in graduate Nursing Certificate program. Exploration of evidence-based practice through the conduct of scientific inquiry and application of credible evidence.
- 505 Nursing Practice Inquiry V** 1 (0-3) to 4 (0-12) Course prerequisite: NURS 539; NURS 565; NURS 576. Analysis and development of a practice inquiry proposal based on a practice concern of interest to the student.
- 506 Nursing Practice Capstone V** 1 (0-3) to 4 (0-12) Course prerequisite: NURS 505; NURS 539; NURS 565; NURS 576. Translational research project including measurement of outcomes, analysis of results and the dissemination of recommendations for practice.
- 507 Health Care Policy Analysis V** 2-3 Analysis of health care system policy; exploration of issues of clinical management and community resource utilization including advocacy techniques.
- 511 Rural and Cultural Competencies for Population Health 2** Course prerequisite: Graduate standing in Nursing. Rural, cultural and research competencies necessary for reducing health disparities to increase access to care for local and global populations.
- 512 Rural and Cultural Competencies for Population Health Practicum V** 1-2 Course prerequisite: NURS 511; graduate standing in Nursing. Rural, cultural and research competencies necessary for reducing health disparities to increase access to care in the practice setting. S, F grading.
- 517 Quality Improvement and Program Evaluation 3** Principal dimensions of healthcare quality management including quality measurement and continuous quality improvement.
- 518 Translating Evidence into Practice 3** Course prerequisite: Graduate standing in Nursing. Health related evidence and development of skills to apply evidence in advanced practice.
- 519 Teaching in the Information Age 3** Course Prerequisite: By instructor permission. Focus on educational paradigms consistent with distance education; development of a variety of multimedia materials for nursing education. Required preparation: Basic computer skills.
- 520 Nursing Education in a Multicultural Society V** 3 (0-9) to 5 (0-15) Course Prerequisite: By instructor permission. Application of learning theories and strategies useful in teaching diverse populations; taught in a distance degree format.
- 521 Teaching, Learning and Evaluation in Nursing V** 3-6 Exploration of concepts related to teaching-learning, assessment of diverse learning needs, instructional strategies and design, evaluation of performance outcomes.
- 523 Educational Issues and Curriculum Analysis V** 3-5 Exploration of curriculum history, development, future predictions; program evaluation, instructional resources, leadership, and policy development in academic and service settings.
- 524 Foundations of Methodological Applications for Health Sciences 2** Qualitative and quantitative methods in health care; research, statistics, and interpretation language.
- 525 Psychopharmacology 3** Clinical psychopharmacology across the lifespan including pharmacokinetics, pharmacodynamics, principles of prescribing, client education and outcome monitoring.
- 526 Analytical Foundations for Health Sciences 3** Quantitative methods, research and statistics in current health care literature. Required preparation must include college-level statistics course.
- 527 Association, Group Difference and Regression Techniques for Health Services 3** Course Prerequisite: NURS 526. Application of quantitative techniques to explore relationships and group differences among variables supporting questions in health science research. Required preparation: Graduate-level statistics course.
- 528 Multivariate Statistical Techniques for Health Sciences 3** Course Prerequisite: NURS 527. Application of quantitative techniques to explore multivariate relationships among variables supporting questions in health science research.
- 529 Analytical Seminar for Health Science 3** In-depth research methods used for health science research.
- 531 Culture, Populations, and Family Health Care 3** Diverse health beliefs and practices of clients, families, and members of the interdisciplinary health care team.
- 532 Resource Stewardship in Health Care 3** Theory, research and practice dimensions of resource stewardship to effectively manage human and material resources in the practice setting.
- 534 Research Seminar: Grant Development 1** Seminar focusing on grant writing and advanced skills for critically reviewing grant applications.
- 535 Philosophy of Nursing Science 2** Course prerequisite: Graduate standing in Nursing; NURS 534 or concurrent enrollment. Structure and organization of fields of knowledge in science including historical and philosophical tenets of inquiry.
- 536 Nursing Theory: Foundations for Knowledge Development 2** Course prerequisite: Graduate standing in Nursing. Theory development analysis; theory critique; nursing knowledge examination; impact of theory on nursing science, applied to student's phenomenon of interest.
- 539 Scientific Foundations of the Advanced Practice Nursing Role 2** Course prerequisite: Graduate standing in Nursing. Analysis of the foundations of the Advanced Practice Nursing role emphasizing the integration of practice inquiry and advanced practice.
- 540 Internship: Practicum in Advancing the FNP Primary Care Role V** 1-10 May be repeated for credit; cumulative maximum 10 hours. Primary Care Practicum experience requiring the supervised provision of increasingly complex direct patient care.
- 541 Psychiatric/Mental Health Nursing: Individuals 4** (3-3) Course prerequisite: Graduate standing in Nursing; NURS 562; NURS 581 or concurrent enrollment. Theories of psychopathology and appropriate nursing interventions with individuals across the age continuum.
- 543 Psychiatric Mental Health Nursing 4** (3-3) Course prerequisite: NURS 541; NURS 581. Introduction to theory and practice of group psychotherapy; Milieu and other selected theories studied and applied to nursing practice.
- 546 Practicum in Psychiatric/Mental Health Nursing V** 4 (1-9) to 5 (1-12) Course prerequisite: Graduate standing in Nursing; NURS 525; NURS 541; NURS 543; NURS 562; NURS 581. Individualized clinical experience/ seminar designed to provide advanced competency, accountability, leadership in psychiatric/mental health nursing.
- 548 Psychiatric Nurse Practitioner Internship V** 1-9 May be repeated for credit; cumulative maximum 9 hours. Course prerequisite: Graduate standing in Nursing; NURS 525; NURS 546; by interview only. Application and integration of theory, research findings, and interventions in the primary care of clients with psychiatric disorders.
- 549 Addiction Perspectives 2** Overview of the theories, physiology, course and epidemiology of addictions; assessment, evaluation, prevention and treatment.

- 550 International, Interdisciplinary, and Transcultural Health Care** 3 Diverse health beliefs and practices of clients and members of the interdisciplinary health care team.
- 551 Risk and Resilience in Child and Adolescent Health** 4 Risk and resilience models in the development of strengths-based health interventions for child and adolescent populations.
- 552 Family Nursing in the Community** V 2-4 Theoretical approaches to the analysis of normal and at-risk families; application of family assessment and intervention models when planning care.
- 553 Seminar in Interprofessional Collaboration** 1 Course prerequisite: Graduate standing in Nursing. Leadership and collaboration efforts among professionals with clients and community partners.
- 554 Epidemiology and Biostatistics for Health Professions** 3 Introduction to epidemiology: principles and methods of epidemiologic investigation including analysis of key elements of investigation of high risk populations. Required preparation must include college-level statistics course.
- 556 Advanced Population Health** V 2-6 Course Prerequisite: Graduate student in Nursing; instructor permission. Culminating analysis, development, and enactment of advanced practice roles in teaching, practice, or administration of community-based/population-focused nursing.
- 561 Advanced Assessment and Diagnosis for the Psychiatric Mental Health Practitioner** 3 Course prerequisite: Graduate standing in Nursing. Assessment and diagnosis of psychiatric illnesses; focus on physical and psychiatric history, mental status exam and strategies of psychometric evaluation.
- 562 Advanced Health Assessment and Differential Diagnoses** 3 (2-3) Course prerequisite: Graduate standing in Nursing. Applying health assessment and differential diagnostic skills to individuals, families, and populations in rural, urban, and medically under-served areas.
- 563 Advanced Pharmacological Concepts and Practice** 3 Pharmacology for clinical practice including decision making, prescribing, drug monitoring, and patient education associated with prescriptive authority.
- 564 Health Promotion in Nursing Practice** V 2-3 Interprofessional course analyzing the theoretical bases for developing and evaluating health promotion strategies tailored to variations in health behaviors.
- 565 Information Management for Clinical Practice** 3 Application/evaluation of nursing informatics; information systems to support clinical research, practice, administration, and education. Required preparation must include competency in word processing/spreadsheets.
- 566 Community Analysis and and Grant Development** 2 Application of core public health functions in community analysis, program development and program evaluation.
- 567 Primary Care of Families: Adults and Elders** 4 (1-9) Course prerequisite: Admission to FNP program; NURS 562; NURS 563; NURS 581. Assessment, differential diagnosis, therapeutic intervention with adults; developmental changes; opportunities to provide diagnostic, maintenance, and follow-up care.
- 568 Primary Care of Families: Infants, Children and Adolescents** 4 (1-9) Course prerequisite: Admission to FNP program; NURS 562; NURS 563; NURS 581. Assessment, differential diagnosis, and therapeutic intervention with infants, children, and adolescents in rural and urban settings.
- 569 Primary Care of Families: Family** 4 (1-9) Course prerequisite: Admission to FNP program; NURS 562; NURS 563; NURS 581. Assessment, differential diagnosis, therapeutic intervention with individuals in childbearing, childrearing, and multigenerational families.
- 570 Clinical Decision Making** 1 (0-3) Course prerequisite: NURS 581; NURS 562; NURS 563; concurrent with first clinical course (NURS 567, 568, or 569). Provides a framework for systematic collection, organization, interpretation, and communication of data for the development of differential diagnosis.
- 572 Nursing Science: Research and Theory of Chronic Conditions** 2 Course prerequisite: NURS 536. Concepts, theories and research relevant to preventing and managing chronic conditions across the lifespan.
- 573 Rational Prescribing** 2 Course Prerequisite: NURS 563; admission to FNP program. Pharmacology for clinical practice including decision-making, prescribing, drug monitoring, and patient education associated with prescriptive authority.
- 574 Nursing Sciences: Research and Theory of Acute Conditions** 2 Course prerequisite: NURS 536. Research methods, procedures and analysis of acute phenomena in nursing with a focus on vulnerable populations.
- 575 Diagnostic Testing and Interpretation** 3 (2-3) Course prerequisite: Admission to FNP program. Analysis of diagnostic findings across the age continuum for clinical decision making; selected diagnostic and treatment skills for advanced practice.
- 576 Organizational Systems and Leadership** 3 Integration of leadership competencies and resource stewardship for nurse leaders in a constantly changing health care environment.
- 577 Health Care Ethics** V 2-3 Ethical theories including deontology, teleology, virtue ethics and applicability to ethical dilemmas in nursing. Credit not granted for both NURS 477 and NURS 577.
- 578 Plateau Tribes: Culture and Health** 3 (2-3) Course Prerequisite: Graduate standing in Nursing, Nutrition and Exercise Physiology, or Pharmacy. History, culture, and health care needs of the Plateau Indian tribes; both classroom and practicum experience. Credit not granted for both NURS 478 and NURS 578.
- 580 Practicum in Advanced Nursing Practice** V 1 (0-3) to 5 (0-15) Course prerequisite: NURS 539; concurrent enrollment in NURS 576. Integration and synthesis of practice inquiry; leadership and advanced practice to demonstrate competency in an area of advanced practice nursing. S, F grading.
- 581 Advanced Pathophysiology** 3 Etiology, pathogenesis, manifestations, and outcomes of disruption and dysfunction of human physiology.
- 584 Theory and Policy Development in Systems of Health Care Delivery** 2 Course prerequisite: NURS 536. Health care delivery systems in the US and worldwide addressing barriers to care, social justice, vulnerability and access disparity.
- 585 Faculty Role Seminar** 1 Course prerequisite: Graduate standing in Nursing. Analysis of current issues related to the faculty role in nursing education.
- 586 Faculty Role Practicum** 2 Course prerequisite: Graduate standing in Nursing. Analysis, development, and enactment of selected aspects of the faculty role.
- 587 Research Inquiry: Qualitative Methods I** 3 Qualitative methodologies, issues and techniques of data collection, analysis and interpretation; issues of ethics and bias.
- 588 Research Inquiry: Quantitative Methods I** 3 Quantitative methodologies, issues and techniques of data collection, analysis and interpretation.
- 589 Psychometrics in Health Care Research** 2 Course prerequisite: NURS 526; NURS 527; 588. Application of psychometric theory and techniques for constructing, analyzing and testing instruments to measure nursing and educational interventions and outcomes.
- 590 Research Inquiry: Quantitative Methods II** 2 Course prerequisite: NURS 588; NURS 589. Advanced theoretical and practical application of selected quantitative and methodological strategies.
- 591 Mixed Methods for Program Development** 2 Program development, implementation, and outcomes evaluation in healthcare will be addressed primarily from a mixed methods and application perspective.
- 592 Research Inquiry: Qualitative Methods II** 2 Course prerequisite: NURS 587. Application of qualitative methodologies, techniques of qualitative data analysis, presentation of qualitative findings, rigor, data management and research dissemination.

593 Preliminary Examination Seminar

1 Course prerequisite: PhD in Nursing; completion of 30 core credits; by permission only. Methods to synthesize material from coursework to present and analyze scholarly nursing science knowledge. S, F grading.

594 Community-Based Care of At-Risk Adults and Marginalized Adult Populations

3 Analysis and evaluation of strategies, interventions and programs to promote health of at-risk adults, older adults and marginalized adult populations.

595 Internship V 1-10 May be repeated for credit; cumulative maximum 10 hours. Course prerequisite: Admission to FNP program; NURS 562; NURS 563; NURS 581; one of NURS 567, 568, 569, 571, or 572. Application and integration of theoretical content, research findings, and assessment and intervention strategies into primary care practice. S, F grading.

597 Advanced Topics in Nursing V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Graduate student in Nursing; instructor permission. Specialized topics within the discipline; content will vary each term.

598 Advanced Topics in Nursing V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Graduate student in Nursing; instructor permission. Specialized topics within the discipline; content will vary each term.

599 Independent Study V 1-18 May be repeated for credit. Course Prerequisite: Graduate student in Nursing; instructor permission. S, F grading.

700 Master's Research, Thesis, and/or Examination

V 1-18 May be repeated for credit. Course prerequisite: Graduate standing in Nursing. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

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

V 1-18 May be repeated for credit. Course prerequisite: Graduate standing in Nursing. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

799 Dissertation Seminar 1 May be repeated for credit. Course prerequisite: Graduate standing in Nursing. Best practices for doctoral research and presentation. S, F grading.

800 Doctoral Research, Dissertation, and/or Examination

V 1-18 May be repeated for credit. Course prerequisite: Graduate standing in Nursing. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Program in Nutrition and Exercise Physiology, College of Pharmacy, WSU Spokane

www.pharmacy.wsu.edu/prospectivestudents/
BS, MS, MS CPD NEP: 509-358-7811;
PhD NEP: 509-335-8665

Professor and Dean, G.M. Pollack; Professor and Director, College of Pharmacy Graduate Programs, K.E. Meier; Professor and Associate Dean for Graduate Education and Scholarship, G.G. Meadows; Professor and Chair, Pharmaceutical Sciences Dept, P. Lazarus; Professor and Chair, Pharmacotherapy Dept., J. R. White; Professor and Head, Clinical Pharmacology Section, K.M. Gibson; Professors, W.E. Fassett, R.M. Quock; Associate Professors, M.M. Ahern, S.S. Daoud, M.W. Garrison, E.C. Johnson, M. Paine; Assistant Professors, D.W. Koh, S. A. Marsh, J.J. Neumiller, G.M.K. Poon, G.D. Trobridge; Associate Research Professor, G. Chen, S. Tolmachev, Z. Xia, H. Zhang; Assistant Research Professor, Z. Zhang; Clinical Professor, A. Lazarus; Clinical Associate Professors, B. Vorderstrasse, L.J. Woodard; Clinical Assistant Professors, J.K. Beary, K. Dolan, L.L. Frank, S. Kynast-Gales, J. Knuth, J. Padowski; Instructors, A. Atkins, D. Guerra, M. Houghton, M. McMulkin, M.J. Sandall, M. Silvers, B. Sponseller, T. Warner; Adjunct faculty, B. Becker, M. Clay, S. Fluegel; Affiliate Faculty, J. Armstrong Shultz.

The Nutrition and Exercise Physiology Program, offered by the College of Pharmacy, is the only research program in the state of Washington that integrates nutrition with experimental and clinical exercise physiology.

The Bachelor of Science in Nutrition and Exercise Physiology is a unique, interdisciplinary undergraduate degree in the health sciences that focuses on the effects of exercise and nutrition on the health of individuals. Supporting prerequisite coursework, detailed in the Program of Study (below), provides a broad knowledge base in human anatomy, physiology, nutrition, chemistry, biochemistry, and microbiology; however, the primary focus of the upper division major is on clinical exercise physiology and nutrition.

The degree offers an integrative curricular approach in which students gain a unique perspective on how and why the human body responds to various exercise and nutritional stimuli through didactic and experiential assessment of molecular, genetic, clinical, social/psychological, and environmental factors. Students gain experiential learning through laboratories and practicum focusing on exercise physiology and nutrition, followed by a semester-long internship.

At the completion of their undergraduate B.S. program, students will be expected to demonstrate effective written, oral, and visual communication skills in a variety of settings and environments for target audiences; apply knowledge of physical, chemical, and biological sciences to exercise and nutrition sciences; apply knowledge of behavioral and social sciences to exercise and nutrition habits of diverse populations; demonstrate the ability to use, interpret, evaluate, and apply research principles to exercise and nutrition interventions; demonstrate the application of exercise programming and nutrition recommendations for the prevention or management of chronic disease; demonstrate their understanding of the role of healthcare systems and public policy in the maintenance and achievement of health; demonstrate critical thinking skills gained throughout the Nutrition and Exercise Physiology curriculum by utilizing problem-solving activities and assignments; perform exercise and nutrition programming and work effectively as a team member in a variety of settings such as acute care, rehabilitation facilities and community health facilities; be well informed regarding the characteristics of various health and fitness settings and factors that impact their operation such as policies, regulatory agencies, reimbursement/funding, and legislative issues; and model professional skills and behaviors, including social responsibility, ethical practice, and a commitment to lifelong learning.

Graduates will be prepared for successful and rewarding careers and job opportunities including: cardiac and pulmonary rehabilitation clinical programs; community health centers; sports nutrition; university and worksite wellness programs; exercise and health promotion, and commercial fitness centers. Graduates who complete an approved clinical internship will be qualified to test for American College of Sports Medicine Certified Clinical Exercise Specialist credential. In addition, graduates may seek admission to graduate programs in nutrition and exercise physiology.

The non-thesis Master of Science Coordinated Program in Dietetics, Nutrition, and Exercise Physiology (CPD NEP), is a coordinated program in dietetics with an exercise emphasis. The program is accredited by the Accreditation Council for Education in Nutrition and Dietetics, the accrediting agency for the Academy of Nutrition and Dietetics. Successful completion of this MS program prepares students to test for the Registered Dietitian (R.D.) credential.

The College of Pharmacy Graduate Programs also offer the Doctor of Philosophy (PhD) in Nutrition and Exercise Physiology as well as the Master of Science Nutrition and Exercise Physiology (MS NEP). The Ph.D. in Nutrition and Exercise Physiology offers a unique opportunity to pursue research interests in nutrition and/or exercise physiology, from a molecular, clinical and/or behavioral approach.

This curriculum provides a foundation in the study of the cellular and molecular mechanisms that regulate physiological responses. It also provides a foundation in assessment and outcome measures in community nutrition and health programs. The research interests of the faculty include cellular and molecular signal transduction processes in cancer, sociocultural factors that influence dietary practices, clinical exercise physiology, and nutrition education.

The Master of Science in Nutrition and Exercise Physiology (MS NEP) provides students with training in clinical exercise physiology and is designed for students wishing to complete a research project in the area of exercise physiology.

Applications for admission to the graduate programs must include: Official GRE scores, official transcripts for all college level work, three letters of recommendation, and a letter discussing career goals and research interests. For students whose native language is not English, TOEFL scores above 100 (Internet based) are required. Inquiries should be emailed to: gradprograms@pharmacy.wsu.edu.

The following Program of Study is recommended for undergraduate (BS NEP) students completing an exercise internship. Students from colleges or universities other than WSU Pullman will need to contact the Academic Coordinator in the Program in Nutrition and Exercise Physiology to determine appropriate prerequisites: nep.advising@wsu.edu.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

BACHELOR OF SCIENCE IN NUTRITION AND EXERCISE PHYSIOLOGY (120 HOURS)

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 101 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MBIOS 101 [BSCI]	4

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 102	4
CHEM 102	4
Creative & Professional Arts [ARTS]	3
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 251	4
Diversity [DIVR]	3
PHIL 103 [HUM] or 365 [HUM]	3
STAT 205 [QUAN]	3

<i>Second Term</i>	<i>Hours</i>
BIOLOGY 233	3
COM 102 [COMM]	3
KINES 262 or BIOLOGY 315	4
Elective	1
Complete Writing Portfolio	

<i>Third Term</i>	<i>Hours</i>
Summer Session @WSU Spokane, NEP 320	3

Third Year

<i>First Term</i>	<i>Hours</i>
WSU Spokane	
NEP 300 [M]	2
NEP 340	3
NEP 400	3
NEP 427	3
NEP 463	4

<i>Second Term</i>	<i>Hours</i>
WSU Spokane	
NEP 402	2
NEP 435	4
NEP 465 [M]	3
NEP 470	3
NEP 476	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
WSU Spokane	
NEP 362	3
NEP 458	3
NEP 478	3
NEP 479	3

<i>Second Term</i>	<i>Hours</i>
WSU Spokane	
Integrative Capstone [CAPS]	3
NEP 450	3
NEP 479	3
NEP 480	4

<i>Third Term</i>	<i>Hours</i>
NEP 490	10

Description of Courses

NUTRITION AND EXERCISE PHYSIOLOGY

NEP

300 [M] Professional Preparation 2 Course
Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Standards of practice in dietetics and exercise physiology; healthcare ethics; social and cultural issues; professional writing; career development.

320 Strength Training and Conditioning; Theory and Application 4 Course
Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Application of scientific principles of strength and conditioning as they relate to exercise training.

340 Foods with Application to Physical Activity 3 (2-3) Course
Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Experimental approach to physical, chemical and sensory properties of foods; overview of culinary techniques, technology and application to physical activity.

362 Biomechanical Analysis 3 Applied sport, clinical and occupational biomechanics.

370 Physiological Biochemistry 3 Course
Prerequisite: 8 hours of CHEM; 3 hours BIOLOGY. Biochemical foundations of human physiology; biochemistry of carbohydrate, amino acid, and lipid homeostasis from the molecular to the physiological level.

400 Macronutrient Metabolism 3 Course
Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Digestion, absorption, and metabolism of carbohydrates, protein and fats, and their utilization for energy.

401 Community Supervised Practice 9 Course
Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Advanced principles of community dietetic nutrition education along with hands-on community supervised practice experience.

402 Vitamin and Mineral Metabolism 3 Course
Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Absorption and metabolism of vitamins and minerals and their role in macronutrient metabolism and nutritional requirements for maintenance of health.

427 Nutritional Assessment and Lifestyle Counseling 3 (2-3) Course
Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Basic skills and concepts of nutrition assessment and lifestyle counseling of ambulatory adults using dietary intakes, menu planning and communication skills.

435 Exercise, Diet and Disease 4 Course
Prerequisite: NEP 400; NEP 402 or concurrent enrollment; NEP 463. Pathophysiology of disease and implications for dietary and exercise interventions.

437 Diet Therapy 4 Course
Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Theoretical and practical base for diet modification and nutritional therapy in health and a variety of disease states.

450 Management and Facilities 3 Course
Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Essential skills and guidelines for those in the health facility industry in establishing and maintaining a safe and proper facility.

458 Nutrition and Exercise Throughout the Life Cycle 3 Physical activity relating to nutritional needs and dietary patterns from infancy through old age and including maternal nutrition.

463 Advanced Exercise Physiology 4 (3-3) Course
Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Advanced undergraduate exercise physiology with emphasis on mechanisms regulating physiological responses to exercise across the life span.

- 465 [M] Nutrition and Exercise Assessment** 3 (2-3) Course Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Field and laboratory techniques and tools required to properly assess nutritional and physiological parameters.
- 470 Sports Nutrition** 3 Course Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Identification of energy, macro/micronutrients and fluid requirements during exercise; evaluation of dietary practices and ergogenic aids for pre- and post-competition, weight maintenance.
- 476 Exercise Testing and Prescription** 3 (2-3) Course Prerequisite: Certified major in nutrition and exercise physiology, or admitted to the Master of Science in Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Principles of exercise testing and prescription based on current practices in physical education, physiology, and rehabilitation.
- 478 Electrocardiography, Medications and Procedures** 3 (2-3) Development of ECG interpretation skills, including 12-leads, with emphasis on procedures and impact of medication in resting and exercising persons.
- 479 Nutrition and Exercise Practicum** 3 (1-6) May be repeated for credit; cumulative maximum 6 hours. Supervised experience in applying exercise and nutrition assessment techniques and developing exercise and nutrition prescription for normal and diseased subjects.
- 480 Cardiopulmonary Rehabilitation** 4 (3-3) Course Prerequisite: Certified major in Nutrition and Exercise Physiology. Principles and applications of exercise assessment/prescription and nutrition recommendations and program management to cardiopulmonary and rehabilitation situations and populations.
- 490 Exercise and Nutrition Internship** V 10 (0-30) to 15 (0-45) Supervised offsite exercise field experience to assess normal and diseased populations and develop/apply exercise prescriptions and nutrition recommendations. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Community Supervised Practice** 5 (1-12) Review of literature in dietetic education and health promotion including supervised practice in community facilities.
- 505 Graduate Seminar** V 2-3 May be repeated for credit; cumulative maximum 6 hours. Current issues and evaluation of literature related to nutrition, dietetics, exercise physiology practice and research.
- 510 Foundations of Cellular Regulation** 3 Fundamentals of pharmacology and toxicology; signal transduction; cellular effects of diet and exercise; action and regulation of dietary supplements.
- 520 Research Methods in Nutrition and Exercise Physiology** 3 Current research designs and methods in nutrition and exercise physiology including behavioral and basic sciences emphasizing chronic disease prevention.
- 526 Advanced Community Nutrition and Health** 3 Research basis of practice in community nutrition or health programs; assessment and outcome measures emphasizing chronic disease prevention.
- 537 Advanced Medical Nutrition Therapy** 4 Exercise and nutrition assessment/prescription and program management in rehabilitation for populations in various disease states.
- 540 Clinical Supervised Practice** 10 Clinical supervised practical experience for graduate students in coordinated program in dietetics.
- 551 Management Practices in Food Service** 4 (1-9) Advanced principles and supervised experience in food systems, institutional food service management, school food service and community feeding programs.
- 573 Nutrition in the Community** 2 Public health from a nutrition perspective including current issues in nutrition healthcare, overview of existing programs and assessment of program planning.
- 577 Introduction to Research** 3 Philosophy, standards, and practices of scientific inquiry and scholarship appropriate to basic, clinical, and social and administrative sciences in healthcare, and the performance expectations of researchers and scholars. (Crosslisted course offered as PHARMSCI 577, NEP 577).
- 578 Biomedical Statistics** 3 Research process; techniques for conducting health services research and evaluation, critique published health services research and collect, utilize, and evaluate primary and secondary data. (Crosslisted course offered as PHARMSCI 578, NEP 578).
- 580 Advanced Topics in Exercise Physiology** 3 Advanced topics in cellular and molecular physiology.
- 585 Clinical Exercise Physiology** 4 Exercise and nutrition assessment/prescription and program management in rehabilitation for populations in various disease states.
- 597 College of Pharmacy Graduate Seminar** 1 May be repeated for credit; cumulative maximum 12 hours. (Crosslisted course offered as PHARMSCI 597, NEP 597.) Cooperative: Open to UI degree-seeking students. S, F grading.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination** V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

The Pharmaceutical Sciences Graduate Program

www.pharmacy.wsu.edu/prospectivestudents/graduateprograms.html
509-335-8665

Professor and Dean, G.M. Pollack; Professor and Director, College of Pharmacy Graduate Programs, K.E. Meier; Professor and Associate Dean for Graduate Education and Scholarship, G.G. Meadows; Professor and Chair, Pharmaceutical Sciences Dept, P. Lazarus; Professor and Chair, Pharmacotherapy Dept., J. R. White, Professor and Head, Clinical Pharmacology Section, K.M. Gibson; Professors, W.E. Fassett, R.M. Quock; Associate Professors, M.M. Ahern, S.S. Daoud, M.W. Garrison, E.C. Johnson; M. Paine; Assistant Professors, D.W. Koh, S. A. Marsh, J.J. Neumiller, G.M.K. Poon, G.D. Trobridge; Associate Research Professor, G. Chen, S. Tolmachev, Z. Xia, H. Zhang; Assistant Research Professor, Z. Zhang; Clinical Professor, A. Lazarus; Clinical Associate Professors, B. Vorderstrasse, L.J. Woodard; Clinical Assistant Professors, J.K. Beary, K. Dolan, L.L. Frank, S. Kynast-Gales, J. Knuth, J. Padowski; Affiliate Faculty, J. Armstrong Shultz.

The mission of the College of Pharmacy Graduate Programs is to produce graduates for teaching, research, and clinical careers in academia, industry, health care, and other public and private institutions dedicated to the promotion of human health and wellness. The Graduate Programs offer two doctoral degrees: Doctor of Philosophy (Ph.D.) in Pharmaceutical Sciences and Doctor of Philosophy (Ph.D.) in Nutrition and Exercise Physiology.

The Ph.D. in Pharmaceutical Sciences utilizes multi-disciplinary and translational research approaches to (1) understand mechanisms of disease,

(2) identify novel therapeutic targets, (3) develop and optimize pharmaceutical treatment approaches, and (4) promote the prevention and management of chronic diseases. Pharmacogenomics and genomics, drug metabolism, pharmacokinetics, gene therapy, immunotherapy, and basic and clinical pharmacological approaches to disease p are emphasized. We strive to prepare students to become independent and creative problem solvers who will develop into leaders in their respective fields.

Students entering the program should have completed undergraduate work in biology, chemistry (including organic chemistry and biochemistry), mathematics (through calculus), an upper division level organ/mammalian physiology course, and an undergraduate statistics course. We also welcome applicants who have a professional degree in pharmacy. Students working toward the Ph.D. in Pharmaceutical Science are expected to develop an area of emphasis that is consistent with the research capabilities and interests of the faculty.

The College of Pharmacy Graduate Programs offer the Doctor of Philosophy (PhD) in Nutrition and Exercise Physiology as well as the Master of Science Nutrition and Exercise Physiology (MS NEP). For more information, please see the Program in Nutrition and Exercise Physiology section.

Applications for admission to the graduate programs must include: Official GRE scores, official transcripts for all college level work, three letters of recommendation, and a letter discussing career goals and research interests. For students whose native language is not English, TOEFL scores above 100 (Internet based) are required. Inquiries should be emailed to: gradprograms@pharmacy.wsu.edu.

Description of Courses

PHARMACEUTICAL SCIENCES

PHARMSCI

502 Faculty Research in Pharmacology/ Toxicology 1 Introduction to faculty research for incoming graduate students. S, F grading.

505 Principles and Methods of Toxicology 3 Course Prerequisite: MBIOS 513. Basic concepts in mammalian toxicology and the methodology currently employed for toxicological investigations. Required preparation: 300-level organ/mammalian physiology course. Cooperative: Open to UI degree-seeking students.

506 Principles of Pharmacology 3 Course Prerequisite: MBIOS 513 or concurrent enrollment. Mechanisms of drug action and the factors that modify drug responses; drug design and drug development. Cooperative: Open to UI degree-seeking students.

507 Principles of Therapeutics 3 Course Prerequisite: PHARMSCI 506. Organ systems pharmacology, including drug actions, effects, side effects, and interaction of medications used in therapeutics. Required preparation: 300-level organ/mammalian physiology course.

510 Advanced Pharmacokinetics/ Toxicokinetics 3 Course Prerequisite: PHARMSCI 506. Kinetics of drug absorption, distribution, elimination, and pharmacologic response. Cooperative: Open to UI degree-seeking students.

511 Topics in Toxicology V 1-4 May be repeated for credit; cumulative maximum 12 hours. Topics of current interest in toxicology and closely related areas. Cooperative: Open to UI degree-seeking students.

512 Topics in Pharmacology V 1-4 May be repeated for credit; cumulative maximum 12 hours. Topics of current interest in pharmacology and closely related disciplines. Cooperative: Open to UI degree-seeking students.

555 General and Cellular Physiology 4 (3-3) Physicochemical mechanisms of cellular function. (Crosslisted course offered as VET PH 555, PHARMSCI 555). Recommended preparation: Concurrent enrollment in MBIOS 513.

572 Fundamentals of Oncology 3 Course Prerequisite: By permission only. Thorough overview of cancer biology encompassing basic cellular and molecular mechanisms of carcinogenesis and tumor progression, treatment and prevention. Cooperative: Open to UI degree-seeking students.

573 Principles of Pharmacokinetics and Toxicokinetics 3 Pharmacokinetic, pharmacodynamic, and toxicokinetic systems; mathematical model development utilizing common kinetic systems.

574 Advanced Pharmacokinetics and Pharmacodynamics 4 Standard model development techniques to complex pharmacokinetic, pharmacodynamic systems; advanced data analysis techniques to recover intrinsic kinetic and dynamic parameters.

575 Receptor-Ligand Interactions 3 Interactions of drugs with biological macromolecules constituting the physicochemical basis of drug action.

576 Biophysical Methods 3 Biophysical methods separating or detecting analytes based on their physical interactions with a support matrix or energy.

577 Introduction to Research 3 Philosophy, standards, and practices of scientific inquiry and scholarship appropriate to basic, clinical, and social and administrative sciences in healthcare, and the performance expectations of researchers and scholars. (Crosslisted course offered as PHARMSCI 577, NEP 577).

578 Biomedical Statistics 3 Research process; techniques for conducting health services research and evaluation, critique published health services research and collect, utilize, and evaluate primary and secondary data. (Crosslisted course offered as PHARMSCI 578, NEP 578).

580 Gene and Stem Cell Therapies 3 Stem cell therapeutics, gene transfer vectors and methods for isolating and generating stem cells; stem cell therapeutics, presentation skills and evaluation of primary literature.

581 Stem Cell Biology, Therapeutics and Regenerative Medicine 3 Provides information on the latest cutting edge research in the areas of stem cell biology and tissue regeneration; covers stem cell therapeutics, gene transfer vectors and methods for isolating, characterizing, and generating stem cells. (Course offered as PHARMSCI 581, ANIM SCI 581).

597 College of Pharmacy Graduate Seminar 1 May be repeated for credit; cumulative maximum 12 hours. (Crosslisted course offered as PHARMSCI 597, NEP 597.) Cooperative: Open to UI degree-seeking students. S, F grading.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

College of Pharmacy

www.pharmacy.wsu.edu
Academic Center 525, WSU Spokane
509-368-6605

COLLEGE OF PHARMACY Dean and Professor, G. Pollack; Associate Dean and Professor, G. G. Meadows; Associate Dean and Professor, D. E. Baker; Associate Dean and Associate Professor, L. G. MacLean; Director of Student Services and Clinical Assistant Professor, J. D. Robinson. DEPARTMENT OF PHARMACEUTICAL SCIENCES Professor and Chair, P. Lazarus; Professors, G. G. Meadows, K. E. Meier; Associate Professor, S. S. Daoud; Assistant Professors, D. W. Koh, G. Poon, G. Trobridge; Clinical Associate Professor, B. A. Vorderstrasse. DEPARTMENT OF PHARMACOTHERAPY Professor and Chair, J. R. White; Professors, D. E. Baker, R. K. Campbell, W. E. Fasset, L. G. MacLean T. L. Skaer, J. R. White; Associate Professors, M. M. Ahern, M. W. Garrison; Assistant Professor, J. J. Neumiller; Clinical

Associate Professors, B. Bray, B. J. Gates, T. L. Levien, C. R. Schwartz, C. M. Terriff, L. Woodard; Clinical Assistant Professors, G. Matsuura, J. Robinson, T.E. Sonnett, M. Willson. DEPARTMENT OF CLINICAL PHARMACOLOGY Professor and Chair, M. Gibson; Clinical Professor, A. Lazarus.

The College of Pharmacy offers a course of study leading to a Doctor of Pharmacy (PharmD) degree. The PharmD schedule of studies involves four professional years. The first three professional years of the PharmD curriculum are delivered in the Health Sciences building on the WSU Spokane campus. The fourth professional year of the PharmD curriculum consists of advanced experiential training, in which students will be assigned to one of the following geographic locations: Spokane, Yakima, Vancouver, Tri-Cities, Tacoma, Olympia, Wenatchee, or Pullman. Students are expected to complete the majority of their rotations in their assigned geographic locations. Students will gain experience in a variety of health care environments, including community, institutional, and long-term care settings. One hundred and twenty five students are enrolled annually in the fall in the first professional year of the PharmD program.

The application period each academic year is from June 1st to December 1st. Although a bachelor's degree is not required for admission, pre-requisites for admission require three years of pre-pharmacy education. 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 pre-pharmacy requirements will be admitted to the Doctor of Pharmacy program. For additional information regarding the Doctor of Pharmacy curriculum, please see the College of Pharmacy home page at <http://www.pharmacy.wsu.edu>, or contact the College of Pharmacy Office of Student Services at 509-368-6605.

We expect our Doctor of Pharmacy graduates to successfully achieve the following competency-based outcomes:

Outcome 1 -- Knowledge Acquisition and Critical Thought: The graduate shall acquire, analyze, synthesize, and apply knowledge in biomedical, pharmaceutical, and clinical sciences to facilitate positive therapeutic outcomes and prevent drug therapy related misadventures.

Outcome 2 -- Communication: The graduate shall acquire a repertoire of verbal, non-verbal, and written communication skills, demonstrate professional level competency in applying these skills in a variety of cultural and practice contexts, and select appropriate methods for use in all facets of pharmacy practice.

Outcome 3 -- Professionalism: The graduate shall practice ethically within the boundaries of the laws of pharmacy, uphold values and integrity embodied in the practice of pharmacy, and provide leadership/influence for the improvement of the profession.

Outcome 4 -- Knowledge of the Profession, Professional Development, and Public Service: The graduate shall thoroughly understand the profession, assume responsibility for continuous professional development, and provide leadership/influence for the improvement of the health and wellness of individuals and society.

Outcome 5 -- Medication Therapy Management: The graduate shall integrate and apply requisite

biomedical, pharmaceutical, and clinical sciences, and communication skills, to evaluate, design, implement, and monitor optimal patient-centered pharmacotherapy plans, educate patients, identify and resolve drug related problems, and assure patient safety.

Outcome 6 -- Management Systems, Processes and Operations: The graduate shall understand multiple factors/perspectives in US healthcare systems delivery; medication distribution, control, and quality management systems; and pharmacy management systems, policies, and operations to optimize patient/population outcomes.

Pharmacy Prerequisites for Admission to the Professional Pharmacy Program

- Written Communication I – 3 credits
- Written Communication II – 3 credits
- Philosophy – Logic, Critical Thinking or Ethics – 3 credits
- Microeconomics – ECONS 101 – 3 credits
- Introductory Psychology – PSYCH 105 – 3 credits
- Calculus – MATH 140 or 171 or 202 – 4 credits
- Statistics – STAT 212 – 3 credits
- Introductory Biology – BIOLOGY 106 and 107 – 8 credits
- Principles of Chemistry – CHEM 105 and 106 – 8 credits
- Organic Chemistry – CHEM 345 and 348 – 7 credits
- Microbiology – MBIOS 305 – 3 credits
- Human Anatomy with lab – BIOLOGY 315 – 4 credits
- Mammalian Physiology – BIOLOGY 353 – 4 credits
- Biochemistry – MBIOS 303 – 4 credits
- Microbiology and Molecular Biology Laboratory – MBIOS 304 – 3 credits

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

PROFESSIONAL CURRICULUM (132 HOURS)

First Year

	Hours
First Term	
PHARDSCI 502	3
PHARDSCI 503	4
PHARDSCI 504	1
PHARDSCI 508	3
PHARMACY 505	2
PHARMACY 507	1
PHARMACY 509	1

	Hours
Second Term	
PHARDSCI 512	4
PHARDSCI 515	2
PHARDSCI 518	2
PHARDSCI 519	1
PHARMACY 501	1
PHARMACY 513	1
PHARMACY 514	4
PHARMACY 516	2
Elective ¹	1

Second Year

	Hours
First Term	
PHARDSCI 528	3
PHARDSCI 532	4
PHARMACY 527	3
PHARMACY 531	1
PHARMACY 533	3
PHARMACY 534	4
Elective ¹	1

	Hours
Second Term	
PHARDSCI 542	4
PHARMACY 541	1
PHARMACY 543	1
PHARMACY 544	4
PHARMACY 546	2
PHARMACY 559	2
Elective ¹	1

Third Year

	Hours
First Term	
PHARMACY 545	3
PHARMACY 551	1
PHARMACY 553	3
PHARMACY 554	3
PHARMACY 555	3
PHARMACY 558	2
PHARMACY 567	3
Elective ¹	1

	Hours
Second Term	
PHARMACY 557	3
PHARMACY 561	1
PHARMACY 563	2
PHARMACY 564	3
PHARMACY 565	2
PHARMACY 566	3
PHARMACY 568	1
Elective ¹	1

Fourth Year

	Hours
First Term	
Advanced Pharmacy	
Practice Experiences (APPE) ²	15

	Hours
Second Term	
Advanced Pharmacy	
Practice Experiences (APPE) ²	15

¹ Elective Courses: 4 credits of electives are mandatory throughout the first three years of the curriculum. Students are required to take 2 elective credits during the first two years of the program and 2 elective credits during the third year of the program. Select from: PHARMACY 499, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, and 599.

² Advanced Pharmacy Practice Experiences (APPE) courses are: PHARMACY 581, 582, 583, 584, 585, 586, 587.

Description of Courses

PHARMACY

PHARMACY

399 Mentored Writing Skills Development

1 Course Prerequisite: Admission to Pharmacy program; permission of instructor. Individual faculty mentoring to improve written communication skills. S, F grading.

