



WASHINGTON STATE
 UNIVERSITY

2022 Catalog

The WSU Catalog

The Washington State University Catalog is a comprehensive reference guide and is available online at <https://catalog.wsu.edu/>. It provides an overall view of the programs and courses at the University and the rules that pertain to admission, registration, and graduation. The online catalog includes the most recent changes to courses and degree requirements that have been approved by the Faculty Senate. For graduate students, catalog information is published by the Graduate School at <https://gradschool.wsu.edu/degrees/>. Most academic departments and colleges maintain their own web pages with additional information.

The Schedule of Classes is published each semester at <https://schedules.wsu.edu/> and gives additional detailed information about courses offered, class hours, and classroom locations, and contains the latest calendar dates, fees, and details on registration.

All information in this catalog is 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 catalog is organized as follows:

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 list of faculty and departmental description, including student learning outcomes and details about the requirements for majors and options.
- 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 that you are admitted to 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		
(1)	First Semester	Credits
	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 example, you need to choose a Humanities course. These courses are designated with the [HUM] indicator and both the browse catalog in myWSU and the schedule of studies allow you to search by the UCORE course designations such as [HUM]. See the section on WSU's Learning Goals of Undergraduate Education 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.

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 after the title. This is a 4-credit course. The (3-3) indicates that there are three hours in lecture and three hours in lab each week.

Next are the course prerequisites required before you will be able to enroll. For this course if you haven't already taken a CHEM course, you may fulfill the course prerequisite by enrolling in chemistry course 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 Anthropology "Topics" course indicates that the subject matter for the class may change each term. The course title is often displayed in the Schedule of Classes.

This is a variable credit course with a range of credits that may be taken each term, indicated by the 'V' followed by 3 - 6 credits. In this case, you would be able to enroll in the course for 3 credits in the fall and another 3 credits in the spring for the total of 6.

Finally, notice 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 may want to consider.

ANTH

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

WSU Accreditation

Washington State University is accredited by the Northwest Commission on Colleges and Universities (NWCCU). NWCCU is recognized by the US Department of Education. 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. WSU has been continuously accredited since 1918.

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 WSU's accreditation liaison officer. Individuals may also contact:

Northwest Commission on Colleges and Universities
8060 165th Avenue N.E., Suite 200
Redmond, WA 98052
(425) 558-4224
info@nwccu.org
www.nwccu.org

Specialized Accreditations

Many programs, departments and colleges are accredited by professional accrediting associations recognized by the Council on Higher Education Accreditation (CHEA) (<http://chea.org>). Accreditation 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 (ABET)

- Engineering Accreditation Commission of ABET
- Computing Accreditation Commission of ABET

Accreditation Council for Education in Nutrition and Dietetics
Accreditation Council for Pharmacy Education (ACPE)
American Animal Hospital Association (AAHA)
American Association of Veterinary Laboratory Diagnosticians (AAVLD)
American Chemical Society (ASC)
American Council for Construction Education (ACCE)
American Psychological Association Commission on Accreditation (APA)
American Veterinary Medicine Association (AVMA) - Council on Education (COE)
Association to Advance Collegiate Schools of Business (AACSB International)
Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC)
Commission on Accreditation of Allied Health Education Programs (CAAHEP)
Commission on Accreditation of Athletic Training Education (CAATE)
Commission on Collegiate Nursing Education (CCNE)
Commission on English Language Program Accreditation
Council for Interior Design Accreditation (CIDA)
Council on Academic Accreditation in Audiology and Speech-Language Pathology
Institute of Food Technologists
Landscape Architectural Accreditation Board (LAAB)
Liaison Committee on Medical Education (LCME) - conditional accreditation
National Architectural Accrediting Board (NAAB)
National Association of Schools of Music (NASM)
National Professional Science Masters Association (NPSMA)
PESB, University Council for Educational Administration
Society of American Foresters - provisional accreditation
Washington State Department of Health, Nursing Care Quality Assurance Commission