- 499 Special Problems V** 1-4 May be repeated for credit; cumulative maximum 12 hours. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Applied Patient Care I: Patient Assessment** 1 (0-3) Course Prerequisite: Admission to Pharmacy program. Laboratory course teaching hands-on physical assessment techniques from a pharmacy perspective, to provide patient-specific care. S, F grading.
- 502 Integrated Pharmacology I** 3 Medicinal chemistry, drug metabolism, signal transduction, drug development and autonomic pharmacology.
- 503 Pathophysiology with Medical Terminology** 4 Review of human physiology along with an overview of human pathophysiology, including medical terminology.
- 505 Pharmacy Practice Foundations** 2 Course Prerequisite: Admission to Pharmacy program. Perspectives into the profession of pharmacy; pharmacy law, ethics, and careers. H, S, F grading.
- 507 Introduction to Therapeutic Agents: Top 200 Drugs** 1 (0-2) Course Prerequisite: Admission to Pharmacy program. Drugs most frequently prescribed in the US as a basis for pharmacy practice. H, S, F grading.
- 508 Pharmaceutics I** 3 Principles of dosage form design and drug delivery, with an emphasis on physiochemical principles.
- 509 Professional Communications Lab** 1 (0-3) Course Prerequisite: Admission to Pharmacy program. Professional communication skills as an essential foundation for career development. H, S, F grading.
- 512 Integrated Pharmacology II** 4 Pharmacology of drugs acting on the cardiovascular system, peripheral sites and central nervous system.
- 513 Introductory Pharmacy Practice Experience I** 1 Course Prerequisite: PHARMACY 505; PHARMACY 507; PHARMACY 509; PHARDSCI 502; PHARDSCI 503; PHARDSCI 504; PHARDSCI 508. Prepares student pharmacists for community practice experience and service learning activities. H, S, F grading.
- 514 Pharmacotherapy I** 4 Course Prerequisite: PHARDSCI 502; PHARMACY 505. First in a sequence of courses that focuses on the clinical use of medications in the prevention, mitigation, or cure of disease. H, S, F grading.
- 515 Immunology** 2 Fundamentals of immunology, including the immunological mechanisms that underlie prevention and clearance of infectious diseases, and immune reactions that contribute to disease; mechanism of action of immunotherapeutic and immunomodulatory agents.
- 516 Health Care Systems** 2 Course Prerequisite: Admission to Pharmacy program. US healthcare system, financing of health care delivery and the role of the pharmacist. H, S, F grading.
- 518 Pharmaceutics II** 2 Principles of dosage form design and drug delivery, with an emphasis on pharmaceutical technology and biopharmaceutics.
- 519 Pharmaceutics Laboratory** 1 (0-3) Laboratory experience in the preparation of medicines.
- 527 Biostatistics and Population Based Health** 3 Course Prerequisite: Admission to Pharmacy program. Research process; biostatistics, pharmacoconomics, pharmacoepidemiology and evaluation of quality of life emphasizing application and interpretation.
- 528 Pharmacokinetics** 3 Qualitative and quantitative understanding of the processes of drug absorption, distribution, and elimination.
- 531 Applied Patient Care II: Clinical Assessment and Documentation** 1 (0-3) Course Prerequisite: PHARMACY 501. Clinical assessment and documentation skills necessary for effective pharmaceutical care.
- 533 Introductory Pharmacy Practice Experience II** 3 (0-9) Course Prerequisite: PHARMACY 513; PHARMACY 514; PHARMACY 516; PHARDSCI 512; PHARDSCI 518; PHARDSCI 519. Authentic practice situations and service learning with opportunities for discussion and reflection.
- 534 Pharmacotherapy II** 4 Course Prerequisite: PHARMACY 514; PHARDSCI 512; concurrent enrollment in PHARDSCI 532. Second in a sequence of courses that focuses on the clinical use of medications in the prevention, mitigation, or cure of disease.
- 541 Applied Patient Care III: Medication Therapy Management** 1 (0-3) Course Prerequisite: PHARMACY 531. Identification of pertinent patient findings, assessment of drug-related problems and clinical problem solving.
- 542 Integrated Pharmacology IV** 4 Pharmaceutical biotechnology, basic toxicology, pharmacogenomics and complementary and alternative medicines.
- 543 Introductory Pharmacy Practice Experience III** 1 Course Prerequisite: PHARMACY 527; PHARMACY 531; PHARMACY 533; PHARMACY 534; PHARDSCI 528; PHARDSCI 532. Authentic practice situations and service learning with opportunities for discussion and reflection.
- 544 Pharmacotherapy III** 4 Course Prerequisite: PHARMACY 534; concurrent enrollment in PHARDSCI 542. Third in a sequence of courses that focuses on the clinical use of medications in the prevention, mitigation, or cure of disease.
- 545 Pharmacy Management** 3 Course Prerequisite: Admission to Pharmacy program. Management principles essential for common practice settings in the profession of pharmacy.
- 546 Selected Topics in Pharmacy Practice** 2 Course Prerequisite: PHARMACY 516; PHARMACY 527. Interactive course addressing economic, ethical and professional aspects of health care delivery. S, F grading.
- 551 Applied Patient Care IV: Advanced Medication Therapy Management** 1 (0-3) Course Prerequisite: PHARMACY 541. Medication therapy management for complex patients; case-based discussions and human patient simulation.
- 553 Introductory Pharmacy Practice Experience IV** 3 (0-9) Course Prerequisite: PHARMACY 541; PHARMACY 543; PHARMACY 544; PHARMACY 546; PHARDSCI 542. Authentic practice situations and service learning with opportunities for discussion and reflection.
- 554 Pharmacotherapy IV** 4 Course Prerequisite: PHARMACY 544. Fourth in a sequence of courses that focuses on the clinical use of medications in the prevention, mitigation, or cure of disease.
- 555 Drug Information and Literature Evaluation** 3 Course Prerequisite: PHARMACY 527. Evaluation of drug information in pharmaceutical and biomedical literature to provide better patient care.
- 557 Pharmacotherapy V** 4 Course Prerequisite: PHARMACY 554. Fifth in a sequence of courses that focuses on the clinical use of medications in the prevention, mitigation, or cure of disease.
- 558 Applied Clinical Pharmacokinetics** 2 Course Prerequisite: PHARDSCI 528. Clinical applications of pharmacokinetics including theoretical background and application to patient care.
- 559 Quality Assurance and Patient Safety** 2 Course Prerequisite: Admission to Pharmacy program. Patient safety issues including quality assurance, medication error avoidance and risk management in healthcare systems.
- 561 Applied Patient Care V: Integrated Patient Care** 1 (0-3) Course Prerequisite: PHARMACY 551. Integration of pharmaceutical care with an interdisciplinary emphasis using patient cases and human patient simulation.
- 563 Introductory Pharmacy Practice Experience V** 2 (1-2) Course Prerequisite: PHARMACY 551; PHARMACY 553; PHARMACY 554; PHARMACY 555; PHARMACY 558; PHARMACY 559. Prereq successful completion of third year fall coursework. Authentic practice situations and service learning with opportunities for discussion and reflection.
- 564 Pharmacy Law and Regulatory Affairs** 3 Course Prerequisite: Admission to Pharmacy program. Legal and ethical pharmacy practice including licensing, patient privacy protection, order fulfillment and contracts.
- 565 Parenteral Products** 2 (0-4) Course Prerequisite: PHARDSCI 519 or PHARMACY 519; PHARMACY 554. Preparation and administration of compounded parenteral products; patient case discussions and student presentations.

- 566 Therapeutics of Special Populations 3** Course Prerequisite: PHARMACY 554. Special therapeutic needs of unique populations including pediatrics, chronic neurologic disorders, hospice care and immunocompromised patients.
- 567 Public Health and Emergency Preparedness and Response 2** Course Prerequisite: PHARMACY 541; PHARMACY 543; PHARMACY 544; PHARMACY 546; PHARDSCI 542. Interdisciplinary students (pharmacy, nursing, medicine) working and learning together using patient cases. S, F grading.
- 576 Advanced Topics in Immunology/Transplantation 1** Course Prerequisite: Admission to Pharmacy program. Transplant pharmacy providing understanding of medical research applied to transplant and other areas of practice. S, F grading.
- 577 Diseases, Complications, and Drug Therapy in Obstetrics 2** Course Prerequisite: PHARMACY 534. Medical and pharmacological issues common in obstetrics. S, F grading.
- 578 Leadership and Professional Development 2** Skills, traits, and values required by leaders seeking to influence change in the pharmacy profession and health care. S, F grading.
- 579 Diabetes Prevention 2** Course Prerequisite: PHARMACY 544. Preparation for educating patients in diabetes prevention and promoting health and wellness in the community. S, F grading.
- 580 Practical Politics and Pharmacy 1** Course Prerequisite: PHARMACY 505. Study of government and legislation to better assist patients in navigating the political process.
- 581 Acute Care Advanced Practice Experience 5** (0-5) Course Prerequisite: PHARMACY 558; PHARMACY 561; PHARMACY 563; PHARMACY 564; PHARMACY 565; PHARMACY 566; PHARMACY 567. Advanced practice experience in acute care settings. H, S, F grading.
- 582 Ambulatory Care Advanced Practice Experience 5** (0-5) Course Prerequisite: PHARMACY 558; PHARMACY 561; PHARMACY 563; PHARMACY 564; PHARMACY 565; PHARMACY 566; PHARMACY 567. Advanced practice experience in ambulatory care settings. H, S, F grading.
- 583 Community Advanced Practice Experience 5** (0-5) Course Prerequisite: PHARMACY 558; PHARMACY 561; PHARMACY 563; PHARMACY 564; PHARMACY 565; PHARMACY 566; PHARMACY 567. Advanced practice experience in a community pharmacy setting. H, S, F grading.
- 584 Institutional Advanced Practice Experience 5** (0-5) May be repeated for credit; cumulative maximum 5 hours. Course Prerequisite: PHARMACY 558; PHARMACY 561; PHARMACY 563; PHARMACY 564; PHARMACY 565; PHARMACY 566; PHARMACY 567. Advanced practice experience in an institutional pharmacy setting. H, S, F grading.
- 585 Elective I Advanced Practice Experience 5** (0-5) Course Prerequisite: PHARMACY 558; PHARMACY 561; PHARMACY 563; PHARMACY 564; PHARMACY 565; PHARMACY 566; PHARMACY 567. Advanced practice experience in acute or ambulatory patient care settings. H, S, F grading.
- 586 Elective II Advanced Practice Experience 5** (0-5) Course Prerequisite: PHARMACY 558; PHARMACY 561; PHARMACY 563; PHARMACY 564; PHARMACY 565; PHARMACY 566; PHARMACY 567. Advanced practice experience in acute, ambulatory, or non-traditional patient care. H, S, F grading.
- 587 Elective III Advanced Practice Experience 5** (0-5) Course Prerequisite: PHARMACY 558; PHARMACY 561; PHARMACY 563; PHARMACY 564; PHARMACY 565; PHARMACY 566; PHARMACY 567. Advanced practice experience in various health care settings. H, S, F grading.
- 588 Special Topics 2** Contemporary issues in pharmacy.
- 590 Advanced Topics in Infectious Disease 1** Course Prerequisite: PHARMACY 544. Advanced knowledge of infectious disease topics covered in therapeutic PHARMACY coursework. S, F grading.
- 594 Comprehensive Diabetes Management 3** Course Prerequisite: PHARMACY 505; PHARMACY 507; PHARMACY 509; PHARDSCI 502; PHARDSCI 503; PHARDSCI 504; PHARDSCI 508. Multidisciplinary foundation for future health professionals in the principles of diabetes management, using self-paced, modular and internet-based alternative format for delivery. S, F grading.
- 595 Emergency Preparedness and Public Health Response 1** Course Prerequisite: PHARMACY 544. Terrorism and disaster emergency preparedness and the role of the pharmacist in the public health response. S, F grading.
- 596 Entrepreneurship in Pharmacy 1** Course Prerequisite: PHARMACY 544; PHARMACY 546. Entrepreneurship and innovative pharmacy business plan development. S, F grading.
- 598 Elementary Science Education Practicum 1** (0-2) Course Prerequisite: PHARMACY 541; PHARMACY 543; PHARMACY 544; PHARMACY 545; PHARMACY 546; PHARDSCI 542. Communication with children in classroom environment to stimulate future practicing pharmacists to participate in outreach activities as part of science education. S, F grading.
- 599 Special Projects 2** May be repeated for credit; cumulative maximum 4 hours. Laboratory research, clinical research, or comprehensive review of selected subjects. S, F grading.

PHARMACY SCIENCES

PHARDSCI

- 499 Special Problems V 1-4** May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Admission to Pharmacy program and permission of instructor. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 502 Integrated Pharmacology I 3** Course Prerequisite: Admission to Pharmacy program. Medicinal chemistry, drug metabolism, signal transduction, drug development and autonomic pharmacology. H, S, F grading.
- 503 Pathophysiology with Medical Terminology 4** Course Prerequisite: Admission to Pharmacy program. Review of human physiology along with an overview of human pathophysiology, including medical terminology. H, S, F grading.
- 504 Pharmacy Calculations 1** (0-2) Course Prerequisite: Admission to Pharmacy program. The mathematics of prescription preparation and dispensing. S, F grading.
- 508 Pharmaceutics I 3** Course Prerequisite: Admission to Pharmacy program. Principles of dosage from design and drug delivery, with an emphasis on physiochemical principles. H, S, F grading.
- 512 Integrated Pharmacology II 4** Course Prerequisite: PHARDSCI 502. Pharmacology of drugs acting on the cardiovascular system, peripheral sites and central nervous system. H, S, F grading.
- 515 Immunology 2** Course Prerequisite: Admission to Pharmacy program. Fundamentals of immunology, including the immunological mechanisms that underlie prevention and clearance of infectious diseases, and immune reactions that contribute to disease; mechanism of action of immunotherapeutic and immunomodulatory agents. H, S, F grading.
- 518 Pharmaceutics II 2** Course Prerequisite: PHARDSCI 508. Principles of dosage from design and drug delivery, with an emphasis on pharmaceutical technology and biopharmaceutics. H, S, F grading.
- 519 Pharmaceutics Laboratory 1** (0-3) Course Prerequisite: PHARDSCI 504; PHARDSCI 508. Laboratory experience in the preparation of medicines. H, S, F grading.
- 528 Pharmacokinetics 3** Course Prerequisite: PHARDSCI 518. Qualitative and quantitative understanding of the processes of drug absorption, distribution, and elimination.
- 532 Integrated Pharmacology III 4** Course Prerequisite: PHARDSCI 512. Immunopharmacology (including immunizations), chemotherapeutics (antibiotics, antivirals, and anti-cancer drugs), and endocrine pharmacology.

542 Integrated Pharmacology IV 4 Course
Prerequisite: PHARDSCI 532. Pharmaceutical biotechnology, basic toxicology, pharmacogenomics and complementary and alternative medicines.

599 Special Projects 2 May be repeated for credit; cumulative maximum 4 hours. Laboratory research, clinical research, or comprehensive review of selected subjects. S, F grading.

Physical Education Activity

PEB 101

509-335-1309

Description of Courses

PE ACTIVITY

Physical Education Activity courses are open to all students. PE ACTIV courses numbered 100 through 174 are for beginners. Those numbered 177 and above are for intermediate or advanced students.

PE ACTIV course credit is granted on the basis of 1 credit for two one-hour classes per week. PE ACTIV courses may not be repeated for credit, with the exception of PE ACTIV 200 Special Topics (1 credit hour, repeatable to a maximum of 4 hours). Only 8 hours of PE ACTIV credit may be applied toward graduation credit. Courses are graded A, S, or F, except as noted.

PE ACTIV

101 Beginning Conditioning 1 (0-2) S, F grading.

102 Beginning Conditioning ROTC 1 (0-2) A, S, F grading.

106 Self Defense 1 A, S, F grading.

107 Beginning Judo 1 (0-2) A, S, F grading.

108 Karate 1 (0-2) A, S, F grading.

112 Weight Training 1 (0-2) S, F grading.

114 Beginning Gym Tumbling 1 (0-2) A, S, F grading.

119 Aerobic Dance 1 (0-2) S, F grading.

120 American Social Dance Men 1 (0-2) A, S, F grading.

121 American Social Dance Women 1 (0-2) A, S, F grading.

122 Beginning Ballet 1 (0-2) A, S, F grading.

126 Beginning Mod Dance 1 (0-2) A, S, F grading.

127 Beginning Jazz Dance 1 (0-2) A, S, F grading.

128 Beginning Swimming 1 (0-2) A, S, F grading.

131 Scuba Diving 2 (1-3) A, S, F grading.

132 Conditioning Swimming 1 (0-2) S, F grading.

133 Water Aerobics 1 (0-2) S, F grading.

140 Jogging 1 (0-2) S, F grading.

141 Beginning Golf 1 (0-2) A, S, F grading.

143 Beginning Bowling 1 (0-2) A, S, F grading.

145 Beginning Fencing Men 1 (0-2) A, S, F grading.

146 Beginning Fencing Women 1 (0-2) A, S, F grading.

150 Beginning Tennis 1 (0-2) A, S, F grading.

153 Ultimate Frisbee 1 (0-2) A, S, F grading.

154 Beginning Racquetball 1 (0-2) A, S, F grading.

158 Beginning Volleyball 1 (0-2) A, S, F grading.

164 Beginning Soccer 1 (0-2) A, S, F grading.

177 Intermediate Racquetball 1 (0-2) A, S, F grading.

200 Special Topics 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. A, S, F grading.

201 Intermediate Conditioning ROTC 1 (0-2) A, S, F grading.

208 Intermediate Karate 1 (0-2) A, S, F grading.

220 Advanced Social Dance Men 1 (0-2) A, S, F grading.

221 Advanced Social Dance Women 1 (0-2) A, S, F grading.

222 Intermediate Ballet 1 (0-2) A, S, F grading.

227 Intermediate Jazz Dance 1 (0-2) A, S, F grading.

241 Intermediate Golf 1 (0-2) A, S, F grading.

242 Advanced Golf 1 (0-2) A, S, F grading.

243 Intermediate Bowling 1 (0-2) A, S, F grading.

250 Intermediate Tennis 1 (0-2) A, S, F grading.

251 Advanced Tennis 1 (0-2) A, S, F grading.

258 Intermediate Volleyball 1 (0-2) A, S, F grading.

264 Intermediate Soccer 1 (0-2) A, S, F grading.

265 Advanced Soccer 1 (0-2) A, S, F grading.

266 Fly Fishing 1 (0-2) A, S, F grading.

Department of Physics and Astronomy

physics.wsu.edu

Webster 1245

509-335-9532

Chair and Professor, M.D. McCluskey; Regents Professors, J. T. Dickinson, Y. M. Gupta, M. G. Kuzyk; Professors, D. Blume, S. Bose, G. S. Collins, K. G. Lynn, P. L. Marston, M. D. Miller, S. L. Tomovic; Associate Professors, S. L. Dexheimer, P. Engels, Y. Gu, G. Worthey; Assistant Professor, M. Duez; Clinical Professor, F. Gittes; Senior Instructors, M. Allen, N. Cerruti.

Physics is the study of nature at its most fundamental level. It is the science upon whose principles all

other sciences and technologies are based. A major in physics is ideal preparation not only for further study in physics but also for advanced study in biophysics, medicine, astrophysics, geophysics, chemical physics, engineering, meteorology, and computer science. All of these areas also offer potential careers for the physics major.

Courses offered introduce the student to the major physical theories: mechanics, thermodynamics and statistical physics, electricity and magnetism, and quantum physics. Additional undergraduate courses cover optics, atomic physics, nuclear physics, solid state physics, biological physics, and astrophysics. Students test the theories in laboratories and learn experimental techniques needed to work with modern apparatus such as computers, high-vacuum equipment, lasers, and electronic and optical devices.

Active research programs supported by federal grants and contracts are pursued in the following fields: acoustics (scattering, nonlinear processes, and levitation); astrophysics (planetary, stellar, and galactic structure and evolution); astrophysical generation of gravitational waves, gravitational wave data analysis, cosmology; optical properties of semiconductors; biophysics; nanoscale physics and materials, Bose-Einstein condensates, cluster physics; optical physics (femtosecond laser spectroscopy, scattering from doped polymers, nonlinear optics, quantum electronics, Fourier spectroscopy, diffraction catastrophes); physics education (use of microcomputers in teaching and labs); nuclear solid state physics (Mössbauer effect, perturbed angular correlation, positron annihilation studies of defects in solids); shock wave and high pressure physics (chemical and structural response of condensed materials to high dynamic pressures, time-resolved optical spectroscopy, shock and detonation wave propagation, chemical reactions, dynamic mechanical failure); surface and chemical physics (synchrotron SAFS, diamond films, molecular interactions with surfaces, reactive etching of surfaces, photoelectric and thermal emission microscopy); theory (quantum chaos, nonlinear dynamics, mesoscopic systems, phase transitions and critical phenomena, quantum liquids, and gases, atomic and molecular physics, classical and quantum gravity, black hole thermodynamics, and low-temperature physics). These research groups offer graduate students the opportunity to pursue original investigations required for advanced degrees. Undergraduate physics majors are encouraged to participate in research through the special-project course (PHYSICS 499) and through part-time jobs that are sometimes available.

The department offers courses of study leading to the degrees of Bachelor of Science in Physics, Master of Science in Physics, and Doctor of Philosophy (Physics).

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, a Spitz planetarium, and faculty research at LIGO gravitational-wave observatory. Opportunities are available for students to collaborate with faculty to do research projects.

The Department of Physics and Astronomy is a major participant in the Materials Science Program and offers courses and research opportunities leading to advanced degrees in this interdisciplinary program.

Transfer Students

Transfer students receive credit for equivalent courses taken elsewhere, but must meet the requirements for graduation listed.

Preparation for Graduate Study

Undergraduate students contemplating graduate work in physics should consider enrolling in PHYSICS 443, 521, 571, and additional math courses.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

PHYSICS - FIRST AND SECOND YEAR REQUIREMENTS (61 HOURS)

The Department of Physics and Astronomy has developed a variety of options for students seeking a major in Physics. For most of these options the program in the first two years is the same and will be referred to as the "standard program". Additions to the standard program will be noted in some specific options. The program of courses below is appropriate for students who have had a good experience with calculus in high school and wish to start physics in the first semester at WSU (even though the student may be placed in MATH 171, if their high school grades for the year course were B or better they can follow this schedule of study). Students who have placed in MATH 172 can accelerate the math sequence. Student who have not had calculus in high school should defer Physics 201 (or 205) until they have completed MATH 171. Upon consultation with the departmental advisor, modifications can be made in the list of required courses to fit the needs of individual students.

Certification Requirements

A student may certify as a physics major after completing 30 credits (preferably including PHYSICS 201 and MATH 171) with a cumulative gpa of 2.0 or better.

Graduation Requirements

A research experience is required of all students as a 499 project; however, to gain valuable work experience outside the university, students are strongly encouraged to participate in an internship or research experience in industry or a government lab outside of WSU. The summer after the junior year is the most appropriate time for this experience. All students are required to submit an undergraduate thesis to a committee of two physics faculty members in the senior year. PHYSICS 490 will give credit for this effort. The student must earn a C (2.0) or better grade in each of the required physics courses.

Physics – lower division and core requirements:

First Year

<i>First Term</i>	<i>Hours</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3

HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
PHYSICS 188	1

<i>Second Term</i>	<i>Hours</i>
CHEM 106 or 116	4
Creative & Professional Arts [ARTS]	3
MATH 172	4
PHYSICS 201 or 205	4 or 5

Second Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab	4
Humanities [HUM]	3
MATH 220	2
MATH 273	2
PHYSICS 202 or 206	4 or 5

<i>Second Term</i>	<i>Hours</i>
CPT S 121	4
MATH 315	3
PHYSICS 303	3
PHYSICS 330	3
Social Sciences [SSCI]	3
Complete Writing Portfolio	

--THIRD AND FOURTH YEAR AND OPTION REQUIREMENTS--

To complete the University Core Requirements (UCOREs), the third and fourth year must include one course each in the following categories: Communication [COMM] or Written Communication [WRTG]; Diversity [DIVR]; and Integrated Capstone [CAPS]. To fulfill the College requirement, one additional course in the Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI] category must be completed. At least 40 credits must be completed at the 300-400-level.

STANDARD OPTION

Junior Year: PHYSICS 304, 320, 341, 342, 415, MATH (6 hours), UCORE or Electives (6 hours).

Senior Year: PHYSICS 410, 443, 450, 463, 465, 490, 499, 514, PHYSICS or MATH elective (3 hours), ENGLISH 402.

ASTROPHYSICS OPTION

Sophomore Year (In addition to the standard program): ASTRONOM 345.

Junior Year: PHYSICS 304, 320, 341, 342, 415, 435, ASTRONOM 390, MATH (6 hours), UCORE or Electives (6 hours).

Senior Year: PHYSICS 410, 412, 443, 450, 461, 465, 490, 499, 514, ENGLISH 402.

BIOPHYSICS OPTION

Sophomore Year (In addition to the standard program): BIOLOGY 106, 107.

Junior Year: PHYSICS 304, 320, 341, 342, 415, MATH (6 hours), UCORE or Electives (6 hours), CHEM 345, 346, 347, MBIOS 303.

Senior Year: PHYSICS 410, 450, 490, 461, 463, MBIOS 304, 413, 465, 499, ENGLISH 402.

COMPUTATION OPTION

First Year: (In addition to the standard program): CPT S 121, 122.

Sophomore Year: (In addition to the standard program): E E 214, CPT S 430.

Junior Year: PHYSICS 304, 320, 341, 342, MATH 216, MATH (6 hours), CPT S 224, 322, E E 234, UCORE or Electives (6 hours).

Senior Year: PHYSICS 410, 415, 450, 463, 490, 400-level CPT S (6 hours), CPT S 499, ENGLISH 402.

CONTINUUM PHYSICS AND ACOUSTICS OPTION

Junior Year: PHYSICS 304, 320, 341, 342, 415, MATH (6 hours), ME 303, 413, 424, UCORE or Electives (6 hours).

Senior Year: PHYSICS 410, 450, 463, 490, 499, ME 449, MSE 413, ME 413, 449, ENGLISH 402.

EDUCATION OPTION

First Year: (In addition to the standard program): PSYCH 105, COM 102.

Sophomore Year: (In addition to the standard program): TCH LRN 301, 317, HD 101.

Junior Year: PHYSICS 304, 320, 341, 342, 415, MATH 303, 360, TCH LRN 445, UCORE or Electives (6 hours).

Senior Year: PHYSICS 410, 450, 463, 465, 490, 499, ED PSYCH 468, TCH LRN 464, 465, 466, 467, 469, 470, ENGLISH 402.

OFF CAMPUS PRACTICE TEACHING: TCH LRN 415 (16 credits). Note: A TCH LRN advisor must be consulted for approval and sequencing.

ENVIRONMENTAL OPTION

First Year (In addition to the standard program): ENVR SCI 101.

Sophomore Year (In addition to the standard program): BIOLOGY 106, 107.

Junior Year: PHYSICS 304, 320, 341, 342, 410, 415, CHEM 345, BIOLOGY 372, ENVR SCI 285, 335, UCORE or Electives (6 hours).

Senior Year: PHYSICS 450, 463, 465, 490, ENVR SCI 445, 499, 400-level elective, MATH (6 hours), ENGLISH 402.

INSTRUMENTATION OPTION

Sophomore Year: (In addition to the standard program): E E 214.

Junior Year: PHYSICS 304, 320, 341, 342, 415, MATH (6 hours), E E 261, 262, 311, UCORE or Electives (6 hours).

Senior Year: PHYSICS 410, 514, 443, 450, 490, 463, 465, 499, E E 352, ENGLISH 402.

MATERIALS SCIENCE OPTION

Sophomore Year: (In addition to the standard option): MATSE 201.

Junior Year: PHYSICS 304, 320, 341, 342, 415, MATH (6 hours), CHEM 331, 333, MATSE 312, UCORE or Electives (6 hours).

Senior Year: PHYSICS 410, 450, 463, 465, 490, MATSE 321, 413, 400-level MATSE (6 hours), MATSE 499, ENGLISH 402.

MATHEMATICAL PHYSICS OPTION

Sophomore Year: (In addition to the standard option): MATH 300, 301.

Junior Year: PHYSICS 304, 320, 341, 342, 415, MATH 398, 401, 402, 420, 421, UCORE or Electives (6 hours).

Senior Year: PHYSICS 410, 450, 463, 465, MATH (12 hours), MATH 499, ENGLISH 402.

NANOTECHNOLOGY OPTION

Sophomore Year: (In addition to the standard option): MATSE 201, 321.

Junior Year: PHYSICS 304, 320, 341, 342, 415, CHEM 331, 332, 333, MATH (6 hours), UCORE or Electives (6 hours).

Senior Year: PHYSICS 410, 450, 463, 466, 490, 499 CHEM 345, 346, ENGLISH 402.

OPTICS AND ELECTRONICS OPTION

Sophomore Year (In addition to the standard program): E E 214.

Junior Year: PHYSICS 304, 320, 341, 342, 410, 415, E E 261, 262, 351, UCORE or Electives (6 hours).

Senior Year: PHYSICS 443, 450, 463, 490, 514, MATH (6 hours), E E 234, 431, 496, 499, ENGLISH 402.

Minors

Astronomy

The program in astronomy offers a 19-hour minor in astronomy consisting of ASTRONOM 345, 435, 436, at least two hours from ASTRONOM 390, 490, or 499, and at least 3 hours from GEOLOGY 103, ASTRONOM 135, or HISTORY 381. The minor also requires MATH 273 and PHYSICS 303. These courses have as prerequisites MATH 220, 171, 172 and PHYSICS 201, 202. These prerequisites are often required as part of physical science major programs (Chemistry, Computer Science, Engineering, Geology, and Physics) so that students in these fields will find the astronomy minor more accessible than students in other fields. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Physics

A physics minor requires PHYSICS 201, 202, 303, and 304 plus any two courses (6 credits) from the following list: PHYSICS 320, 330, 341, 342, 410, 412, 415, 443, 450, 461, 463, 465. This makes a total of 20 credits in PHYSICS of which 12 are upper division. Credit hours must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Students from outside the College of Arts and Sciences (i.e., College of Engineering) do not have to meet the extra graduation requirements of the College of Arts and Sciences.

Description of Courses

ASTRONOMY

ASTRONOM

- 135 [PSCI] Astronomy** 4 (3-2) Overview of the solar system, stars, galaxies, cosmology, and the history of astronomy. Includes a lab component with occasional evening meetings. Credit not granted for both ASTRONOM 135 and 150.
- 138 [PSCI] Planets and Planetary Systems** 3 Formation and dynamics of planetary systems; major planets: interiors, surfaces, atmospheres; minor planets: moons, asteroids, comets; science missions; extrasolar planets.

150 [PSCI] Science and the Universe 3 Basic structure and history of science and science reasoning with emphasis on astronomy, observational practice, and data analysis. Credit not granted for both ASTRONOM 135 and 150.

345 Principles of Astronomy 3 Course Prerequisite: MATH 172 or 182; PHYSICS 202 or 206. Planets, the sun, stars, and galaxies; current topics in astrophysics and planetary research.

390 [PSCI] The Night Sky 1 (0-3) Course Prerequisite: Science [B], [P], or [Q] GER, or [BSCI], [PSCI], or [SCI] UCORE course. Star names, magnitude scales, constellation identification, astronomical coordinates, solar, lunar and planetary motions, practical astronomy. Some outdoor evening time required.

435 Astronomy and Astrophysics I 3 Course Prerequisite: MATH 172 or 182; PHYSICS 202 or 206. Planets, solar systems, and stars.

436 Astronomy and Astrophysics II 3 Course Prerequisite: MATH 172 or 182; PHYSICS 202 or 206. Exotic objects, galaxies, and cosmology.

450 [CAPS] Life in the Universe 3 Course Prerequisite: Mathematics [N] or [QUAN]; junior standing. The natural history of life on earth and prospects for life elsewhere; includes chemistry, biology, geology, physics and astronomy. Recommended preparation: Completion of physical and biological sciences GERs/UCORES.

581 Advanced Topics 3 May be repeated for credit; cumulative maximum 12 hours. Topics of current interest in advanced physics. (Crosslisted course offered as PHYSICS 581, ASTRONOM 581). Cooperative: Open to UI degree-seeking students.

PHYSICS

PHYSICS

101 [PSCI] General Physics 4 (3-3) Course Prerequisite: MATH 107 or 108 with a grade of C or better, ALEKS math placement score 60% or higher, or passing MATH 140, 171, 202, or 206. Algebra/trigonometry-based physics; topics in mechanics, wave phenomena, temperature, and heat; oriented toward non-physical science majors. Credit not granted for more than one of PHYSICS 101, 201, or 205.

102 [PSCI] General Physics 4 (3-3) Course Prerequisite: PHYSICS 101 with a grade of C or better; MATH 107 or 108 with a grade of C or better, ALEKS math placement score 60% or higher, or passing MATH 140, 171, 202, or 206. Algebra/trigonometry-based physics; topics in electricity, magnetism, optical phenomena, relativity, and quantum theory; oriented toward non-physical science majors. Credit not granted for more than one of PHYSICS 102, 202, or 206.

103 Problem Solving for Physics 101 1 Course Prerequisite: Concurrent enrollment in PHYSICS 101. Small class environment for students who desire focused attention on problem solving skills as applied to PHYSICS 101 materials. S, F grading.

104 Problem Solving for Physics 102 1 Course Prerequisite: Concurrent enrollment in PHYSICS 102. Small class environment for students who desire focused attention on problem solving skills as applied to PHYSICS 102 materials. S, F grading.

150 [PSCI] Physics and Your World 3 Survey of physics as found in everyday phenomena; including many hands-on activities and home experiments.

188 First-Year Seminar I 1 Faculty will present current research interests and opportunities in physics; questions and discussion. Taught annually each fall. S, F grading.

201 [PSCI] Physics for Scientists and Engineers I 4 (3-3) Course Prerequisite: MATH 171 with a C or better, MATH 172 or concurrent enrollment, MATH 182 or concurrent enrollment, MATH 273 or concurrent enrollment, or MATH 315 or concurrent enrollment. Calculus-based physics; topics in motion and dynamics of particles and rigid bodies, vibrations, wave phenomena, and the laws of thermodynamics. Credit not granted for more than one of PHYSICS 101, 201, or 205.

202 [PSCI] Physics for Scientists and Engineers II 4 (3-3) Course Prerequisite: PHYSICS 201 with a C or better or PHYSICS 205 with a C or better; MATH 172 with a C or better or MATH 182 with a C or better. Calculus-based physics, topics in electricity, magnetism, electromagnetics, D/C and A/C circuits, optics, reflection, refraction, interference, diffraction, polarization. Credit not granted for more than one of PHYSICS 102, 202, or 206.

203 Problem Solving for Physics 201 1 Course Prerequisite: Concurrent enrollment in PHYSICS 201. Small class environment for students who desire focused attention on problem solving skills as applied to PHYSICS 201 materials. S, F grading.

204 Problem Solving for Physics 202 1 Course Prerequisite: Concurrent enrollment in PHYSICS 202. Small class environment for students who desire focused attention on problem solving skills as applied to PHYSICS 202 materials. S, F grading.

205 [PSCI] Physics for Scientists and Engineers I - Honors 5 (3-5) Course Prerequisite: MATH 171 with a C or better, MATH 172 or concurrent enrollment, MATH 182 or concurrent enrollment, or MATH 315 or concurrent enrollment. Calculus-based physics, honors section; mechanics, sound, and thermodynamics. Credit not granted for more than one of PHYSICS 101, 201, or 205.

206 [PSCI] Physics for Scientists and Engineers II - Honors 5 (3-5) Course Prerequisite: PHYSICS 201 with a C or better or PHYSICS 205 with a C or better; MATH 172 with a C or better or MATH 182 with a C or better. Calculus-based physics, honors section; electricity, magnetism, light, topics in modern physics. Credit not granted for more than one of PHYSICS 102, 202, or 206.

- 303 Modern Physics I** 3 Course Prerequisite: MATH 220 or concurrent enrollment or MATH 230 or concurrent enrollment; PHYSICS 202 or concurrent enrollment or PHYSICS 206 or concurrent enrollment. Quantum and relativity theories with applications to atomic, solid state, nuclear and elementary particle physics.
- 304 Modern Physics II** 3 Course Prerequisite: PHYSICS 303. Continuation of PHYSICS 303.
- 320 Mechanics** 3 Course Prerequisite: MATH 315 or concurrent enrollment; MATH 220 or concurrent enrollment or MATH 230 or concurrent enrollment; PHYSICS 202 or 206. Particle motion in one-, two-, and three-dimensions; motions of systems of particles; rigid body motion; Lagrange's equations.
- 330 Thermal Physics** 3 Course Prerequisite: MATH 273 or 283; PHYSICS 202 or 206. Thermal behavior of systems; energy and entropy; equations of state; changes of phase; elements of continuum and statistical approaches.
- 341 Electricity and Magnetism I** 3 Course Prerequisite: MATH 315 or concurrent enrollment; PHYSICS 202 or 206. Electrostatic fields, magnetic fields, dielectric and magnetic media.
- 342 Electricity and Magnetism II** 3 Course Prerequisite: PHYSICS 341. Continuation of PHYSICS 341. Maxwell's equations; electromagnetic waves, special relativity.
- 408 [CAPS] Physics and Society** 3 Course Prerequisite: Junior standing. Interactions of physics with society; energy; air and water pollution; recycling; communications and computers; physics and war; physics and art.
- 410 Electronics** 3 (1-6) Course Prerequisite: PHYSICS 202 or 206. Laboratory construction and investigation of electronic circuits employed in research instruments.
- 415 [M] Quantum Physics Laboratory** 3 (2-3) May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: PHYSICS 304. Experiments in modern and quantum physics, fundamental interactions of radiations with matter.
- 435 Astronomy and Astrophysics I** 3 Planets, solar systems, and stars.
- 443 Optics** 3 Course Prerequisite: PHYSICS 341 or concurrent enrollment. 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 Course Prerequisite: MATH 315; PHYSICS 303. Introduction to quantum theory with applications to atomic physics. Cooperative: Open to UI degree-seeking students.
- 461 Introduction to Atomic and Molecular Physics** 3 Course Prerequisite: PHYSICS 304. Introduction to atomic and molecular physics; spectroscopy.
- 463 Introduction to Solid State and Materials Physics** 3 Course Prerequisite: PHYSICS 304. Introduction to the physics of solids; crystal structures, lattice vibrations, and electron theory. Cooperative: Open to UI degree-seeking students.
- 466 Biological Physics** 3 Course Prerequisite: CHEM 106 or 116; MATH 172 or 182; PHYSICS 202 or 206. Fundamental physics and thermodynamics of the cell; mechanics of biomolecular machines. Credit not granted for both PHYSICS 466 and PHYSICS 566.
- 481 Advanced Topics** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Topics in scientific and technological areas that have relative significance to physics and astronomy.
- 490 [M] Undergraduate Thesis** 1 Preliminary thesis draft of a laboratory or library research experience, oral presentation, and final draft.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Graduate Seminar** 1 Introduction to graduate and interdisciplinary research. S, F grading.
- 514 Optoelectronics Lab I** 1 (0-3) May be repeated for credit; cumulative maximum 3 hours. Experiments with optical systems: Imaging, interference, coherence, information storage/processing, gas and solid state lasers, optical fibers, and communications systems.
- 515 Optoelectronics Lab II** V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 3 hours. Experiments in optical physics, physical properties of light, laser physics, waveguides, quantum confined semiconductor structures and ultrafast dynamics and nonlinear optics.
- 521 Classical Mechanics I** 3 Laws of motion as developed by Newton, d'Alembert, Lagrange, and Hamilton; dynamics of particles and rigid bodies. Cooperative: Open to UI degree-seeking students.
- 522 Classical Mechanics II** 3 Continuation of PHYSICS 521. Classical mechanics of liquids and deformable solids; stress, deformation and strain, flow, oscillations and waves.
- 533 Thermal and Statistical Physics I** 3 Thermodynamic laws and potentials, kinetic theory, hydrodynamics and transport coefficients; introduction to statistical mechanics, ensembles, partition functions.
- 534 Thermal and Statistical Physics II** 3 Phase transitions and critical phenomena, Ginzburg-Landau theory, Bose-Einstein condensation, superfluids, Fermi systems, low-temperature expansions. Cooperative: Open to UI degree-seeking students.
- 541 Electromagnetic Theory** 3 Special relativity and the classical electromagnetic field; emission, propagation, and absorption of electromagnetic waves. Cooperative: Open to UI degree-seeking students.
- 542 Electrodynamics** 3 Interaction of matter and electromagnetic radiation; classical and quantum electrodynamics. Cooperative: Open to UI degree-seeking students.
- 545 Nonlinear Optics** 3 Nonlinear wave propagation theory applied to several nonlinear-optical phenomena; experimental techniques that probe a material's nonlinearity.
- 546 Quantum Electronics** 3 The physics of lasers and of coherent optical radiation generation and propagation.
- 550 Quantum Theory I** 3 Introduction to quantum theory; physical and mathematical foundations; application to atomic systems. Cooperative: Open to UI degree-seeking students.
- 551 Quantum Theory II** 3 Symmetry and invariance; angular momentum theory; approximation methods. Cooperative: Open to UI degree-seeking students.
- 552 Quantum Theory III** 3 Scattering theory; relativistic wave mechanics; quantum field theory. Cooperative: Open to UI degree-seeking students.
- 561 Atomic and Molecular Physics** 3 Physics of atoms and molecules using quantum theory. Cooperative: Open to UI degree-seeking students.
- 563 Physics of the Solid State** 3 Lattice vibrations and defects; ionic and electronic conductivities; band theory; magnetic properties; luminescence. Cooperative: Open to UI degree-seeking students.
- 566 Biological Physics** 3 Fundamental physics and thermodynamics of the cell; mechanics of biomolecular machines. Credit not granted for both PHYSICS 466 and PHYSICS 566.
- 571 Methods of Theoretical Physics** 3 Mathematical methods for theoretical physics; linear algebra, tensor analysis, complex variables, differential equations, integral equations, variational calculus, and group theory. Cooperative: Open to UI degree-seeking students.
- 575 Advanced Solid State Physics** 3 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. (Crosslisted course offered as PHYSICS 581, ASTRONOMY 581). Cooperative: Open to UI degree-seeking students.
- 590 Seminar** 1 May be repeated for credit. S, F grading.
- 592 Wave Propagation Seminar** 2 May be repeated for credit; cumulative maximum 4 hours. Waves in the continuum; elastic, plastic, and hydrodynamic waves; shock waves. 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 V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Plant Pathology

plantpath.wsu.edu
Johnson Hall 345
509-335-9541

Professor and Department Chair, H. R. Pappu; Professors, D. A. Glawe, L. A. Hadwiger, S. H. Hulbert, D. A. Johnson, T. D. Murray; Associate Professors, L. M. Carris, T. L. Peever; Assistant Professors, A. A. Elling, B. K. Schroeder; Adjunct Professor, J. W. Moyer; Off-campus Professors, G. A. Chastagner, K. C. Eastwell, G. G. Grove, D. A. Inglis; Off-campus Associate Professors, L. J. duToit, N. Rayapati; Adjunct ARS Plant Pathologists, X. M. Chen, W. Chen, F. M. Dugan, N. Klopfenstein, R. F. Line, P. A. Okubara, T. C. Paulitz, D. See, L. S. Thomashow, G. Vandemark, D. M. Weller; Off Campus Adjunct ARS Plant Pathologists, M. Mazzola, R. Navarre, C. L. Xiao; Off Campus Affiliate ARS Plant Pathologist, R. Larsen; Professors Emeriti, P. R. Bristow, G. W. Bruehl, R. J. Cook, R. G. Duran, J. W. Hendrix, O. C. Maloy, G. I. Mink, J. D. Rogers, G. S. Santo, H. Smith, S. Wyatt.

Plant pathology is the study of plant diseases, including causes, economic consequences, spread, 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.

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 Agricultural and Food Systems (Agriculture and Food Security major) or Integrated Plant Sciences curricula. For more information on these baccalaureate degrees, please visit <http://academic.cahnr.wsu.edu/majors>.

The courses offered in this department are designed both to train students expecting to make plant pathology 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 botany, chemistry, genetics, microbiology, physics, and zoology.

A professional career in plant pathology would benefit from graduate training. Students often enter the graduate program 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 bacteriology, mycology, nematology, virology, epidemiology, molecular biology of host-parasite relationships, ecology of disease development, disease resistance, chemical control, and biological control. Research is conducted on diseases of grain crops, forage crops, forest trees, tree fruits, grapes, vegetables, ornamentals, and turf.

The department offers Master of Science in Plant Pathology, and Doctor of Philosophy in Plant Pathology and contributes to the degrees of Bachelor of Science in Agricultural and Food Systems, Bachelor of Science in Integrated Plant Sciences, and the Master of Science in Agriculture online degree.

Preparation for Graduate Study

As preparation for work toward an advanced degree, a student should have completed a bachelor's degree; at least one semester each of general inorganic chemistry, botany, zoology, physics; one semester each of systematic botany, plant physiology, general plant pathology, entomology, microbiology, precalculus, organic chemistry, genetics, and report writing or advanced composition.

Description of Courses

PLANT PATHOLOGY

PL P

150 [BSCI] Molds, Mildews, Mushrooms: The Fifth Kingdom 3 A survey of the socio-historical impact of fungi and their role in development and application of the scientific method.

300 Diseases of Fruit Crops 2 Course Prerequisite: BIOLOGY 120, HORT 310, or HORT 313. Comprehensive understanding of the diseases of fruit crops grown in the state of Washington.

403 Advanced Cropping Systems 3 Course Prerequisite: HORT 202. Understanding the management of constraints to crop production and quality; biological, physical, and chemical approaches to crop health management. Field trips required. (Crosslisted course offered as CROP SCI 403, PL P 403). Recommended preparation: CROP SCI 305; PL P 429. Cooperative: Open to UI degree-seeking students.

429 General Plant Pathology 3 (2-3) Classification, symptoms, causes, epidemiology, and control of plant diseases.

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

501 Biology and Control of Plant Diseases 3 (2-3) Introduction to the biology and control of plant diseases covering disorders caused by fungi, viruses, bacteria, and nematodes.

503 Advanced Cropping Systems 3 Understanding the management of constraints to crop production and quality; biological, physical, and chemical approaches to crop health management. Field trips required. (Crosslisted course offered as CROP SCI 403, PL P 403). Recommended preparation: CROP SCI 305; PL P 429. Cooperative: Open to UI degree-seeking students.

511 Viruses and Virus Diseases of Plants 4 (3-3) Course Prerequisite: MBIOS 503 or 504. Nature of plant viruses, vector-virus relationships and virus diseases of plants. Cooperative: Open to UI degree-seeking students.

513 Plant Nematology 4 (3-3) Anatomy and morphology of plant-parasitic nematodes, molecular plant-nematode interactions, genomics, symptoms, identification, techniques and control. Cooperative: Open to UI degree-seeking students.

514 Phytobacteriology 4 (3-3) Isolation and characterization of bacteria having a saprophytic, symbiotic or pathogenic association with plants, molecular structure, function, and genetics. Cooperative: Open to UI degree-seeking students.

515 Seminar 1 May be repeated for credit.

521 General Mycology 4 (2-6) The structure, life histories, classification, and economic importance of the fungi. Cooperative: Open to UI degree-seeking students.

525 Field Plant Pathology and Mycology V 1 (0-3) to 2 (0-6) May be repeated for credit; cumulative maximum 4 hours. Field trips, forays, and demonstrations dealing with various aspects of plant pathology and mycology.

526 Advanced Fungal Biology 4 (2-6) Course Prerequisite: PL P 521. Advanced topics in fungal biology, ecology, systematics, evolution and coevolution via discussions of literature and special laboratory projects. Cooperative: Open to UI degree-seeking students.

535 Molecular Genetics of Plant and Pathogen Interactions 3 Genetic and molecular biological aspects of host-pathogen interactions. Cooperative: Open to UI degree-seeking students.

551 Epidemiology and Management of Plant Diseases 3 Principles of plant disease epidemiology, control and ecology of pathogens. Recommended preparation: PL P 429. Cooperative: Open to UI degree-seeking students.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

School of Politics, Philosophy, and Public Affairs

**Johnson Twr 801
509-335-2544**

POLITICAL SCIENCE: Director and Professor, T. Preston; Professors, C. Clayton, M. Cottam, A. Mazur, D. Nice; Associate Professors, A. Appleton, D. Baker, C. Long, T. Ridout, S. Stehr, M. Stephan, P. Thiers; Assistant Professors, C. Leeb, A. Lopez, M. Salamone; Professor Emeritus, N. Lovrich. PHILOSOPHY: Professors, J. K. Campbell, J.M. W. Myers; Associate Professors, D. L. Shier, M. Stichter; Assistant Professors, M. Goldsby, W. Kabasheche; Professors Emeriti, D. M. Holbrook, H. S. Silverstein. PUBLIC AFFAIRS: Professor and Academic Director, A. Wharton; Associate Professor and Program Director, D. Baker; Professors, J. Goodstein, T. Tripp; Associate Professors, L. Drapela, S. Finley, D. Jaffee, C. Long, A. Maclean, C. Mosher, M. Stephan, P. Thiers, D. Wood; Assistant Professor, M. J. Chappell.

POLITICAL SCIENCE PROGRAM

<http://libarts.wsu.edu/pppa/undergraduate/major-ps.asp>

Courses in political science are offered in political institutions (presidency, congress, the courts, political parties, mass media), public policy formation and evaluation, public law, civil liberties, international relations (foreign policy, security studies, 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 (with a Graduate Certificate in Global Justice and Security Studies), and Doctor of Philosophy.

The undergraduate programs in the Department of Political Science are designed to prepare students to be more thoughtful consumers and producers of information related to political phenomenon in the U.S. and in other nations. More specifically, the department's programs aim to: (1) develop the ability to think critically about social and political values; (2) produce graduates with an understanding of the importance of a global perspective on political issues; (3) understand the fundamental theories and frameworks currently used to explain a wide range of political behaviors; and (4) develop and cultivate the ability to write, read, and think critically and effectively.

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.

Global Politics and 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.

Preparation for Graduate Study

<http://libarts.wsu.edu/pppa/graduate/index.asp>

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, our students currently choose from one major foundational training area within which they will focus for their preliminary exams (Institutions and Processes; Behavior and Psychology; Theory and Philosophy), as well as a specialization field (American politics; Global politics; Public Policy/Public Administration).

PHILOSOPHY PROGRAM

<http://libarts.wsu.edu/pppa/undergraduate/major-ph.asp>

The Philosophy program offers courses in which

students discuss fundamental intellectual questions and both classical and contemporary attempts to address them. What makes for a morally right act or a just society? What sorts of things can we really claim to know? What is mind, and what is its relation to matter? Are we really capable of free choice or is our every act determined by past events? These are the kinds of questions that are addressed by philosophers.

Philosophy students acquire knowledge of ethics, logic, political philosophy, philosophy of religion, epistemology, metaphysics, and other areas which provide excellent intellectual foundations for careers in law, government service, education, ministry, and many other fields.

The study of philosophy enables students to explore critically a variety of systems of beliefs and values, to identify and challenge the foundations of their own beliefs and values, and to develop sound habits of critical thinking and communication skills that are central to success in all professions.

We expect our undergraduate students to 1) develop the critical thinking skills necessary for evaluating intellectual material from any discipline; 2) learn basic methods of symbolic logic (propositional logic or higher); 3) learn standard research procedures and methods for philosophy; 4) develop their abilities to write and speak effectively about philosophy and other subjects; 5) come to understand theories, concepts, and issues of moral philosophy; and 6) gain both broad knowledge of philosophy and knowledge within specialized fields of philosophy.

The School of Politics, Philosophy, and Public Affairs offers programs of study leading to the Bachelor of Arts in Philosophy (in either the Traditional Option or the Pre-Law Option) and the Graduate Certificate in Bioethics.

PUBLIC AFFAIRS

<http://cas.vancouver.wsu.edu/public-affairs>

The Bachelor of Arts in Public Affairs seeks to develop critical thinking about political and social values and develop the ability to conduct objective analysis of political structures and bureaucratic processes. The degree program is designed to educate people for service in public and nonprofit agencies and to prepare students for graduate or law school. The program's multidisciplinary perspective provides for the blending of theory, methodology, and experience in an academically rigorous degree format.

The Master's Degree in Public Affairs (MPA) draws on a wide variety of academic disciplines, including political science, sociology, business administration, economics, health policy administration, environmental and research science/regional planning and criminal justice. This degree program is designed for the education of individuals interested in administrative and leadership positions in the public sector.

The MPA prepares students for a diverse group of positions in government such as public policy, personnel administration and strategic planning, as well as a range of jobs outside of government service, such as not-for-profit organizations. MPA students may already be employed in these areas and are seeking this degree to advance professionally in the field; these students can expect to hone their skills and receive further training. Alternatively, the

Master of Public Affairs degree is also appropriate for students who would like to shift their career tracks and obtain a position in the public and non-profit sector.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

PHILOSOPHY - PRE-LAW OPTION (120 HOURS)

No course with a grade of D+ or less and no course taken pass/fail will be counted toward the major. The overall gpa for courses in the major must be at least a 2.00.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
PHIL 260	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
PHIL 201	3
Quantitative Reasoning [QUAN]	3 or 4
Social Sciences [SSCI]	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Foreign Language, if necessary, or Elective	4
PHIL Elective	3
Electives	2

<i>Second Term</i>	<i>Hours</i>
Foreign Language, if necessary, or Elective	4
PHIL Elective	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
Diversity [DIVR]	3
PHIL 360 [HUM], 365 [HUM], or 370	3
POL S 300	3
300-400-level Electives	3

<i>Second Term</i>	<i>Hours</i>
ENGLISH 301 or PHIL 200	3
Integrative Capstone [CAPS]	3
PHIL 460, 470, or 472	3
300-400-level Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
400-level [M] Course	3
PHIL Electives	6
300-400-level Electives	6

<i>Second Term</i>	<i>Hours</i>
PHIL Electives ¹	6
300-400-level Electives	9

¹ One PHIL elective must be [M] if two have not been taken.

PHILOSOPHY - TRADITIONAL OPTION (120 HOURS)

No course with a grade of D+ or less and no course taken pass/fail will be counted toward the major. The overall gpa for courses in the major must be at least a 2.00.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
PHIL 101 [HUM] or 103 [HUM]	3
Quantitative Reasoning [QUAN]	3 or 4
Electives	3

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
PHIL 201	3
Social Sciences [SSCI]	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Foreign Language, if necessary, or Elective	4
PHIL 320	3
Electives	2

<i>Second Term</i>	<i>Hours</i>
Foreign Language, if necessary, or Elective	4
PHIL 321	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
PHIL 314 or 315	3
PHIL 322 or 420	3
PHIL 446 or 447	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
PHIL 442 or 443	3
PHIL 460 [M] or 472 [M]	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Hours</i>
400-level [M] Course	3
PHIL Electives	6
Electives	6

<i>Second Term</i>	<i>Hours</i>
PHIL Electives	3
300-400-level Electives	12

POLITICAL SCIENCE - GENERAL OPTION (120 HOURS)

Students wishing to enroll in POL S 499 must have at least junior standing and consent of the instructor; no more than 3 hours of 499 or 3 hours of 497 may be counted towards the departmental requirements.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
POL S 101 [SSCI]	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Diversity [DIVR]	3
POL S 102	3
Electives	6

Second Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS]	3
Foreign Language, if necessary, or Elective	3 or 4
POL S 103	3
Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Hours</i>
Foreign Language, if necessary, or Elective	3 or 4
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
POL S Electives ¹²	6
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
300-400-level Arts & Humanities or Social Sciences Elective	3
300-400-level POL S Elective [M]	3
POL S Electives ³	6
300-400-level Electives	4

<i>Second Term</i>	<i>Hours</i>
300-400-level Arts & Humanities or Social Sciences Elective	3
300-400-level POL S Elective [M]	3
CPT S or STAT Elective ⁴	3
ENGLISH 201 [WRTG], 301 [WRTG], or 402 [WRTG]	3
POL S Elective ³	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
300-400-level Arts & Humanities or Social Sciences Elective	3
300-400-level POL S Elective	3
300-400-level Electives	9
<i>Second Term</i>	<i>Hours</i>
300-400-level Arts & Humanities or Social Sciences Elective	3
300-400-level POL S Elective	3
Integrative Capstone [CAPS]	3
300-400-level Electives	3

¹ American politics, see department.

² Comparative or International Relations, see department

³ Policy and public administration, see department.

⁴ Recommended

POLITICAL SCIENCE - GLOBAL POLITICS OPTION (120 HOURS)

33 hours in POL S are required, at least 15 of which must be earned at WSU. Consult advisor on study abroad in junior year.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
POL S 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3 or 4

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
Humanities [HUM]	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
POL S 102	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
POL S 103	3
POL S Comparative Elective or Minor Field Elective ¹²	3
Electives	4

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Minor Field Elective	3
POL S Elective	3
POL S IR Elective ³	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Minor Field Elective or Foreign Language ²	3 or 4

POL S [M]	3
POL S 333 or 438	3
POL S Comparative Elective ¹	3
POL S IR Elective ³	3

<i>Second Term</i>	<i>Hours</i>
POL S [M]	3
POL S Comparative Elective ¹	3
POL S IR Elective ³	3
Electives	3
Minor Field Elective or Foreign Language ²	3 or 4

Fourth Year

<i>First Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
Minor Field Elective	3
Political Science Comparative Elective (if necessary) ¹	3
300-400-level Electives	6

<i>Second Term</i>	<i>Hours</i>
Minor Field Elective ²	3
Electives	9

¹ Comparative Politics Electives: POL S 305, 314, 405 [M], 413, 428, 432, 435, 447, 472 [M], 474, 476 (courses cannot be counted for both Comparative Politics and International Relations).

² May choose from a minor in a Foreign Language or Global Studies.

³ International Relations Electives: POL S 314, 424 [M], 427 [M], 428, 429 (courses cannot be counted for both Comparative Politics and International Relations).

POLITICAL SCIENCE - PRE-LAW OPTION (120 HOURS)

24 hours in POL S required. 21 of the 24 required hours of course work must be earned at WSU.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
POL S 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Hours</i>
ECONS 101 [SSCI] or ECONS 102 [SSCI]	3
Humanities [HUM]	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
POL S 102	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
CRM J 101	3
PHIL 201	3
POL S 103	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
ENGLISH 201 [WRTG], or ENGLISH 301 [WRTG]	3

POL S [M] Course Elective	3
POL S 300	3
Public Speaking or Argumentation Elective	3
Electives	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
CRM J 320 or 420	3
POL S 402	3
Electives	9

<i>Second Term</i>	<i>Hours</i>
POL S 404 [M]	3
POL S Elective	3
Electives	9

Fourth Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
POL S 443	3
300-400-level Electives	6

<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
300-400-level Electives	12

PUBLIC AFFAIRS (VANCOUVER ONLY) (120 HOURS)

The Bachelor of Arts in Public Affairs requires students to earn at least a C grade or higher in all core courses and no core courses may be taken pass/fail. In addition, only 6 hours in the concentration may be taken pass/fail. At least 40 of the 120 hours for the degree must be at the 300-400-level.

Certification Requirements

To certify in Public Affairs, students must have least 24 semester hours and an overall minimum gpa of 2.75 or higher. Once certified, all students must maintain a minimum overall gpa of 2.75 or higher or they will be decertified.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] with lab or SCIENCE 101 [SCI]	4
ENGLISH 101 [WRTG]	3
Foreign Language, if necessary, or Elective	3
HISTORY 105 [ROOT]	3
POL S 101 [SSCI]	3

<i>Second Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS]	3
Foreign Language, if necessary, or Elective	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Physical Sciences [PSCI] with lab or SCIENCE 102 [SCI]	4
POL S 300	3
POL S 316	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
POL S 340	3
Electives	7
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Minor Elective ¹	3
PA Elective ²	6
SOC 320	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
PA Elective ²	6
POL S 432 [M]	3
SOC 321	4
Electives	2

Fourth Year

<i>First Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
Minor Elective ¹	6
PA Elective ²	3
POL S 442 [M]	3

<i>Second Term</i>	<i>Hours</i>
Minor Elective ¹	9
Electives	3

¹ A minor is recommended, but not required. The minor must total 16 to 18 semester hours, including at least six credits of upper-division course work, and must be in an area other than criminal justice or political science.

² 15 semester hours is required in one of three concentration options: public policy and politics, public administration and management, or justice studies. See department for an approved list of courses.

Minors**Ethics**

The minor in ethics consists of 18 credit hours, of which at least 15 must be from ethics courses within the department of philosophy, such as PHIL 260, 360, 365, 370, 460, 462, 470, and 472. Three credit hours may, with approval of the department of philosophy, be from an ethics course in the student's major or in another department. Nine of the 18 hours must, in accordance with university policies, be in upper-division course work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Philosophy

The minor in philosophy consists of 16 hours of course work, at least 9 of which must be in 300-400-level courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Courses are chosen by the student, in consultation with the department, but will normally include PHIL 101 and will always include PHIL 201.

Political Science

18 semester hours of political science coursework is required for the minor, half of which must be in 300-400-level courses. The courses may not be taken pass, fail. Students must successfully complete POL S 101, 102, and 103. At least 12 semester hours of political science must be earned at Washington State University. Three hours of POL S 497 or 499 may be applied to the minor. A minimum gpa of 2.0 in the political science courses is required.

Description of Courses**PHILOSOPHY****PHIL**

101 Introduction to Philosophy 3 Nature and place of philosophy in human thought; problems and achievements.

103 [HUM] Introduction to Ethics 3 Ethics through analysis of contemporary moral and social issues.

200 Writing and Reasoning 3 Application of critical thinking skills to essay writing.

201 [QUAN] Elementary Logic 3 Course Prerequisite: MATH 101 with a C or better, MATH 103 with a C or better, ALEKS math placement score of 40%, or higher level MATH. Core logical concepts and formal syntax, semantics and proof procedures for categorical, propositional, and basic predicate logic.

207 [HUM] Philosophy of Religion 3 Critical inquiry into the existence and nature of God; the problem of evil; the relation of faith and reason; immortality and miracles. Cooperative: Open to UI degree-seeking students.

210 Philosophy in Film 3 The use of film as philosophical text.

280 Philosophy and Religion of Islam 3 Philosophical and religious framework of Islam. (Crosslisted course offered as PHIL 280, ASIA 280).

314 [M] Philosophies and Religions of India 3 Metaphysical, epistemological, ethical, aesthetic, social, and political views of Hinduism, Buddhism, and Islam, and their influence on Indian civilization. (Crosslisted course offered as PHIL 314, ASIA 314).

315 [M] Philosophies and Religions of China and Japan 3 The philosophies and religions of China and Japan, and their metaphysical, epistemological, ethical, social, and political positions and views of God and gods. (Crosslisted course offered as PHIL 315, ASIA 315).

320 History of Ancient and Medieval Philosophy 3 Course Prerequisite: 3 hours PHIL. Pre-Socratics, Plato, Aristotle; post-Aristotelian philosophy to the Renaissance. Cooperative: Open to UI degree-seeking students.

321 History of Modern Philosophy 3 Course Prerequisite: 3 hours PHIL. Renaissance, 17th and 18th century philosophers. Cooperative: Open to UI degree-seeking students.

322 Nineteenth-century Philosophy 3 Course Prerequisite: 3 hours PHIL. The Continental, post-Kantian tradition, with emphasis on thinkers such as Hegel, Schopenhauer, Kierkegaard and Nietzsche. Cooperative: Open to UI degree-seeking students.

350 Philosophy of Science 3 Purpose and logical structure of science; human implications. Cooperative: Open to UI degree-seeking students.

360 [HUM] Business Ethics 3 The principles of ethics as applied to specific problems in business faced by individuals and corporate institutions.

365 [HUM] Biomedical Ethics 3 Ethical problems in medicine and biological research.

370 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. May be repeated for credit; cumulative maximum 6 hours.

401 Advanced Logic 3 First-order predicate logic plus some metatheory, applications and/or extensions. Credit not granted for both PHIL 401 and PHIL 501. Recommended preparation: PHIL 201. Cooperative: Open to UI degree-seeking students.

406 Philosophy and Race 3 Course Prerequisite: 3 hours in PHIL or CES 201. Examination of race within western philosophy including work of philosophers of color and analysis of the category race. (Crosslisted course offered as CES 406, PHIL 406).

407 Seminar in Philosophy of Religion 3 May be repeated for credit; cumulative maximum 6 hours. Advanced topic-driven seminar. Critical analysis of traditional and contemporary religions and religious phenomena. Credit not granted for both PHIL 407 and PHIL 507. Cooperative: Open to UI degree-seeking students.

413 Mind of God and the Book of Nature: Science and Religion 3 Course Prerequisite: 3 hours PHIL; 3 hours [B] or [P] GER, or [BSCI] or [PSCI] UCORE. Methodological comparison; cutting edge issues in science as they impact theism; guest lectures from professors in the natural sciences.

420 Contemporary Continental Philosophy 3 Selected movements, figures, and issues in recent continental philosophy. Recommended preparation: PHIL 320, 321 or 322. Cooperative: Open to UI degree-seeking students.

421 Kant 3 Course Prerequisite: 3 hours PHIL. Exploration of Kant's philosophy and the philosophies heavily influenced by Kant. Cooperative: Open to UI degree-seeking students.

425 Philosophy and Feminism 3 Course Prerequisite: 3 hours PHIL, WOMEN ST 101, or WOMEN ST 201. Feminist philosophy as critique of Western philosophical tradition and as alternate framework for thought. (Crosslisted course offered as PHIL 425, WOMEN ST 425).

- 431 Aesthetics and Philosophy of Art** 3 Course Prerequisite: 3 hours PHIL; junior standing. Philosophical exploration of aesthetics experience and any or all of the arts; emphasis on value considerations and comparisons of differing media. Cooperative: Open to UI degree-seeking students.
- 435 East/West Philosophy of Architecture** 3 Course Prerequisite: Junior standing. East/West philosophies and their impact on understanding of nature and architecture.
- 442 [M] Philosophy of Mind** 3 Course Prerequisite: 3 hours PHIL. Theories of mind, self, mental acts, psychological states and artificial intelligence. Cooperative: Open to UI degree-seeking students.
- 443 Philosophy of Language** 3 Course Prerequisite: 3 hours PHIL. Investigation of philosophical issues concerning meaning, reference, truth, the nature of language, and the relation between language and thought. Credit not granted for both PHIL 443 and PHIL 543. Cooperative: Open to UI degree-seeking students.
- 446 Metaphysics** 3 Course Prerequisite: 3 hours PHIL. Issues and theories concerning free will and determinism, the nature of truth, the existence of God, space, time and identity. Cooperative: Open to UI degree-seeking students.
- 447 Theory of Knowledge** 3 Course Prerequisite: 3 hours PHIL. Problems and theories concerning skepticism, the nature and scope of knowledge, a priori knowledge, and induction. Cooperative: Open to UI degree-seeking students.
- 460 [M] Ethical Theory** 3 Course Prerequisite: 3 hours PHIL. Problems of ethical theory as treated by historical and contemporary philosophers. Cooperative: Open to UI degree-seeking students.
- 462 [M] Women and Ethics** 3 Course Prerequisite: PHIL 101, WOMEN ST 101, or WOMEN ST 201. Study of gender and feminism and their effect on contemporary ethical theories and issues. (Crosslisted course offered as WOMEN ST 462, PHIL 462). Cooperative: Open to UI degree-seeking students.
- 470 Philosophy of Law** 3 Course Prerequisite: 3 hours PHIL or POL S Selected topics pertaining to moral and philosophical evaluation of law. Credit not granted for both PHIL 470 and PHIL 570. Cooperative: Open to UI degree-seeking students.
- 472 [M] Social and Political Philosophy** 3 Course Prerequisite: 3 hours PHIL or POL S Problems of normative social and political theories; historical and contemporary philosophers. Cooperative: Open to UI degree-seeking students.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Advanced Logic** 3 First-order predicate logic plus some metatheory, applications and/or extensions. Credit not granted for both PHIL 401 and PHIL 501. Recommended preparation: PHIL 201. Cooperative: Open to UI degree-seeking students.
- 504 Special Topics in Philosophy** 3 May be repeated for credit; cumulative maximum 6 hours. Intensive study of a special topic not otherwise covered in depth in the curriculum. Cooperative: Open to UI degree-seeking students.
- 507 Seminar in Philosophy of Religion** 3 May be repeated for credit; cumulative maximum 6 hours. Advanced topic-driven seminar. Critical analysis of traditional and contemporary religions and religious phenomena. Credit not granted for both PHIL 407 and PHIL 507. Cooperative: Open to UI degree-seeking students.
- 510 Seminar in the History of Philosophy** 3 May be repeated for credit; cumulative maximum 6 hours. Systematic exploration of the central works of an individual philosopher or philosophical movement. Cooperative: Open to UI degree-seeking students.
- 520 Seminar in Ethical Theory** 3 The major issues, views, and figures of ethical theory from ancient Greece to the present. Cooperative: Open to UI degree-seeking students.
- 522 Seminar in Metaphysics** 3 The nature of reality, through study of key concepts such as God, personhood, free will, causation, space, time, and identity. Cooperative: Open to UI degree-seeking students.
- 524 Seminar in Epistemology** 3 Classical problems, questions, and theories involving the concept of knowledge. Cooperative: Open to UI degree-seeking students.
- 530 Bioethics** 2 Professional ethics for scientists; ethical implications of new technologies; obligations to human and non-human research subjects. Cooperative: Open to UI degree-seeking students.
- 532 Seminar in Business Ethics** 3 The major issues in business ethics, both domestic and international, from general principles to specific cases. Cooperative: Open to UI degree-seeking students.
- 535 Advanced Biomedical Ethics** 3 Current ethical issues in medical practice, medical research and public policy relating to health issues. Cooperative: Open to UI degree-seeking students.
- 540 Ethics and Social Science Research** 3 Professional ethics for social science research, ethical conduct of research, obligations to human subjects and ethical implications of methods and technologies.
- 543 Philosophy of Language** 3 Investigation of philosophical issues concerning meaning, reference, truth, the nature of language, and the relation between language and thought. Credit not granted for both PHIL 443 and PHIL 543. Cooperative: Open to UI degree-seeking students.
- 570 Philosophy of Law** 3 Selected topics pertaining to moral and philosophical evaluation of law. Credit not granted for both PHIL 470 and PHIL 570. Cooperative: Open to UI degree-seeking students.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

POLITICAL SCIENCE

POL S

- 101 [SSCI] American National Government** 3 Introduction to American politics exploring the constitution, political institutions and actors, the policy making process, and various public policies.
- 102 [SSCI] Introduction to Comparative Politics** 3 Nature of the state; fundamental problems of government and politics; ideological and institutional comparison of democracies and dictatorships.
- 103 [SSCI] International Politics** 3 Operation and interaction of national, international, and supranational communities; major world problems since 1945.
- 206 State and Local Government** 3 Institutions, processes, and problems, with special reference to the state of Washington.
- 276 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 277 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 300 The American Constitution** 3 Constitutional principles as established by the Supreme Court and related political developments.
- 301 Political Simulations** 3 May be repeated for credit; cumulative maximum 9 hours. Preparation for and participation in political simulations.
- 305 Gender and Politics** 3 Role of gender in political behavior; voting and political participation; women as subjects and objects of political systems. (Crosslisted course offered as POL S 305, WOMEN ST 305).
- 314 National States and Global Challenges** 3 Comprehensive introduction to the processes of the economic and political integration of the European Union.

- 316 American Public Policy** 3 Institutions, processes, and substantive issues of American public policy and policy formation.
- 317 Media and Politics** 3 Relationship between the media and American political institutions and the public.
- 333 Development of Marxist Thought** 3 Marxist theory from the original writing of Marx and Engels to contemporary developments.
- 340 Introduction to Public Administration** 3 Basic theories of administrative organization, relationships, and behavior.
- 375 Chicana/o and Latina/o Politics** 3 Character, role, and goals of Chicano/Latino politics; contemporary Chicano/Latino issues. (Crosslisted course offered as CES 359, POL S 375).
- 381 Crime and Justice in the Movies** 3 (2-2) Mass media as both reflector and shaper of public attitudes and opinions about crime, criminals, law, order, and justice; using films. (Crosslisted course offered as CRM J 381, POL S 381).
- 400 Political Science Issues** 3 May be repeated for credit; cumulative maximum 6 hours. Current issues in political science.
- 402 Civil Liberties** 3 Origin and development of civil liberties; responsibility of the branches of government and the people for their maintenance.
- 404 [M] The Judicial Process** 3 Relationship of judicial behavior to structure, politics and the behavior of other participants in the judicial process.
- 405 [M] Comparative Criminal Justice Systems** 3 Comparative study of criminal justice systems in the US and selected foreign countries. (Crosslisted course offered as CRM J 405, POL S 405). Cooperative: Open to UI degree-seeking students.
- 410 History of American Indian Sovereignty and Federal Indian Law** 3 The history of sovereignty and Federal Indian Law against the backdrop of treaties and trust responsibility. (Crosslisted course offered as HISTORY 410, ANTH 410, POL S 410).
- 416 Policy Analysis** 3 Analysis of public policy formation, evaluation and implementation.
- 417 Voting and Elections** 3 Analysis of voting behavior and elections; turnout, influences on voter choice, congressional and presidential elections, campaign finance, and polling.
- 418 Human Issues in International Development** 3 Interdisciplinary analysis of complex interaction between tradition and modernity in Third World societies. (Crosslisted course offered as ANTH 418, POL S 418, SOC 418).
- 420 Political Parties and Interest Groups** 3 Roles, characteristics, and theories of political parties; organization, behavior, and impact of interest groups.
- 424 [M] US National Security Policy** 3 Substantive and theoretical research on issues relevant to formulation and requirements of post-Cold War, US national security and defense policy.
- 427 United States Foreign Relations** 3 Ends and means in foreign policy; organization, management, control, and current policy issues. (Crosslisted course offered as POL S 427, HISTORY 486).
- 428 Issues in Political Psychology** 3 Course Prerequisite: POL S 101 or PSYCH 105; junior standing. Introduction to the ways in which psychological factors influence political phenomena.
- 429 Special Topics in American Foreign and Defense Policy** 3 May be repeated for credit; cumulative maximum 6 hours. Current issues in foreign policy.
- 430 The Politics of Natural Resource and Environmental Policy** 3 Course Prerequisite: Junior standing. Issues and problems of natural resource and environmental policy.
- 432 [M] Comparative Public Policy** 3 Processes of public policy formation and outcomes in post-industrial democracies, and how to analyze it in a comparative perspective.
- 435 Politics of Developing Nations** 3 Issues and problems of political development and modernization common among developing nations.
- 436 Disability, Aging, and Public Policy** 3 Application of disability and aging theory to public policy challenges in the 21st century.
- 437 Classical Political Thought** 3 The development of political philosophy from the pre-Socratics to Machiavelli.
- 438 [M] Recent Political Thought** 3 The development of political thought since Machiavelli. (Crosslisted course offered as POL S 438, HISTORY 489).
- 442 [M] Leadership Skills for the Public Sector** 3 Leadership, motivation, team-building, group dynamics, interpersonal and group conflict and job design for the public sector.
- 443 Administrative Jurisprudence** 3 Study of the origins, nature, and practice of justice and law in public administration.
- 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: Open to UI degree-seeking students.
- 446 [M] Public Budgeting** 3 The government budget as an instrument of politics, planning and control; organizing for democratic accountability.
- 447 [M] Comparative Public Administration** 3 Public administration systems in Europe, Japan, Socialist and developing countries; origins and development.
- 448 Urban Politics and Policy** 3 Urban political processes and policies; intergovernmental relationships; impact of urban reform.
- 450 [M] The Legislative Process** 3 Role of legislatures in a democratic system; problems of representation; election and tenure of lawmakers; legislative organization and procedures.
- 455 The Presidency** 3 Organization and processes of executive institutions at the national level; uses and limits of executive power.
- 472 [M] European Politics** 3 Government and politics of postindustrial societies, including West Europe and Japan.
- 474 African Politics** 3 Course Prerequisite: Junior standing. Historical, economic, and social factors that shape contemporary African political systems and problems of nation-building.
- 475 Mao to Deng: The People's Republic of China, 1949 - 1999** 3 The major political, social, economic and cultural developments during the People's Republic of China. (Crosslisted course offered as HISTORY 475, ASIA 475, POL S 475).
- 476 [M] Revolutionary China, 1800 to Present** 3 Continuity and change in the political, social, cultural and economic experience of China since 1800. (Crosslisted course offered as HISTORY 476, ASIA 476, POL S 476).
- 497 Political Science Internship V** 1-12 May be repeated for credit; cumulative maximum 12 hours. On/off campus internship in federal, state, or local government institutions; nonprofit or public organizations; written assignments and readings required. S, F grading.
- 498 Cooperative Education Internship V** 2-12 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By interview only. 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. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 The Scope of Political Science** 3 Historical development and present status of the discipline; contemporary issues and future trends.
- 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.
- 503 Research Methods in Political Science** 3 Social science research design topics, measurement, sampling, data sources, experimental and quasi-experimental designs, field and historical designs, content analytic designs. Cooperative: Open to UI degree-seeking students.
- 504 Quantitative Methods in Political Science** 3 Applied statistical skills, enabling understanding of substantive political and social questions.

- 505 Comparative Criminal Justice 3** Comparative study of crime laws and criminal justice systems in selected foreign countries. (Crosslisted course offered as CRM J 505, POL S 505). Cooperative: Open to UI degree-seeking students.
- 510 Seminar on American Institutions and Processes 3** Seminar required of all graduate students using this field as a major or a minor; it is a prerequisite of all other graduate seminars in the field.
- 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.
- 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 in the US.
- 514 Seminar in Public Policy 3** Examination of central questions in public policy including the nature of public policy, policy analysis, and government intervention in society.
- 516 Seminar on Law, Courts, and Judicial Politics 3** Seminar on law, courts, and judicial politics.
- 530 American Foreign Policy: Theories and Applications 3** Theories of international politics applied to American foreign policy. Cooperative: Open to UI degree-seeking students.
- 531 Seminar in International Security 3** International security and arms control politics, negotiations, agreements. Cooperative: Open to UI degree-seeking students.
- 532 Seminar in International Political Economy 3** Institutions, politics, and decision-making processes in managing international economic relations.
- 533 Topics in Political Psychology 3** May be repeated for credit; cumulative maximum 6 hours. Psychological influences on political decision making, bargaining, conflict and conflict resolution options.
- 534 Seminar in Comparative Politics 3** Cooperative: Open to UI degree-seeking students.
- 536 Special Topics in Comparative Politics 3** May be repeated for credit; cumulative maximum 6 hours. Advanced issues seminar in international and comparative politics.
- 537 Concepts and Methods in Comparative Politics 3** May be repeated for credit; cumulative maximum 6 hours. Selected concepts (state, political participation), and methods (cross-national analysis, case study approaches) in comparative politics.
- 538 International Development and Human Resources 3** History of and recent changes in international development emphasizing anthropological perspectives. (Crosslisted course offered as ANTH 519, POL S 538, SOC 519).
- 539 The Political Science Profession 1** Methods, problems, and purposes of teaching, research, and vocation in political science. S, F grading.
- 540 Proseminar in Public Administration 3** Proseminar over viewing basic theories of administrative organization, relationships, and behavior.
- 541 Seminar in Evaluation Research 3** Interrelationship of ideology, data, policy development, and policy implementation in public policy analysis. (Crosslisted course offered as CRM J 540, POL S 541). Cooperative: Open to UI degree-seeking students.
- 542 Proseminar in Administration, Justice, and Applied Policy Studies 3** May be repeated for credit; cumulative maximum 6 hours. Analytical perspectives and theoretical issues. Cooperative: Open to UI degree-seeking students.
- 543 Topics in Public Administration and Policy 3** May be repeated for credit; cumulative maximum 6 hours. Examination of the literature on the politics of the American public policy process.
- 544 The Politics of Policy Process 3** American political process; policy making under the constraints of a democratic system; relationship to the (non) achievement of the public interest.
- 590 Policy Studio Course I 2** Course Prerequisite: By instructor permission. Public policy training for graduate students in the science and engineering fields through the NSF-IGERT program.
- 591 Policy Studio Course II 2** Course Prerequisite: By instructor permission. Public policy training for graduate students in the science and engineering fields through the NSF-IGERT program.
- 592 Policy Studio Course III 2** Course Prerequisite: By instructor permission. Public policy training for graduate students in the science and engineering fields through the NSF-IGERT program.
- 597 Graduate Internship V 2-12** May be repeated for credit; cumulative maximum 12 hours. On/off campus internship in federal, state, or local government institutions; nonprofit or public organizations; written assignments and readings required. S, F grading.
- 600 Special Projects or Independent Study V 1-18** May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V 1-18** May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

The Pre-Dental Curriculum

Smith Center for Undergraduate Education (CUE) 502
509-335-4549
prehealth.advising@wsu.edu

Associate Dean and Director, Mary Sánchez Lanier

All pre-health students are assisted with their preparation for dental school through the Pre-Health and STEM Education office (PHASE).

Becoming a dentist requires a program of graduate study in a dental school as well as undergraduate preparation. The majority of students who go on to dental school complete a baccalaureate degree. No particular major is required and students are more likely to excel in majors they enjoy. Adequate latitude exists in the dental schools' requirements so that the PHASE advisor is able to suggest a schedule of studies to meet the needs of the individual student. Almost all dental schools require specific undergraduate coursework. Typically, a total of 21 credits of elective courses in humanities and social sciences, plus one year of coursework in each of the following areas, will meet the requirements of almost all institutions and also give a good preparation for the Dental Admission Test (DAT).

- English composition (ENGLISH 101 and an additional [WRTG] course or ENGLISH 298)
- General chemistry (CHEM 105 and 106 or CHEM 105 and 116)
- Organic chemistry (CHEM 345 and 348)
- Physics (PHYSICS 101 and 102 or PHYSICS 201 and 202)
- Introductory biology (BIOLOGY 106 and 107)
- Molecular biology (MBIOS 301, 304, and 305)
- Biochemistry (MBIOS 303)

In addition, some institutions require Microbiology (MBIOS 304 and 305), Biochemistry (MBIOS 303),

Biochemistry Laboratory (M BIOS 304), and/or Introductory Psychology (PSYCH 105).

Admission to a school of dentistry is based on satisfactory completion of the entrance requirements of that school, attainment of satisfactory scholastic record, satisfactory to exceptional scores on the Dental Admission Test (DAT), the possession of personal qualifications necessary for the study of dentistry, and a single committee letter written by the Premedical/Predental Applicant Advisory Committee.

The Learning Goals for the Pre-dental curriculum are based on the WSU Learning Goals of the Baccalaureate and can be identified as (1) acquire and assimilate the disciplinary knowledge that is essential to successful careers as dental students and dentists (2) reason critically (3) develop life long learning skills (4) write and speak effectively and (5) develop a sense of self in society.

Additional information can be obtained from the director of Pre-dental advising, K.L. Brothers, Ph.D., Pre-Health and STEM Education, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

The Pre-Health Curriculum

Pre-health STEM.wsuedu
Smith Center for Undergraduate Education
(CUE) 502
509-335-4549
prehealth.advising@wsu.edu

Associate Dean and Director, Mary Sánchez Lanier

All pre-health students are assisted with their preparation for application to health professions schools through the Pre-Health and STEM Education office (PHASE).

Entering a health care professional program requires specific undergraduate preparative coursework. Typically, there are additional requirements that must be met for admission. The advisors in Pre-Health and STEM Education (PHASE) assist all students, regardless of major, who have an interest in a health care profession in meeting their goal.

PHASE advisors advise students with interest in pre-medical, pre-dental, pre-nutrition and exercise physiology, pre-speech and hearing sciences, pre-nursing, pre-pharmacy, pre-veterinary, pre-physical therapy, pre-physician's assistant, pre-occupational therapy, pre-optometry, and many others.

The Learning Goals for the Pre-health curriculum are based on the WSU Learning Goals of the Baccalaureate and can be identified as (1) acquire and assimilate the disciplinary knowledge that is essential to successful careers as a health professions student and practitioner (2) reason critically (3) develop life long learning skills (4) write and speak effectively and (5) develop a sense of self in society.

Additional information on preparation for admission to health profession programs can be obtained from Pre-Health and STEM Education, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

The Pre-Medical Curriculum

Pre-health STEM.wsuedu
Smith Center for Undergraduate Education
(CUE) 502
509-335-4549
prehealth.advising@wsu.edu

Associate Dean and Director, Mary Sánchez Lanier

All pre-health students are assisted with their preparation for medical school through the Pre-Health and STEM Education office (PHASE).

Becoming a medical doctor requires a program of graduate study in medical school as well as undergraduate preparative coursework. No particular major is required and students are more likely to excel in majors they enjoy. Adequate latitude exists in the medical schools' requirements so that the PHASE advisor is able to suggest a schedule of studies to meet the needs of the individual student. Typically a total of 21 credits of elective courses in humanities and social sciences, plus coursework in each of the following areas, will meet the requirements of almost all institutions and also give a good preparation for the Medical College Admission Test (MCAT).

- English composition (ENGLISH 101 and an additional [WRTG] course or ENGLISH 298)
- General chemistry (CHEM 105 and 106 or CHEM 105 and 116)
- Organic chemistry (CHEM 345)
- Physics (PHYSICS 101 and 102 or PHYSICS 201 and 202)
- Introductory biology (BIOLOGY 106 and 107)
- Molecular biology (M BIOS 301, 304, and 305)
- Biochemistry (M BIOS 303)

All medical schools assume that applicants will have developed math skills adequate to the demands of the required courses listed above; however, a few schools specify either a semester or a year of calculus (Math 140 or 171, with Math 172 if a full year is needed).

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. Most schools require applicants to appear for a personal interview. In addition, letters of recommendation from several college teachers or a single committee letter written by the Premedical/Predental Applicant Advisory Committee must strongly support the applicant. The latter is preferable.

The Learning Goals for the Pre-medical curriculum are based on the WSU Learning Goals of the Baccalaureate and can be identified as (1) acquire and assimilate the disciplinary knowledge that is essential to successful careers as medical students and physicians (2) reason critically (3) develop life long learning skills (4) write and speak effectively and (5) develop a sense of self in society.

Additional information can be obtained from the director of pre-medical advising, K. L. Brothers, Ph.D., Pre-Health and STEM Education, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

The Pre-Nursing Curriculum

Pre-health STEM.wsuedu
Smith Center for Undergraduate Education
(CUE) 502
509-335-4549
prehealth.advising@wsu.edu

Associate Dean and Director, Mary Sánchez Lanier

All pre-nursing students are assisted with their preparation for application to nursing school through the Pre-Health and STEM Education office (PHASE).

Students interested in nursing must meet the requirements for admission. The requirements for admission are listed in the WSU Spokane catalog under Nursing. The direct BSN program is based on the Spokane, Yakima and Tri-Cities locations of WSU. In Pullman, pre-nursing students typically spend their first two years fulfilling their core curriculum and pre-nursing requirement courses, and if accepted, they then spend their junior and senior years fulfilling their nursing program courses at the WSU College of Nursing.

The Learning Goals for the pre-nursing curriculum are based on the WSU Learning Goals of the Baccalaureate and can be identified as (1) acquire and assimilate the disciplinary knowledge that is essential to successful careers as nursing students and nurses (2) reason critically (3) develop life long learning skills (4) write and speak effectively and (5) develop a sense of self in society.

Additional information on preparation for admission to nursing can be obtained from the pre-nursing advisor, April Seehafer, M.Ed., Pre-Health and STEM Education, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

The Pre-Nutrition and Exercise Physiology Curriculum

Pre-health STEM.wsuedu
Smith Center for Undergraduate Education
(CUE) 502
509-335-4549
prehealth.advising@wsu.edu

Associate Dean and Director, Mary Sánchez Lanier

All pre-NEP students are assisted with their preparation for application to the program in Nutrition and Exercise Physiology through the Pre-Health and STEM Education office (PHASE).

Students interested in the program in Nutrition and Exercise Physiology (NEP) must meet the requirements for admission. The requirements for admission are listed in the WSU Spokane catalog under Nutrition and Exercise Physiology. Pre-NEP students typically spend their first two years in Pullman fulfilling their core curriculum and pre-NEP requirement courses, and then if accepted, they spend their junior and senior years fulfilling their NEP program courses on the WSU Spokane campus.

The Learning Goals for the pre-NEP curriculum are based on the WSU Learning Goals of the Baccalaureate and can be identified as (1) acquire and assimilate the disciplinary knowledge that is essential to successful careers (2) reason critically (3) develop

life long learning skills (4) write and speak effectively and (5) develop a sense of self in society.

Additional information on preparation for admission to NEP can be obtained from the pre-NEP advisor, Karen Chase, Pre-Health and STEM Education, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

The Pre-Pharmacy Curriculum

Pre-health STEM.wsuedu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
prehealth.advising@wsu.edu

Associate Dean and Director, Mary Sánchez Lanier

All pre-pharmacy students are assisted with their preparation for application to pharmacy schools through the Pre-Health and STEM Education office (PHASE).

Students interested in entering a professional Doctor of Pharmacy (PharmD) program at schools and colleges across the country must meet the requirements for admission. The requirements for admission to the WSU PharmD program are listed in the WSU Spokane catalog under Pharmacy. A bachelor's degree is not required for admission to most colleges of pharmacy and pre-pharmacy students at the WSU Pullman campus typically take 3 years fulfilling their pre-pharmacy requirements. Then, if admitted to the highly competitive WSU PharmD program, the student will spend 4 years in professional school, regardless of prior degrees.

Additional information on preparation for admission to pharmacy schools can be obtained from the pre-pharmacy advisor, Marian McDonnell Horton, M.A., Pre-Health and STEM Education, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

The Pre-Physical Therapy, Pre-Physician's Assistant, Pre-Occupational Therapy Curriculum

Pre-health STEM.wsuedu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
prehealth.advising@wsu.edu

Associate Dean and Director, Mary Sánchez Lanier

All pre-health students are assisted with their preparation for physical therapy, occupational therapy, or physician assistant school through the Pre-Health and STEM Education office (PHASE).