Academic Calendar

	2022- 2023	2023- 2024	2024- 2025	2025- 2026	2026- 2027	2027- 2028	2028- 2029
First Semester (Fall)							
Classes begin, Monday	Aug 22	Aug 21	Aug 19	Aug 18	Aug 24	Aug 23	Aug 21
Labor Day holiday	Sept 5	Sept 4	Sept 2	Sept 1	Sept 7	Sept 6	Sept 4
Midterm grades due, 5:00 p.m.	Oct 12	Oct 11	Oct 9	Oct 7	Oct 14	Oct 13	Oct 11
Veterans Day holiday	Nov 11	Nov 10*	Nov 11	Nov 11	Nov 11	Nov 11	Nov 10*
Thanksgiving Vacation	Nov 21-25	Nov 20-24	Nov 25-29	Nov 24-28	Nov 23-27	Nov 22-26	Nov 20-24
Thanksgiving Day holiday	Nov 24	Nov 23	Nov 28	Nov 27	Nov 26	Nov 25	Nov 23
Native American Heritage Day holiday	Nov 25	Nov 24	Nov 29	Nov 28	Nov 27	Nov 26	Nov 24
Commencement	Dec 10	Dec 9	Dec 7	Dec 6	Dec 12	Dec 11	Dec 9
Final Examinations	Dec 12-16	Dec 11-15	Dec 9-13	Dec 8-12	Dec 14-18	Dec 13-17	Dec 11-15
Final grades due, 5:00 p.m.	Dec 20	Dec 19	Dec 17	Dec 16	Dec 22	Dec 21	Dec 19
Second Semester (Spring)							
Classes begin	Jan 9	Jan 8	Jan 6	Jan 12	Jan 11	Jan 10	Jan 8
Martin Luther King, Jr. Day holiday	Jan 16	Jan 15	Jan 20	Jan 19	Jan 18	Jan 17	Jan 15
Presidents Day holiday	Feb 20	Feb 19	Feb 17	Feb 16	Feb 15	Feb 21	Feb 19
Midterm grades due, 5:00 p.m.	Mar 1	Feb 28	Feb 26	Mar 4	Mar 3	Mar 1	Feb 28
Spring Vacation, (10th week)	Mar 13-17	Mar 11-15	Mar 10-14	Mar 16-20	Mar 15-19	Mar 13-17	Mar 12-16
Final Examinations	May 1-5	April 29- May 3	April 28 - May 2	May 4-8	May 3-7	May 1-5	April 30- May 4
Commencement	May 6	May 4	May 3	May 9	May 8	May 6	May 5
Final grades due, 5:00 p.m.	May 9	May 7	May 6	May 12	May 11	May 9	May 8
Summer Session							
Early Session begins	May 8	May 6	May 5	May 11	May 10	May 8	May 7
Memorial Day holiday	May 29	May 27	May 26	May 25	May 31	May 29	May 28
Eight-Week Session begins	June 5	June 3	June 2	June 8	June 7	June 5	June 4
Juneteenth holiday	June 19	June 19	June 19	June 19	June 18*	June 19	June 19
Late Six-Week Session begins	June 19	June 17	June 16	June 22	June 21	June 19	June 18
Independence Day holiday	July 4	July 4	July 4	July 3*	July 5*	July 4	July 4
Summer Session ends, Friday	July 28	July 26	July 25	July 31	July 30	July 28	July 27
Final grades due, 4:00 p.m.	Aug 1	July 30	July 29	Aug 4	Aug 3	Aug 1	July 31

* Observed

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



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Washington State University

wsu.edu

One of America's leading public research institutions, Washington State University pairs an outstanding learning experience with a deeply rooted commitment to public service.

Campuses across Washington welcome almost 30,000 undergraduate, graduate, and professional students from every state and over 100 countries.

Academic programs prepare undergraduates to succeed

WSU empowers students through award-winning and effective support:

- **Writing program for all majors:** WSU's Writing Program teaches students to write effectively—a vital skill in any career.
- **Undergraduate research:** With the guidance of professors, students learn research methods and deepen understanding of their fields.
- **Honors College:** Top students in all majors participate in small, discussion-based courses and examine issues in a global context. A senior thesis explores a topic in depth.

Graduate and professional programs win national acclaim

Nearly 150 master's, doctoral, and professional degree programs attract students from around the world to WSU.

Professors are both outstanding and accessible

Students at all levels work alongside professors who include members of the National Academies, Fulbright Fellows, and some of the most cited researchers in the world. WSU faculty have a well-deserved reputation for accessibility.

Research strengthens communities worldwide

Research targets critical national and global challenges in fields such as healthcare, clean energy, food production, economic opportunity, smart systems, and national security.

Students work for the greater good

Each year thousands of students volunteer their time and talents to benefit communities near and far. The Elson S. Floyd College of Medicine trains physicians to serve Washington communities where they are needed most.

School spirit is unstoppable

Fans form a sea of crimson to cheer on the Pac-12 Cougars.

WSU serves communities across Washington and beyond

Campuses in Pullman, Everett, Spokane, Tri-Cities, and Vancouver serve students across the state. Global Campus online learning programs reach worldwide. Extension offices in every Washington county partner with citizens to address local issues. Research and Extension centers across the state conduct studies that benefit Washington industries: agriculture, viticulture, tree fruit production, and more.

Alumni form a community of Cougs

The vast alumni network supports the achievement of fellow Cougs everywhere, from classroom to career.