Students interested in physical therapy, occupational therapy, or physician assistant programs may prepare for admission from any major in the University as long as they meet the minimum requirements for admission. Admission to physical therapy, occupational therapy, and physician as-

sistant programs is highly competitive. The PHASE advisor is able to suggest a schedule of studies to meet the needs of the individual student.

The Learning Goals for the pre-physical therapy, pre-occupational therapy, and pre-physician assistant curriculum are based on the WSU Learning Goals of the Baccalaureate and can be identified as (1) acquire and assimilate the disciplinary knowledge that is essential to successful careers (2) reason critically (3) develop life long learning skills (4) write and speak effectively and (5) develop a sense of self in society.

Additional information on preparation for admission to physical therapy, occupational therapy, and physician assistant programs can be obtained from the director of pre-physical therapy, pre-occupational therapy, and pre-physician assistant advising, Anne LaFrance, M.A., NCC, Pre-Health and STEM Education, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

The Pre-Speech and Hearing Sciences Curriculum

Pre-health STEM.wsuedu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
prehealth.advising@wsu.edu

Associate Dean and Director, Mary Sánchez Lanier

All pre-Speech and Hearing Sciences students are assisted with their preparation for certification to the program in Speech and Hearing Sciences through the Pre-Health and STEM Education office (PHASE).

Students interested in the program in Speech and Hearing Sciences (SHS) must meet the requirements for certification. The requirements for certification are listed in the WSU Spokane catalog under Speech and Hearing Sciences. Pre-SHS students typically spend their first two years in Pullman fulfilling their core curriculum and pre-SHS requirement courses, and then they spend their junior and senior years fulfilling their SHS program courses on the WSU Spokane campus.

Additional information on certification to Speech and Hearing Sciences can be obtained from Pre-Health and STEM Education, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

The Pre-Veterinary Curriculum

Pre-health STEM.wsuedu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
prehealth.advising@wsu.edu

Associate Dean and Director, Mary Sánchez Lanier

All pre-health students are assisted with their preparation for veterinary school through the Pre-Health and STEM Education office (PHASE).

Students interested in veterinary medicine may prepare for admission from any major in the University

as long as they meet the minimum requirements for admission. The requirements for admission are listed in this catalog under Veterinary Medicine. Admission to the veterinary program is highly competitive. A minimum of three years of college or completion of a baccalaureate degree is essential. The PHASE advisor is able to suggest a schedule of studies to meet the needs of the individual student.

The Learning Goals for the pre-veterinary curriculum are based on the WSU Learning Goals of the Baccalaureate and can be identified as (1) acquire and assimilate the disciplinary knowledge that is essential to successful careers as veterinary students and veterinarians (2) reason critically (3) develop life long learning skills (4) write and speak effectively and (5) develop a sense of self in society.

Additional information on preparation for admission to veterinary medicine can be obtained from the director of pre-veterinary advising, Brooke Wolf, Ed.M., Pre-Health and STEM Education, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

The Prelaw Curriculum

libarts.wsu.edu/prelaw/

Students interested in legal education may prepare for admission to law school from any major in any college at the University. The American Bar Association recommends completing baccalaureate degrees before entering law school, attaining as rich an undergraduate education as possible, and developing skills in reading, writing, critical thinking, oral communication, research, and task management. Admission to law school is based in most cases on a student's Law School Admissions Test (LSAT) score, grade point average, personal statement, letters of recommendation, quality of the institution where undergraduate work is completed, and difficulty and range of course work. The ABA recommends completing a major, but double majors or minors have no effect on admission. Pre-law students are advised to pursue majors in a discipline that interests them: students are more likely to excel in majors they enjoy, and the process of exploring one subject in greater depth will provide valuable preparation for study of the law. No particular major is recommended and there are no minimum requirements with regard to course work, but the American Bar Association has identified knowledge of certain subjects as important groundwork for law school: history, especially American history; political thought and theory and the American political system; ethical theory and theories of justice; economics; basic math and finance; human behavior and social interaction; diverse cultures both within and outside the United States; international and global issues.

For best results students should work closely with their major advisors. Several departments and schools at the University offer pre-law curricula: Communication (226 Murrow Hall), History (301 Wilson Hall), The School of Politics, Philosophy, and Public Affairs (801 Johnson Tower), and Sociology (204 Wilson Hall). Additional information can be obtained from Professor Cornell Clayton, (Washington State University, 818 Johnson Tower, Pullman, WA 99164-4880).

Department of Psychology

wsu.edu/psychology/
Johnson Twr 233
509-335-2631

Professor and Department Chair, R. M. Craft; Professors, A. Blume, G. L. Burns, D. Dyck, J. M. Hinson, D. Marcus, F. K. McSweeney, M. M. Morgan, C. D. Parks, T. M. Probst, K. Schmaling, M. Schmitter-Edgecombe, P. M. Whitney, J. W. Wright; Associate Professors, S. Bauman, A. Estrada, L. Fournier, J. P. Garofalo, M. Gartstein, P. Kwon, S. Lakatos, E. Soliday, P. S. Strand, S. Tragesser, B. Walker; Assistant Professors, J. Ehrlinger, R. Magnan, B. Sharpless; Clinical Associate Professors, S. Swindell, B. Wright; Clinical Assistant Professors, L. Daffin, D. Posey, A. L. Matthews, L. Smith; Professor Emeritus, T. A. Brigham.

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 that are related to their respective fields.

The department offers courses of study leading to the Bachelor of Science in Psychology and the Doctor of Philosophy.

Excellent facilities are available for instruction and research in psychology. There are specially designed facilities for research in learning, memory, perception, animal behavior, neurosciences and social interaction. Departmental facilities also include the Psychology Clinic, which is a training clinic for doctoral students in clinical psychology. 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.

Graduate Program

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.

Preparation for Graduate Study

Students who contemplate work leading to advanced degrees are urged to confer as early as possible with a psychology faculty mentor. Graduate programs require a solid background in mathematics, natural sciences, physics, philosophy, and social sciences as well as appropriate preparation in psychology itself.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

PSYCHOLOGY - BACHELOR OF SCIENCE (120 HOURS)

The Bachelor of Science in Psychology requires a minimum of 30 credit hours in PSYCH, at least 15 hours of which must be in 300-400-level courses. Students must take at least 10 credit hours of psychology in residence at WSU and must maintain at least a C average in PSYCH courses. Students must have two years of one foreign language in high school or take one year in college of a modern foreign language before graduation. Beyond certain minimum requirements there is flexibility in the degree program, in accordance with the needs of the individual student. A student may certify as a BS major after completion of 30 semester hours, PSYCH 311 with a C- or better, and cumulative gpa of 2.5 or better.

For the BS degree in Psychology, the four learning goals are: (1) Students will understand basic research design and analysis; (2) Students will be able to describe societal influences on individual behavior, and they will display an understanding of the cultural relativism inherent in defining what is normal and abnormal behavior; (3) Students will be able to critically evaluate scientific studies; (4) Students will demonstrate proficiency in the written communication of psychological concepts.

First Year

First Term	Hours
Biological Sciences [BSCI] with lab	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
PSYCH 105 [SSCI]	3

Second Term	Hours
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3 or 4
Electives	3

Second Year

First Term	Hours
Creative & Professional Arts [ARTS]	3
Physical Sciences [PSCI] with lab	4
PSYCH 311	4
Electives	3

Second Term	Hours
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
PSYCH 312 [M]	4
Electives	7
Complete Writing Portfolio	

Third Year

First Term	Hours
Group I PSYCH Elective ¹	3
Group II PSYCH Elective ¹	3
Electives	10

Second Term	Hours
Group I PSYCH Elective ¹	3
Group II PSYCH Elective ¹	3
300-400-level Non-PSYCH Electives	10

Fourth Year

First Term	Hours
Group I PSYCH Elective ¹	3
Integrative Capstone [CAPS]	3
PSYCH Elective ²	3
300-400-level Non-PSYCH Electives	7

Second Term	Hours
Non-PSYCH Electives	15
PSYCH Electives	1-4
Complete Psychology Exit Interview and Survey	

¹ The PSYCH courses listed above under Groups I and II are recommended for that semester. Some are only offered in the fall or the spring. Group I FALL: PSYCH 350, 372, 384, 390, 401, 470, 490 and Group I SPRING: PSYCH 350, 384, 401, 470, 473. Group II FALL: PSYCH 321, 324, 333, 361, 363, 440 and Group II SPRING: PSYCH 321, 324, 333, 361, 363, 412, 440, 464.

² Writing in the Major Courses: PSYCH 312, 328, 401, 440, 473.

Minors

Addiction Studies (Vancouver only)

A minor in addiction studies requires 17 – 22 hours depending on the track. The three tracks are: Track 1 (professional certification): comprising coursework primarily in the department of psychology and aimed at preparing students for certification as chemical dependency professionals (CDP) in Washington State. Track 2 (non-certification): comprising coursework primarily in the departments of sociology and criminal justice, aimed at students preparing for careers in public policy, law enforcement, social work, and related fields, who wish to obtain additional training in the political, social, and cultural components of addictive behaviors (but who do not wish to be certified as chemical dependency professionals in Washington State). Track 3 (interdisciplinary): integrating psychological, behavioral, sociological, and criminal justices issues into models of addiction intervention and prevention. Credit hours for the minor must include 9 hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Psychology

The minor in psychology may be certified after the completion of 60 semester hours. It requires 18 credit hours in PSYCH, of which at least 9 must be taken at WSU and at least 9 must be in graded 300-400-level courses. PSYCH 105 or 198 is required and a statistics or research methods course is strongly recommended. A minimum gpa of 2.00 or higher is required in all coursework used for the minor.

Description of Courses

PSYCHOLOGY

PSYCH

- 105 [SSCI] Introductory Psychology 3** Survey of the basic terms, processes, principles, and theories related to the scientific study of human behavior.
- 106 Psychology Applied to Daily Living: Dealing with Friends, Alcohol, and Sex 1** Application of psychological procedures to the problems of group living, alcohol use, sexual decision making and related social issues.
- 110 Introduction to Addiction Studies 3** Analysis of cultural, societal, individual, and physiological factors underlying drug addiction.
- 230 Human Sexuality 3** Sexuality in personal development; personal, cultural, biological influences on sexual identification and behavior; fertility, reproduction, sexual functioning, sexuality and personality. (Crosslisted course offered as PSYCH 230, WOMEN ST 230). Recommended preparation: PSYCH 105.
- 265 Biopsychological Effects of Alcohol and Other Drugs 3** Biopsychological effects of the major classes of abused and psychotherapeutic drugs, including alcohol, stimulants, sedatives and hallucinogens. Recommended preparation: PSYCH 105; BIOLOGY 102, BIOLOGY 107, or BIOLOGY 101 and 105.
- 301 Seminar in Psychology V 1-3** May be repeated for credit; cumulative maximum 6 hours.
- 306 Industrial Psychology 3** Job analysis and evaluation; personnel recruitment and selection; design and evaluation of training systems; performance appraisals. Recommended preparation: PSYCH 105.
- 307 Human Factors 3** Human limitations and capabilities in architectural and engineering design; system analysis. Recommended preparation: PSYCH 105.
- 308 Organizational Psychology 3** Employee motivation satisfaction and commitment; organizational communication; leadership; group behavior, teams and conflict; organizational change and development. Recommended preparation: PSYCH 105.
- 309 Cultural Diversity in Organizations 3** Psychology applied to cultural diversity in organizations; interpersonal and intergroup relationships; diversity training; EEO legislation and affirmative action. Recommended preparation: PSYCH 105.
- 310 Pseudoscience and Human Behavior 3** Evaluation of scientific claims in the behavioral sciences and everyday life.
- 311 Elementary Statistics in Psychology 4** (3-3) Course Prerequisite: ENGR 107, MATH 105, 106, 107, 108, 140, 171, 172, 202, 205, 212, 252, or MGTOP 215 with a grade of C- or better. Descriptive statistics, probability, and inference; design and interpretation of research. Recommended preparation: PSYCH 105.
- 312 [M] Experimental Methods in Psychology 4** (3-3) Course Prerequisite: PSYCH 311 with a grade of C- or better. Designing, conducting, and reporting research in selected areas of experimental psychology. Recommended preparation: PSYCH 105.
- 320 Health Psychology 3** Psychological and physiological aspects of stress; health behavior and disease prevention; adjustment to chronic illness. Recommended preparation: PSYCH 105.
- 321 Introduction to Personality 3** Theories, concepts, methods, discoveries in psychology of personality. Recommended preparation: PSYCH 105.
- 324 Psychology of Women 3** Socialization and sex roles of women; a psychological perspective. (Crosslisted course offered as PSYCH 324, WOMEN ST 324). Recommended preparation: PSYCH 105.
- 328 [M] Self Control 3** Analysis of self-control problems; application of behavioral principles to student-conducted projects. Recommended preparation: PSYCH 105.
- 333 Abnormal Psychology 3** Problems of abnormality from traditional and evolving points of view; types, therapies, outcomes, preventive techniques. Recommended preparation: PSYCH 105.
- 342 Assessment and Treatment of Dual Diagnosis 3** Course Prerequisite: PSYCH 333. Development of conceptual frameworks to guide the treatment and research of patient's co-occurring chemical dependency and psychiatric disorders. Recommended preparation: PSYCH 105.
- 350 Social Psychology 3** Attitude changes, conformity, interpersonal relations, groups and social influences explored to give a coherent view of social psychology. (Crosslisted course offered as PSYCH 350, SOC 350). Recommended preparation: PSYCH 105 or SOC 101.
- 361 Principles of Developmental Psychology 3** Introduction to biological and psychosocial influences on infant, child and adolescent development. Recommended preparation: PSYCH 105.
- 363 Psychology of Aging 3** Psychological processes of aging; changes in sensory, motor, cognitive, motivational and personality characteristics; research methodologies for the study of aging. Recommended preparation: PSYCH 105.
- 372 [BSCI] Biological Basis of Behavior 3** Functional relationship between nervous system and behavior; integrated organ systems, sensory processes, and investigative procedures. Occasional lab meetings required; see instructor for times. Recommended preparation: PSYCH 105 or PSYCH 265; BIOLOGY 102, BIOLOGY 107, or BIOLOGY 101 and 105.
- 384 Sensation and Perception 3** Perception of size, depth, form, shape; illusions, contrast; historical and modern theories and research; applications and demonstrations. Recommended preparation: PSYCH 105.
- 401 [M] Historical Development of Psychology 3** Course Prerequisite: Certified major in Psychology; junior standing. Concepts, methods, theories, trends, and systems. Recommended preparation: PSYCH 105.
- 403 Cultural Issues in Psychology 3** Multidisciplinary analyses of the relationship between social-ecological and political contexts and individual and collective psychology. (Crosslisted course offered as CES 403, PSYCH 403).
- 412 Psychological Testing and Measurement 3** Course Prerequisite: PSYCH 311. Assessment of behavioral variables in humans; individual differences. Recommended preparation: PSYCH 105. Cooperative: Open to UI degree-seeking students.
- 440 [M] Clinical/Community Psychology 3** Course Prerequisite: PSYCH 333. Professional problems; theory, training, relations with clients, institutions, public. Recommended preparation: PSYCH 105.
- 442 Advanced Addiction Treatment Techniques 4** (3-2) Course Prerequisite: PSYCH 342. Advanced addiction treatment approaches for individuals, couples, families and groups within a human services framework; integration of relapse prevention techniques. Recommended preparation: PSYCH 110.
- 444 Basic Helping Skills 3** Course Prerequisite: 6 hours PSYCH. Training in basic skills to work with varied types of clients; didactic and role play instruction. Recommended preparation: PSYCH 105. S, F grading.
- 445 Undergraduate Practicum V 1** (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: 6 hours PSYCH; junior standing. Supervised experience in local and county agencies; application of psychological principles to a variety of professional work settings. Recommended preparation: PSYCH 105; PSYCH 333; PSYCH 444. S, F grading.
- 464 Behavior Disorders of Children and Adolescents 3** Course Prerequisite: PSYCH 361, HD 101, or HD 340. Theoretical and empirical approaches to the description, etiology, and treatment of behavior disorders in children and adolescents. Recommended preparation: PSYCH 105; PSYCH 333.
- 465 Neuropsychology of Learning Disorders 3** Biological and cognitive aspects of learning disorders including etiology, common cognitive deficits, and treatment of cognitive dysfunction.
- 466 Environmental Psychology 3** Psychological concepts applied to the mixture of positive and negative interactions individuals have with their physical environment. Recommended preparation: PSYCH 105.
- 468 Addictive Behavior Across the Demographic Spectrum 3** Course Prerequisite: Junior standing. Overview of social, cultural and historical perspectives on dealing with addictive behavior. (Crosslisted course offered as SOC 468, CRM J 468, PSYCH 468). Recommended preparation: SOC 101, PSYCH 105, or CRM J 101.

- 470 Motivation** 3 Different motivational systems; analysis of environmental and biological factors influencing motivation, with emphasis on human motivation. Recommended preparation: PSYCH 105; PSYCH 350, PSYCH 372, PSYCH 490, or PSYCH 491.
- 473 [M] Advanced Biological Basis of Behavior** 3 Course Prerequisite: PSYCH 372, or NEUROSCI 301. Neurophysiological, hormonal, and biochemical bases of regulatory behavior; theoretical and applied issues. Recommended preparation: PSYCH 105.
- 480 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 490 Cognition and Memory** 3 Human information processing, memory, and cognition. Recommended preparation: PSYCH 105.
- 491 Principles of Learning** 3 Principles of learning from a behavioral perspective using the experimental analysis of behavior. Credit not granted for both PSYCH 491 and 591. Recommended preparation: PSYCH 105.
- 492 Psychology of Language** 3 The cognitive and neuropsychological processes involved in the acquisition and use of language; cross-cultural perspectives on language and thought.
- 495 Field Experience in Personnel Psychology** V 2 (0-6) to 6 (0-18) May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: MGTOP 450 or PSYCH 306. Supervised experience in local industries and organizations; application of personnel psychology and resource management principles to work environments. Recommended preparation: PSYCH 105. S, F grading.
- 496 Cooperative Education Internship** V 2-6 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: PSYCH 445 or PSYCH 495. Off-campus cooperative education internship with business, industry, or government unit coordinated through the Professional Experience Program. Recommended preparation: PSYCH 105. S, F grading.
- 497 Instructional Practicum** V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By permission only. S, F grading.
- 498 Research Participation** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By permission only. Participation in the current research of departmental faculty. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Course Prerequisite: By permission only. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 502 Research Design** V 1-3 May be repeated for credit; cumulative maximum 16 hours. Course Prerequisite: Ph.D. student in Psychology. Research design, equipment, data collection, data analysis, and report writing. S, F grading.
- 504 History of Psychology: Theoretical and Scientific Foundations** 3 Course Prerequisite: Ph.D. student in Psychology. Roots of scientific explanation in psychology traced through various philosophical schools and psychological movements.
- 505 Teaching Introductory Psychology** V 1-3 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Ph.D. student in Psychology. Problems and techniques related to teaching introductory psychology. S, F grading.
- 506 Current Research in Psychology** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Ph.D. student in Psychology. Current research being conducted by psychology faculty and members of associated departments. S, F grading.
- 508 Special Topics in Psychology** V 1-3 May be repeated for credit.
- 511 Analysis of Variance and Experimental Design** 3 Course Prerequisite: Ph.D. student in Psychology. Parametric, nonparametric, repeated-measures, and multivariate ANOVA; planned comparisons; confidence intervals and power analysis; experimental design and variants.
- 512 Correlation, Regression, and Quasi-Experimental Design** 3 Course Prerequisite: Ph.D. student in Psychology. Simple and multiple correlation and regression; time-series analysis; factor analysis; field research and quasi-experimental design.
- 513 Seminar in Quantitative Methods and Research Design** 3 May be repeated for credit. Course Prerequisite: PSYCH 512. Advanced topics in specialized quantitative procedures and in design of research in psychology.
- 514 Psychometrics** 3 Course Prerequisite: PSYCH 512. Scientific construction of behavioral assessment instruments, including validation and reliability; types of scales and responses; statistical scaling; test theory issues.
- 515 Multilevel and Synthesized Data** 3 Course Prerequisite: PSYCH 512. Structural equation modeling, hierarchical linear modeling and meta-analysis and the software used to conduct these analyses.
- 516 Applied Structural Equation Modeling with Current Software** 3 Course Prerequisite: PSYCH 514; PSYCH 515. Confirmatory factor analysis, path analysis, structural regression analysis, multilevel analysis and latent growth analysis with current software.
- 520 Empirical Approaches to Psychotherapy** 3 Course Prerequisite: PSYCH 533. Major therapy systems, research on process and outcome of therapy.
- 530 Professional, Ethical, and Legal Issues** 3 Course Prerequisite: Ph.D. student in Psychology. Application of professional, ethical, and legal issues in clinical psychology to such topics as confidentiality, dual-relationships, research, assessment, and intervention.
- 533 Adult Psychopathology** 3 Course Prerequisite: Ph.D. student in Psychology. Theoretical and empirical approaches to diagnosis, etiology and treatment of mental disorders. Cooperative: Open to UI degree-seeking students.
- 534 Clinical Psychopharmacology** 3 Course Prerequisite: PSYCH 533 or COUN PSY 517. Classification, clinical application, and mechanisms of psychotherapeutic drugs used in the treatment of mental disorders.
- 535 Personality Assessment and Diagnosis** 3 Course Prerequisite: Ph.D. student in Psychology. Diagnostic interviewing, conceptualization of clinical problems, case presentations, and treatment planning.
- 536 Measurement Theory and Personality Assessment** 3 Course Prerequisite: By interview only. Psychometric theory, theories of personality, objective and projective methods of assessing personality, development of testing and interpretive skills.
- 537 Psychology Clinic Assessment Practicum** 3 May be repeated for credit; cumulative maximum 18 hours. Course Prerequisite: PSYCH 539. Supervised practice in psychological assessment in the Psychology Clinic. S, F grading.
- 538 Child Therapy Practicum** 3 May be repeated for credit; cumulative maximum 18 hours. Course Prerequisite: Ph.D. student in Psychology. Supervised practice in the clinical application of psychology with children and families. S, F grading.
- 539 Intellectual and Neuropsychological Assessment** 3 Course Prerequisite: Ph.D. student in Psychology. Psychometric theory, theories of intelligence, methods of appraising intelligence in children and adults, and development of testing and interpretive skills.
- 542 Child and Adolescent Psychopathology** 3 Theoretical and empirical approaches to etiology and diagnosis of mental disorders in children.
- 543 Child Clinical Psychology: Empirical Approaches to Assessment and Therapy** 3 Course Prerequisite: Ph.D. student in Psychology. Research on child assessment and therapy.
- 544 Medical Psychology: Psychological and Pharmacological Interventions** 3 Course Prerequisite: Ph.D. student in Psychology. Psychological factors and their influence upon the causes and/or course of medical illnesses as well as relevant clinical interventions. Cooperative: Open to UI degree-seeking students.

- 545 Psychology Clinic Assessment and Psychotherapy Practicum** 3 (0-9) May be repeated for credit; cumulative maximum 18 hours. Course Prerequisite: Ph.D. student in Psychology. Supervised practice in the clinical application of psychology with adults in the Psychology Clinic. S, F grading.
- 546 Counseling Service Practicum** V 1-3 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Ph.D. student in Psychology. Supervised practice in the clinical application of psychology at the WSU Counseling Service. S, F grading.
- 547 Medical Psychology Practicum** 3 May be repeated for credit; cumulative maximum 18 hours. Course Prerequisite: Ph.D. student in Psychology. Supervised practice in the clinical application of psychology at the WSU Health and Wellness Service. S, F grading.
- 548 Clinical Externship** V 1-3 May be repeated for credit; cumulative maximum 18 hours. Course Prerequisite: Ph.D. student in Psychology. Supervised practice in the clinical application of psychology at approved hospitals and medical practices. S, F grading.
- 550 Social Psychology** 3 Course Prerequisite: Ph.D. student in Psychology. Attitude structure, function, and change; social cognition and motivation, and attributions. Cooperative: Open to UI degree-seeking students.
- 552 Diversity Issues in Psychology** 3 Course Prerequisite: Ph.D. student in Psychology. Research, theories, and controversies regarding the role of human diversity in psychotherapy, psychological assessment, and clinical research.
- 574 Clinical and Experimental Biopsychology** 3 Course Prerequisite: Ph.D. student in Psychology. Neuroanatomical, neurochemical, and other biological cases of human and animal behavior. Cooperative: Open to UI degree-seeking students.
- 575 Foundations of Neuropsychology** 3 Course Prerequisite: Ph.D. student in Psychology. Foundations in brain/behavior relationships and neuropathological syndromes; preparation for advanced training in neuropsychological assessment. Cooperative: Open to UI degree-seeking students.
- 577 Behavioral Pharmacology** 3 Survey of drugs which affect brain function with emphasis on animal models and clinical applications. Recommended preparation: PSYCH 574 or NEUROSCI 520. Cooperative: Open to UI degree-seeking students.
- 584 Sensory Bases of Behavior** 3 Sensory and physiological aspects of vision, audition, and other senses. Cooperative: Open to UI degree-seeking students.
- 591 Principles of Learning** 3 Principles of learning from a behavioral perspective using the experimental analysis of behavior. Credit not granted for both PSYCH 491 and 591. Recommended preparation: PSYCH 105.
- 592 Cognition and Affective Basis of Behavior** 3 Course Prerequisite: Ph.D. student in Psychology. Experimental approaches to human information processing, memory, and cognition.
- 595 Clinical Internship in Psychology** V 2-16 May be repeated for credit; cumulative maximum 16 hours. Course Prerequisite: Ph.D. student in Psychology. Clinical training in an internship approved by American Psychological Association or by WSU. S, F grading.
- 600 Special Projects or Independent Study** V 1-18 May be repeated for credit. Course Prerequisite: Ph.D. student in Psychology. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Course Prerequisite: Ph.D. student in Psychology. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study and/or Examination** V 1-18 May be repeated for credit. Course Prerequisite: Ph.D. student in Psychology. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination** V 1-18 May be repeated for credit. Course Prerequisite: Ph.D. student in Psychology. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Sciences

Description of Courses

SCIENCE

SCIENCE

- 101 [SCI] Origins in the Natural World** 4 (3-3) Interdisciplinary approach to science in the modern world for non-science majors.
- 102 [SCI] Dynamic Systems in the Natural World** 4 (3-3) Course Prerequisite: SCIENCE 101. Interdisciplinary approach to science in the modern world for non-science majors.
- 210 Your Future in Life Sciences** 2 Exploration of career options in biological sciences with faculty and outside speakers; guide to preparing resume and career plans. (Crosslisted course offered as SCIENCE 210, BIOLOGY 210, MBIOS 210). S, F grading.
- 430 Methods of Teaching Science** 3 Course Prerequisite: Junior standing. Methods, philosophy, and structure of science; application in teaching middle and secondary school science courses. (Crosslisted course offered as BIOLOGY 430, SCIENCE 430).

Department of Sociology

libarts.wsu.edu/soc/
Wilson-Short 204
509-335-4595

Associate Professor and Department Chair, L. McIntyre; Professors, M. Allen, D. Dillman, G. Hooks, C. Horne, M. Johnson, C. Mosher, T. Rotolo, A. Wharton; Associate Professors, S. Frickel, E. Fussell, J. Kmec, A. MacLean, J. Schwartz; Assistant Professors, M. Balaev, E. Johnson, R. Lievanos, J. Sherman; Instructor, A. Luebbers.

Sociology is the scientific study of social life. The fundamental insight of the discipline is that the social matters; our lives are affected not only by our personal psychology, but by our place in the social world.

Courses in sociology are designed to provide the student with an understanding of what makes people and groups of people behave the way they do. They cover a wide range of issues, from inequality to human ecology, from deviance to religion, from medicine to politics. Few fields offer students (and researchers) opportunities of such breadth. The course of study for majors is flexible enough to accommodate a variety of individual interests. Some knowledge of sociology is widely regarded as a useful supplement to the course work in most fields.

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. It also offers an undergraduate minor in Sociology.

Undergraduate Studies

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 community planning, counseling, law, medicine, the ministry, politics, or public administration.

Learning Outcomes: At the completion of the Bachelor of Arts degree in sociology, students will be able to 1) understand themselves in relationship to society, 2) understand the relationship between society and the physical world, 3) reason symbolically and quantitatively, 4) conduct/evaluate empirical research, 5) critically apply sociological concepts to "real world" situations, 6) understand how individual behavior and social institutions affect social order, 7) communicate effectively orally and in writing, 8) enhance life skills such as civility and cooperation, and 9) respect social diversity.

Degree Requirements: A Bachelor of Arts degree in sociology requires a minimum of 31 hours of sociology coursework in which students must maintain a C average. All majors must complete five required core courses as well as five elective courses in sociology. In addition, students must earn 24 credit hours in related fields, half of which must be in 300-400 level courses. Related field courses enable students to individualize their programs of study to best meet their academic and career goals. Students select related field courses from a departmentally approved list and in consultation with an academic advisor.

The following courses are required for all sociology majors: Introduction to Sociology (SOC 101), Development of Social Theory (SOC 310), Research Methods in Sociology (SOC 317 [M]), and a department approved course in statistics for the social sciences, SOC 321, and one of the following "capstone experience" integrative capstone courses: Capstone Internship (SOC 495), or Capstone Service (SOC 496).

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

SOCIOLOGY (120 HOURS)

This is a prototype of one of many ways to complete the Bachelor of Arts in Sociology in four years. The program has built-in flexibility. Students should consult their advisors regarding other acceptable course plans.

Students must meet the graduation requirements of the College of Liberal Arts. They are encouraged to make a broad and balanced sampling of UCORE courses to meet the university's goal for a general education, as well as to explore or confirm possible major and career interests.

At least 40 of the 120 hours for the degree must be at the 300-400-level.

First Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3

SOC 101 [SSCI]	3
Electives	4

Second Term

<i>Communication [COMM] or Written Communication [WRTG]</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
Humanities [HUM]	3
Electives	6

Second Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI]	4
Creative & Professional Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Diversity [DIVR]	3
Electives	6

Second Term

<i>Physical Sciences [PSCI] or SCIENCE 102 [SCI]</i>	<i>Hours</i>
Physical Sciences [PSCI] or SCIENCE 102 [SCI]	4
SOC Elective	3
Electives	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
Related Field Electives	6
SOC 310	3
SOC 317 [M]	3
SOC Elective	3

Second Term

<i>Related Field Electives</i>	<i>Hours</i>
Related Field Electives	6
SOC 321 or CRM J 321	3 or 4
SOC Elective	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
Related Field Electives	9
SOC Electives	3
Electives	3

Second Term

<i>Related Field Electives</i>	<i>Hours</i>
Related Field Electives	9
SOC 495 [CAPS] [M] or 496 [CAPS] [M] ¹	3
Electives	3

¹ If approved, SOC 497 [M] may fulfill the UCORE Integrative Capstone [CAPS] requirement.

Minors

Sociology

The minor in sociology may be certified after completion of 60 semester hours. It requires a minimum of 18 credit hours in sociology, including SOC 101, 320, and at least 9 additional graded hours of 300-400-level courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Any SOC course may be counted toward the minor (subject to the above provisions). Only 3 credits of SOC 495 may apply to the minor. A gpa of 2.0 is required for the minor.

Description of Courses

SOCIOLOGY

SOC

101 [SSCI] Introduction to Sociology 3 Introduction to the discipline of sociology: Concepts and methods used in the inquiry into the social world.

102 [SSCI] Social Problems 3 The structure of social institutions and cultural factors that constitute threats to society (crime, poverty, discrimination, drugs, family violence).

245 (345) Sociology of Sport 3 Sociological study of sport in America.

250 Perspectives on Disability 3 Historical, international, socioeconomic, ethical and personal perspectives on disability; individual choices, societal values, and social responsibility.

251 The Sociology of Sex, Relationships, and Marriage 3 Social and personal factors in mate selection; the sociology of sexuality; development of gender roles; and intimate relationships and marriage. (Crosslisted course offered as SOC 251, WOMEN ST 251).

300 [M] Intersections of Race, Class, Gender and Sexuality 3 Course Prerequisite: 3 hours CES, WOMEN ST, or SOC 101. Intersections between race, class and gender through case studies; experiences in interdisciplinary methods. (Crosslisted course offered as WOMEN ST 300, CES 300, SOC 300).

302 Contemporary Masculinity and Men's Issues 3 Analysis of the development of masculinity in its biological and cultural forms. (Crosslisted course offered as WOMEN ST 302, CES 305, SOC 302).

310 Development of Social Theory 3 Foundations of sociological theory; introduction to original works of early social theorists. Recommended preparation: SOC 101.

317 [M] Research Methods in Sociology 3 Designing, conducting, and reporting social research.

320 Introduction to Social Research 3 Methods of collecting data; surveys, experiments, field observations; organization and interpretation of data; reading social research findings.

321 Quantitative Techniques in Sociology I 4 Levels of measurement; measures of central tendency, dispersion and association; normal curve, statistical inference; logic of quantitative comparison and decision making.

331 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 Society-environment relations, including environmental attitudes and behavior; the environmental movement and environmental politics and policy-making. Recommended preparation: SOC 101.

- 333 Science, Power and Human Values 3** Recent developments in the sociological study of science and scientific knowledge through cultural, commercial, and political perspectives.
- 334 Issues in Global Human Health 3** Human populations and life expectancies; inequity across global regions.
- 340 [DIVR] Social Inequality 3** Causes and consequences of social inequality in contemporary America. Recommended preparation: SOC 101.
- 341 Sociology of Religion 3** Relation between religious and other institutions of societies, particularly in Europe and North America. Recommended preparation: SOC 101.
- 342 Urban Poverty 3** Historical context and current debates on US urban poverty including public policy, employment and education, and gender, race, and ethnicity. Recommended preparation: SOC 101.
- 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. Recommended preparation: SOC 101.
- 346 Sociology of Education 3** Examination of how educational institutions are influenced by other social forces, how school practices affect individual outcomes and how race/class/gender shape educational opportunity. Recommended preparation: SOC 101.
- 347 Sociology of Race, Ethnicity, and Immigration 3** Racial and ethnic categories and experiences of specific racial, ethnic, and immigrant groups.
- 350 Social Psychology 3** Attitude changes, conformity, interpersonal relations, groups and social influences explored to give a coherent view of social psychology. (Crosslisted course offered as PSYCH 350, SOC 350). Recommended preparation: PSYCH 105 or SOC 101.
- 351 [DIVR] The Family 3** Family system and its interaction patterns; family formation and dissolution; marital and partner relations, divorce, sexuality, parenting, work-family balance. (Crosslisted course offered as SOC 351, WOMEN ST 351). Recommended preparation: SOC 101.
- 356 Sociology of Aging and the Life Course 3** Aging as a lifelong process; behavior, personality competencies, social relations changes over the life course; historical, social structural, demographics, contextual influences. Cooperative: Open to UI degree-seeking students.
- 360 Social Deviance 3** A survey of the sociology of deviance. Recommended preparation: SOC 101.
- 361 Criminology 3** Crime measurement, the correlates of crime, and specific types of crime such as white-collar and drug crime. Recommended preparation: SOC 101.
- 362 Juvenile Delinquency 3** Sociological perspectives on delinquency; delinquent gangs and subcultures; delinquency causation and control; law and its enforcement: juvenile justice and corrections. Recommended preparation: SOC 101.
- 367 Juvenile Justice and Corrections 3** History, philosophy, legal process, performance, and outcomes of the juvenile justice and corrections systems. (Crosslisted course offered as CRM J 365, SOC 367). Cooperative: Open to UI degree-seeking students.
- 368 Sociological Theories of Addictive Behavior 3** Alcohol use and abuse in the context of other legal and illegal substances focusing on theories and drug policies. Recommended preparation: SOC 101.
- 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.
- 375 Aspects of Sustainable Development 3** Course Prerequisite: ECONS 101 or 198. Ecological, economical, and sociological aspects of sustainable development. (Crosslisted course offered as ECONS 326, SOC 375).
- 384 Sociology of Gender 3** Construction and maintenance of gender and gender inequality in American society. (Crosslisted course offered as SOC 384, WOMEN ST 384). Recommended preparation: SOC 101.
- 390 Gender and Work 3** Gender and inequality at work including occupational segregation, wage inequality and balancing work and family. (Crosslisted course offered as SOC 390, WOMEN ST 390).
- 391 Special Topics in Sociology V 1-3** May be repeated for credit; cumulative maximum 6 hours.
- 392 Special Topics V 1-3** May be repeated for credit. May be repeated for credit; cumulative maximum 6 hours.
- 415 Globalization 3** Course Prerequisite: Junior standing. Structural foundations of global social change; theories of intersocietal interactions and interdependencies. Recommended preparation: SOC 101.
- 418 Human Issues in International Development 3** Interdisciplinary analysis of complex interaction between tradition and modernity in Third World societies. (Crosslisted course offered as ANTH 418, POL S 418, SOC 418).
- 421 Quantitative Techniques in Sociology II 3** Probability theory, sampling distributions, random variables, matrix approaches to statistical techniques, calculus for statistics and computer applications.
- 430 Society and Technology 3** Course Prerequisite: Junior standing. Role of technology in social evolution; social impacts and shaping of technology. Recommended preparation: SOC 101.
- 433 Urbanization and Community Organization 3** Course Prerequisite: Junior standing. Organization, function, change, development, and decline of communities; applications emphasizing rural or urban settings. Recommended preparation: SOC 101.
- 461 Corrections 3** Course Prerequisite: Junior standing. History, facilities, processes, strategies for the correction and punishment of offenders, analysis of concepts of prevention and control of crime. Recommended preparation: SOC 101.
- 468 Addictive Behavior Across the Demographic Spectrum 3** Course Prerequisite: Junior standing. Overview of social, cultural and historical perspectives on dealing with addictive behavior. (Crosslisted course offered as SOC 468, CRM J 468, PSYCH 468). Recommended preparation: SOC 101, PSYCH 105, or CRM J 101.
- 474 Collective Behavior and Social Movements 3** Course Prerequisite: Junior standing. Processes of collective behavior and social movements in historical and contemporary societies. Recommended preparation: SOC 101.
- 484 [DIVR] Lesbian and Gay Studies 3** Interdisciplinary exploration of issues related to gender and sexuality, explored transhistorically and cross-culturally, including race, class and age differences. (Crosslisted course offered as WOMEN ST 484, SOC 484).
- 491 Advanced Special Topics V 1-3** May be repeated for credit; cumulative maximum 6 hours.
- 493 Internship V 1-6** May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By permission only. Work experience related to undergraduate major and career interests. S, F grading.
- 495 [CAPS] [M] Internship Capstone 3** Course Prerequisite: SOC 310 or concurrent enrollment; junior standing. Self-initiated supervised work experience in an approved campus or community setting. Recommended preparation: SOC 317 or 320, and Soc 321 or CRM J 321.
- 496 [CAPS] [M] Capstone - From Theory to Practice: The Sociology of Service 3** Course Prerequisite: SOC 310 or concurrent enrollment; junior standing. Service learning course connecting theoretical solutions to social problems with service in community organizations.
- 497 [M] Capstone Research Practicum 3** Course Prerequisite: SOC 317 or concurrent enrollment; certified major in sociology. Hands-on experience in selection of social problem, review of literature, identifying data sources, developing methodology and reporting results.
- 498 Research Assistantship 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By permission only. Supervised experience in current research by departmental faculty.

- 499 Special Problems V** 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 510 Development of Social Theory 3** Examination of the foundations of social theory.
- 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** History of and recent changes in international development emphasizing anthropological perspectives. (Crosslisted course offered as ANTH 519, POL S 538, SOC 519).
- 520 Research Methods in Sociology 3** Methodology of social research at the professional level.
- 521 Regression Models 3** Simple and multiple regression, structural equation models, nonlinear applications, applications for discrete dependent variables.
- 522 Advanced Sociological Methodology 3** May be repeated for credit; cumulative maximum 12 hours. Scaling theory, sampling theory, experimental design, measurement of association, multivariate analysis, current methods and techniques. Recommended preparation: SOC 521.
- 523 Qualitative Methods Practicum 3** Introduction to qualitative research methods as used in social sciences; epistemological underpinnings and empirical techniques. Recommended preparation: SOC 520.
- 525 Practicum in Survey Research 3** Practical experience in design and implementation of telephone and mail surveys; participation in all aspects of conducting a survey. Recommended preparation: SOC 520.
- 526 Experimental Methods 3** May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: SOC 521. Experimental methods including design and analysis, settings, manipulations, measures and human subjects considerations.
- 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 societies on the physical environment; environmental impacts on human behavior and social organization.
- 535 Technology and Society 3** Analysis of sociotechnical systems; effects of technology on society; the social shaping of technologies and their environmental impacts.
- 536 Special Topics in Environmental Sociology V** 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 9 hours. Special topics in environmental sociology.
- 542 Social Stratification: Class, Race and Gender Inequalities 3** Theoretical and empirical research in both classic stratification literature and recent scholarship on class, race/ethnicity and gender.
- 545 Sociology of Community 3** Community stability and change: interaction processes; decision making; societal linkages; effects on well-being.
- 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.
- 556 Sociology of Aging and the Life Course 3** Theory and research on the changes individuals undergo over the life course; influences of history, social structure, agency and social relations on lives.
- 574 Labor Market Inequality 3** Overview of research on the causes and consequences of inequality in U.S. work organizations.
- 580 Sociology of Race Relations 3** Analysis of race/ethnic relations; historical and current theoretical explanations of race/ethnic relations.
- 582 Social Movements 3** Theories and methods in social movement studies.
- 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.
- 593 Special Topics in Sociology V** 1-3 May be repeated for credit; cumulative maximum 6 hours. Special topics in sociology.
- 600 Special Projects or Independent Study V** 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Speech and Hearing Sciences, WSU Spokane

www.speechandhearing.wsu.edu/index.html
 Health Sciences Building 125
 509-358-7602

Professor and Department Chair, G. D. Chermak; Professor, C. L. Madison; Associate Professors, E. Inglebret, N. Potter; Assistant Professor, M. VanDam; Clinical Professor, L. Power; Clinical Associate Professors, S. Bassett, A. Meredith; Instructor, M. Ratsch; Professor Emeritus, R. E. Potter.

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, hearing and learning problems.

Students are prepared as speech-language pathologists to provide direct and consultative services in education and medical settings. The course of study emphasizes the physiological, neurological, psychological, and behavioral processes of normal development, the fundamental communication process, and the disorders of communication. The analytic and independent application of course content to the clinical process is encouraged.

The undergraduate and graduate programs, located in the Health Sciences Building at the Health Sciences Riverpoint Campus of Washington State University Spokane, are cooperative ventures,

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. The Hearing and Speech Clinic is the Spokane campus graduate training facility for the University Programs in Communication Disorders. Opportunities to work with special populations and in medical settings are readily available for graduate students in the Spokane area. A capstone graduate internship program provides intensive practical experience in many clinical and educational settings.

The graduate program in speech-language pathology is accredited nationally by the Council on Academic Accreditation of the American Speech-Language-Hearing Association and recognized at the state level by the Washington State Board of Education. State and national clinical and educational certifications require a master's degree. Bachelor's-level training in speech and hearing sciences is considered pre-professional. The upper-division course work in the major is offered in Spokane.

Learning Outcomes

Learning outcomes for students in Speech & Hearing Sciences reflect the knowledge and skills competencies required by the American Speech-Language-Hearing Association. Students earning a master's degree with an emphasis in speech-language pathology will be able to demonstrate: 1) knowledge of the basic human communication and swallowing processes; 2) knowledge of the nature of speech, language, hearing, and communication disorders and differences, and swallowing disorders; 3) knowledge of the principles and methods of prevention, assessment, and intervention for people with communication and swallowing disorders; 4) knowledge of standards of ethical conduct; 5) knowledge of the processes used in research and the integration of research principles into evidence-based clinical practice; 6) knowledge of contemporary professional issues; 7) skills in screening, evaluation and prevention procedures; 8) skills in developing, implementing, and monitoring appropriate intervention plans with measurable and achievable goals that meet clients'/patients' needs.

Preparation for Graduate Study

Students with undergraduate majors in human development, linguistics, education, psychology, and other 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. Those with majors in areas other than speech & hearing sciences may be required to take undergraduate prerequisite coursework prior to taking graduate coursework.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

SPEECH AND HEARING SCIENCES (121 HOURS)

Certification Requirements:

Given the rigorous nature of the coursework and the need to prepare students for work in a pre-professional role or to prepare them for the competitive demands of applying to graduate school in the discipline, students must meet the following minimum requirements to be eligible to certify a major in Speech and Hearing Sciences: 1) Have earned a minimum of 24 credits of undergraduate credits; 2) Have taken, or currently enrolled in, SHS 205, Introduction to Speech-Language Pathology & Audiology; 3) minimum cumulative GPA of 2.75.

At least 45 of the total hours required for the bachelor's degree in this program must be in 300-400-level courses. Successful completion of SHS 473 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. This course sequence is based on fall enrollment. UCOREs must be completed prior to the fifth semester.

First Year

<i>First Term</i>	<i>Hours</i>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	3 or 4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
PSYCH 105 [SSCI]	3
Electives	3

<i>Second Term</i>	<i>Hours</i>
Communication [COMM] or Written Communication [WRTG]	3
Creative & Professional Arts [ARTS]	3
SHS Elective ²	3
STAT 212 [QUAN]	4
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
Diversity [DIVR]	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	4 or 3
SHS Electives ²	6
Electives	3

<i>Second Term</i>	<i>Hours</i>
Humanities [HUM]	3
SHS Electives ²	6
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
SHS 205	3
SHS 371	3
SHS 372	3
SHS 375	3
SHS 377	3

<i>Second Term</i>	<i>Hours</i>
Integrative Capstone [CAPS]	3
SHS 376	3
SHS 378	3
SHS 472	3
SHS 478	3

Fourth Year

<i>First Term</i>	<i>Hours</i>
SHS 201	4
SHS 471	3
SHS 477	3
SHS 479	3
SHS 482 [M]	3

<i>Second Term</i>	<i>Hours</i>
SHS 202	4
SHS 451	3
SHS 461	2
SHS 473 [M]	3
SHS 480	1

¹ For a total of 7 units—one Biological Science [BSCI] and one Physical Science [PSCI] course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

² Highly recommended electives include: ACCTG 230, 231; ANTH 405, 450; BIOLOGY; CHEM; CPT S; ENGLISH 255, 256, 402; FOR LANG; H D; MGTOP 101, 301; PHYSICS; PSYCH 311, 312, 321, 333, 361, 363, 372, 384, 390, 412, 464, 490; SHS 460, 490; SOC 356; SPEC ED 301; STAT 212; TCH LRN 330, 333; WOMEN ST 220; and others in consultation with your advisor.

Description of Courses

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.

201 American Sign Language I 4 Instruction and practical training in sign language for communication with persons who are deaf; deaf culture; beginning conversation skills.

202 American Sign Language II 4 Course Prerequisite: SHS 201 or concurrent enrollment; completion of SHS 201 recommended. Sign language systems; vocabulary and skill development in signing and interpreting signs; intermediate conversation skills.

205 Introduction to Speech-Language Pathology and Audiology 3 Overview of deficits of speech, language, and hearing and the role of speech-language pathologist and the audiologist.

371 Language Development 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 psychophysiologic aspects of normal hearing and speech perception, and the nature and consequences of hearing disorders.

373 Clinical Phonetics 2 Analysis and transcription of speech sounds as it relates to the remediating of unintelligible or disordered speech.

- 375 Phonetics** 3 Description and classification of American English speech sounds; practice using the International Phonetic Alphabet to transcribe normal and disordered speech sounds.
- 376 Speech Sound Disorders** 3 Course Prerequisite: SHS 375. Clinical phonetics and transcription; evaluation and treatment of articulatory disorders; delayed phonological acquisition; dysarthria; and dyspraxia.
- 377 Anatomy and Physiology of the Speech Production** 3 Anatomical and physiological basis of speech production and the pathologies and aberrations that require the services of a communication disorders specialist.
- 378 Speech and Hearing Sciences** 3 Course Prerequisite: SHS 377. Basis of acoustics, acoustic phonetics, psychoacoustics, speech production, speech perception, and instrumentation for measurement of related phenomena.
- 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.
- 451 Neurogenic Communication Disorders** 3 Course Prerequisite: SHS 479. Introduction to the etiology, assessment and intervention of communication disorders associated with neurological disorders.
- 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 Methods** 2 (1-3) Course Prerequisite: Concurrent enrollment in SHS 480 or SHS 478. Pre-practicum preparation; observation of and assisting in therapy; state laws; clinical methods.
- 471 Speech-Language Pathology and Audiology in Schools** 2 Therapy methods and procedures in speech-language pathology and audiology; state/federal laws affecting public school therapy.
- 472 Audiometry** 3 (2-3) Course Prerequisite: SHS 372. Principles and procedures in basic identification and assessment of hearing impairment; introduction to differential diagnosis of auditory pathologies.
- 473 [M] Language and Literacy** 3 Diagnosis and remediation of language and learning disabilities in individuals manifesting disorders in understanding or using spoken/written language.
- 477 Aural Rehabilitation** 3 Theories and methods in aural rehabilitation for persons who are hearing-impaired; amplification; educational audiology; counseling techniques.
- 478 Language Impairment** 3 Course Prerequisite: SHS 371. Assessment and habilitation for the preschool and elementary-age child with language disorders.
- 479 Neuroanatomy** 3 Neuroanatomical and neurophysiological bases of speech production and audition; neuropathologies of speech, language, and audition.
- 480 Senior Seminar** 3 Course Prerequisite: 60 semester credit hours completed; SHS 473 or c//. Synthesis of theory and evidence underlying professional principles and practices inclusive of multicultural populations in speech-language pathology and audiology.
- 482 Assessment of Speech and Language** 3 Course Prerequisite: SHS 376 or concurrent enrollment; and SHS 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 1-3 May be repeated for credit; cumulative maximum 9 hours. Study of specialized topics in speech and hearing sciences.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Research Methods** 3 Philosophy of research, types of literature; experimental and descriptive designs; application of statistics; analysis of statistical results.
- 503 Research Methods II** 2 Experimental and descriptive designs, application of statistics, analysis of statistical results. SHS graduate student; all undergraduate prerequisite courses completed.
- 540 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. SHS graduate student; all undergraduate prerequisite courses completed.
- 542 Infant and Toddler Communication and Language** 3 Typical development of communication and language in the birth to 5 year-old population; impairments affecting development; disorders; assessment; intervention. SHS graduate student; all undergraduate prerequisite courses completed.
- 543 School Age and Adolescent Language** 3 Language development in typically developing and language impaired school age and adolescent students; disorder types; implications for assessment and intervention. SHS graduate student; all undergraduate prerequisite courses completed.
- 545 Autism Spectrum Disorder** 3 Course Prerequisite: SHS 542. Overview and discussions of the characteristics, causes, assessments, and interventions for autism spectrum disorder.
- 550 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. SHS graduate student; all undergraduate prerequisite courses completed.
- 555 Bilingual and Cultural Issues** 2 Cultural and linguistic variables that may impact speech-language pathology services of culturally and linguistically diverse populations; assessment and treatment considerations.
- 556 Problems in Stuttering** 2 Historical and current literature; problem-solving strategies applied to theoretical and clinical problems in stuttering. SHS graduate student; all undergraduate prerequisite courses completed.
- 557 Cleft Palate and Craniofacial Disorders** 2 Speech and voice problems associated with clefts of the lip and palate. SHS graduate student; all undergraduate prerequisite courses completed.
- 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. SHS graduate student; all undergraduate prerequisite courses completed.
- 562 Motor Speech Disorders** 3 Underlying processes of neuromuscular control and feedback; results of damage and disease on neuromotor system. SHS graduate student; all undergraduate prerequisite courses completed.
- 563 Dysphagia** 3 Anatomy and physiology of swallowing; evaluation and treatment of swallowing disorders. SHS graduate student; all undergraduate prerequisite courses completed.
- 565 Augmentative Communication** 3 Augmentative communication theory; implementation, training strategies, ongoing adjustments, and evaluating effectiveness. SHS graduate student; all undergraduate prerequisite courses completed.
- 566 Off-Campus Practicum Public School Setting** V 2 (0-6) to 6 (0-18) May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: SHS 575. Advanced clinical practice in a public school setting; evaluation and treatment of speech, language, and hearing disorders. SHS graduate student; all undergraduate prerequisite courses completed. S, F grading.
- 567 Issues in Public School Service Delivery** 3 Clinical operations, policies, procedures, including legal, ethical, and professional considerations in the schools. SHS graduate student; all undergraduate prerequisite courses completed.
- 568 Off-campus Practicum Clinical Setting** V 2 (0-6) to 6 (0-18) May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: SHS 575. Advanced clinical practice in an off-campus clinical/medical setting; evaluation and treatment of speech, language and hearing disorders. S, F grading.

- 570 Advanced Internship in Speech-Language Pathology V** 1-18 May be repeated for credit. Course Prerequisite: SHS 566 or SHS 568. Advanced practicum in diagnosis of and therapy for communication disorders. SHS graduate student; all undergraduate prerequisite courses completed. S, F grading.
- 574 Neuropathologies of Language 3** Advanced study of language disorders resulting from brain insult after birth; emphasis on aphasia and related disorders. SHS graduate student; all undergraduate prerequisite courses completed.
- 575 Advanced Clinical Practice V** 2-6 May be repeated for credit; cumulative maximum 15 hours. Advanced clinical practice in evaluation and treatment of speech, language, and hearing disorders. SHS graduate student; all undergraduate prerequisite courses completed.
- 576 Voice Disorders 2** Functional and organic voice disorders resulting from various etiologies. SHS graduate student; all undergraduate prerequisite courses completed.
- 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. SHS graduate student; all undergraduate prerequisite courses completed.
- 582 Clinical Perspectives 3** Theory and clinical experience designed to assist students in integrating course work into a clinical perspective. SHS graduate student; all undergraduate prerequisite courses completed.
- 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. SHS graduate student; all undergraduate prerequisite courses completed.
- 588 Phonological Acquisition and Behavior 3** Current literature in articulatory development and deviancy; diagnosis and therapy. SHS graduate student; all undergraduate prerequisite courses completed.
- 590 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. SHS graduate student; all undergraduate prerequisite courses completed.
- 600 Special Projects or Independent Study V** 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

Department of Statistics

www.stat.wsu.edu

Neil 413

509-335-8645

Please see the Department of Mathematics in this catalog for information about Statistics.

Department of Teaching and Learning

education.wsu.edu/tl/

Cleveland 321

509-335-6842

Chair, D. Miller; Assistant Chair, T. Akmal; Professors, J. M. Canty, J. L. Egbert, G. Ernst-Slavit, S. B. Kucer, L. Mabry, E. Nagel, A. R. McDuffie, A. G. Rud, D. Slaviv; Associate Professors, S. R. Banks-Joseph, P. J. Bettis, A. Cavagnetto, D. Day-Wiff, M. Dunn, S. Finley, J. E. Kelley, J. Morrison, T. Nelson, L. P. Groves Price, T. L. Salsbury, R. D. Sawyer; Assistant Professors, B. Barrio, J. Frost, E. J. Johnson, R. Lamb, K. Lesseig, J. Lupinacci, S. Newcomer, K. Puzio; Clinical Faculty, K. Baldwin, J. Firestone, L. D. Hall, P. D. Mencke, J. C. Olson, S. Petersen, B. A. Ward, T. F. Watson; Instructors, W. T. Doenecke, S. E. Ford, E. Jones, A. Kennedy, C. Ludwig, N. McKibbin, M. Moscatelli, D. Pastore, A. M. Pavkovich, G. Pitzer, S. E. Skavdahl, C. O. Sodorff, G. Tinder, L. White. Professors Emeriti, L. S. Paznokas, B. Romanish; Associate Professor Emeritus, P. Mills.

Courses of study (availability differs across campuses) are offered for elementary school teaching (Bachelor of Arts in Education, Master in Teaching) and secondary school teaching (degree from major plus certification, Master in Teaching). Additional endorsements are offered in Special Education, English Language Learners/Bilingual Education, Reading, Middle Level Math, and Middle Level Science. Graduate programs include Master of Arts in Education, Masters of Education, Masters in Teaching, Doctor of Education, and Doctor of Philosophy. Doctoral specializations are available in these areas: Cultural Studies and Social Thought

in Education (Ph.D.); Language, Literacy, and Technology (Ph.D.); Teacher Leadership (Ed.D.); and Special Education (Ph.D.).

Department of Teaching & Learning faculty contribute to the theory and practice of the broad field of education, and dedicate themselves to understanding and respecting learners in diverse cultural contexts. They facilitate engaged learning and ethical leadership in schools and clinical settings. They seek collaboration with diverse constituencies, recognizing their local and global responsibilities to communities, environments, and future generations. They seek the following learning outcomes for students in teacher education: graduates will (1) use content and pedagogical knowledge to inform their teaching, (2) develop relevant, rigorous, and developmentally appropriate curricula, (3) modify curriculum and instruction based on the individual needs of their students, (4) use assessment of their students' learning and their own teaching to inform future planning and teaching, (5) attend to the social and civic development of their students, and (6) work respectfully and collaboratively with colleagues to ensure quality instructional programs and stewardship of public schools. At the master's level, graduates will (1) locate, analyze, and synthesize research literature, and apply that synthesis to problems of practice, (2) effectively communicate scholarly work through written, oral, and/or alternate formats, (3) skillfully inquire into areas of program-related interest, (4) develop scholarly habits of curiosity, inquiry, skepticism, and data-based decision making, and (5) demonstrate professional habits of respect, accept and use feedback, and consider others' ideas and perspectives. Doctoral students will achieve master's level outcomes and also will: (1) conduct and disseminate original scholarship that demonstrates acquisition and application of new knowledge and theory, (2) become emerging experts in their area of study.

The Washington State University annual report on teacher preparation, required under Title II, Section 207(f)(2) of the Higher Education Act, is available upon request. Visit our web site at <http://education.wsu.edu/academics/accreditation/titleii/>

TEACHER CERTIFICATION

The Department of Teaching and Learning prepares individuals to teach elementary education, and various single subjects at the secondary education level. The teaching certificate, awarded by the State Superintendent of Public Instruction upon recommendation by Washington State University, designates the subject area in which the certificate holder is qualified to teach. Admission to the teacher education programs at all campuses is selective. Teacher education is offered at the Pullman, Spokane, Tri-Cities, and Vancouver campuses, although not all programs are available at each site.

The teaching certificate will be awarded if the following provisions are met:

- The candidate provides evidence of good character and personal fitness to teach. Fingerprinting is required. A background investigation is conducted by the Washington State Patrol, the FBI, and Office of Professional Practices.
- The degree is awarded and the professional education program is satisfactorily completed following these guidelines:

- All course work is taken for a letter grade where offered. Pass, fail grading is not accepted except for field experience courses.
- The candidate has earned no grade lower than C (2.0) for professional course work, and course work in the endorsements. The C minimum grade also applies to general education, math, science, and social studies requirements in the elementary program.
- The cumulative WSU gpa and the gpa computed separately for professional course work and each endorsement is not less than 2.75 for Health and Fitness and 2.5 for all other areas.
- The student has completed all work within five years of admission to teacher education. Those not finishing within this time limit will be subject to all new program requirements.
- The candidate has achieved a passing score on the statewide examinations in basic skills (WEST-B), content (WEST-E), on the pedagogy assessment (edTPA), and on all cross-campus assessments.
- The candidate has made application to OSPI and paid licensing fees.
- The candidate has met the Professional Dispositions Assessment standards.
- The candidate has successfully completed the state-mandated Teacher Performance Assessment (edTPA).

Transfer students entering an undergraduate or post baccalaureate certificate program must complete at least fifty percent of the professional education core, and, if preparing to teach at the elementary level, fifty percent of the elementary endorsement course work, plus student teaching at WSU. Transfer students and post baccalaureate applicants should consult with an advisor regarding equivalency and transferability of course work.

Opportunities are provided for teacher certificate candidates to gain meaningful experiences by working directly with and observing children in school settings. It is WSU's intent to place only those individuals in K-12 classrooms that are able to demonstrate a positive impact on student learning, and to insure 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 an individual's placement if in the professional judgment of the faculty, the hosting school, or coordinating field personnel there is cause for concern about the fitness of that individual to work with children in a classroom setting. The student teaching field placement is arranged by the faculty with school districts contracted to provide experiences for WSU students. Students do not make their own student teaching placements. Student teaching must be completed at an approved WSU site in the state of Washington or internationally with supervision by an approved WSU provider.

Certificate Renewal, Continuing Certificate, Add-On Endorsements

<http://www.education.wsu.edu/certification/>

Information is available upon request from the Certification Coordinator, College of Education, PO Box 642152, Pullman, WA 99164-2152 (509) 335- 8146 or sbickel@wsu.edu.

Professional Certificate

The ProTeach Support Program is offered at the Spokane and Tri-Cities campuses. Online and district partnerships are offered through the Pullman campus. Information is available upon request from the College of Education, PO Box 64 2132, Pullman, WA 99164- 2132, (509) 335- 7475, and on regional campus web sites.

WSU PULLMAN/SPOKANE TEACHER CERTIFICATION

Inquiries and requests for program information should be addressed to Office of Student Services, College of Education, PO Box 642152, Pullman WA 99164-2152 (509) 335-4855 or beateacher@wsu.edu or visit our website at <http://education.wsu.edu/certification/>.

WSU Pullman seeks to prepare the best possible teachers and therefore seeks highly qualified individuals. Admission to, or continued enrollment in, the teacher education program may be denied a candidate on the basis of review by the faculty. To prepare in elementary education the candidate shall satisfy degree requirements of the Department of Teaching and Learning. 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 endorsement preparation is available in Agriculture, Biology, Chemistry, Earth and Space Science, English Language Arts, World Languages (French and Spanish), Health and Fitness, History, Family and Consumer Sciences, Mathematics, Music, Physics, and Social Studies. Add-on endorsements for pre-service teachers are offered in Bilingual Education, English Language Learners, Middle Level Math, Middle Level Science, Reading, Science, and Special Education. Candidates holding single-subject endorsements typically will be assigned to teach in grades 5-12 except those endorsed in ELL, Bilingual Education, World Languages, Health and Fitness, Music, Reading, or Special Education who are authorized to teach P-12. Specific course requirements for endorsements are listed under Single Subject Certificate Programs at the end of this section. Endorsement requirements are subject to change by the Professional Educator Standards Board.

Admission to Undergraduate and Post baccalaureate Teacher Education

Applicants who meet the minimum requirements are eligible for consideration, but not assured admission. Enrollment is limited and admission competitive. Admission deadlines are September 30 and February 28 or 29 with admission effective the following term. Candidates must complete formal admission procedures and be admitted to teacher education prior to taking any professional education course work beyond TCH LRN 301, 307, or 317. The following minimum criteria must be met for consideration for admission:

Minimum Criteria

- Contact Student Services at 509-335-4855 or beateacher@wsu.edu for up-to-date information.
- Completion, within the last three years, of 80 hours of supervised work with children 4 years of age or older in a supervised setting.
- A passing score on the WEST-B, a statewide basic

skills test. For information and registration go to <http://education.wsu.edu/studentervices>.

- Completion of at least 45 semester hours of post-secondary course work.
- Minimum WSU cumulative gpa of 2.50 for elementary and secondary applicants. Health and Fitness educational applicants must have a minimum WSU cumulative gpa of 2.75 (transfer student gpa is based on WSU course work).
- TCH LRN 301 graded C or better.
- Elementary Majors: H D 101, MATH 251, and three of the four required UCORE science courses, all graded C or better.
- Secondary Majors: Nine hours of course work in the endorsement area. Certified in major department. Contact major department for additional requirements.
- Personal goal statement.
- Interview and writing sample.

Field Experiences and Student Teaching

Washington State University requires background clearance for all students admitted into the undergraduate teacher education, Master in Teaching (MIT), and selected add-on endorsement programs. Secondary single subject majors must make application for student teaching one full academic year prior to the actual student teaching semester. Elementary majors make application for advanced practicum placement one year prior to the advanced practicum semester. Fingerprint and background clearance is required for enrollment in TCH LRN 402, 405, 415, 469, 490, 593, and 595. Application forms are distributed at an orientation held each semester. An interview is required to begin student teaching. The following courses are required field experiences:

Elementary majors enroll in TCH LRN 402, Instructional Practicum I (1 credit); TCH LRN 405, Instructional Practicum II (1 credit); TCH LRN 490, Advanced Practicum (2 credits). Elementary majors enroll concurrently in the required practicum for the appropriate block. TCH LRN 402 and 405 involve participation in a school setting to apply concepts learned in blocked courses. Practicum placement and activities are arranged by the course instructors and the Field Experience Office. TCH LRN 490 is an extended 4-week, full-time practicum in a school setting one semester prior to student teaching. Placement is arranged by the Department of Teaching and Learning. Secondary majors enroll in TCH LRN 317, Initial Practicum Experience (2 credits) and TCH LRN 469, Advanced Field Experience (2 credits). TCH LRN 317 is a three-week, full-time experience completed in May at the end of the sophomore year or prior to enrollment in Block I classes, in a public or private school in the student's home community. TCH LRN 469 is a 12-week, 6 hrs/week experience in local schools arranged by the Department of Teaching and Learning during the semester prior to student teaching. All practica involve observation, reflection, and practice in classrooms.

TCH LRN 415, Student Teaching (16 credits), is a semester of full-time teaching in a public school, arranged by university personnel. Agricultural Education, Family Consumer Sciences and Music majors enroll concurrently in TCH LRN 415 and the appropriate student teaching course in the major. Prior to student teaching the certificate candidate will: interview; make application and

pay certification fees; satisfactorily complete all course work for the degree and teacher certificate; obtain a passing score on the WEST-E content examination; receive fingerprinting clearance from the Washington State Patrol, the FBI, and the Office of Professional Practices. Student teaching must be completed at an approved WSU site in the state of Washington or internationally with supervision by university personnel.

TCH LRN 593 Pre-Internship (2 credits) requires successful completion of summer courses, enrollment in concurrent fall coursework and fingerprinting clearance from the Washington State Patrol, the FBI and the Office of Professional Practices.

TCH LRN 595 Internship (10 credits) requires successful completion of TCH LRN 593 and concurrent coursework, application and payment of certification fee and a passing score on the WEST-E content examination.

The Pre-Internship and Internship are arranged by university personnel and must be completed at an approved WSU site in the state of Washington with supervision by university personnel.

Master in Teaching (MIT)

The Master in Teaching degree program is a full-time, field-based program leading to elementary or secondary teacher certification and a master's degree. Students in this program will complete certification courses during the first 12 months of the program. With successful completion of these requirements, students may opt to complete additional research requirements for a master's degree. Applicants must have a bachelor's degree from an accredited institution with a minimum 3.0 cumulative gpa. Applications for Elementary Education and Secondary Education must be submitted by November 15 for programs beginning the following summer. All applicants must have a passing score on the WEST-B to be considered for admission. Information about minimum admission requirements may be obtained from the College of Education Office of Graduate Studies 509-335-9195 or gradstudies@wsu.edu or <http://education.wsu.edu/graduate>. For additional information about certification issues contact the Certification Coordinator at sbickel@wsu.edu or visit them online at <http://education.wsu.edu/certification>.

Course of Study for Elementary Education (50 hrs): ED AD 506, ED PSYCH 503, 504, KINES 586, SPEC ED 520, TCH LRN 502, 505, 517, 525, 540, 552, 556, 564, 572, 593, 594, 595, 600, 702.

Course of Study for Secondary Education (46 hrs): ED AD 506, ED PSYCH 503, 504, TCH LRN 522, TCH LRN 528, TCH LRN 513, SPEC ED 520, TCH LRN 502, 505, 517, 525, 593, 595, 600, 702, and an additional 9 credits of graded course work.

WSU PULLMAN/SPOKANE MASTERS' DEGREES (non-certification)

Master of Arts in Education

WSU Pullman/Spokane offers a Master of Arts in Education degree (M.A.) program with specialization and/or endorsement in Curriculum and Instruction, ELL/Bilingual Education, Literacy Education, and/or Special Education. Students planning to add an endorsement to a Washington teacher certificate must apply to WSU's add-on endorsement program. This thesis degree focuses on developing research

and inquiry skills and other professional knowledge and skills in education and leadership and may include a concentration of coursework outside the Department of Teaching and Learning.

Master of Education Degree (Ed.M.)

WSU Pullman/Spokane also offers a Master of Education degree (Ed.M.) program specialization and/or endorsements in Curriculum and Instruction, Language and Literacy Education, Special Education, and/or ELL/Bilingual Education. Students planning to add an endorsement to a Washington teacher certificate must apply to WSU's add-on endorsement program. This non-thesis degree focuses on developing K-12 teachers' or other professionals' knowledge and skills in education and leadership and may include a concentration of coursework outside the Department of Teaching and Learning.

WSU PULLMAN/SPOKANE DOCTORAL PROGRAMS

Doctor of Philosophy in Education (Ph.D.)

(Pullman only) Specializations include Cultural Studies and Social Thought in Education, Language, Literacy and Technology, and Special Education (see <http://education.wsu.edu/graduate/> for program descriptions and application procedures).

Doctor of Education (Ed.D.)

The specialization for the Ed.D. program is Teacher Leadership (see <http://education.wsu.edu/graduate/> for program descriptions and application procedures).

WSU TRI-CITIES TEACHER CERTIFICATION

<http://www.tricity.wsu.edu/education/index.html>

Inquiries and requests for application materials should be addressed to WSU Tri-Cities, Department of Teaching and Learning, 2710 University Drive, Richland WA 99354-1671, (509) 372-7396.

WSU Tri-Cities seeks to prepare the best possible teachers and therefore seeks highly qualified individuals. Admission to, or continued enrollment in, the teacher education program may be denied on the basis of review by the faculty.

Bachelor of Arts

Applicants to the bachelor of arts program with elementary certification at the Tri-Cities campus who meet the minimum requirements are eligible for consideration, but not assured admission. Enrollment is limited and admission is competitive. Admission deadlines are October 1 and March 1 with admission effective the following semester. Candidates must complete formal admission procedures and be admitted to teacher preparation prior to taking any professional education coursework beyond TCH LRN 301. Applicants must meet the admission criteria listed for WSU Pullman, with the exception that a timed writing sample is not required as part of the interview process. TCH LRN 301 may not be required for program admission by transfer students who are admitted to the program before they begin taking classes at WSU. TCH LRN 301 must be taken in the first semester of the program by these students in order to remain eligible for the major.

Teacher Professional Certification Program

Washington State University Tri-Cities (WSUTC) has a quality, established support program. WSU's Teacher Pro Certification Support Program consists of two courses: the Pre-Assessment Seminar (TCH LRN 541) and the Culminating Seminar (TCH LRN 543). Each course runs for the duration of the WSU semester (15 weeks). Instructors generally meet once a week, for three hours. Cohorts are currently scheduled in the Kennewick, Richland, Pasco, and North Franklin school districts. Additionally, these courses can be taken either for graduate credit (3 credits each course) or as a non-credit course (\$500/each course). The curriculum is the same regardless of which option you choose.

Master of Education (Ed.M.)

Washington State University Tri-Cities offers the Master of Education (Ed.M.) degree with specializations in Literacy, ELL/Bilingual, and Curriculum and Instruction. The Ed.M. is a non-thesis degree designed for educators wishing to extend their professional knowledge and enhance their competence as practitioners. Course credit also may be used to meet continued certification requirements or lead to a Reading, Special Education, Bilingual Education, and/or English Language Learner endorsement. Students planning to add an endorsement to a Washington teacher certificate must apply to WSU's add-on endorsement program. For additional information about certification issues please contact the Department of Teaching and Learning, WSU Tri-Cities.

WSU VANCOUVER TEACHER CERTIFICATION

<http://vancouver.wsu.edu/programs/edu/education.htm>

Inquiries and requests for application materials for teacher certification programs should be addressed to WSU Vancouver, Education Department, 14024 NE Salmon Creek Avenue, Vancouver WA 98686, (360) 546-9673, or by email at admissions@vancouver.wsu.edu.

WSU Vancouver seeks to prepare the best possible teachers and therefore seeks highly qualified individuals for admission to the Bachelor of Arts in Education and the Master in Teaching programs. Admission to, or continued enrollment in, a teacher education program may be denied a candidate on the basis of review by the faculty. Field experiences with accompanying seminars allow the intern-cooperating partners to engage in ongoing dialogue with university field personnel throughout the year and are coordinated with academic work.

Bachelor of Arts in Education

This Teacher Education Program culminates in a bachelor's degree with elementary certification. The program is designed for students who have a direct transfer Associate of Arts degree or who have completed 60 semester hours of study and who have also completed the required program prerequisites. Students can obtain a list of the prerequisites by contacting the Education Department at (360) 546-9673. All applicants must have a passing score on the state wide basic skills (WEST-B) test to be considered for admission. Students must be admitted to both WSU and the Teacher Education Program before beginning education classes. Students are admitted and begin classes only during the summer session.

Master in Teaching (MIT)

The Master in Teaching is a full-time, 15-18 month field-based program leading to elementary or secondary certification and a master's degree. Applicants must have a bachelor's degree from an accredited institution with a minimum 3.0 gpa in the last 60 semester hours of graded course work, and submit the MIT application portfolio which is available from the WSU Vancouver Education Department. All applicants must have a passing score on the state wide basic skills (WEST-B) and subject test (WEST-E) to be considered for admission. Applications are available in the summer and must be submitted by October 1 for secondary certification in order to be considered for the program beginning in January; December 1 is the deadline for application for elementary certification in order to be considered for the program beginning the following May.

Course of Study for Elementary Education (53 hours): ED AD 506, 510, ED PSYCH 503, 504, KINES 586, SPEC ED 520, TCH LRN 521, 522, 525, 540, 552, 556, 564, 572, 583, 593, 594, 595, 600, 702.

Course of Study for Secondary Education (37-51 hrs): ED AD 506, 510, ED PSYCH 503, 504, SPEC ED 520, TCH LRN 522, 528, 513, 502, 503, 505, 517, 525, 593, 594, 595, 600, 702.

WSU VANCOUVER IN SERVICE AND MASTERS' DEGREE PROGRAMS (NON-CERTIFICATION)

Inquiries and requests for application materials should be addressed to WSU Vancouver, Education Department, 14024 NE Salmon Creek Avenue, Vancouver, WA 98686, (360) 546-9075, or by email at admissions@vancouver.wsu.edu.

Endorsement Program

WSU Vancouver is proud to offer a number of endorsements for certified teachers to add to their credential. Use these endorsements to open new doors of opportunity for you within your school district or to help you gain employment for the first time. In addition to the traditional route of taking classes and an exam to add an endorsement, we also offer the Pathway 2 alternative route for certain endorsements. Check with our local advisor for more information on this route. Some of our endorsements may also be obtained in conjunction with a master's degree. Others are strictly "non-degree" endorsements. Endorsements offered as either non-degree or with a Master of Education (Ed.M.): English Language Learners, Reading, Middle Level Mathematics, and Special Education. Endorsements offered only as non-degree: Biology, Early Childhood Education, English/Language Arts, History, Mathematics, Science, and Social Studies.

Master of Education Degree (Ed.M.)

WSU Vancouver also offers a Master of Education degree (Ed.M.) program with course work leading to endorsements in Reading, Special Education, Middle Level Mathematics, and/or ELL/Bilingual Education for educators who already have a teaching certificate. This non-thesis degree focuses on K-12 developing teachers' or other professionals' knowledge and skills in education and leadership.

WSU VANCOUVER DOCTORAL DEGREES**Doctor of Education in Teacher Leadership**

The statewide Doctor of Education (Ed.D.) with a specialization in Teacher Leadership is designed to prepare K-16 teachers and teacher leaders for intellectual and practical leadership within classrooms, schools, districts, and the larger educational policy arena. The program is built on an inquiry stance: Students draw from theory, research, and practical experiences to investigate local and statewide teaching and learning programs and practices. The program is cohort-based and requires attendance at three summer sessions (two of which occur on the Pullman campus). Some courses will be delivered face-to-face at each campus. Others will be delivered utilizing distance technology (on-line and/or video-conferencing). Participants must have access to the internet and to a computer with sufficient bandwidth to allow for on-line course delivery. The program is designed for completion within four years including summers, as a part-time student.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

ELEMENTARY EDUCATION TEACHER CERTIFICATE (121 HOURS)

Candidates for the undergraduate elementary education teacher certificate program will satisfy degree requirements of the Department of Teaching and Learning. The degree will be the Bachelor of Arts. The student should include the following course work within UCORE selections to satisfy prerequisite, degree, and admission to teacher preparation requirements. This course schedule does not include an add-on endorsement.

During the first year, students must qualify to enroll in MATH 251, pass the Music 388 competency exam or take MUS 153, and begin the University Writing Portfolio, as students must receive a pass before taking TCH LRN 306.

First Year

<i>First Term</i>	<i>Hours</i>
BIOLOGY 106 [BSCI] or SCIENCE 101 [SCI] ¹	4
Communication [COMM] or Written Communication [WRITG]	3
ENGLISH 101 [WRITG]	3
H D 101 [SSCI]	3
MATH prereq, if necessary, or Elective	3

<i>Second Term</i>	<i>Hours</i>
HISTORY 105 [ROOT]	3
MATH 251	3
MUS 153 [ARTS]	3
Social Science Elective	3
Electives	3

Second Year

<i>First Term</i>	<i>Hours</i>
ENGLISH 201	3
GEOLOGY 101 [PSCI] or SCIENCE 102 [SCI] ¹	4

Humanities [HUM]	3
TCH LRN 301	3
Electives	3
Complete WEST-B	

<i>Second Term</i>	<i>Hours</i>
Diversity [DIVR]	3
Integrative Capstone [CAPS]	3
MATH 252 [QUAN]	3
Science Elective	3 or 4
Certify Major Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Hours</i>
ED PSYCH 401	3
TCH LRN 307	2
TCH LRN 321	3
TCH LRN 402	1
TCH LRN 445	2
TCH LRN 483	3

<i>Second Term</i>	<i>Hours</i>
TCH LRN 304	3
TCH LRN 310 [M]	2
TCH LRN 322	3
TCH LRN 371	3
TCH LRN 390	3
TCH LRN 405	1

Fourth Year

<i>First Term</i>	<i>Hours</i>
SPEC ED 420/421	2 or 3
TCH LRN 330	3
TCH LRN 352	3
TCH LRN 385	3
TCH LRN 413	2
TCH LRN 490	2
Electives	2

<i>Second Term</i>	<i>Hours</i>
TCH LRN 415	16

¹ If both SCIENCE 101 and 102 are taken, students satisfy the biological and physical sciences and laboratory requirement.

SPECIFIC SUBJECT TEACHER CERTIFICATE (141 HOURS)

Candidates for specific subject certificates shall declare a major with the subject-matter department and meet the UCORE and degree requirements of that department. Students completing subject-specific endorsements will follow the Secondary Professional Education Core: PSYCH 105; ED PSYCH 468, TCH LRN 301, 317, 464, 465, 466, 467, 469, 470 and 415 unless admitted to the MIT program.

In addition to meeting requirements of the degree-granting department, the student must meet admission requirements and make formal application to the teacher preparation program prior to enrolling in any professional education courses beyond TCH LRN 301 and 317. It is recommended that candidates begin professional education courses in the sophomore or junior year to meet sequencing requirements. Students should include the following courses within UCORE selections to fulfill prerequisite and admission to teacher

preparation program requirements: ENGLISH 101 and one of the following: ENGLISH 201, 301, 302, or 402; PSYCH 105.

First Year

First Term	Hours
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
PSYCH 105 [SSCI]	3
Quantitative Reasoning [QUAN]	3
Science Elective	3 or 4

Second Term

Second Term	Hours
Biological Sciences [BSCI] or SCIENCE 101 [SCI] ¹	4 or 3
COM 102 [COMM]	3
Creative & Professional Arts [ARTS] Endorsement ²	3
Humanities [HUM]	3

Second Year

First Term	Hours
Endorsement ²	6
ENGLISH 201, 301, or 302	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] ¹	3 or 4
Certify in Major	

Second Term

Second Term	Hours
Diversity [DIVR]	3
Endorsement ²	12
Complete Writing Portfolio	

Third Year

First Term	Hours
Endorsement ²	14-15
TCH LRN 301	3
Certify In Teaching and Learning Complete West-B	

Second Term

Second Term	Hours
Endorsement ²	14-16

Third Term

Third Term	Hours
TCH LRN 317 (available summer only)	2

Fourth Year

First Term	Hours
Endorsement ²	9
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

Second Term

Second Term	Hours
ED PSYCH 468	3
Endorsement ²	3
Integrative Capstone [CAPS]	3
TCH LRN 467	3
TCH LRN 469	2
TCH LRN 470	3

Fifth Year

First Term	Hours
TCH LRN 415	16

SPECIFIC SUBJECT AREA REQUIREMENTS

Agricultural Education (51 hours): AFS 101, 201, 301, 401; ANIM SCI 101, ECONS 350; AG ED 342, 407, 440, 442, 471; AGTM 201, 402; HORT 102; SOIL SCI 201, plus 9 additional credits, 6 upper division in technical agriculture selected with adviser approval. 18 credits in technical agriculture must be upper division. A valid first aid card is required for Career and Technical certification.

Biology (71-74 hours): BIOLOGY 106, 107, 301, 372, 405, 430, 499; CHEM 105, 106, 345; MBIOS 303, 305, 306; MATH 140 or 171; PHYSICS 101, 201; PHYSICS 102 or 202; STAT 212, 412, or PSYCH 311; one from HISTORY 381, 382, SOC 430 or HONORS 390; 9 hours approved biological sciences electives.

Chemistry (62-64 hours): BIOLOGY 106, 107; CHEM 105 or 115, 106 or 116, 220, 222, 345, 348; one from HISTORY 381, 382, 483, SOC 430, or HONORS 390; MATH 140 or 171; MBIOS 303, 304; PH S 430; PHYSICS 101 or 201, 102 or 202, STAT 212, 412 or PSYCH 311. Additional 7 hours 300-400-level CHEM including CHEM 331 or MBIOS 465 and at least 4 hours from CHEM 333, 335, 347, 398, 425, 426, 495 or 499.

Designated World Languages French (40 hours): FRENCH 204, 306, 307, 308, or 408; two from FRENCH 120, 320, 420; one from FRENCH 310, 350, 361; FOR LANG 440, 541; approved internship in French or study abroad in Francophone country at the advanced level.

Designated World Languages Spanish (40 hours): SPANISH 204, 306, 307, 308, 407, 408; one from FOR LANG 101, 110, 120, 130, 220; two from SPANISH 310, 311, 320, 321, 350, 351, 361; two from SPANISH 450, 451, 452, 453; FOR LANG 440, 541.

Early Childhood Education (108 hours): COM 102 or H D 205; ENGLISH 198, 201, 301, or 302; three 3-4 credit UCORE sciences; H D 201, 202, or 101; 204, 302, 341, 342, 410, 446, 449, 482; SPEC ED 409; HISTORY 150 or AMERST 216; MATH 251, 252; MUS 388; TCH LRN 301, 307, 321, 322, 352, 371, 385, 390, 402, 403, 405, 413, 415, 445, 483.

Earth and Space Science (67-70 hours): GEOLOGY 101 or 102 (102 preferred), 206, 210, 315, 340, 350, 499; MATH 140 or 171; PHYSICS 101, 102; CHEM 105, 106; BIOLOGY 106; ASTRONOM 345; ENVR SCI 174; one from HISTORY 381, 382, 483, SOC 430 or HONORS 410; PH S 430; one from STAT 212, 412, or PSYCH 311; 6 hours 300-400-level (geology elective, geomorphology or oceanography recommended).

English Language Arts (42 hours): ENGLISH 302; one from HUM 101, 103, 198, 302, 303, 304, 335, 350, 410 or 450; three from ENGLISH 370, 371, 372, 373; one from ENGLISH 205, 305, 306; ENGLISH 326, 325, 324, 323; 12 hours English or Humanities electives (3 hours must include an advisor approved writer-of-color class).

Family and Consumer Sciences (58-59 hours): AG ED 440; two from AMDT 210, 211, 417; HBM 258, MBIOS 130; H D 201, 202, 203, 204, 302, 310, 320, 350, 406, 407, 410, 479, 480.

Health and Fitness (67 hours): KINES 266, 311; BIOLOGY one from 102, 106, 107; BIOLOGY 140, 251; CHEM 101 or 105; MBIOS 130; KINES 361, 484, 393, 481, 483; KINES 199, 262, 264, 362, 380, 415, 461, 481; PEACT 112, 114, 132, 120/121; PSYCH 230.

History (48 hours): ECONS 102; POL S 101; HISTORY 101, 102, 110, 111, 300, 422, 469, 480; two from HISTORY 230 or 231, 270 or 271, 272 or 273, 274, 275; one from HISTORY 411, 413, 414, 415, 416; one from HISTORY 412, 417, 418, 419; 6 hours 300-400 level HISTORY electives which must include one European and one global non-western course.

Mathematics (44 hours): MATH 171, 172, 216, 220, 273, 300, 301, 303, 330, 360, 398, 431, 432, 320 or 421; PHYSICS 201.

Music: Each endorsement requires the passing of a piano proficiency examination, an upper-division exam, a solo half-recital, a 2.5 gpa and a grade of C or better in all music courses. If the requirements listed below along with the graduation requirements of the College of Arts and Sciences are met, the degree will be Bachelor of Music.

Choral/Instrumental/General (73 hours): MUS 251, 252, 253, 254, 351, 352, 353, 354, 359, 360, 361, 455, 467, 480, 481, 482, 483, 487, 488, 489, 490, 491, 493, 494, 497. Performance Studies: 14 hours of which 2 hours must be at the 400-level. Performance Groups: 7 hours, minimum of 1 hour during each of seven semesters, to include at least one semester of MUS 435 for instrumentalists and MUS 428 for vocalists. Include a minimum of 2 hours in choral and 2 hours in performing groups. Total performance experience (performance studies and performing groups) must include a minimum of 4 hours in choral/vocal music and 4 hours in instrumental music.

Choral/General (67 hours): MUS 251, 252, 253, 254, 351, 352, 353, 354, 359, 360, 361, 455, 480, 482, 483, 488, 489, 490, 491, 497. Performance Studies: 14 hours of which 2 hours must be at the 400 level. Performance Groups: 7 hours, minimum of 1 hour during each of seven semesters, to include at least 1 hour of MUS 428.

Instrumental/General (69 hours): MUS 251, 252, 253, 254, 351, 352, 353, 354, 359, 360, 361, 455, 480, 482, 487, 490, 491, 493, 494, 497. Performance Studies: 14 hours minimum of which 2 hours must be at the 400 level. Performance Groups: 7 hours, minimum of 1 hour during each of seven semesters, to include at least 1 hour of MUS 435.

Physics (64-69 hours): ASTRONOM 345; BIOLOGY 106; 430, CHEM 105, 106; one from HISTORY 381, 382, 483; SOC 430, or HONORS 390; MATH 171, 172, 220, 273, 315; PHYSICS 201 or 205, 202 or 206, 303, 304, 410, 415 or 514; 499 (4 hours includes observing PHYSICS 101 and 102); one from STAT 212, 412 or PSYCH 311; two from PHYSICS 320, 330, 341.

Social Studies (63 hours): ECONS 102; HISTORY 101, 102, 110, 111, 422, 480 and 12 hours of upper-division history electives w/advisor approval that must include a non-western, a European, a U.S. History, and an elective; POL S 101; SOC 101; one from ANTH 101, 198, 203, 260; one from ECONS 320, 327, 416, 427, 430; two from HISTORY 230 or 231, 270, 272 or 273, 275; one from HISTORY 319, 495, ANTH 309; one from HISTORY 469, SOC 320; one from POL S 300, 316, 427, 450, 455, CRMJ 320; two from ANTH 307, 316, 320, 330, 331, 350, PSYCH 310, 324, 361, 470, SOC 320, 351, 384, 430.

ADD-ON ENDORSEMENTS

Anyone wishing to add an endorsement to a valid Washington State teacher certificate must make application to the WSU add-on endorsement

¹ Students may substitute 3 credits of Biological Sciences [BSCI] and 4 credits of Physical Sciences [PSCI].

² Credit hours needed for the endorsement are from 20-74, depending on the major.

program. The application and more information can be found on the College of Education's website (<http://education.wsu.edu/student-services/endorsements>). The following endorsements are available as add-on endorsements only. Individuals may be recommended for endorsement in bilingual education, English Language Learners, reading, middle level science, middle level mathematics, science, or special education concurrently with completion of endorsement requirements in elementary education or one of the specific subject endorsements listed above, or as an endorsement added to a currently valid teacher certificate.

Bilingual Education (21 hours): TCH LRN 333 or 510, 339 or 549, 401 or 501, 509, 411, 414 or 514 and 509; one from TCH LRN 504 (highly recommended), 512, 516, 537, 574, 580. Demonstrated proficiency in a language other than English by passing the oral and written proficiency tests of the American Council on the Teaching of Foreign Language (ACTFL) at the advance mid-level.

English Language Learners [undergraduate level] (18 hours): TCH LRN 330, 333, 339, 401, 414, and 409 (under development) or 509, or equivalent. One from TCH LRN 504 (highly recommended), 512, 516, 537, 574, 580.

English Language Learners [graduate level] (18 hours): TCH LRN 501, 509, 510, 514, 549; one from TCH LRN 512, 516, 504, (highly recommended), 537, 574 or 580.

Middle Level Science (17 hours): CHEM 101, BIOLOGY 107, PHYSICS 150, SCIENCE 430, TCH LRN 513, 304.

Middle Level Science (17 hours): CHEM 101, BIOLOGY 107, PHYSICS 150, SCIENCE 430, TCH LRN 304.

Reading [undergraduate level] (20+ hrs): TCH LRN 528, 551, 553, 558; TCH LRN 307, 322, 413.

Reading [graduate level] (20+ hours): TCH LRN 528, 551, 553, 558; one from TCH LRN 307, 532, 544, 547, 548, 552; one from TCH LRN 322, 538, 546, 556; one from TCH LRN 413, 505, 507, 537.

Science (hours vary): The candidate must complete a full endorsement in biology, chemistry, physics, or earth and space science, plus the following courses, if not included in the full endorsement: one 3-4 credit Astronomy course; CHEM 345; two from GEOLOGY 102, 210, 323 or 390; BIOLOGY 107.

Special Education [undergraduate level] (31 hours): SPEC ED 301, 401, 402, 403, 404, 409, 421, 440, 470, 490 (4 credits).

Special Education [graduate level] (31 hours): SPEC ED 301, 501, 502, 503, 504, 509, 521, 540, 571, 590 (4 credits).

Description of Courses

SPECIAL EDUCATION

SPEC ED

301 Education of Exceptional Children 3
Survey of characteristics of students with disabilities, and overview of programming, legal aspects, and methods of instruction.

401 Teaching Students with Disabilities 3
Course Prerequisite: SPEC ED 301 or 420. Intervention and instructional strategies for managing academic, social, and behavior problems in classroom settings. Credit not granted for both SPEC ED 401 and SPEC ED 501. Required preparation must include completion of an introductory special education course, or SPEC ED 520.

402 Assessment and Curriculum for Students with Disabilities 3
Course Prerequisite: SPEC ED 301; SPEC ED 404; concurrent enrollment in 2 credits of SPEC ED 490. Methods of individual and group, formal and informal assessment for students with disabilities. Credit not granted for both SPEC ED 402 and SPEC ED 502. Graduate level required preparation must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504; concurrent enrollment SPEC ED 590 (2 credits).

403 Secondary Education for Students with Disabilities 3
Course Prerequisite: SPEC ED 301 or 420; SPEC ED 404. Overview of instruction and intervention strategies for secondary students with disabilities; assessment, and curriculum/program development. Credit not granted for both SPEC ED 403 and SPEC ED 503. Required preparation must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504; or permission of instructor.

404 Professional Skills in Special Education 3
Course Prerequisite: SPEC ED 301 or 420. Legal aspects of special education, individualized education plans, roles and responsibilities of teachers, collaboration techniques, service delivery/design, and supervision of paraprofessionals. Credit not granted for both SPEC ED 404 and SPEC ED 504. Required preparation must include completion of an introductory special education course, SPEC ED 520.

409 Early Childhood Special Education 3
Course Prerequisite: SPEC ED 301 or 420. Assessment, curriculum, and instructional techniques for teaching young children with handicaps and their families in a variety of settings. Credit not granted for both SPEC ED 409 and SPEC ED 509. Required preparation must include completion of an introductory special education course, or SPEC ED 520.

420 Teaching in Inclusive Classrooms V 2-3
Course Prerequisite: For candidates admitted to teacher education (elementary education). Designed for preservice/in-service general education (K-12) teachers to learn how to teach students with disabilities. Credit not granted for both SPEC ED 420 and SPEC ED 520.

421 Inclusion Strategies for Special Education Teachers 3
Course Prerequisite: SPEC ED 301; SPEC ED 404. Roles and responsibilities of special education professionals in inclusion programs, including legal aspects and collaboration. Credit not granted for both SPEC ED 421 and SPEC ED 521. Required preparation must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504.

440 Methods in Intensive Educational Supports 3
Course Prerequisite: SPEC ED 301 or 420. Assessment, curriculum development and modification, and instructional methods for students with severe disabilities. Credit not granted for both SPEC ED 440 and SPEC ED 540. Required preparation must include completion of an introductory special education course, or SPEC ED 520.

470 Effective Assessment and Instruction in Reading for Diverse Learners 3
Course Prerequisite: SPEC ED 301 or 420. Preparation of K-12 teachers to conduct reading assessment and design reading interventions for students struggling in reading and literacy.

490 Practicum in Special Education V 1 (0-3) to 6 (0-18)
May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: SPEC ED 301 or SPEC ED 420; SPEC ED 404; for candidates admitted to teacher education (EDUC or SECED). Supervised field experience in special education. S, F grading.

499 Special Problems V 1-4
May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

501 Teaching Students with Disabilities 3
Intervention and instructional strategies for managing academic, social, and behavior problems in classroom settings. Credit not granted for both SPEC ED 401 and SPEC ED 501. Required preparation must include completion of an introductory special education course, or SPEC ED 520.

502 Assessment and Curriculum for Students with Disabilities 3
Methods of individual and group, formal and informal assessment for students with disabilities. Credit not granted for both SPEC ED 402 and SPEC ED 502. Graduate level required preparation must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504; concurrent enrollment SPEC ED 590 (2 credits).

503 Secondary Education for Students with Disabilities 3
Overview of instruction and intervention strategies for secondary students with disabilities; assessment, and curriculum/program development. Credit not granted for both SPEC ED 403 and SPEC ED 503. Required preparation must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504; or permission of instructor.

504 Professional Skills in Special Education 3
Legal aspects of special education, individualized education plans, roles and responsibilities of teachers, collaboration techniques, service delivery/design, and supervision of paraprofessionals. Credit not granted for both SPEC ED 404 and SPEC ED 504. Required preparation must include completion of an introductory special education course, SPEC ED 520.

- 509 Early Childhood Special Education 3** Assessment, curriculum, and instructional techniques for teaching young children with handicaps and their families in a variety of settings. Credit not granted for both SPEC ED 409 and SPEC ED 509. Required preparation must include completion of an introductory special education course, or SPEC ED 520.
- 520 Teaching in Inclusive Classrooms V 2-3** Designed for preservice/in-service general education (K-12) teachers to learn how to teach students with disabilities. Credit not granted for both SPEC ED 420 and SPEC ED 520.
- 521 Inclusion Strategies for Special Education Teachers 3** Roles and responsibilities of special education professionals in inclusion programs, including legal aspects and collaboration. Credit not granted for both SPEC ED 421 and SPEC ED 521. Required preparation must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504.
- 522 Topics in Special Education V 1-4** May be repeated for credit; cumulative maximum 8 hours. Recent research developments, issues and/or applications in selected areas of special education.
- 540 Methods in Intensive Educational Supports 3** Assessment, curriculum development and modification, and instructional methods for students with severe disabilities. Credit not granted for both SPEC ED 440 and SPEC ED 540. Required preparation must include completion of an introductory special education course, or SPEC ED 520.
- 541 Foundations of Education of Children with Hearing Loss 2** Historical and contemporary forces impacting education of children with hearing loss with emphasis on technology.
- 542 Development of Language for Teachers of Children with Hearing Loss 3** Language from birth through school-age with emphasis on development and relationship of pragmatics, semantics and syntax.
- 543 Teaching Speech to Children with Hearing Loss 3** Strategies for assessing, developing and remediating the speech of children with hearing loss.
- 544 Developing Language in Children with Hearing Loss 3** Strategies for assessing and developing language in children with hearing loss.
- 545 Curriculum for Children with Hearing Loss 3** Strategies for modifying and adapting instruction in academic areas to meet the needs to students with hearing loss.
- 546 Working with Parents of Children with Hearing Loss 3** Impact of hearing loss on parents and strategies for helping parents cope at various stages of their child's life.
- 571 Prevention and Remediation of Reading Disabilities 3** Theoretical concepts, research, and strategies of reading assessment and instruction for students with disabilities. Required preparation must include completion of an introductory special education course, or SPEC ED 520; or permission of instructor.
- 589 Seminar in Disability Studies 3** Current research, issues, trends in disabilities within the broader context of education, society, history.
- 590 Practicum in Special Education V 1-4** May be repeated for credit; cumulative maximum 8 hours. Supervised experiences in application of theories and practices in special education. Required preparation must include completion of an introductory special education course, or SPEC ED 520; certified education major or completed certificate. S, F grading.
- 591 Response to Intervention Across the Core Academic Curriculum 3** New method of assessment for learning disability referred to as response to intervention. Recommended preparation: Admission to a doctoral program.
- 592 Single Subject Research Design and Methods 3** In-depth study of single subject research designs; critical analysis of strengths and weaknesses of each design. Recommended preparation: Admission to a doctoral program.
- 593 Diversity Issues in Special Education: Theory, Research and Practice 3** Diversity issues in special education examined and critically reflected upon for future use and practice. Recommended preparation: Admission to a doctoral program.
- 594 Prevention and Intervention for Emotional and Behavioral Disorders (EBD) 3** Cross-disciplinary perspectives on preventing mental, emotional, and behavioral disorders; analysis of evidence-based practices, research to practice gap, implementation and sustainability. Recommended preparation: Admission to a doctoral program.
- 595 Universal Design 3** Factors associated with developing, implementing and assessing curricular materials for individuals with disabilities. Recommended preparation: Admission to a doctoral program.
- 596 Seminar in Quality Indicators for Research in Special Education 1** May be repeated for credit; cumulative maximum 3 hours. Examines quality indicators of research designs and approaches in special education.
- 600 Special Projects or Independent Study V 1-8** May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.
- 800 Doctoral Research, Dissertation, and/or Examination V 1-18** May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

TEACHING AND LEARNING

TCH LRN

- 301 Learning and Development 3** Analysis of the connections among learning theories, human development theories, and educational practice in today's PK-12 classrooms.
- 304 Introduction to Middle Level Education 3** Course Prerequisite: H D 101; TCH LRN 301. Introduction to developmentally appropriate organization, structures, curriculum, and instruction in the middle grades.
- 305 Fundamentals of Instruction 2** Course Prerequisite: For candidates admitted to teacher education (elementary education). Introduction to lesson and unit plans, state standards, instructional models, and basic strategies for using and integrating technology.
- 306 [M] Survey of Elementary Reading and Language Arts 3** Course Prerequisite: For candidates admitted to teacher education (elementary education). Attitudes, knowledge, and skills needed for successful teaching of reading and language arts.
- 307 Survey of Children's Literature 2** Course Prerequisite: For candidates admitted to teacher education (elementary education). Types, values, selection of children's literature; role of teacher in facilitating children's experiences with books.
- 310 [M] Classroom Management 2** Course Prerequisite: For candidates admitted to teacher education (elementary education). Strategies for developing positive and supportive classroom learning environments.
- 317 Initial Practicum Experience 2** Course Prerequisite: TCH LRN 301. Classroom experience providing observation, reflection and gradual classroom involvement and teaching responsibility. S, F grading.
- 320 Elementary Reading Methods 3** Course Prerequisite: For candidates admitted to teacher education (elementary education). Teaching methods, materials, and content in elementary school reading.
- 321 Early Literacy 3** Course Prerequisite: For candidates admitted to teacher education (elementary education). Designed for pre-service teachers to link assessment and instruction and guide the development of early reading and writing skills.
- 322 [M] Reading and Writing in Grades 4 - 8 3** Course Prerequisite: For candidates admitted to teacher education (elementary education). Designed for pre-service teachers to link assessment and instruction and assist upper-elementary students to read and write more effectively.
- 330 Diversity in Education 3** Course Prerequisite: For candidates admitted to teacher education (Elementary Education); TCH LRN 301. Social, historical, and philosophical foundations of gender, socioeconomic, linguistic, and cultural diversity in schools.

- 333 Introduction to English as a Second Language (ESL)** 3 Foundations of ESL with attention to basic concepts of second language processing in educational settings.
- 339 Communicating in Diverse Classrooms** 3 Selected topics dealing with linguistic diversity, cross-cultural communication, language development and language use.
- 352 Teaching Elementary Mathematics** 3 Course Prerequisite: MATH 252; for candidates admitted to teacher education (EDUC). Teaching methods, materials, and content in elementary and middle school mathematics.
- 371 Teaching Elementary Science** 3 Course Prerequisite: For candidates admitted to teacher education (elementary education). Teaching methods, materials, and content in elementary and middle school science.
- 385 Teaching Elementary Social Studies** 3 Course Prerequisite: For candidates admitted to teacher education (elementary education). Teaching methods, materials, and content in elementary and middle school social studies.
- 390 Integrating Fine Arts into K-8 Curriculum** 3 Course Prerequisite: For candidates admitted to teacher education (elementary education). Integrating the range of fine arts (art, music, dance, drama) into K-8 curriculum; designed for preservice and inservice general K-8 teachers.
- 401 Practicum in Bilingual/ESL Education** 3 (2-3) May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: For candidates admitted to teacher education (elementary education or secondary education). Work with students from diverse cultural and linguistic backgrounds in an educational setting implementing theoretical foundations, skills, and strategies acquired from ESL coursework.
- 402 Instructional Practicum I** V 1 (0-3) to 6 (0-18) May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: For candidates admitted to teacher education (elementary education). Application of educational theories and approaches learned during methods Block I. S, F grading.
- 403 Social Foundations of Elementary Curriculum** 2 Course Prerequisite: For candidates admitted to teacher education (elementary education). The school; historical, and philosophical foundations of education; school law and professional certification.
- 405 Instructional Practicum II** V 1 (0-3) to 6 (0-18) May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: For candidates admitted to teacher education (elementary education). Application of educational theories and approaches learned during methods Block II. S, F grading.
- 409 Fundamentals of Curriculum and Assessment for Teaching English Language Learners** 3 Research in curriculum development for and assessment of language minority students.
- 410 Theoretical Foundations of Bilingual/ESL Education** 3 Theoretical foundations related to research and instructional strategies for effective schooling of language minority students. Credit not granted for TCH LRN 410 and 510. Credit not granted for both TCH LRN 410 and TCH LRN 510.
- 411 Bilingual Methods and Materials Across Content Areas** 3 Course Prerequisite: TCH LRN 333, 335, 339, 410, or 413. Approaches, methods, and materials across content areas for the bilingual classroom.
- 413 Introduction to ESL for K-8 Teachers** V 2-3 Course Prerequisite: For candidates admitted to teacher education (elementary education). Introduction to teaching ESL students for K-8 teachers.
- 414 Methods and Materials for Bilingual/ESL Education** 3 Research and instructional methods related to English language acquisition across content areas. Credit not granted for both TCH LRN 414 and TCH LRN 514. Recommended preparation: Recommended: TCH LRN 410 or 510; TCH LRN 509; TCH LRN 549.
- 415 Student Teaching** V 6 (1-15) to 16 (1-40) Course Prerequisite: For candidates admitted to teacher education (elementary education or secondary education). To begin student teaching the candidate must have paid certification fees and have a currently valid teacher certificate application with character and fitness supplement on file; completed with a C or better all course work for the teacher certificate; received fingerprinting clearance from Washington State Patrol, FBI, and Office of Professional Practices; earned a 2.5 gpa overall, in endorsement area and professional core courses. Placement by interview only at approved sites. Supervised teaching in public schools including seminars reflecting on effective teaching and professional certification. S, F grading.
- 425 Conceptual Aspects of Mathematics** 3 Exploration of conceptual models for thinking about mathematical ideas; activities and discussions of mathematical thinking and instruction. (Crosslisted course offered as TCH LRN 425, MATH 425).
- 426 Middle Level Mathematics Methods** 3 Research-based and standards-aligned methods for teaching mathematics in the middle grades.
- 427 Proportional Reasoning** 3 Course Prerequisite: TCH LRN 352. Examination of work samples; identifying student's incomplete understanding of fundamental concepts; design instruction to develop a deeper understanding of rational numbers.
- 445 Elementary Methods of Educational Technology** 2 (1-2) Course Prerequisite: For candidates admitted to teacher education (elementary education). Consideration of all technologies in K-8 schools, applications for their use, some production techniques and instructional methodologies.
- 464 Curriculum, Instruction and Content Literacy Methods** 3 Development of curriculum, instruction and content literacy materials and methods for teaching in the secondary school classroom.
- 465 Culture and Community Contexts of Education** 3 Cultural and community-based contexts of schooling, teaching and education.
- 466 Secondary Methods of Educational Technology** 2 (1-2) Integration of technologies for teaching and learning within the 9-12 classrooms; hands-on development of technology enhanced activities and lessons.
- 467 [M] Diversity, Classroom Life and Management** 3 Course Prerequisite: TCH LRN 317. Diversity, community building and classroom management and their interrelationships in secondary schools, and educational/legal issues on physical/sexual abuse.
- 469 Advanced Practicum** 2 Course Prerequisite: TCH LRN 317. Field experience with classroom observation and teaching prior to student teaching; weekly seminar included. S, F grading.
- 470 ESL/Special Education Methods for Secondary Teachers** 3 Course Prerequisite: TCH LRN 317. Methods for teaching second language learners and students with special needs in the secondary school classroom.
- 480 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 TCH LRN 480, 580, 582. Credit not granted for both TCH LRN 480 and TCH LRN 580.
- 483 Integrating Health and Fitness into K-8 Curriculum** 3 Course Prerequisite: For candidates admitted to teacher education (elementary education). Integrating health and fitness concepts into the K-8 curriculum; issues of abuse; designed for preservice and inservice K-8 teachers.
- 487 Global Geography** 3 Open to non-education majors. World geography as a global perspective; education in the contemporary world: the interaction between human societies and the natural environment.
- 490 Advanced Practicum** V 1 (0-3) to 3 (0-9) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: TCH LRN 405. Intensive practicum integrating educational theory with teaching in classroom contexts. S, F grading.
- 497 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.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

- 501 Bilingual/ESL Education 3** May be repeated for credit; cumulative maximum 6 hours. Work with students from diverse linguistic and cultural backgrounds in educational settings.
- 502 Assessment for Teaching and Learning V 2-3** Instruction in sound assessment practices for preservice and inservice graduate students.
- 503 ESL Methods and Material for Secondary Content Teachers 2** Research-based ESL strategies and methods for pre-service and secondary content area teachers.
- 504 Advanced Study in Linguistics for Educators 3** Use of linguistics to better understand second language learning and teaching and the physical aspects of acquiring a language.
- 505 ESL Methods for General Educators (K-8) 2** Course Prerequisite: For candidates admitted to MIT. Research-based ESL strategies and methods for pre-service and experienced teachers.
- 506 Multicultural Classroom Instruction and Management 4** Instructional and management strategies for maximizing students' opportunities to learn in a multicultural setting.
- 507 Seminar in Literacy in Multicultural Settings I 3** Multicultural perspective to curriculum development and classroom literacy practices.
- 508 Seminar in Literacy in Multicultural Settings II 3** Course Prerequisite: TCH LRN 507. Multicultural perspective to curriculum development and classroom literacy practices.
- 509 Research in Curriculum and Assessment for Bilingual/ESL Education 3** Research in curriculum development for and assessment of language minority students. Recommended preparation: TCH LRN 510; TCH LRN 549.
- 510 Theoretical Foundations of Bilingual/ESL Education 3** Theoretical foundations related to research and instructional strategies for effective schooling of language minority students. Credit not granted for TCH LRN 410 and 510. Credit not granted for both TCH LRN 410 and TCH LRN 510.
- 512 Language and Cultural Factors in Mathematics 3** Research and instructional strategies related to linguistic and cultural influences on learning math.
- 513 Seminar in Middle School Education 3** For experienced teachers. Curriculum patterns and recent research regarding instruction and materials in the contemporary middle school.
- 514 Methods and Materials for Bilingual/ESL Education 3** Research and instructional methods related to English language acquisition across content areas. Credit not granted for both TCH LRN 414 and TCH LRN 514. Recommended preparation: Recommended: TCH LRN 410 or 510; TCH LRN 509; TCH LRN 549.
- 515 The Education of Cultural and Linguistic Minority Students 3** Issues in the education of language minority students.
- 516 Advanced Study in Computer-Assisted Language Learning 3** Research, theory, and practice in computer-assisted language learning.
- 517 Educational Technology in K-8 Schools 2 (1-2)** Course Prerequisite: For candidates admitted to MIT. Technology standards for teachers, technology use in schools, production techniques and instructional methods.
- 518 Integrating Technology into the Curriculum 3** Examination and articulation of the potential for new technologies to expand learning opportunities.
- 519 Instructional Media Production I 3** Instructional media development, emphasizing the theory and methods of instructional design, digital media production and evaluation.
- 520 Topics in Special Student Populations V 1-4** May be repeated for credit; cumulative maximum 6 hours. For K-12 teachers. Knowledge of special student populations and guidance in developing appropriate curricula. Cooperative: Open to UI degree-seeking students.
- 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 Education V 1-3** May be repeated for credit; cumulative maximum 6 hours. Recent research, development, issues, and/or applications in selected areas of education.
- 523 Topics in Education V 1-3** May be repeated for credit; cumulative maximum 6 hours. Recent research, development, issues, and/or applications in selected areas of education.
- 524 Topics in Education V 1-3** May be repeated for credit; cumulative maximum 6 hours. Recent research, development, issues, and/or applications in selected areas of education.
- 525 Classroom Management Seminar V 2-3** Course Prerequisite: For candidates admitted to MIT. Contemporary issues in management of elementary, middle school, and secondary classrooms; issues of abuse.
- 526 Research in Multicultural Education 3** Course Prerequisite: TCH LRN 515. Research and instructional practices focusing on multicultural education.
- 527 Seminar in Teacher Education Instruction 1** 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 Literacy within the Disciplines 3** Explores literacy research and practices that enhance the learning of various disciplines taught in K-12 settings.
- 529 Place-Based Education 3** Theory and practice of place-based education with an emphasis on community-based action research and curriculum planning.
- 530 Innovations in Reading V 2-3** Graduate-level counterpart of TCH LRN 431; additional requirements.
- 531 Frameworks for Research in Mathematics and Science Education 3** Exploration of research frameworks and methodologies specific to mathematics and science education.
- 532 Children's Literature in the Curriculum 2** Theory and classroom applications for selecting and using literature and storytelling in content areas; reading, writing, language development, the arts.
- 533 Middle Level Mathematics Pedagogy and Philosophy 3** Middle-school philosophy; understanding of effective standards and research-based instructional methods.
- 534 Conceptualization of Proportional Thinking 3** Investigation of the development of K-14 students' understanding of proportional reasoning.
- 535 Gender, Power and Education 3** Interdisciplinary focus on the relationships among gender, power and education.
- 536 Cultural Studies in Education 3** Historical and conceptual background of the field of cultural studies.
- 537 Seminar in Language, Literacy, and Culture 3** Interrelationships between schools, literacy, and student cultural background.
- 538 Writing Across the Curriculum 3** Writing for learning at grade levels K-12.
- 539 Innovations in Language Arts 3** The most recent developments in language arts instruction for pre-service and in-service teachers K-12.
- 540 Elementary School Social Studies 3** Course Prerequisite: For candidates admitted to MIT. For candidates admitted to graduate teacher preparation and experienced teachers. Elementary structures of various social sciences; research findings related to instruction; classroom applications and materials.
- 541 Teacher Professional Certification: Pre-Assessment Seminar V 1-3** May be repeated for credit; cumulative maximum 6 hours. Candidates evaluate current teaching against standards to determine steps for professional growth plans which measure positive impact on student learning.
- 542 Teacher Professional Certification: Researching Exemplary Practices V 1-3** May be repeated for credit; cumulative maximum 6 hours. Teachers will apply exemplary practices, continue to assess their performance and college evidence of positive impact on student learning.
- 543 Teacher Professional Certification: Culminating Seminar V 1-3** May be repeated for credit; cumulative maximum 6 hours. Candidates will complete ProCert requirements to document positive impact on students' learning: set new goals; learn about National Board options.
- 544 Advanced Children's Literature 3** Trends, issues, and research in children's literature.

- 546 Teaching Writing in the Elementary School** 3 Theory and research relevant to instructional approaches and practices for teaching writing in elementary schools.
- 547 Teaching Folk Literature to Children and Adolescents** 3 Folk literature as a genre in adult and adolescent literature; curriculum applications; reading, language development, social studies, creative expression.
- 548 Teaching Adolescent Literature** 3 Evaluating, selecting, and using literature for middle school and teenage students.
- 549 Communicating in a Multilingual Society** 3 Study of language in social and educational context and its relation to cultural and linguistic diversity. Recommended preparation: TCH LRN 510.
- 550 Second Language Learning and Literacy** 3 Research on second language teaching and learning in literacy education with a focus on English language learners in US schools. Recommended preparation: Admission to a doctoral program.
- 551 Psychology of Reading** V 2-3 Psychological, perceptual, motivational, developmental and physiological aspects of reading.
- 552 Literacy Development I** 3 Course Prerequisite: For candidates admitted to MIT. For candidates admitted to graduate teacher preparation. Review of current research and approaches to instruction in the development of literacy in elementary and middle grades.
- 553 Assessment and Instruction for Reading: K-8** 4 (3-3) Evaluation techniques and instructional practices for impacting the reading achievement of K-8 students.
- 554 Sociolinguistics** 3 Interaction between language use and sociopolitical and cultural contexts; cultural and linguistic delivery and educational opportunity. Recommended preparation: TCH LRN 504.
- 555 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 Literacy Development II** 3 Course Prerequisite: For candidates admitted to MIT. Review of current research and approaches to instruction in the development of literacy in elementary and middle grades.
- 557 Research in Reading** 3 Exploration of qualitative and quantitative reading research covering topics of current and historical importance.
- 558 Improving Comprehension through Literature** 3 Key theoretical concepts and their implications for improved comprehension instruction, using children's literature.
- 559 Readings in Cultural Studies and Social Thought in Education** 1 May be repeated for credit; cumulative maximum 3 hours. Current scholarship in the field of cultural studies in education and practices of schools.
- 560 Research in Teaching** 3 May be repeated for credit; cumulative maximum 6 hours. Recent developments in research on teaching; both quantitative and qualitative research methodologies emphasized.
- 561 Elementary School Mathematics** 3 Course Prerequisite: For candidates admitted to MIT. Research on curriculum and instruction issues in elementary school mathematics.
- 564 Elementary School Mathematics Methods** 3 Course Prerequisite: For candidates admitted to MIT. Introduction to research, theory, and methods of teaching K-8 mathematics; emphasis on integrating theory and practice.
- 565 Introduction to Scholarly Inquiry** 1 Introduction to the Ed.M program including the scholarship and research requirements and the role of students and action research.
- 566 Democratic Education** 3 Rationale and skill to assist teachers in making classrooms more democratic.
- 567 Social Foundations of Literacy** 3 Social, cultural and political factors which influence the acquisition and use of literacy. Recommended preparation: Admission to a doctoral program.
- 568 Psychological Foundations and Assessment of Literacy** 3 Historical look that blends the assessment of literacy and its psychological components. Recommended preparation: Admission to a doctoral program.
- 569 Critical Analysis of Children's and Young Adult Literature** 3 Multicultural analysis of children's and adolescent literature and its pedagogical and sociopolitical implications and possibilities. Recommended preparation: Admission to a doctoral program.
- 570 Theory and Research in Electronic Literacies** 3 . Ideas of literacy and effects of technology on literacy and policy, particularly those issues addressing diverse learners.
- 571 Elementary School Science** 3 Course Prerequisite: For candidates admitted to MIT. Theories and research underlying science programs with classroom implications.
- 572 Elementary School Science Methods** 3 Course Prerequisite: For candidates admitted to MIT. Theoretical base to design and implement appropriate standards-based elementary science instruction.
- 573 Theory and Research in Computer-Assisted Language Learning** 3 Information and tools needed to contribute to the CALL research literature.
- 574 Science for All: An Individual and Multicultural Perspective** 3 Course Prerequisite: For candidates admitted to MIT. Implications of cultural and individual diversity for understanding western scientific and mathematical thought; an activity-based, educational perspective.
- 575 Globalization and Identity in Education** 3 Issues relating to the complexities of globalization and identity in education.
- 576 Youth Cultures in Education** 3 Analysis of how youth cultures operate in society and how they are practiced in schools.
- 577 Curriculum Theory** 3 Curriculum theory as the interdisciplinary study of educational experience.
- 578 National Board for Professional Teaching Standards (NBPTS) I** 3 Development of evidence aligned with National Board standards and allowance for reflection on the impact of teaching and student learning. Required background must include: Bachelor's degree from accredited institution, valid state teaching/counseling certificate, completion of minimum 3 years successful full-time teaching in a U.S. P-12 school.
- 579 National Board for Professional Teaching Standards (NBPTS) II** 3 Construct/submit portfolio of evidence meeting national standards in classrooms for National Board Certification assessment. Required background must include: Bachelor's degree from accredited institution, valid state teaching/counseling certificate, completion of minimum 3 years successful full-time teaching in a U.S. P-12 school.
- 580 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 TCH LRN 480, 580, 582. Credit not granted for both TCH LRN 480 and TCH LRN 580.
- 581 Learning and Development in Mathematics and Science** 3 This course explores and illustrates "what we know" about various aspects of mathematical learning at various grade levels.
- 583 Problem Solving in Elementary and Middle Level Education** 3 Course Prerequisite: For candidates admitted to MIT. Integration of knowledge and skills to address complex cases in teaching and learning.
- 584 Research in Teaching Mathematics and Science** 3 Development of an understanding for the research literature that is particularly related to mathematics and science teaching.
- 585 Focused Reading and Conference in Math/Science Education** V 1-3 May be repeated for credit; cumulative maximum 9 hours. Designed to foster ongoing scholarship for individuals interested in mathematics and/or science educational research.
- 587 Environment, Culture and Education** 3 Role of education in the social, ecological, and political conflicts between culture and environment.
- 588 Action Research: Teachers as Research** 3 Theoretical concepts, research, issues, models, and strategies for implementation of action research.
- 589 Race, Identity and Representation in Education** 3 Interdisciplinary research in race, identity and representations in education.

590 Internship V 2-6 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By interview only. Opportunities in professional positions. S, F grading.

591 Research Internship in Math/Science Education 3 May be repeated for credit; cumulative maximum 6 hours. Provides opportunities for students to work closely with an accomplished researcher to observe, learn, and practice research methods.

592 Social Theory in Education 3 Social theory and how it applies to intellectual work in education. Recommended preparation: Admission to a doctoral program.

593 Pre-internship and Seminar 2 (1-3) Course Prerequisite: For candidates admitted to MIT. Instructional practice in diverse classroom settings and reflection on that practice. S, F grading.

594 Integrating Fine Arts into K-8 Curriculum 2 Course Prerequisite: For candidates admitted to MIT. Integrating Fine Arts (art, music, dance, drama) into K-8 curriculum; designed for pre-service MIT.

595 Internship and Seminar 10 (1-27) Course Prerequisite: TCH LRN 593. Instructional practice in classroom settings, reflection on practice; professional certification. S, F grading.

596 Topics in In-Service Education V 1-3 May be repeated for credit; cumulative maximum 12 hours. Advanced study of research, practice, and contemporary issues in education.

597 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.

598 Research Seminar in Mathematics and Science Education 1 May be repeated for credit; cumulative maximum 4 hours. Through targeted readings and discussion, students will develop knowledge base proficiencies related to areas of mathematics/science education.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

The University College

universitycollege.wsu.edu
French Administration, Room 436
509-335-8044
509-335-5507 for First-year Courses

Mary F. Wack, Dean.

The University College is a non-degree-granting college that supports all undergraduates at WSU. There are no admission requirements; any student can access the various programs and courses offered by the college. One- and two-credit courses are designed to fit student schedules and can be paired with other University College courses or courses in the major for high-impact learning.

The curriculum assists students in gaining the skills for effective decision-making to manage key transitions of the college years: from high school or a community college to a research university, transition into a major, and transition from college into a career and a life of personal fulfillment.

Active and collaborative learning environments develop teamwork and leadership skills while also fostering positive relationships with a diverse community of peers, faculty, and advising staff. Students' progress in their degree programs is supported by these courses' focus on developing critical thinking, analytical, and information skills, as well as by their strong written and oral communications components. Frequent reflective assignments assist students in integrating their college experiences with their developing sense of personal and social responsibility and self-direction.

The University College offers personalized support for students intending careers in the Health Sciences, with special course sections, workshops, clubs, and career-oriented advising.

Certificates

Global Leadership Certificate

The University College also offers the Global Leadership Certificate, in partnership with the Global Studies Program in International Programs. The Global Leadership Certificate is structured around

coursework and co-curricular experiences that empower students to analyze, adapt, communicate, problem-solve, and empathize in a variety of professional and personal networks. Taken together, the academic and co-curricular components build self-reliance, leadership and team skills in a global framework.

Requirements for the Global Leadership Certificate (3 sections):

1) Four (4) Courses (12 credits)

Selected coursework should address contemporary global/intercultural issues and be aligned with the three objectives/competency areas. Courses taken during a study abroad experience may also count for this requirement. Up to four credit hours of foreign language at or above the 200 level may be applied. Courses approved for inclusion in the program may address contemporary issues, involve a language and culture different from student's immediate context, and/or be concerned with issues that cross national borders or international regions.

2) Leadership and Experiential Learning (2 credits; UCOLLEGE 497)

All students will take UCOLLEGE 497 "Peer Leadership" for 1 credit. Students will fulfill the remaining experiential requirement (1 credit) in one of two ways:

A. Intensive International/Intercultural/Civic Engagement Experience: An international or domestic immersion experience such as study abroad, internship, exchange program, alternative spring break, service learning, eco adventure, or research experience. The intensive experience must be of at least one week's duration and satisfy academic requirements for one credit. The experience will involve at least 45 hours of learning to satisfy the academic requirements for one credit.

OR:

B. Sustained "Globalization at home" Intercultural/Civic Engagement Experience: Local service learning experiences with an ethnic/national population or with local/global issues such as poverty, hunger, health, community development, or sustainability. These experiences may be complemented by attendance at intercultural or civic engagement events (lectures, international student group celebrations, Common Reading Program activities, community group events, etc.) and through reflection activities for a total of 45 hours to satisfy the academic requirements for one credit.

3) Integrative Capstone Project (1 credit, UCOLLEGE 491)

For additional information, contact the Director of the Global Studies Program in the International Programs Office.

Description of Courses

UNIVERSITY COLLEGE

UCOLLEGE

100 College Majors and Career Exploration 1

Career development and the decision-making process; exploration of academic majors and careers. Credit not granted for UCOLLEGE 100 and 101.

101 College Majors and Career Choice 1

Course Prerequisite: By permission only. Career development and the decision-making process; exploration of academic majors and careers. Credit not granted for UCOLLEGE 100 and 101.

104 Pathways to Academic Success Seminar

2 Introduction to college-level research and writing, including analysis of source material, disciplinary/interdisciplinary discourse, and development of critical thinking.

199 Introduction to Directed Research V

1-3 May be repeated for credit; cumulative maximum 12 hours. May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By permission only. Introduction to independent research, scholarship, reading analysis, creative project, or field experiences.

300 Accessing Information for Research 1

Effective research strategies in the disciplines, including emerging information resources, such as Internet.

301 College Major and Career Planning 1

Course Prerequisite: Sophomore standing. Assistance in developing effective major, career, and graduate school management approaches.

302 Advanced Writing Tutorial 1 (0-3)

May be repeated for credit; cumulative maximum 5 hours. Student-centered group tutorial on writing improvement in upper division courses. Enrollment in a Writing in the Major course or course that assigns writing is required. S, F grading.

303 Composing and Evaluation Strategies 1

Strategies of writing evaluation and composing strategies for writing-intensive courses. By instructor permission.

304 Seminar in Focused Exploration and Leadership 2

Course Prerequisite: Sophomore standing. Seminar designed for students in transition to become better acclimated to the university environment and to aid in achieving academic and personal success.

398 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.

491 Integrative Capstone 1

Integrative culminating experience for university-wide interdisciplinary programs.

496 Experiences in Health Care V 1-3

May be repeated for credit; cumulative maximum 6 hours. Work or shadowing experience under supervision of a qualified professional in a clinic. S, F grading.

497 Peer Leadership V 1-4

May be repeated for credit; cumulative maximum 9 hours. Development of leadership and interpersonal skills for specific peer leadership and paraprofessional positions.

College of Veterinary Medicine

www.vetmed.wsu.edu

Bustad 110

509-335-1531

The College of Veterinary Medicine offers courses of study leading to the degrees of Doctor of Veterinary Medicine, Master of Science in Veterinary Science, and Doctor of Philosophy. Additional information, including requirements for admission, is contained in the general information section of this catalog.

The College of Veterinary Medicine at Washington State University is accredited by the American Veterinary Medical Association.

DOCTOR OF VETERINARY MEDICINE PROGRAM REQUIREMENTS

A minimum of seven years is generally necessary to obtain the degree of Doctor of Veterinary Medicine (DVM). Most successful applicants have completed four years of a preprofessional undergraduate program. The first three years of preveterinary training can be taken at any institution having courses equivalent to those taught at Washington State University. Following undergraduate studies, a student then takes four years of professional study directed by the College of Veterinary Medicine.

Applicants for admission to the College of Veterinary Medicine must present at least 64 semester hours of acceptable prerequisite credits from an accredited college or university, exclusive of military training and physical education. The 64 semester hours should include: 37 hours of science prerequisites, including zoology or general biology, inorganic and organic chemistry, biochemistry, physics, mathematics, genetics, and statistics; and the following 27 hours of University Common Requirements (UCORE): 9 hours of social science, humanities, and the creative and professional arts; 3 hours of English composition; 3 hours of communication (written or verbal); and 12 hours of history or diversity studies, which can include second language courses.

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. However, many successful applicants major in animal science, biology, chemistry, microbiology, neuroscience, wildlife, zoology, or other science-related fields.

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

Information regarding the acceptability of course credits should be obtained from the Office of Student Services, College of Veterinary Medicine.

ADMISSION TO THE DVM PROGRAM

A student seeking to enter the professional DVM program should fill out both a VMCAS (Veterinary Medical College Application Service) and supplemental WSU-CVM online application (<https://>

adds.vetmed.wsu.edu/Admissions). Deadline for submission of applications is October 1st. A \$60 application/processing fee will be assessed as part of completing the WSU supplemental application. The Admissions Committee, with the approval of the Board of Regents, select those students to be admitted to the first year of the professional program. Applicants will be notified of their acceptance on or before April 15th. 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:

- To qualified students coming from homes in the states of Washington and Idaho
- To qualified students certified and financed by the Western Interstate Commission for Higher Education (WICHE) Compact states
- To all other qualified students

HONORS PROGRAM FOR SELECTED STUDENTS

A special program for admission of highly selected and academically qualified students to the Washington State University College of Veterinary Medicine has been established with the WSU Honors College. This program admits students directly to the college upon completion of one year of undergraduate work at WSU. This is a seven-year program leading to the Doctor of Veterinary Medicine degree after satisfactory completion of a designed curriculum. It consists of three years of a unique undergraduate preprofessional education and the four-year professional program. The first three years of this program are a combination of Honors College 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. Applicants should identify themselves to the Honors College as soon as students decide to enter WSU, because the number of positions is limited.

Combined Program in Animal Sciences and Veterinary Medicine - See Department of Animal Sciences.

Schedules of Studies

Honors students complete the Honors College requirements which replace the UCORE requirements.

DVM PROFESSIONAL CURRICULUM (137 HOURS)

The professional curriculum for the Doctor of Veterinary Medicine degree is outlined below. A total of 151 semester hours are required for graduation. All courses required in the professional program are 500-600-level courses.

First Year

<i>First Term</i>	<i>Hours</i>
VET MED 510	5
VET MED 511	5
VET MED 513	4
VET MED 568	2

Second Term

VET MED 512	3
VET MED 520	5
VET MED 521	3
VET MED 534	3
VET MED 545	3
VET MED 580	1

Second Year

First Term

VET MED 522	2
VET MED 535	3
VET MED 536	4
VET MED 546	6
VET MED 589	3

Second Term

VET MED 523	3
VET MED 537	4
VET MED 543	2
VET MED 561	2
VET MED 587	3
VET MED 588	3

Third Year

First Term

VET MED 502	1
VET MED 524	3
VET MED 551	5
VET MED 553	3
VET MED 554	1
VET MED 569	4
VET MED 578	3
VET MED 585	2

Second Term

VET MED 500	1
VET MED 552	3
VET MED 570	3
VET MED 571	4
VET MED 572	2
VET MED 576	1
VET MED 590	1
VET MED 598	1

Fourth Year

First Term

VET MED 600	1
VET MED 605	2
VET MED 606	2
VET MED 607	2
VET MED 608	2
VET MED 609	2
VET MED 628	2
VET MED 629	2

Second Term

VET MED 630	2
VET MED 650	3
VET MED 674	1
VET MED 675	2
VET MED 690	2
VET MED 691	4
VET MED 699	1

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

Hours 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 elective opportunities in their area of interest. All students must prepare and present a senior paper under faculty supervision.

Hours

Description of Courses

VETERINARY MEDICINE

VET MED

Hours

350 Skeletal Preparation 1 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Second year Veterinary Medicine students. Technique of skeletal preparation is mastered by undertaking and completing project. Skeleton becomes property of student. S, M, F grading.

Hours

394 Veterinary Medicine as a Career 2 Course Prerequisite: MBIOS 303 or concurrent enrollment; junior standing; cumulative gpa of 3.00 or higher. Current issues in veterinary medicine; ethical, financial and personal aspects of the veterinary practice. S, F grading.

499 Special problems V 1-4 May be repeated for credit. Course Prerequisite: Veterinary Medicine student. Special problems V 1 (0-3) to 4 (0-12) Course Prerequisite: Veterinary medicine student. S, M, F grading.

Hours

500 Animals, Society, and the Veterinarian 1 Active participation in activities designed to enhance personal growth, character development and leadership skills. S, M, F grading.

501 International Veterinary Medicine 1 Course Prerequisite: Veterinary Medicine student. Important issues and constraints facing the global community. S, M, F grading.

502 Communication Skills V 1-3 Course Prerequisite: Veterinary Medicine student. Exercises designed to enhance communication and relational skills. S, M, F grading.

Hours

504 Global Studies V 1 (0-3) to 6 (0-18) Course Prerequisite: VET MED 501. Preceptorship in the US or overseas, under direct supervision of veterinarian, agriculture or public health professional; related to international veterinary medicine. S, M, F grading.

505 Reverence for Life 1 (0-2) Course Prerequisite: Veterinary Medicine student. Connections between humans and animals; discussions related to use of animals in Western societies; social issues related to veterinary medicine. S, M, F grading.

Hours

508 Research Orientation and Resource 1 Course Prerequisite: Veterinary Medicine student. Resources and important issues for identifying and developing a focused area of scholarly activity in biomedical research. S, M, F grading.

509 Research Issues, Ethics, and Literacy

1 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Veterinary Medicine student. Philosophy and history of methodological, ethical and political issues relevant to biomedical research using selected monographs and essays. May be repeated for credit; cumulative maximum 3 hours. S, M, F grading.

510 Veterinary Microscopic Anatomy 5 (3-6)

Course Prerequisite: Veterinary Medicine student. Microscopic functional morphology of the cell, tissues, and selected organ systems of domestic animals. S, M, F grading.

511 Veterinary Anatomy I 5 (0-15)

Course Prerequisite: Veterinary Medicine student. Detailed macroscopic functional morphology of the dog with comparison to other domestic animals; developmental anatomy of selected organ systems. S, M, F grading.

512 Veterinary Anatomy II 4 (1-9)

Course Prerequisite: VET MED 511. Detailed macroscopic functional morphology of domestic animals. S, M, F grading.

513 Veterinary Cell Physiology 4

Course Prerequisite: Veterinary Medicine student. Cell physiology focusing on endocrine, paracrine, and neurotransmission signaling processes, transcriptional and translational control, and methodologies relevant to medicine. S, M, F grading.

517 Small Animal Applied Anatomy and Surgical Techniques 2 (1-3)

Course Prerequisite: VET MED 512. Applied anatomy of small animals including surgical anatomy. S, M, F grading.

518 Large Animal Applied Anatomy and Surgical Techniques 2 (1-3)

Course Prerequisite: VET MED 512. Applied anatomy of large animals including surgical anatomy. S, M, F grading.

520 Veterinary Physiology 5 (4-3)

Course Prerequisite: VET MED 510. Physiology of domestic animals. Cooperative: Open to UI degree-seeking students. S, M, F grading.

521 Introduction to Veterinary Neurology 3 (2-3)

Course Prerequisite: VET MED 510. Neuroanatomical and neurophysiological bases of veterinary neurology, emphasizing central and peripheral sensory and motor systems. (Crosslisted course offered as VET MED 521, NEUROSCI 521). S, M, F grading.

522 Fundamentals of Pharmacology 3

Course Prerequisite: Veterinary Medicine student. Fundamentals of pharmacology, including pharmacokinetics (absorption, distribution, metabolism, excretion), receptor theory and general mechanisms of drug action. S, M, F grading.

523 Veterinary Toxicology 3

Course Prerequisite: VET MED 522. Pharmacology and toxicology of the systems of domestic animals. Continuation of VET MED 522P. S, M, F grading.

524 Clinical Veterinary Pharmacology 3

Course Prerequisite: VET MED 523. Clinical pharmacology of domestic animal species. S, M, F grading.

- 525 Animal Behavior for the Practicing Veterinarian** 1 (0-3) May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Veterinary Medicine student. Study of the treatment of behavioral problems and training of domestic animals. S, M, F grading.
- 526 Domestic and Exotic Animal Behavior** 2 (1-3) Course Prerequisite: Veterinary Medicine student. Advanced study of animal behavior, emphasizing difference between exotic and domestic animal behavior. (Crosslisted course offered as VET MED 526, NEUROSCI 526). Cooperative: Open to UI degree-seeking students. S, M, F grading.
- 534 Veterinary Immunology** 3 (2-3) Course Prerequisite: Veterinary Medicine student. Immunology for the professional veterinary student. S, M, F grading.
- 535 Veterinary Virology** 3 Course Prerequisite: Veterinary Medicine student. Virology for the professional veterinary student. S, M, F grading.
- 536 Veterinary Bacteriology** 4 (3-3) Course Prerequisite: Veterinary Medicine student. Bacteria that produce disease in animals. S, M, F grading.
- 537 Veterinary Parasitology** 4 (3-3) Course Prerequisite: Veterinary Medicine student. Arthropods, protozoa, and helminths of veterinary importance; their host-parasite relationship and control. S, M, F grading.
- 542 Diseases of Wildlife** 2 Course Prerequisite: Veterinary Medicine student. Management principles, epidemiology, pathology, treatment, and control of diseases in wild birds, fish, and mammals. S, M, F grading.
- 543 Veterinary Medicine and Human Health** 2 Course Prerequisite: Veterinary Medicine student. Preparation for veterinary students in public health and food hygiene. S, M, F grading.
- 545 [M] General Pathology** 3 (2-3) Course Prerequisite: VET MED 520. Structural and functional alterations in disease; elementary oncology. Cooperative: Open to UI degree-seeking students. S, M, F grading.
- 546 [M] Systemic Pathology** 6 (5-3) Course Prerequisite: VET MED 545. Principles of system and organ response to injury, and the effects of injury/disease on the animal host. S, M, F grading.
- 551 Small Animal Medicine I** 5 Course Prerequisite: Veterinary Medicine student. Diagnosis and treatment of small animal diseases. S, M, F grading.
- 552 Small Animal Medicine II** 3 Course Prerequisite: VET MED 551. Diagnosis and treatment of small animal diseases. Continuation of VET MED 551P. S, M, F grading.
- 553 Small Animal Surgery** 3 Course Prerequisite: Veterinary Medicine student. Principles of surgical techniques and small animal surgery. S, M, F grading.
- 554 Small Animal Surgery Lab** 1 (0-3) Course Prerequisite: Concurrent enrollment in VET MED 553. Surgical exercises using small animals. S, M, F grading.
- 555 Small Animal Clinical Problem Solving** 2 Case-based investigation of small animal clinical presentations, diagnosis, and treatment plans. S, M, F grading.
- 556 Small Animal Soft Tissue Surgery Elective** 1 (0-3) Course Prerequisite: VET MED 553. Instruction of advanced surgical techniques, primarily involving canine and feline soft tissue. S, M, F grading.
- 557 Small Animal Surgery Elective II** 1 (0-3) Course Prerequisite: VET MED 553. Small animal orthopedic surgical exercises. S, M, F grading.
- 558 Diseases and Management of Pet and Wild Birds** 2 (1-3) Course Prerequisite: Veterinary Medicine student. Management and handling, diagnosis and treatment of various disease conditions of pet and wild birds. S, M, F grading.
- 559 Special Animal Medicine** V 1-3 Course Prerequisite: Veterinary Medicine student. Handling, restraint, care, normative features, procedures and diseases of unusual animals as pets or those used in food production or research. S, M, F grading.
- 561 Clinical Specialties** V 1-4 Course Prerequisite: Veterinary Medicine student. This course includes clinical disciplines that are not considered core internal medicine, such as ophthalmology and dermatology. S, M, F grading.
- 562 Complementary and Alternative Veterinary Medicine** 1 Presentation of complementary and alternative veterinary medicine theories and techniques. S, M, F grading.
- 566 Population Theriogenology - Food Animal** 3 Course Prerequisite: Veterinary Medicine student. Population theriogenology in food animal or mixed animal practice. S, M, F grading.
- 567 Applied Comparative Reproductive Physiology** 1 Course Prerequisite: Veterinary Medicine student. Applied comparative reproduction physiology of domestic animals. S, M, F grading.
- 568 Animal Handling and Animal Agriculture Orientation** 2 (1-3) Course Prerequisite: Veterinary Medicine student. Restraint procedures, production aspects and the social issues of agricultural animals seen by veterinarians and career opportunities associated with them. S, M, F grading.
- 569 Agricultural Animal Medicine I** 4 (3-3) Course Prerequisite: Veterinary Medicine student. Infectious and non-infectious conditions of agricultural animals. S, M, F grading.
- 570 Agricultural Animal Medicine II** 3 Course Prerequisite: VET MED 569. Infectious and non-infectious conditions of agricultural animals; introduction to performance medicine. Continuation of VET MED 569P. S, M, F grading.
- 571 Theriogenology** 4 (3-3) Course Prerequisite: Veterinary Medicine student. Diagnosis, symptomatology, and treatment of reproductive disorders. S, M, F grading.
- 572 Large Animal Surgery** 2 Course Prerequisite: VET MED 553; veterinary medicine student. Large animal surgical techniques. S, M, F grading.
- 573 Surgery Laboratory III** 1 Course Prerequisite: VET MED 512; concurrent enrollment in VET MED 572. Surgical exercises using large animals. S, M, F grading.
- 574 Equine Lameness** 2 Principles of diagnosis and treatment of musculoskeletal disorders of the horse. S, M, F grading.
- 576 Emerging and Exotic Diseases of Animals** 1 Course Prerequisite: Veterinary Medicine student. To increase understanding of emerging and exotic diseases of animals among veterinary students. S, M, F grading.
- 577 Herd Production Medicine** V 1-3 Course Prerequisite: Veterinary Medicine student. Health management of livestock herds, targeting measures of productivity and profitability. S, M, F grading.
- 578 Veterinary Equine Medicine** 3 Course Prerequisite: Veterinary Medicine student. Discussion of clinical presentation, diagnosis and treatment of common medical diseases of horses. S, M, F grading.
- 579 Advanced Equine Medicine** 2 Course Prerequisite: VET MED 578. Advanced topics in pathophysiology, clinical signs, diagnosis, treatment and prognosis of common medical problems of the horse. S, M, F grading.
- 580 Basic Nutrition** 1 Course Prerequisite: Veterinary Medicine student. Introduction to the concepts of basic nutrition designed for the first year veterinary student. S, M, F grading.
- 581 Agricultural Animal Problems Seminar** 1 May be repeated for credit; cumulative maximum 6 hours. Investigation of current herd problems and evaluation of emerging animal agricultural issues. S, M, F grading.
- 582 Agricultural Animal On-Farm Clinical Experience** 1 May be repeated for credit; cumulative maximum 3 hours. On-farm investigation of individual and herd problems and on-farm provision of professional service. S, M, F grading.
- 585 Epidemiology** 2 Course Prerequisite: Veterinary Medicine student. Minimally quantitative survey in which health is framed as a population phenomena. S, M, F grading.
- 586 Principles of Surgery** 1 Course Prerequisite: Veterinary Medicine student. Principles of surgery for the professional veterinary student. S, M, F grading.
- 587 Clinical Anesthesiology** 2 (1-3) Course Prerequisite: Veterinary Medicine student. Clinical anesthesiology for the professional veterinary student. S, M, F grading.
- 588 Radiology** 3 (2-3) Course Prerequisite: Veterinary Medicine student. Introduction to radiography and diagnostic radiology. S, M, F grading.

- 589 Clinical Pathology** 3 (2-3) Course Prerequisite: Veterinary Medicine student. Laboratory diagnostic procedures and interpretation. S, M, F grading.
- 590 Veterinary Clinical Nutrition** V 1-3 May be repeated for credit; cumulative maximum 3 hours. Large and small animal clinical nutrition; nutrient composition; nutritional diseases and practical feeding methods. S, M, F grading.
- 591 Practice Management** 2 Course Prerequisite: Veterinary Medicine student. A correlation of the veterinary medical and business aspects of practice management. S, M, F grading.
- 592 Small Animal Transfusion Therapy** 1 (0-3) Course Prerequisite: VET MED 589. Blood collection, storage, pretransfusion testing, component therapy and transfusion reactions. S, M, F grading.
- 593 Pain and Analgesics** 2 Course Prerequisite: VET MED 587. Supplemental core course for DVM students; anatomy and physiology of pain; recognition and treatment of pain in veterinary patients. S, M, F grading.
- 595 Internship in Veterinary Medicine** V 1-3 Work experience related to academic learning; under supervision of veterinary professionals and/or faculty. S, M, F grading.
- 596 Special Topics** V 1-4 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: Veterinary Medicine student. Professional leadership skill development for veterinarians. S, M, F grading.
- 597 Special Topics** V 1-4 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: Veterinary Medicine student. Special topics in veterinary medicine. S, M, F grading.
- 598 Introduction to Clinics** 1 (0-3) Course Prerequisite: Veterinary Medicine student. Introduction to the practice of clinical veterinary medicine and surgery within the Veterinary Teaching Hospital including records, presentation and protocol. S, M, F grading.
- 599 Special Problems** V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. S, M, F grading.
- 600 Scientific Writing and Presentation** 1 Course Prerequisite: Veterinary Medicine student. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, M, F grading.
- 603 Clinical Elective at Oregon State University** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Clinical medicine training in diseases of food animals and horses; clinic rounds and diagnostic procedures. S, M, F grading.
- 605 Small Animal Community Practice Medicine** V 1 (0-3) to 4 (0-12) Course Prerequisite: Veterinary Medicine student. Required clinical experience with the small animal community practice service in the small animal clinic of the Veterinary Medicine Hospital. S, M, F grading.
- 606 Small Animal Referral Medicine** V 1 (0-3) to 4 (0-12) Course Prerequisite: Veterinary Medicine student. Required clinical experience with the small animal referral medicine service in the small animal clinic of the Veterinary Medicine Hospital. S, M, F grading.
- 607 Small Animal Soft Tissue Surgery** V 1 (0-3) to 4 (0-12) Course Prerequisite: Veterinary Medicine student. Required clinical experience with the soft tissue surgery service in the small animal clinic of the Veterinary Medicine Hospital. S, M, F grading.
- 608 Small Animal Orthopedic Surgery** V 1 (0-3) to 14 (0-42) Course Prerequisite: Veterinary Medicine student. Required clinical experience with the small animal orthopedic surgery service in the small animal clinic of the Veterinary Medicine Hospital. S, M, F grading.
- 609 Small Animal Clinical Neurology** V 1 (0-3) to 4 (0-12) Course Prerequisite: Veterinary Medicine student. Required clinical experience with the small animal neurology service in the small animal clinic of the Veterinary Medicine Hospital. S, M, F grading.
- 611 Small Animal Orthopedic Surgery Elective** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical experience with the Small Animal Orthopedic Surgery Service in the Small Animal Clinic, Veterinary Teaching Hospital. S, M, F grading.
- 612 Small Animal Soft Tissue Surgery Elective** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical experience with the Small Animal Soft Tissue Surgery Service in the Small Animal Clinic of the Veterinary Teaching Hospital. S, M, F grading.
- 613 Small Animal Referral Medicine Elective** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical experience with the Small Animal Medicine Referral Practice Service in the Small Animal Clinic of the Veterinary Teaching Hospital. S, M, F grading.
- 614 Small Animal Community Practice Elective** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical experience with the Small Animal Medicine Local Practice Service in the Small Animal Clinic, Veterinary Teaching Hospital. S, M, F grading.
- 615 Small Animal Medicine - Special Topics** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical experience in a specialty practice area of small animal clinical medicine or surgery. S, M, F grading.
- 616 Exotic Animal Medicine** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical experience with the Small Animal Medicine Exotic Practice Service in the Small Animal Clinic, Veterinary Teaching Hospital. S, M, F grading.
- 617 Small Animal Clinical Neurology Elective** V 1-3 Course Prerequisite: Veterinary Medicine student. Rotation will emphasize neuroanatomical localization, differential diagnosis, diagnostic testing, and treatments. S, M, F grading.
- 620 Clinical Oncology** V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Veterinary Medicine student. Diagnosing, staging and treating the veterinary cancer patient. S, M, F grading.
- 621 Clinical Cardiology** V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Veterinary Medicine student. Basics in physical assessment, diagnosis and treatment of common cardiac disorders. S, M, F grading.
- 628 Equine Surgery Clinical Rotation** V 2-6 Course Prerequisite: Veterinary Medicine student. Required rotation through the Equine Surgery Services of the Veterinary Teaching Hospital. S, M, F grading.
- 629 Equine Medicine Clinical Rotation** V 2-6 Course Prerequisite: Veterinary Medicine student. Required rotation through the Equine Medicine Services of the Veterinary Teaching Hospital. S, M, F grading.
- 630 Agricultural Animal Clinical Rotation** V 2-6 Course Prerequisite: Veterinary Medicine student. Elective rotation for Agricultural Animal Medical, Surgical, and Ambulatory Service of the Veterinary Teaching Hospital. S, M, F grading.
- 631 Population Medicine** V 1 (0-3) to 4 (0-12) Course Prerequisite: Veterinary Medicine student. Required rotation for agricultural animal species emphasis through the population medicine laboratory of the Veterinary Teaching Hospital. S, M, F grading.
- 632 Large Animal Theriogenology - Special Topics** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical theriogenology subjects in large animals. S, M, F grading.
- 633 Agricultural Animal Special Topics** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical subjects in food animal diseases and herd health/preventive medicine. S, M, F grading.

- 635 Preventive Medicine at Canine Center** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Preventive medicine and management practices related to control of animal diseases at Canine Center, UI, Caldwell Idaho. S, M, F grading.
- 636 Equine Medicine Elective** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical experience with the Equine Medicine Service in the Large Animal Clinic of the Veterinary Teaching Hospital. S, M, F grading.
- 637 Equine Surgery Elective** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical experience with the Equine Surgery Service in the Large Animal Clinic, Veterinary Teaching Hospital. S, M, F grading.
- 638 Equine Track** V 1-4 Course Prerequisite: Veterinary Medicine student. Clinical experience with the Equine Surgery Service of the Large Animal Clinic, Veterinary Teaching Hospital. S, M, F grading.
- 650 Anesthesia Case Management** V 1-4 Course Prerequisite: Veterinary Medicine student. Required rotation through the Clinical Anesthesia Service of the Small Animal Clinic and Large Animal Clinic of the Veterinary Teaching Hospital. S, M, F grading.
- 651 Pharmacy and Therapeutics** 1 Course Prerequisite: Veterinary Medicine student. One-week overview of Washington and federal drug laws, inventory control, formulary management, therapeutics for a successful practice. S, M, F grading.
- 652 Technical and Diagnostic Radiology** V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Veterinary Medicine student. Laboratory exercises and instructional sessions to increase proficiency in clinical diagnostic radiology. S, M, F grading.
- 653 Imaging Services Elective** V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical and laboratory experience with the Radiology Section in the Small Animal Clinic, Veterinary Teaching Hospital. S, M, F grading.
- 656 Diagnostics** V 1-4 Course Prerequisite: Veterinary Medicine student. Advanced study in diagnostic pathology, toxicology, and microbiology. S, M, F grading.
- 657 Clinical Pathology** V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Veterinary Medicine student. Clinical laboratory diagnosis and interpretation. S, M, F grading.
- 673 Small Animal Critical Care** V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical experience, didactic topic discussions, and instructional sessions in small animal critical care. S, M, F grading.
- 674 Small Animal Intensive Care** V 1 (0-3) to 4 (0-12) Course Prerequisite: Veterinary Medicine student. Required rotation for all students through the small animal intensive care unit. S, M, F grading.
- 675 Emergency and Critical Care** V 1-4 Course Prerequisite: Veterinary Medicine student. Required rotation for all students through the large animal emergency and critical care unit. S, M, F grading.
- 676 Veterinary Research Practicum** V 1-8 May be repeated for credit; cumulative maximum 14 hours. Course Prerequisite: Veterinary Medicine student. Individualized research project. S, M, F grading.
- 690 Externship** V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Veterinary Medicine student. Theory of practice of veterinary medicine in a non-university situation. S, M, F grading.
- 691 Guided Preceptorship** V 1-4 Course Prerequisite: Veterinary Medicine student. Guided preceptorship in an accepted extramural clinical or laboratory setting. S, M, F grading.
- 692 Government, Corporate, and Zoological Practice Elective** V 1-6 May be repeated for credit; cumulative maximum 10 hours. Course Prerequisite: Veterinary Medicine student. Elective experience in government, corporate, and zoological veterinary medicine arranged through nationwide matching program. S, M, F grading.
- 693 Laboratory Animal Medicine** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Elective clinical and laboratory experience with major research facilities such as the Department of Comparative Medicine, University of Washington. S, M, F grading.
- 694 Avian Medicine** V 1-4 Course Prerequisite: Veterinary Medicine student. Laboratory diagnosis and pathology of avian (pet bird and commercial fowl) diseases. S, M, F grading.
- 698 Special Topics** V 1-4 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: Veterinary Medicine student. Special clinical topics or opportunities in veterinary medicine. S, M, F grading.
- 699 Advanced Clinical Special Topics** V 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Advanced clinical subjects developed as courses for fourth year veterinary students. S, M, F grading.

Department of Veterinary Clinical Sciences

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509-335-0738

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Description of Courses

VETERINARY CLINICAL MEDICINE AND SURGERY

VET CLIN

- 361 Agricultural Animal Health** 3 Course Prerequisite: One ANIM SCI or BIOLOGY course. Introduction to basic concepts of infectious, noninfectious, and parasitic diseases of animals of agricultural and public health importance.
- 367 Medical and Surgical Problems in the Horse** 3 Basic health care of horses with respect to good health care and recognizing and responding to disease and injury situations.
- 498 Nihon University Seminar** 2 (1-3) Course Prerequisite: By permission only; fourth or fifth year veterinary DVM students from Nihon University. Lectures and laboratory sessions in small animal, exotic animal, and equine veterinary medicine and surgery. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. Cooperative: Open to UI degree-seeking students. S, F grading.
- 565 Oncology Journal Seminar** 1 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Small group discussion of veterinary literature, peer-reviewed literature and textbooks covering biological basis of cancer diagnosis, therapy and treatment. S, F grading.
- 570 Special Topics** 1 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Weekly small group discussions of problems in clinical veterinary medicine, surgery, or reproductive sciences using current literature and recent cases from Veterinary Teaching Hospital.
- 573 Special Topics in Equine Surgery** 1 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Small group discussion and periodic laboratory/practical experience related to large animal surgery.

- 574 Cardiology Special Topics 1** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Clinical cardiology topics and special problems; current medical or interventional information.
- 576 Introduction to Veterinary Clinical Research 2** Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Designing, executing, analyzing and reporting clinical research fundamental to practicing evidence-based medicine.
- 577 Applied Veterinary Physiology I 2 (0-2)** Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Review of physiology as it relates to clinical veterinary medicine and specific diseases of animals through analysis of recent medical literature.
- 578 Applied Veterinary Physiology II 2** Course Prerequisite: VET CLIN 577; admission to the MS or PhD in Veterinary Science program. Continuation of VET CLIN 577.
- 579 Oncology Rounds Seminar 1** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Presentation and discussion of veterinary oncology cases include imaging, pathology, clinical pathology, appropriate diagnostic steps, therapy options and potential outcomes. S, F grading.
- 580 Advanced Clinical Pathology 1** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Weekly small group discussion of laboratory and cytologic abnormalities in recent cases from the Veterinary Teaching Hospital.
- 582 Seminar in Clinical Medicine 1** May be repeated for credit. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program.
- 584 Comparative Theriogenology V 1-2** May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. 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 V 1-2** May be repeated for credit; cumulative maximum 10 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Advanced veterinary neurology as applied to clinical practice.
- 586 Diagnostic Ultrasound 2** Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Diagnostic ultrasound and its application to clinical medicine in large and small animals.
- 587 Hospital Rotation 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Supervised practical experience in all service areas of the veterinary hospital. Cooperative: Open to UI degree-seeking students.
- 589 Advanced Clinical Veterinary Medicine V 1-3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Special topics.
- 590 Special Topics in Equine Medicine 1** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Weekly small group discussion of problems in equine medicine, surgery or reproductive medicine using current or recent case material from the Veterinary Teaching Hospital.
- 591 Advanced Clinical Diagnosis V 1-3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Advanced course in systems clinical and laboratory examination.
- 592 Seminar 1** May be repeated for credit. Cooperative: Open to UI degree-seeking students. S, F grading.
- 593 Anesthesia Seminar 1** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Critical review of current topics in veterinary anesthesia.
- 596 Advanced Radiology 2 (1-3)** May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Advanced study in the field of veterinary radiology and radiation treatment.
- 597 Diagnosis and Treatment of Surgically Correctable Soft Tissue Diseases in Small Animals V 1-2** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Review of recent advances in diagnosis and treatment of diseases in the field of small animal surgery.
- 598 Surgery Residents Seminar 1** May be repeated for credit. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Surgery residents' and interns' presentations of case reports, literature reviews and research. S, F grading.
- 599 Critical Analysis of Veterinary Medicinal Information: Illusional Medicine 1** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Weekly small group discussion, lecture and critical analysis of medical information.
- 600 Special Projects or Independent Study V 1-18** May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. Cooperative: Open to UI degree-seeking students. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V 1-18** May be repeated for credit. Course Prerequisite: MS in Veterinary Science only. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.
- 702 Master's Special Problems, Directed Study, and/or Examination V 1-18** May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.
- 800 Doctoral Research, Dissertation, and/or Examination V 1-18** May be repeated for credit. Course Prerequisite: PhD in Veterinary Science only. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

Department of Veterinary Microbiology and Pathology

www.vetmed.wsu.edu/depts-vmp/
Bustad 402
509-335-6030

Professor and Department Chair, D. J. Prieur; Professors, P. Arasu, T. V. Baszler, T. E. Besser, W. C. Brown, W. C. Davis, W. J. Foreyt, S. A. Hines, D. P. Jasmer, D. P. Knowles, C. W. Leathers, S. Srikumaran; Associate Professors, K. A. Brayton, R. Crespo, R. H. Mealey, K. A. Potter, K. Snekyvik; Assistant Professors, T. Bankhead, D. Diaz-Campos, G. J. Halderson, K. K. Lahmers, A. O. T. Lau, A. Nicola, D. H. Shah, J. B. Stanton; Adjunct Faculty, J. F. Alderete, C. H. Bohach, S. Broschat, D.R. Call, G. H. Cantor, S. Carpenter, F. Cassirer, B. Charles, C. Chung, L. S. Fineman, K. Frandle, M. Garner, J. Gold, R. Hardy, L. Herrmann, M. E. Konkel, S. La Patra, M. Leslie, H. Li, T.F. McElwain, J. Mosqueda, A. J. Musoke, S. M. Noh, K. I. O'Rourke, G.H. Palmer, Y. H. Park, R. Roberts, G. A. Scoles, M. Slattum, D. M. Stone, C. Suarez, N. Taus, E. Trueblood, M. Ueti, P. Vellutini, S. White, N. Wolley.

Description of Courses

VETERINARY MICROBIOLOGY

VET MICR

499 Special Problems V 1-4 May be repeated for credit. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. Cooperative: Open to UI degree-seeking students. S, F grading.

535 Advanced Readings in Veterinary Microbiology 1 May be repeated for credit. Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Supervised reading program which peruses publications of intermediate technical difficulty and advanced textbooks.

541 Advanced Diagnostic Microbiology 1 (0-3) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: VET MED 534; VET MED 535; VET MED 536. 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 V 1-3 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: Open to UI degree-seeking students.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. Cooperative: Open to UI degree-seeking students. S, F grading.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: MS in Veterinary Science only. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: PhD in Veterinary Science only. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

VETERINARY PATHOLOGY

VET PATH

501 Case-based Learning in Veterinary Pathology V 1 (0-3) to 3 (0-9) Course Prerequisite: Admission to the MS or PhD in Veterinary Science program. Principles of pathophysiology, infectious disease, laboratory diagnosis, zoonoses, and food safety learned through the development of multistep teaching cases. 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; cumulative maximum 8 hours. Course Prerequisite: VET MED 546. Necropsy laboratory for techniques and skills in performing and interpreting necropsy material.

544 Immunopathology 4 Course Prerequisite: VET MED 545; VET MED 531. The role of immune processes in the pathogenesis of disease.

545 Mechanisms of Disease 4 Course Prerequisite: VET MED 545; VET MED 531. Biochemical and immunological mechanisms involved in disease processes from the comparative standpoint.

548 Introduction to Research 1 Introduction to research.

555 Research in Progress Seminar 1 May be repeated for credit; cumulative maximum 8 hours. Presentation of on-going student research project results.

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.

700 Master's Research, Thesis, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: MS in Veterinary Science only. Independent research and advanced study for students working on their master's research, thesis and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 700 credit. S, U grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: PhD in Veterinary Science only. Independent research and advanced study for students working on their doctoral research, dissertation and/or final examination. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 800 credit. S, U grading.

The WWAMI Medical Education Program

www.wwami.wsu.edu

Morrill 108

509-335-2602

Interim Director, J. Cloud; Professors, R. W. Brosemer, J. M. Mallatt; Associate Professor, R. Lane Brown; Clinical Associate Professor, P. F. Mixer; Clinical Assistant Professors, D. M. Conley, D. B. Topping; Clinical Affiliation, L. H. Fearn, S. Hall, D. Haynes.

The WSU WWAMI Program is an integral part of the Washington-Wyoming-Alaska-Montana-Idaho (WWAMI) Medical Education Program. Course work is established by the University of Washington School of Medicine. The entire program is taught in concert with the University of Idaho WWAMI Program. Courses are taught on both campuses with faculty from Washington State University and the University of Idaho taking part in each, all WWAMI students being taught as a single class. All WWAMI students are members of the first year class of the University of Washington School of Medicine, and all courses apply to the MD degree granted by that university.

Because of specialized support material required and the nature of course content, course enrollment is restricted. With the approval of the course director and the student's advisor, certain 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 the University of Washington School of Medicine policy, all MEDS courses are S, F graded.

Description of Courses

MEDICAL SCIENCE

MEDS

505 Medical Preceptorship 2 (0-4) Course Prerequisite: For WWAMI students only. First-year medical students gain experience and insight into medical practice situations; students are stationed in physician offices at WWAMI sites. S, F grading.

506 Seminar in Rural Health 1 Introduction for first-year medical students to primary care in rural environments. S, F grading.

510 Microscopic Anatomy 4 (3-3) Course Prerequisite: For WWAMI students only. Description and microscopic examination of cell types, tissues, and major organs of the human body. Cooperative: Open to UI degree-seeking students. S, F grading.

- 511 Anatomy and Embryology I** 5 (4-3) Course Prerequisite: For WWAMI students only. Presents formation and 3-dimensional relationships of major structures in the human body; human phenotype examined in dissection laboratory and living anatomy; focus is on trunk anatomy. (Fall only) Cooperative: Open to UI degree-seeking students. S, F grading.
- 512 Mechanisms in Cellular Physiology** 3 Course Prerequisite: For WWAMI students only. Fundamental cell physiology mechanisms: ionic, electrical gradients, sensory receptors, autonomic nervous system, energy metabolism, epithelial transport; gastrointestinal motility and secretions. (Fall only) Cooperative: Open to UI degree-seeking students. S, F grading.
- 513 Introduction to Clinical Medicine I** 1 Course Prerequisite: For WWAMI students only. Instruction in communications skills and interview techniques to form the basis for the eventual doctor-patient relationship. Cooperative: Open to UI degree-seeking students. S, F grading.
- 514 Biochemistry I** 3 Course Prerequisite: For WWAMI students only. Focus on genome information, gene functions, genetic information stored, mobilized, and used, regulation, molecular medicine, genomic therapies. (Fall only) Cooperative: Open to UI degree-seeking students. S, F grading.
- 516 Systems of Human Behavior** 3 Course Prerequisite: For WWAMI students only. Physical and psychological development of the individual; conceptual systems and models of behavior related to medicine. Cooperative: Open to UI degree-seeking students. S, F grading.
- 522 Introduction to Clinical Medicine II** 2 Course Prerequisite: For WWAMI students only. Communication skills as related to patients and dealing with problem identification and patient history. Cooperative: Open to UI degree-seeking students. S, F grading.
- 523 Introduction to Immunology** 2 Course Prerequisite: For WWAMI students only. Principles of immunology and their relationship to human medicine. Cooperative: Open to UI degree-seeking students. S, F grading.
- 524 Biochemistry II** 2 Course Prerequisite: For WWAMI students only. Continuation of MEDS 514P. Cooperative: Open to UI degree-seeking students. S, F grading.
- 531 Anatomy and Embryology II** 5 (4-3) Gross anatomy; focus on head and neck anatomy, including skull, pharynx, and larynx; audition and balance. Continuation of MEDS 511P. Cooperative: Open to UI degree-seeking students. S, F grading.
- 532 Nervous System** 5 (4-3) Normal structure and function of the nervous system, including the eye. Cooperative: Open to UI degree-seeking students. S, F grading.
- 534 Microbiology and Infectious Disease** 6 (5-3) Biology of microbial pathogens and the mechanisms of pathogenesis; clinical manifestations, epidemiology and general principles of diagnosis, therapy and prevention of infectious disease. S, F grading.
- 535 Introduction to Clinical Medicine III** 2 (1-2) Course Prerequisite: For WWAMI students only. The screening physical examination. Cooperative: Open to UI degree-seeking students. S, F grading.
- 540 Introduction to Cardiovascular Medicine** 4 Course Prerequisite: Successful completion of first-year core curriculum. Introduction to cardiovascular medicine in preparation for caring for patients in hospitals and clinics. S, F grading.
- 541 Respiratory** 3 Course Prerequisite: Successful completion of first-year core curriculum. Scientific foundations that underlie the function of the respiratory system. S, F grading.
- 542 Introduction to Clinical Medicine IIA** 3 Course Prerequisite: Successful completion of first-year core curriculum. Continued instruction in communications skills and interview techniques to form the basis for the eventual doctor-patient relationship. S, F grading.
- 543 Principles of Pharmacology I** 3 Course Prerequisite: Successful completion of first-year core curriculum. In-depth physiology and pathophysiology of systems and the relevant pharmacology as it applies to these systems. S, F grading.
- 547 Pathology IIA** 3 Course Prerequisite: Successful completion of first-year core curriculum. The pathogenesis of disease; cellular and molecular changes that lead to expression of a disease. S, F grading.
- 548 Clinical Ethics** 1 Course Prerequisite: Successful completion of first-year core curriculum. Clinical ethics and tools for ethical reasoning that support current and future work. S, F grading.
- 550 Introduction to Clinical Medicine IIB** 3 Course Prerequisite: MEDS 542. Continued instruction in communications skills and interview techniques to form the basis for the eventual doctor-patient relationship. S, F grading.
- 551 Gastrointestinal** 3 Course Prerequisite: Successful completion of first-year core curriculum. The gastrointestinal system and associated problems with this system. S, F grading.
- 552 Hematology** 2 Course Prerequisite: Successful completion of first-year core curriculum. Development and function of blood and the pathophysiology of the different types of disorders dealing with blood. S, F grading.
- 553 Anatomy and Embryology - Musculoskeletal** 3 Course Prerequisite: For WWAMI students only. Anatomy and clinical lectures, gross anatomy labs, living anatomy/clinical correlation. Cooperative: Open to UI degree-seeking students. S, F grading.
- 554 Genetics** 1 Course Prerequisite: Successful completion of first-year core curriculum. Principles of genetics and how they are utilized in current medical practice. S, F grading.
- 555 Medicine, Health, and Society** 2 Course Prerequisite: Successful completion of first-year core curriculum. Health policy and public health and the relation to practicing medicine. S, F grading.
- 556 Hormones and Nutrients** 3 Course Prerequisite: Successful completion of first-year core curriculum. Hormone production and function, nutrients, and the pathology and clinical manifestations of endocrine and metabolic diseases. S, F grading.
- 557 Pathology IIB** 1 Course Prerequisite: MEDS 547. Introduction of pathology in preparation for caring for patients in hospitals and clinics. S, F grading.
- 558 Rheumatology** 1 Course Prerequisite: Successful completion of first-year core curriculum. Immunology, anatomy, and introduction to clinical medicine to what will be seen in later medical education in clerkship rotations. S, F grading.
- 560 Introduction to Clinical Medicine IIC** 3 Course Prerequisite: MEDS 550. Continued instruction in communications skills and interview techniques to form the basis for the eventual doctor-patient relationship. S, F grading.
- 562 The Urinary System** 3 Course Prerequisite: Successful completion of first-year core curriculum. Anatomy, physiology, and pathophysiology as it relates to the urinary tract. S, F grading.
- 563 Brain and Behavior** 2 Course Prerequisite: Successful completion of first-year core curriculum. Major psychiatric disorders defined; a systemic approach to differential diagnosis. S, F grading.
- 564 Principles of Pharmacology II** 2 Course Prerequisite: Successful completion of first-year core curriculum. Introduction to drugs used to treat behavioral disorders, neurological disorders, and pain. S, F grading.
- 566 Pathology IIC** 2 Course Prerequisite: MEDS 557. Perinatal pathology with focus on patients between conception and early infancy; encompasses the transition from a 'parasitic' existence in utero to independent viability outside the womb. S, F grading.
- 567 Dermatology/Skin System** 1 Course Prerequisite: Successful completion of first-year core curriculum. Anatomy, biochemistry, physiology, pathology, and immunology of the skin. S, F grading.
- 590 Medical Information for Decision Making** 1 Course Prerequisite: For WWAMI students only. Medical literature for the purpose of primary research, diagnosis and therapeutic and preventative intervention. Cooperative: Open to UI degree-seeking students. S, F grading.
- 600 Special Projects or Independent Study** V 1-6 May be repeated for credit; cumulative maximum 6 hours. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

Appendix—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.

UNDERGRADUATE ADMISSION REQUIREMENTS

1. GENERAL REQUIREMENTS

- (a) To be eligible for admission to Washington State University, an applicant must be a high school graduate or its equivalent, or have completed a more advanced transferable credential from a regionally accredited college or university (e.g., a transferable Associate of Arts or Associate of Science degree).
- (b) The total number of new students admitted for any one semester will be based on the number of students for whom facilities can be made available.
- (c) Appeal of admission decisions may be made only to the Admissions Subcommittee of the Academic Affairs Committee or its designee.
- (d) Anyone seeking admittance to the Graduate School must follow procedures in the Graduate School Policies and Procedures Manual available in the Graduate School.
- (e) The university reserves a limited number of spaces in the incoming class for the admission of students with extraordinary talents. Refer to the admission of students with extraordinary talents component of the Admissions policies section of the university catalog.

2. FRESHMAN REQUIREMENTS. Freshman applicants are considered for admission based on required high school courses completed, grade point average and the results of the Washington Pre-College Test (WPCT), if taken prior to June 1, 1989, Scholastic Aptitude Test (SAT), or the American College Test (ACT), and personal statement. On the basis of these criteria, the most qualified applicants are offered admission.

Applicants are required to submit a high school transcript showing completion of the following:

English:	4 credits (3 of which must be composition and literature).
Mathematics:	3 credits of college preparatory mathematics (one year of geometry and two years of algebra, including an introductory component of trigonometry). Additional mathematics is strongly recommended.
Science:	2 credits of laboratory science, including one credit of algebra-based science (typically chemistry or physics).
Social Science:	3 credits.
World Languages:	2 credits of the same world language, Native American language, or American Sign language.
Fine Arts:	1 credit of fine, visual, or performing arts, or one additional credit of academic elective.

Applicants from unaccredited high schools should contact the Director of Admissions.

ADVANCED STANDING (Transfer Applicants)

4. TRANSFER REQUIREMENTS

- (a) Applicants who have completed a transferable Associate's degree from a regionally accredited post-secondary institution will be admitted as space allows.
- (b) Applicants without a transferable Associate's degree, but with at least 27 semester (40 quarter) hours of transferable credit from a regionally accredited post-secondary institution normally will be admitted as space allows provided they have at least a 2.5 cumulative grade point average.

Applicants whose cumulative grade point average is lower than a 2.5 may have their academic record reviewed more comprehensively to determine admission eligibility.

- (c) Applicants with fewer than 27 semester (40 quarter) hours of transferable credit will be considered for admission if they also meet the freshman requirements. Applicants whose cumulative transfer grade point average is lower than a 2.5 may have their academic record reviewed more comprehensively to determine admission eligibility.
 - (d) In evaluating admission credentials of students with transfer work whose cumulative transfer grade point average is below a 2.00, all of the post-secondary transfer credit from a previous institution may be disregarded, provided the work was completed not less than four years before the time of enrollment at Washington State University. Application of this policy is contingent upon the evidence of extenuating circumstances that present a significant probability of future academic success. The Faculty Admissions Subcommittee or its designee in the Office of Admissions will consider these admission requests. After the student has completed 15 semester hours of satisfactory work at WSU, the student may petition to restore the credits previously withheld. All credit earned in courses graded C or better will be considered for restoration and, if approved, only the courses and credit (not grades or grade points) will be restored.
- 6. TRANSFER CREDIT.** (See Rule 114)
- a) Colleges and universities must be regionally accredited for college-level academic transfer credit to be awarded.
 - b) Ninety semester hours shall be the maximum allowed by transfer toward a four-year degree, and 120 semester hours shall be the maximum amount allowed by transfer toward a five-year degree.
 - c) The maximum combined lower-division transfer credit allowed from regionally accredited institutions, CLEP (College Level Examination Program), AP (Advanced Placement), IB (International Baccalaureate), and military credit shall be 73 semester hours toward a baccalaureate degree irrespective of when those hours were earned.
 - d) Two full years of credit and completion of lower-division University Common Requirements (UCOREs) normally will be granted to students who have been awarded the Direct Transfer Associate (DTA) degree from a Washington community college. The Associate of Arts—Oregon transfer degree from an Oregon community college guarantees completion of the lower-division University Common Requirements (UCOREs), but does not guarantee junior standing or 60 semester credits. Certain approved Associate's degrees from Arizona, California, Hawaii, and Idaho may also be considered to have fulfilled the lower-division University Common Requirements (UCOREs) for graduation, but do not guarantee junior status (60 semester credits). For details on specific degrees consult the Office of Admissions.
 - e) Students who have completed at least 70 transferable quarter credit hours toward completion of an approved AA degree may complete the Direct Transfer Associate (DTA) degree from a Washington or Oregon two-year college after their initial enrollment at WSU.
 - f) Students who have completed the Associate of Science Transfer (AST) degree from a Washington community college will receive the same priority consideration for admission to the baccalaureate institution as they would for completing the direct transfer associate degree and will generally be given junior status. Additional University Common Requirements, cultural diversity, and/or world language requirements, as required by Washington State University, must be met prior to the completion of a baccalaureate degree. Students are responsible for checking specific major requirements in the year prior to transferring.
 - g) Completion of lower-division University Common Requirements (UCOREs) will be granted to students, who have completed all of the lower-division general education curriculum at another regionally accredited Washington baccalaureate institution, provided the sending institution so certifies.

9. GRADE POINTS REQUIRED. Students entering with advanced standing must earn twice as many grade points for graduation as the number of hours which they have enrolled in this or any other institution.

14. **CREDIT FROM INSTITUTIONS WITHOUT REGIONAL ACCREDITATION.** Students who have taken college-level, academic work at institutions that are not regionally accredited but are nationally accredited may petition for transfer of appropriate credits. Petitions may be filed after the student has completed a minimum of one semester (minimum of 15 credits) of satisfactory work at Washington State University. To receive credit, a student must have earned a minimum grade of C in the course for which he or she is requesting transfer credit. Petitions are reviewed and approved first by the Department Chair and then by the College Dean from the unit that offers courses in that discipline. The Vice Provost or designee reviews and approves petitions in cases where there is no equivalent WSU unit. Following approval by the Department and College (or Vice Provost or designee), the petition is then forwarded to the Chair of the Admission Subcommittee for review and approval. Students may contact the Office of Admissions for more information.

15. **CREDIT BY EXAMINATIONS.** Subject to standards established in consultation with academic departments concerned, credit may be granted to entering or enrolled undergraduate or professional students via various means including external examinations, institutional examinations, and approved military service schools. WSU does not accept credit by examination granted by other institutions. Credits by examination shall yield no grade points. Such credits may partially fulfill University Common Requirements (UCOREs) for graduation. The maximum combined lower-division transfer credit allowed from regionally accredited institutions, AP, CLEP, IB and military credit shall be 73 semester hours toward a baccalaureate degree irrespective of when those hours were earned. External examinations will include but not be limited to:

Advanced Placement (AP) Program examinations of the College Entrance Examinations Board; general and subject College Level Examination Program (CLEP); and the International Baccalaureate (IB).

Students may request to take a course at WSU for which they have been awarded AP, IB, or CLEP credit. Prompted by the request, the AP, IB, or CLEP credit is removed from the overall credits awarded by WSU. Only the subsequent enrollment in the WSU course will contribute to the total hours earned and grade point average; the AP, IB, or CLEP credit cannot be reconsidered for credit for the same course again. Students submit the request to ask for the WSU course to be allowed and for the AP credit to be omitted to the Registrar's Office.

- (a) **Advanced Placement Program.** Credit for AP examinations will be granted in an amount equal to the 100-200-level course or courses in the particular discipline tested, as approved by the specific academic department. The acceptable score for receiving credit is published online at <http://www.wsu.edu/future-students/admission/advanced-placement.html>.
- (b) **College Level Examination Program (CLEP).** General and Subject Examinations: Credit for CLEP will be granted if the examination is passed with scores established by the department concerned in consultation with the Director of Admission. Credit will be granted for scores at the 50th percentile or above. Credit will be granted for the comparable Washington State University course, or elective credit may be granted. Not more than 6 semester hours of credit will be granted for each examination. Contact the Office of Admissions for specifics.
- (c) **Challenge Examinations.** Matriculated students currently registered at Washington State University, with permission of their advisor or department chairperson and of the chairperson of the department offering the course, may take challenge examinations for university credit in courses in which they are not registered. Students may not take challenge examinations in courses which they have audited, or in which they have received a final grade. Upper-division students may not receive credit by challenge examination in lower-division courses in their major field. Undergraduate students may not receive credit by challenge examination in any course prerequisite to a course in which they are enrolled or have received a final grade. The maximum credit for challenge examinations is 30 semester hours unless permission is obtained from the student's academic dean. Contact Student Accounts for information regarding the cost of the challenge examination.
- (d) **Military Credit.** Lower-division elective credit only will be granted for satisfactory completion of:
 - (1) Military service schools in the amount recommended by the American Council of Education in the publication, *Guide to the Evaluation of Educational Experiences in the Armed Forces*.
 - (2) United States Armed Forces Institute correspondence courses (under the rules applicable to other correspondence work).

- (3) **DANTES Credit:** Elective credit for DANTES Subject Standardized Tests (DSSTs) will be granted for college-level academic subjects (non-vocational/technical courses) using the minimum score and credit amount recommendations of the American Council on Education.
- (e) **Peace Corps and Volunteers in Service to America (VISTA) Credit** for training in the Peace Corps or VISTA will be granted for having completed specific courses, under regular catalog course numbers, as shown on a regular transcript from an accredited college or university.
- (f) **Other Test Programs.** Credit for other testing programs such as the Washington Pre-College Test Program and WSU departmental placement examinations will be granted in accordance with policies established by the university and academic departments.

AUDITING CLASSES

20. **PERMISSION TO AUDIT.** An auditor is a class visitor permitted on a space-available basis to observe class discussions but not take examinations or consume the instructor's time. Attendance in class beyond three visitations requires official approval on the Request for Permit to Audit card. Students may seek permission, after the start of classes, to audit a lecture course by securing the approval of the class instructor. Those wishing to audit or change from credit to audit must pay the appropriate fee and submit the signed audit card to the Office of the Registrar before the end of the fourth week of instruction in the semester. An enrollment change from audit to credit is limited to the first two weeks of instruction. A maximum of two audits are allowed for any semester or term. A registration fee per audit hour is charged for any semester or term for other than regularly enrolled full-fee-paying students. Senior citizens are exempt from this fee under the provisions of RCW 28B.15.540, provided the prescribed eligibility requirements are met. Personnel who have received authorization for the faculty/staff fee waiver are exempt from the audit fee up to 6 hours (including audits) in any one semester or 4 hours (including audits) in the summer session. Said limitation includes any combination of credit and audit hours. Audit fee is non-refundable.

21. **NO CREDIT FOR AUDITING.** No university credit will be allowed for auditing courses, nor may students apply for or take special examinations for university credit in courses which they have audited. Students may not take challenge examinations (see Rule 15c) in courses they have audited. (Audit enrollments will be recorded on the student's permanent record by listing the departmental prefix, course number and the statement, "OFFICIAL AUDIT NO CREDIT.")

23. **MAKE-UP HOURS FOR UNIVERSITY HOLIDAYS.** The presence of our one-day holidays in the academic calendar leads to fewer days of instruction for certain classes. Instructors have authority to require students to make-up lecture and laboratory contact hours, including scheduling such hours on evenings and Saturdays, whenever university holidays create unequal opportunities and time demands for students enrolled in the course. The make-up hours for a given course or section must be identified in the WSU Schedule of Classes and also in the course syllabus.

CLASS STANDING OF STUDENTS

25. **CLASS STANDING.** First-Year Student Standing—below 30 semester hours; Sophomore Standing—30 to 59 1/2 hours; Junior Standing—60 to 89 1/2 hours; Senior Standing—90 and above hours.

CREDIT

27. **CREDIT DEFINITION.** Academic credit is a measure of the total minimum time commitment required of a typical student in a specific course. For the WSU semester system one semester credit is assigned for a minimum of 45 hours. The expected time commitment may include: 1) time spent in scheduled course activities organized by an instructor (lectures, discussions, workbooks, videotapes, laboratories, studios, fieldwork, etc.); 2) time spent in group activities related to course requirements; and 3) time spent in reading, studying, problem solving, writing, and other preparations for the course. The minimum in-class time commitment, based on a fifteen-week semester and a traditional format, should follow these guidelines: 1) lecture--one hour of lecture per week for each credit hour; 2) laboratory--three hours of laboratory per week for each credit hour; 3) studio--two hours of studio work per week for each credit hour; 4) ensemble--four hours of ensemble work per week for each credit hour. The

minimum time commitment for independent study is three hours of work per week for each credit hour. Courses taught in different time frames than the fifteen-week semester or in a different format need to define how the time commitment leads to the achievement of stated course goals. Achievement of course goals may require more than the minimum time commitment.

28. **HIGH SCHOOL STUDENTS.** High school students may enroll at Washington State University provided they are admitted to the university and pay the appropriate fees. Such enrollments may be for high school or university credit or both. For fall and spring semesters, all eligible high school students enroll through Running Start. For Summer Session, special fees may apply.

29. **WORK FROM HIGH SCHOOLS AND VOCATIONAL BUSINESS COLLEGES.** No university credit shall be given for work from high schools or vocational business colleges. Recognized exceptions are College Board Advanced Placement (AP) and International Baccalaureate (IB), for which official score reports are required to award credit. Students are awarded transfer credit for Running Start (RS), College in the High School (CHS) and similar programs only when official college transcripts are presented. Credit is not granted on the basis of the high school transcript.

31. **CREDIT TO HIGH SCHOOL STUDENTS FOR COURSES COMPLETED PRIOR TO HIGH SCHOOL GRADUATION.** Washington State University encourages students to complete rigorous college preparatory courses in high school, or to take college courses while in high school if they have adequate preparation. In some cases college credit may be awarded when consistent with the following criteria.

- (a) High School Courses: Some high schools may offer instruction at the college level, and when consistent with university and academic department policies, college credit will be awarded if student achievement is validated by an approved national examination such as Advanced Placement or International Baccalaureate, or a review or examination administered by the university.
- (b) Running Start Program:
 - (1) Credit will be awarded for college courses taken prior to high school graduation when such courses are completed through the state of Washington's Running Start Program.
 - (2) Courses offered by Washington State University to high school students participating in Running Start will have an enrollment of at least 70% of regularly admitted students in each course section.
- (c) Other Courses: College credit may be awarded for courses taken in high school when consistent with the following conditions:
 - (1) The course must also be currently available on the campus of the regionally accredited college or university and must be listed in the college or university catalog. The course, regardless of setting, must use the college or university curriculum.
 - (2) Students interested in credit must register and pay fees at the beginning of the term and would be subject to the same grading and tuition refund policies as students on the campus of the regionally accredited college or university.
 - (3) The faculty teaching the course in high school must carry a regular or adjunct faculty appointment at the regionally accredited college or university.
 - (4) The students taking the course in the high school must be assessed and graded in the same manner as students taking the course on the campus of the regionally accredited college or university. Student work, whether completed for the course offered on-campus or at the high school, must be graded and evaluated by the same standards.

34. **REPEAT COURSES.** Students may repeat a course in which they have received a grade of C- or below, or a withdrawal (W), or when a course may be repeated for additional credit. Students may enroll more than once in the same course in any given term (fall, spring, or summer) provided that the particular periods of enrollment do not overlap and that other conditions for allowed repeats are met.

- a. Repeating courses graded C- or below. To attempt to improve the cumulative grade point average, a student may repeat courses in which a C- or below was received. When such a course is repeated, only the last grade contributes to the grade point average and total hours earned. Students may repeat a course graded C- or below one time at WSU. Additional repeats are allowed at WSU by special permission of the

academic unit offering the course. Repeats are allowed as transfer credit from another institution. However, the series of repeats and grades is retained on the student's academic record.

1. Only courses identified as acceptable equivalents according to the appropriate department, the Transfer Guide, or the Admissions Office are treated as repeats. If courses deemed equivalent in content differ in credit hours, the credit hours of the repeat course supersede the credit hours of the original course.
 2. Once a student has graduated from WSU, repeated courses cannot change the pre-degree transcript.
- b. Repeating for additional credit.
 1. Some courses have been approved for repeat credit, i.e., the student may re-enroll in the course during a subsequent term and credit may be accumulated. Such courses are designated in the WSU catalog as "May be repeated for credit" and will list the maximum credit limitation.
 2. Courses which have been approved for repeat credit, such as topics, may offer multiple sections of a course during any one term. Students may enroll in more than one section of these courses in any one term provided that the specified particular topics and titles differ.

UNDERGRADUATE ACADEMIC DEFICIENCY

35. Washington State University expects students to maintain academic standards of excellence and make satisfactory academic progress toward their degree objectives. Undergraduate students are in good academic standing if both their current WSU semester and cumulative grade point averages are 2.00 or above, and/or they are eligible to be enrolled. Students not meeting the criteria above are considered academically deficient.

38. Undergraduate students whose semester (excluding summer session) or cumulative grade point average drops below a 2.0 for the first time must apply for reinstatement to continue their enrollment at Washington State University. Students are placed on academic probation after reinstatement. Certified majors on academic probation may be decertified by the academic department.

39. Undergraduate students are dismissed from the university after the third semester (excluding summer session) in which the cumulative grade point average is below 2.0. Individuals who are dismissed from the university may not enroll in courses at WSU, including online and courses on any WSU campus, for two full academic semesters. Dismissed individuals will also not be able to seek status as a "non-degree seeking student."

40. Former students may seek reinstatement after two semesters by completing the academic reinstatement petition process. Former students petitioning for academic reinstatement must, as part of the reinstatement petition process, provide documentation that demonstrates potential for academic success at WSU. If seeking reinstatement after more than two semesters, former students must also apply for readmission to the university through the Office of Admissions. All academic coursework from other institutions completed during dismissed status must be documented and official transcripts submitted to the Office of Admissions.

41. An undergraduate student who has been reinstated after becoming deficient under Rule 38 or 39 will be on academic probation. The specific conditions of enrollment for students who are on official probation will be determined by the interviewer or Review Board. Students on probation who fail to comply with the conditions of their probationary enrollment will be dismissed from the university.

42. Students enrolled in professional programs (e.g., clinical courses in nursing) that involve human health care may be subject to more stringent requirements in grading, repeating course work, and retention provided the more stringent requirements are approved through Faculty Senate channels and are published and are made available to students prior to certification. Students are referred to the nursing and pharmacy offices for specific requirements.

43. Former WSU students, dismissed under any academic deficiency rule, who have not been enrolled at WSU for four years or more may request at the time that they apply for readmission and reinstatement that all previous WSU work be disregarded. This includes all credits and grade points earned. Once the student is officially enrolled following the first day of the term, the

student's transcript will be marked to indicate that the previous work is not considered as credit earned. After the subsequent completion of 15 semester hours of course work with a cumulative grade point average of 2.0 or higher at WSU, the student may petition to restore credits earned in courses graded C or better. If approved, only the courses and credit, not grades or grade points, will be restored. Requests for reinstatement and petitions for credit restoration for former WSU students will be considered by the Review Board in Center for Advising and Career Development on the Pullman campus, WSU Online, or designated office on other campuses.

CONDUCT

45. Washington State University is guided by a commitment to excellence embodied in a set of core values. The university aims to create an environment that cultivates individual virtues and institutional integrity in the community. The mission of the university is supported when students uphold and take responsibility for the full scope of these values. The university's core values are identified in its strategic plan. Under the terms of enrollment, students acknowledge the university's authority to take disciplinary action for conduct on or off university property that is detrimental to the university's core values. Students who violate the university Standards of Conduct are subject to discipline, which may include temporary or permanent removal from the university. (See the Standards of Conduct for Students.)

46. **PENALTY FOR ACADEMIC DISHONESTY.** Cases of academic dishonesty shall be processed in accordance with the Academic Integrity Policy, as printed in the Student Handbook and the Faculty Manual and as available from the Office of Student Standards and Accountability.

ENROLLMENT, REGISTRATION, DROPPING COURSES, AND WITHDRAWALS

47. **PLACEMENT TESTS.** All students will be required to take the regulation placement tests as a prerequisite to enrollment in appropriate courses.

50. **PASS, FAIL GRADING OPTIONS.** Pass, fail options are available for undergraduate and graduate students. The advisor's approval is required for undergraduates. No courses designated as meeting University Common Requirements (UCOREs) may be taken pass, fail by any undergraduate. No more than two courses may be taken on a pass, fail basis during any given semester. Two courses is the limit for summer session.

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. Students in the College of Veterinary Medicine with advisor approval may enroll for a total of six courses in the professional curriculum on a pass, fail basis, subject to the regulations listed above. University Honors College courses may be taken on a pass, fail basis only with the permission of the University Honors College Dean.

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.

Allowances for transfer students are as follows:

Transfer status upon entering WSU—Pass, fail Allotment

1-44 credits six courses allowed pass, fail

45-59 credits five courses allowed pass, fail

60-74 credits four courses allowed pass, fail

75-89 credits three courses allowed pass, fail

90 and above credits two courses allowed pass, fail

A student may change a pass, fail enrollment to a regular letter-graded enrollment, or vice versa, during the first three weeks of classes in a semester. After the third week and through the last day of instruction in a semester (end of the 15th week), only a pass, fail enrollment can be changed to a letter-graded enrollment.

The P (pass) grades earned by pass, fail enrollees will not be included in computing the grade point average; however, F grades earned by pass, fail enrollees will be included in grade point average computations. 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 have the prerogative of requesting, from the Office of the Registrar, the letter grade for courses a prospective major has taken on a pass, fail basis. 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.

52. **PREREQUISITE COURSES.** All prerequisites shall be satisfactorily completed before the student may register in a course. The instructor may waive the prerequisite in the case of a student who has demonstrated competence or who has had academic experience equivalent to that represented by the prerequisite.

53. **MAJOR AND CERTIFICATION.** The undergraduate major is the in-depth field of study leading to the degree and includes a set of core courses that has been approved by the academic unit offering the major, as well as the college, and the Faculty Senate. The major represents approximately one-third of the credit hours required for the undergraduate degree, though some majors require a higher percentage of the total credit hours. While most majors lead to a degree that shares the same name, some majors lead to a degree with a broader title (e.g., an Accounting major leads to the Bachelor of Arts in Business Administration).

Certification requirements: Upon completion of 24 semester hours, and meeting department, program, or school certification requirements, a student may certify in an academic major with the approval of the appropriate academic department, program, or school, and upon notification to the Center for Advising and Career Development. Departments, programs, or schools may require additional criteria beyond the minimum 24 hours for certification and a grade point average higher than the minimum of 2.00. Typically, students with 60 or more semester hours should be certified into a major.

Consult the catalog for specific major and certification requirements.

54. **MINOR OR SECOND MAJOR.** An undergraduate or professional student who has completed 60 semester hours and is certified in a major may certify a minor or second major with the approval of the department offering the minor or second major. The student should consult with the department concerning hours and grade point requirements and an approved schedule of studies to meet such requirements. No student shall be required by their major to complete a minor, though the department may encourage students to complement the first major with a certificate, minor, or second major. Once requirements for the minor or second major are met and the student's first undergraduate degree has been conferred and posted to the transcript, the student's transcript will be updated to show these additional academic awards.

An undergraduate minor requires a minimum of 16 semester hours, 9 of which must be in upper-division work and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

A second major requires completion of departmental requirements for the major, exclusive of University Common Requirements (UCOREs). Note that second degrees have additional requirements. See Rule 118.

55. **CHANGE OF MAJOR.** A student may change from one department to another only on approval of the chairpersons of the departments or deans concerned.

56. **DECERTIFICATION AND RECERTIFICATION.** A certified major who becomes academically deficient under Rules 38 or 39 and is decertified by the major department or program will be eligible to recertify, on a space-available basis, when the cumulative and major grade point averages are at or above the minimum level required for certification into the department.

A certified major who falls below the minimum departmental requirements (approved by Faculty Senate) may be decertified by the department after two semesters of falling below that minimum. The department must notify the student at the end of the first semester and establish conditions in writing that must be met the second semester. If conditions are not met at the end of the second semester, documentation must be provided to the Center for Advising and Career Development along with the request to decertify a student.

57. **STUDENT PETITIONS FOR EXCEPTIONS TO ACADEMIC CALENDAR DEADLINES AND WITHDRAWAL LIMITS.** Students may, with the payment of a service fee, petition for exceptions to the academic calendar deadlines (e.g., withdrawal after the deadline) or petition for withdrawal from an individual course after the student has used the maximum number allowed. Petitions are considered only in the case of extraordinary circumstances such as a medical

emergency and require supporting documentation. Withdrawal also may be granted for a course if the withdrawal is recommended by the Director of Health and Wellness Services, the Director of Counseling Services, the academic dean of the unit in which the course is taught, or the academic Vice Chancellor or his or her designee because of illness or other documented extenuating circumstances.

Undergraduate and professional students may petition through the Registrar's Office or Office of Student Services. Graduate students may petition through the Graduate School. Requests for exceptions to the calendar deadlines must be made within two years of the date of enrollment in the course. Petitions for exception to the withdrawal limit must be filed by the end of the term in which the course was taken.

58. **PERMISSION TO REGISTER LATE.** A student may not register after the second week of any session, except with the permission of the Registrar.

61. **LATE SERVICE FEE.** A student who does not enroll before classes start or pay fees on or before the due date will be assessed a service charge. A charge of \$100.00 will be assessed to late registrations that occur after the tenth day of classes. Late payment fees will be assessed those who pay tuition and fees after the due dates.

66. **ADDING A COURSE.** Students may add course enrollments through the fifth day of the semester. (NOTE: If the course is being added pass, fail the approval of the student's faculty advisor is also required.)

After the fifth day of the semester, students may add course enrollments only with the permission of the instructor.

67. **DROPPING A COURSE.** A student may drop a course without record up to the end of the 30th day of the semester in which the course is offered or according to a prorated schedule for shorter academic terms.

68. **WITHDRAWAL FROM A COURSE.** An undergraduate or professional student may withdraw from a course after the 30th day of the regular term up through the end of the 13th week with these provisions:

- (a) At the end of each term, the number of withdrawals will be counted for undergraduate and professional students. Once four withdrawals have been used, no further withdrawals will be allowed in subsequent terms. Withdrawals that result from the cancellation of enrollment will not be counted. (For those entering WSU in fall 1998 through summer 2004, once six withdrawals have been used, no further withdrawals will be allowed in subsequent terms.)
- (b) After the withdrawal limit is reached, an undergraduate or professional student may, in exceptional circumstances, submit a petition through the Registrar's Office for an exception to the withdrawal limit. See Rule 57.
- (c) If a grade has been entered for a course, the grade may not be changed to a withdrawal without the instructor's consent.
- (d) Withdrawals do not reduce tuition charges or the total official hours of enrollment.
- (e) For academic calendars that vary from the regular 15-week term, a prorated schedule will be used to determine the withdrawal deadline.
- (f) The grade shall be marked W, and payment of the service fee shall be mandatory.

Graduate students who wish to request a course withdrawal after the 30th day must do so through the Graduate School.

70. **CANCELLATION OF ENROLLMENT.** Students who wish to withdraw from the institution and disenroll from all of their classes initiate the cancellation online through the Registrar's Office website, cancel.wsu.edu. Students seeking to cancel their enrollment after completing one or more courses may petition for an exception to the academic calendar deadlines in the event of extraordinary circumstances (see Rule 57).

- (a) Students canceling their enrollment during the first four weeks of the semester will have their permanent records marked "withdrew (date)." (Individual course enrollments will not be recorded.)
- (b) Students canceling their enrollment after the fourth week through the last day of instruction (end of the 15th week) will have their permanent records marked "withdrew (date)," and a grade of W will be recorded for each course enrollment.
- (c) Students on academic probation during the semester of their cancellation must obtain permission of the Center for Advising and Career Development to re-enroll.

ATTENDANCE

71. **ADMISSION TO CLASSES.** Instructors shall not permit a student to be enrolled in a class or admit a student more than three times as a visitor without an official enrollment notice.

72. **CLASS ATTENDANCE DURING THE FIRST WEEK TO ENSURE ENROLLMENT.** Students who have not attended class and laboratory meetings during the first week of the fall or spring semester, or according to a prorated schedule for shorter academic terms, will 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 who believe that they have extenuating circumstances which prevent their attendance during the first week should notify the Dean of Students or Student Services. That office will notify instructors of the absence and the reason for it. Instructors shall determine whether to accept the excuse, waive the absence, and permit make-up work.

73. **ABSENCES.** Absences impede a student's academic progress and should be avoided.

- (a) **UNIVERSITY SPONSORED.** Any student who is required to participate in off-campus, university-sponsored activities such as field trips, musical performances, judging teams, intercollegiate athletic events, etc., should obtain an official Class Absence Request form from the faculty or staff member supervising the off-campus activity. The form must contain specific information concerning the activity and date, be signed by the supervising faculty or staff member, and be submitted by the student at least one week in advance to the individual instructors of the student's classes. It is requested that a student not be penalized for absence from class provided a properly signed Class Absence Request form has been filed with the instructor prior to the absence. These university sponsored absences are subject to an instructor's attendance policy and are not intended to imply additional acceptable absences. In all instances, it is the student's responsibility to make up all work missed. Problem cases should follow the Academic Complaint Procedures, Rule 104.
- (b) **MILITARY SERVICE MEMBERS.** Students who are members of the National Guard or a reserve branch of a military service are occasionally required to miss class for weekend drills, active duty, and related responsibilities. In such a case, instructors should not penalize the student for the absences and should work with the student to make-up the missed assignment or examination. In each instance, it is the responsibility of the student to inform the instructor of the duty before the absence and complete the missed work as soon as reasonably possible.
- (c) **OTHER EXCUSED ABSENCES.** Students must sometimes miss examinations or other academic obligations affecting their grades because of illness, personal crises, mandated court appearances, parental responsibilities, and the like. As long as such absences are not excessive, it is recommended that the instructor provide and document reasonable accommodation. The instructor may require the student to submit a written explanation of the absence, but written excuses from health care personnel should not be required since these requests frequently put the health care personnel in untenable positions. A student who is dissatisfied with the instructor's accommodation may follow the Academic Complaint Procedure, Rule 104. It is recommended that the instructor explain the procedures for excused absences early in the semester, preferably in a written syllabus distributed to all students in each class. Once announced, these procedures should be scrupulously followed unless extraordinary circumstances require an exception. Students who attempt to gain advantage through abuse of this policy (e.g., by providing an instructor with false information) may be referred to the Office of Student Standards and Accountability for disciplinary action.

EXAMINATIONS

74. **FINAL EXAMINATIONS WEEK.** The final examination week for each fall and spring semester will span five days, from the Monday through the Friday immediately following the 15th week of the semester. Special examinations will be scheduled for the Saturday following the Friday of final examination week. Summer Session final exams will be confined to the designated class meeting times scheduled for the course or lab.

75. **FINAL EXAMINATION SCHEDULE.** The final examination schedule will be determined before the start of each semester and published in the semester schedule of classes by the Registrar based on previous enrollment for that semester. After publication, the schedule cannot be altered except as provided.

76. **SCHEDULING ALL COMMON MORNING/EVENING EXAMS.** Undergraduate (100-400-level) courses having an enrollment of at least two percent of the total student body or courses with multiple lecture sections may schedule not more than three examinations each semester at the periods of 7:00 to 8:00 a.m., 6:00 to 7:15 p.m. and 8:30 to 9:45 p.m., Monday through Friday, with the exception of Monday morning and Friday evening. The actual test-taking time may not exceed the regularly scheduled lecture time (50 or 75 minutes)—however, instructors may require that students arrive up to 15 minutes early to check in. If permission is to be granted for a large group exam, all sections of the course must give the exam on the same day and within the same time block unless given during the regular scheduled class time. One class lecture period shall be omitted to compensate for each hour of examination. A class lecture period lost to Labor Day, Veterans Day, Martin Luther King, Jr. Day, and/or Presidents Day holiday(s) may be counted toward this compensation for an evening exam. Proposed examination dates must be submitted to the Registrar's Office no later than the first week of each semester.

(NOTE: Officially approved and scheduled night examinations have priority over all other academic and non-academic evening activities.)

77. **SPECIAL PERIODS FOR FINAL EXAMINATIONS.** During examination week time will be allowed to large courses for special examinations of the entire group. The privilege of giving such special examinations is necessarily limited in terms of periods available for such tests. The courses having the greatest number of students will be given first opportunity to utilize the special examination periods available.

78. **THREE OR MORE IN ONE DAY.** During final examination week, if the scheduled arrangement results in students having three or more examinations scheduled for any one day, any one of their instructors is authorized to excuse the students from the regularly scheduled examination and give a final examination to the students during the special exams time blocks.

In cases of difficulty in arriving at a solution, students shall refer the matter to the chairpersons of their departments or to their academic advisors.

79. **CLOSED WEEK.** No examinations or quizzes (other than laboratory examinations, make-up examinations and make-up quizzes) may be given during the last week of instruction.

80. **NO EARLY EXAMINATIONS.** A student will not be granted special examinations for the purpose of leaving the institution before the close of the semester.

81. **LENGTH OF EXAMINATIONS.** All regular examinations in undergraduate courses during the regular 15 weeks of instruction, except for common morning/evening examinations and take-home examinations, will be confined to the designated class meeting times scheduled for lecture, studio, laboratory, independent student or ensemble. Summer Session exams will be confined to the designated class meeting times scheduled for the course or lab.

82. **ACCOMMODATIONS OF RELIGIOUS OBSERVANCES IN THE ADMINISTRATION OF EXAMINATIONS.** Washington State University is committed to providing people of diverse religious backgrounds access to education. In addition, law requires reasonable accommodation of religious beliefs and practices. Because religious observances do not always conform to state and university holidays, tests or examinations that fall on these religious observances require reasonable accommodation. The university will provide reasonable accommodation consistent with the fair, efficient and secure administration of its programs. When tests or examinations fall on one or two days objectionable to a student because of religious beliefs, the student shall provide the instructor written notice 14 calendar days prior to the holiday. The written notice shall specify the date(s) and the reasonable accommodation requested. If the request appears to be made in good conscience, the instructor shall make alternate arrangements for administration of the examination or test, considering the integrity of the testing process and fairness to all the students. The instructor shall inform the student of the decision in writing within seven

calendar days of the receipt of the request. Any student who believes that she or he has not been appropriately accommodated under this policy may seek review of the decision by sending a written request to the chairperson of the department offering the course, as soon as possible and no later than seven days after learning of the instructor's decision. After the chair's decision, the student or the instructor may appeal to the dean's office. Appeals to the dean's office must be presented in writing within seven calendar days of the chair's decision. The decision of the dean or associate dean shall be made within seven calendar days and is final. The University Ombudsman is available at any stage for advice or assistance in resolving requests for accommodation. Students should understand that fairness in the examination process is an important consideration in the educational process and that they do have a duty to cooperate in making alternate arrangements.

83. **ACCOMMODATION OF DISABILITIES IN THE ADMINISTRATION OF EXAMINATIONS.** Washington State University is committed to providing access to education for all of its students. In addition, federal law states that academic requirements must be modified on a case-by-case basis to afford qualified students with handicaps an equal educational opportunity. The nature of certain disabilities may necessitate accommodation of these disabilities in the administration of exams. It is the policy of the university to provide reasonable accommodation consistent with the fair and secure administration of its programs.

A student with a disability who may require special accommodation should contact the Access Center (or Office of Student Services) when he or she arrives on the WSU Pullman campus. On the branch campuses a student should contact the Office of Student Services. A file documenting the disability will be established, and an accommodation form initiated. The instructor may ask for verification of a disability when a student requests an accommodation for an examination. The Office of Student Services or Access Center provides the student with a disability with an accommodation form verifying a disability and specifying the appropriate testing accommodation designed to fit the individual needs of that student. If the instructor disagrees with the arrangements as presented in the form, the instructor and/or student should seek the assistance of the Access Center (or Office of Student Services), department chair, cognizant dean or Vice Provost for Academic Affairs, in that order. The student and instructor may also contact the University Ombudsman or Office for Equal Opportunity.

88. **MIDTERM GRADE SUBMITTAL.** Midterm grades will be submitted for students enrolled in undergraduate courses by 5:00 p.m. on the Wednesday of the eighth week of the fall and spring semesters.

The assessment should not be interpreted as a formal grade, but rather as an indication of the student's progress to date.

Midterm grades are advisory and do not appear on the student's permanent record, the WSU transcript.

89. **FINAL GRADE SUBMITTAL.** Final grades will be submitted to the Registrar's Office by 5:00 p.m. on the second working day after the close of finals week. (Final grades for Summer Session will be submitted to the Registrar's Office by 5:00 p.m. on the second working day following the last day of Summer Session. Departments may be requested to submit final grades for summer courses earlier than the official submission deadline to facilitate grade reporting to students.)

GRADES AND GRADE POINTS

90. **GRADES AND GRADE POINTS.** Washington State University uses letter grades and the four (4) point maximum grading scale. The grade A is the highest possible grade, and grades below D are considered failing. Plus (+) or minus (-) 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 minus (-) equals .7 (e.g., a grade B+ is equivalent to 3.3 and A- is 3.7). A student's work is normally rated in accordance with the following definitions:

90a. A. Student work demonstrates consistently excellent scholastic performance; thorough comprehension; ability to correlate the material with other ideas, to communicate and to deal effectively with course concepts and new material; reliability in attendance and attention to assignments.

90b. B. Student work demonstrates superior scholastic performance overall, reliability in attendance, and attention to assignments; may demonstrate excellence but be less consistent than the work of an A student.

90c. C. Student work demonstrates satisfactory performance overall, as well as reliability in attendance, and attention to assignments.

90d. D. Student work demonstrates minimal, barely passing performance overall; limited knowledge of subject matter.

90e. F. Student work demonstrates unsatisfactory performance and comprehension or unfulfilled requirements. The grade is failing.

90f. S. (Satisfactory.) 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 Schedules of Classes.) Courses approved for S, F grading may also be graded S at midsemester indicating satisfactory progress.

A, S, or F grades only are used to report physical education activity grades.

S, M (marginally satisfactory), or F grades only are used to report grades for designated courses within the College of Veterinary Medicine.

H (honors), S, or F grades only are used to report grades for designated courses within the College of Pharmacy.

90g. P. (Passing.) A satisfactory grade for a course taken under the pass, fail Grading Option. Instructors will turn in regular letter grades for all students enrolled in courses under the pass, fail option but grades will appear on the student's permanent record as P (Passing) or F (Failure).

90h. I. (Incomplete.) An Incomplete "I" is the term 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. All outstanding incomplete work (including grades of I, X, and blank/no grade) must be completed and posted to the official transcript prior to the conferral of the degree. It is strongly recommended that students who are granted an Incomplete limit their total number of credits to 18 credits (including credits for the Incomplete course and any new courses) during the semester when they are finishing an Incomplete.

Students 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 the student repeats the course, the I is changed to an F. (See Rule 34.) Faculty are required to submit an Incomplete Grade Report (IGR) to the departmental office with every I given. The IGR must specify conditions and requirements for completing the incomplete, as well as any time limitations less than one year.

90i. W. This is the term to be used if the student has filed, in the Registrar's Office, official notice of a withdrawal from the course prior to the end of the ninth week, or withdrew in accordance with Rule 69, or withdrew from the university in accordance with Rule 70.

90j. X. Denotes continuing progress toward completion of special problems, research, thesis, doctoral dissertation (i.e., 499, 600, 700, 702, 800), or flexible enrollment courses; X grades are converted to S or to a letter grade upon satisfactory completion. All outstanding incomplete work (including grades of I, X, and blank/no grade) must be completed and posted to the official transcript prior to the conferral of the degree. An X grade may also be used when no final grade is reported due to instructor's illness or absence.

90k. U. (Unsatisfactory.) Student work demonstrates unsatisfactory performance, failed examination, or unfulfilled requirements in courses numbered 700, 702, and 800.

92. GRADE RECORDS. Class grade records (the records from which final grades for a given class are determined) are university records which must be maintained for five years after the end of the term. Department chairs or directors are responsible for identifying appropriate storage location, which may include the instructor's campus office. Both the chair or director or their designees and the instructor shall have ready access to these records.

93. RETENTION OF FINAL EXAMINATIONS, FINAL PROJECTS, AND FINAL PAPERS. Final examinations, final projects, and final papers are university records which must be maintained for one year after the end of the term, unless they are returned directly to the student. Department chairs or directors are responsible for identifying appropriate storage location, which may include the instructor's campus office. Both the chair or the director or their designees and the instructor shall have ready access to these final examinations, final projects, and final papers.

98. CORRECTION OF GRADE ERRORS. An instructor may not change a grade after it has been filed with the Registrar, except in the case of clerical error, which the instructor may correct by so certifying to the Registrar. Such change must be approved (signature required) by the chairperson of the department in which the course was offered. Grade corrections must be processed within one year of the end of the term for which the original grade was given. In extenuating circumstances, exceptions to the one-year limit for correction of grade errors may be considered by petition to the Registrar's Office.

99. GRADUATE STUDENT GRADES. On a program leading to an advanced degree, graduate students must attain a minimum grade point average of 3.00 on their graduate programs and a minimum grade point average of 3.00 in all 300-400-level and graduate courses. No grade below C is accepted in any course for graduate credit.

100. THE GRADE POINT SYSTEM

A	provides 4.0 grade points per credit hour.
A-	provides 3.7 grade points per credit hour.
B+	provides 3.3 grade points per credit hour.
B	provides 3.0 grade points per credit hour.
B-	provides 2.7 grade points per credit hour.
C+	provides 2.3 grade points per credit hour.
C	provides 2.0 grade points per credit hour.
C-	provides 1.7 grade points per credit hour.
D+	provides 1.3 grade points per credit hour.
D	provides 1.0 grade points per credit hour.
F	provides no credit or grade points. (Credits attempted are calculated in GPA)
P	credit given—grade points not calculated.
S	credit given—grade points not calculated.
M	credit given—grade points not calculated.
H	credit given—grade points not calculated.
I	provides no credit or grade points.
W	provides no credit or grade points.
X	provides no credit or grade points.
U	provides no credit or grade points.

102. STUDENT'S SCHOLASTIC AVERAGE. A student's scholastic average is determined by adding the grade points earned in all WSU course work and dividing by the total number of hours in which the student has been enrolled at WSU. I, W, S, P, U, and X grades are disregarded.

103. GROUP AVERAGES. Group averages, honor rolls, eligibility lists for honorees, and similar lists are calculated on the basis of grades received in the Registrar's Office by 5:00 p.m. two working days following the last day of final examinations.

104. ACADEMIC COMPLAINT PROCEDURES. Students having complaints about instruction or grading should refer them first to the instructor. If the complaint is not resolved, then the student may refer the complaint in writing to the chairperson of the department in which the course is offered by the end of the last day of the following semester (excluding summer term). The chair's decision shall be rendered within 20 business days. After the chair's decision, the student or the instructor may appeal to the Dean's Office. Complaints must be presented in writing to the dean within 20 business days of the chair's decision. The written statement should describe the complaint, indicate how it affects the individual or unit, and include the remedy sought from the dean. The decision of the dean is the final step and shall be made within 20 business days. The University Ombudsman is available at any stage for advice or assistance in resolving academic complaints. At the branch campuses, the procedure is identical except that the academic area coordinator shall substitute for the department chair and the campus dean shall substitute for the college dean.

105. ADMINISTRATIVE CHANGES TO FINAL GRADES

- a.) University Academic Integrity Hearing Board. If an allegation of academic dishonesty is not resolved between the instructor and the student, then the case is referred to the University Academic Integrity Hearing Board. The case must be referred to the board within one semester (excluding summer term). The University Academic Integrity Hearing Board shall have jurisdiction over decisions of any faculty member on matters of grading related to academic dishonesty cases. The decision of the board is final and not subject to further appeal.
- b.) University Grade Appeals Board. If a chair, dean, Graduate School Dean, Academic Vice Chancellor or designee, or ombudsman finds that a change of a final grade is warranted for any reason other than academic dishonesty, any one of them may refer the case to the University Grade Appeals Board for review within one semester of the posting of the grade (excluding summer term). Students may not take a grade appeal directly to the board. In the case of graduate students, the Dean of the Graduate School may refer a case to the Board upon completion of the Graduate School appeal process, as published in the Graduate School Bulletin. The University Grade Appeals Board shall have jurisdiction over decisions of any faculty member and/or administrator on matters of University course grading appeals. The decision of the board is final and not subject to further appeal.

GRADUATION

106. APPLICATION FOR UNDERGRADUATE DEGREE (TO-DO LIST). Application for a bachelor's or DVM degree should be made at the Registrar's Office near the end of the junior year. The Registrar will furnish candidates with records of their grade points and the hours completed to date, and lists of major and University Common Requirements (UCOREs) yet to be completed. The chairperson of the department is held responsible for checking all departmental requirements, including prerequisites for all courses and the courses required in other departments. A graduation fee must be paid at the time of application.

108. STUDENT RESPONSIBILITY FOR GRADUATION. Together with the advisor, the student plans the program of study each semester. However, the written curriculum requirements described in the bulletin and catalog supplements are binding, and no advisor may waive or alter them. The student has the ultimate responsibility for meeting university, college and departmental graduation requirements.

109. PETITIONS FOR UNDERGRADUATE GRADUATION REQUIREMENTS. Students may petition for a change in graduation requirements by obtaining the signatures of their department chairperson or director and dean on the appropriate form available in the undergraduate degree office of the Registrar's Office.

114. REQUIREMENTS FOR UNDERGRADUATE DEGREES

- (a) The four-year degree (BA, BS, BFA, BLA, B Mus):
 1. Meet the University Common Requirements (UCOREs) for Graduation.
 2. Earn twice as many grade points as the number of hours enrolled in graded course work, in this or any institution for which a grade has been received.
 3. Earn twice as many grade points in the major subject as the number of hours enrolled graded course work in that major subject at Washington State University.
 4. Complete any of the four-year programs.
 5. Complete the senior year under the direction of the college in which the degree is to be granted. If any portion of the final year's work is to be completed at another institution, advance approval must be obtained, in writing, from both the department chairperson and the dean of the college.
 6. Earn a minimum of 120 semester hours of credit, no more than 8 of which may be PEACTION (Physical Education Activity) courses. (At least 30 must be WSU hours; see Rule 6.)
 7. Earn a minimum of 40 semester hours of credit in 300-400-level courses; 500-level courses will count toward the 300-400-level requirement, but an undergraduate may not be required to enroll in or complete a 500-level course as a requirement for the baccalaureate degree.
 8. The award of a degree is conditioned upon the student's satisfaction of all University graduation requirements.

9. The award of a degree is conditioned upon the student's good standing in the university and satisfaction of all University graduation requirements. "Good standing" means the student has resolved any unpaid fees or acts of academic or behavioral misconduct, and complied with all sanctions imposed as a result of the misconduct. The University shall deny the award of a degree if the student is dismissed from the University based on his or her misconduct. (See Rule 45 and the Standards of Conduct for Students.)
10. All outstanding incomplete work (including grades of I, X, and no/blank grade) must be completed and posted to the official transcript prior to the conferral of the undergraduate or professional degree. Once an undergraduate or professional degree is conferred and posted to the official transcript, no changes will be allowed on the academic record that predates the undergraduate or professional degree.

115. REQUIREMENTS FOR THE DOCTOR OF VETERINARY MEDICINE DEGREE (DVM)

- (a) Complete the four-year professional program.
- (b) Meet requirements 9 and 10 listed under Rule 114 (a) above.

116. REQUIREMENTS FOR MASTER'S DEGREES

- (a) The Graduate School has no residency requirement.
- (b) Earn not less than 30 semester hours of credit with a minimum of 21 semester hours of course work for a thesis degree program or 26 semester hours of course work for a nonthesis degree program.
- (c) Earn a minimum grade point average of 3.00 on a graduate program in all upper-division and graduate course work completed for the master's degree.
- (d) Earn a minimum grade point average of 3.00 for all course work taken as a graduate student.
- (e) Successfully complete graduate examinations.
- (f) All outstanding incomplete work (including grades of I, X, and no/blank grade) must be completed and posted to the official transcript prior to the conferral of the degree. Once a degree is conferred and posted to the official transcript, no changes will be allowed on the academic record that predates the degree.

117. REQUIREMENTS FOR DOCTOR'S DEGREES

- (a) The Graduate School has no residency requirement.
- (b) Earn not less than 72 semester credit hours beyond the baccalaureate degree to include the minimum requirements as listed in the Graduate School's Policies and Procedures and as established by the academic program.
- (c) Earn a minimum grade point average of 3.00 on a graduate program and in all 300-400-level and graduate course work completed for the doctor's degree.
- (d) Earn a minimum grade point average of 3.00 for all course work taken as a graduate student.
- (e) Successfully complete graduate examinations.
- (f) All outstanding incomplete work (including grades of I, X, and no/blank grade) must be completed and posted to the official transcript prior to the conferral of the degree. Once a degree is conferred and posted to the official transcript, no changes will be allowed on the academic record that predates the degree.

118. TWO OR MORE BACHELOR'S DEGREES FROM WSU. One four-year undergraduate degree from WSU requires a minimum of 120 semester hours. For each additional undergraduate degree, the student must complete an additional 30 semester hours, as well as to satisfy all requirements of the college and the second degree program. The first bachelor's degree from WSU is understood to fulfill all University requirements for graduation with the second undergraduate degree, including the 300-400-level requirements, University Writing Portfolio, the minimum hours for the first degree (120), as well as the University Common Requirements (UCOREs).

The first bachelor's degree from another regionally accredited institution is understood to fulfill all University requirements for graduation, provided that the general education curriculum and major program course patterns at the other institution approximate those at WSU.

121. SUMMER SESSION CREDITS. Credit earned during summer sessions may be applied toward the fulfillment of requirements for baccalaureate and

advanced degrees in the same manner and subject to the same rules as credit earned during semesters of regular academic years.

125. DATE OF GRADUATION. Students will be recommended for their degrees at the end of the semester or term in which they complete their requirements. Diplomas will be dated the Saturday following the last day of final examination week for the fall semester, the day of commencement for the spring semester, and the Saturday following the last day of instruction for summer session.

HONORS

Honor rolls and lists are calculated on the basis of grades received by 5:00 p.m. two working days following the last day of final examinations. (See Rule 103.)

133. PRESIDENT'S HONOR ROLL. An undergraduate will be named to the President's Honor Roll under either of the following conditions:

- (a) By achieving a grade point of 3.75 while enrolled in at least 9 graded hours in a single semester at Washington State University, provided that the cumulative gpa is a 2.0 or better.
- (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, provided that the semester gpa is a 3.0 or better.

137. RECOGNITION FOR SELECTED BACCALAUREATE DEGREE CANDIDATES. 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 3.90 or better, will graduate magna cum laude if the minimum cumulative grade point average is 3.70 but less than 3.90, and will graduate cum laude if the minimum cumulative grade point average is 3.50 but less than 3.70.

The appropriate Latin phrase will be printed on the diploma and on the final transcript. Qualified students electing to participate in the Honors College who complete its requirements satisfactorily, regardless of whether they qualify to graduate summa cum laude, magna cum laude, or cum laude, will receive a certificate of completion and a printed notation on the final transcript.

Computation of graduation honors will be done prior to the end of the final semester to allow for publication of the appropriate honors in advance of graduation. However, following the student's final semester, the Registrar will recompute the student's GPA including the last semester's work, and only this computation will determine official graduation honors.

SOLICITING

150. No agent, solicitor, or university individual or group shall be permitted to canvass or solicit faculty members during office hours in the interests of business, charity, or any other purpose not directly connected with university interest or official duties.

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