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, Design,
and Textiles, BA, MS
Applied Economics, MAE, MS
Architectural Studies, BS
Architecture, MArch
Athletic Training, MAT
Biochemistry, BS
Bioengineering, BS
Biological and Agricultural
Engineering, MS, PhD
Biology, BS, MS, PhD
Biomedical Sciences, MS, PhD
Business Administration, BA, MBA,
MS, PhD
Chemical Engineering, BS, MS, PhD
Chemistry, BA, BS, MS, PhD
Civil Engineering, BS, ME, MS, PhD
Communication, MA, PhD
Comparative Ethnic Studies, BA
Computer Engineering, BS, MS
Computer Science, BA, BS, MS, PhD
Construction Engineering, BS
Construction Management, BS
Coordinated Program in Dietetics,
Nutrition, and Exercise
Physiology, MS
Criminal Justice and Criminology,
BA, MA, PhD
Crop Science, MS, PhD
Data Analytics, BS
Digital Technology and Culture, BA
Earth and Environmental Science,
BS
Economics, MS, PhD
Economic Sciences, BS
Education, BA, EdM, MA, MEd, EdD,
PhD
Electrical and Computer
Engineering, PhD
Electrical Engineering, BS, MS
Electrical Power Engineering, PSM
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
Genetics and Cell Biology, BS
Geology, MS, PhD
Health Communication and
Promotion, MA
History, BA, MA, PhD
Horticulture, MS, PhD
Hospitality Business Management,
BA
Human Biology, BA
Human Development, BA
Humanities, BA
Individual Interdisciplinary, PhD
Integrated Plant Sciences, BS
Interior Design, BA, MA
Journalism and Media Production,
BA
Kinesiology, BS, MS
Landscape Architecture, BLA, MS
Materials Science and Engineering,
BS, MS, PhD
Mathematics, BS, MS, PhD
Mechanical Engineering, BS, MS,
PhD
Medicine, MD
Microbiology, BS
Molecular Biosciences, MS, PSM,
PhD
Molecular Plant Sciences, MS, PhD
Music, BA, BMus, MA
Natural Resource Sciences, MS
Neuroscience, BS, MS, PhD
Nursing, BSN, MNurs, DNP, PhD
Nutrition and Exercise Physiology,
BS, MS, PhD
Pharmaceutical Sciences and
Molecular Medicine, MS, PhD
Pharmacy, PharmD
Philosophy, BA
Physics, BS, MS, PhD
Plant Biology, MS, PhD
Plant Pathology, MS, PhD
Political Science, BA, MA, PhD
Prevention Science, MS, PhD
Psychology, BS, MS, PhD
Public Affairs, BA, MPA
Science, Bachelor of
Social Sciences, BA
Social Studies, BA
Sociology, BA, MA, PhD
Software Engineering, BS, MS
Soil Science, MS, PhD
Speech and Hearing Sciences, BA,
MS
Sport Management, BA
Sports Medicine, BS
Statistical Science, PhD
Statistics, MS
Strategic Communication, BA, MA
Veterinary Medicine, DVM
Veterinary Science, BS
Viticulture and Enology, BS
Women's, Gender, and Sexuality
Studies, BA
Zoology, BS

WASHINGTON STATE UNIVERSITY STRATEGIC PLAN

Vision

Washington State University will be one of the nation's leading land-grant universities, preeminent in research and discovery, teaching, and engagement.

Mission

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

- To **advance** knowledge through creative research, innovation, and creativity across a wide range of academic disciplines.
- To **extend** knowledge through innovative educational programs in which students and 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 providing quality and excellence in all our endeavors.
- **Integrity, Trust, and Respect:** We are committed to ensuring trust and respect for all persons in an environment that cultivates individual and institutional integrity in all that we do.
- **Research, 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 recognizes and values the importance of domestic and global diversity, global interdependence, and sustainability.
- **Freedom of Expression:** We are committed to the free exchange of ideas in a constructive and civil environment, including the canons of academic freedom in research, teaching, and outreach.
- **Stewardship and Accountability:** We are committed to serving as ethical and responsible stewards of University resources.

Goals

Theme 1: Exceptional Research, Innovation, and Creativity

Goal 1

Increase productivity in research, innovation, and creativity to address the grand challenges and opportunities of the future.

Goal 2

Further develop WSU's unique strengths and opportunities for research, innovation, and creativity based on its locations and land-grant mandate to be responsive to the needs of Washington state.

Goal 3

Advance WSU's reach both nationally and internationally in existing and emerging areas of achievement.

Theme 2: Transformative Student Experience

Goal 1

Provide an excellent teaching and learning opportunity to a larger and more diverse student population.

Goal 2

Provide a university experience centered on student engagement, development, and success, which prepares graduates to lead and excel in a diverse United States and global society.

Goal 3

Improve curricular and student support infrastructure to enhance access, educational quality, and student success in a growing institution.

Theme 3: Outreach and Engagement

Goal 1

Increase access to and breadth of WSU's research, scholarship, creative, academic, and extension programs throughout Washington and the world.

Goal 2

Expand and enhance WSU's engagement with institutions, communities, governments, and the private sector.

Goal 3

Increase WSU faculty, staff, and students' contributions to economic vitality, educational outcomes, and quality of life at the local, state, and international levels.

Theme 4: Institutional Effectiveness: Diversity, Integrity, and Openness

Goal 1

Create and sustain a university community that is diverse, inclusive, and equitable.

Goal 2

Cultivate a system-wide culture of organizational integrity, effectiveness, and openness that facilitates pursuit of the institution's academic aspirations.

Goal 3

Steward and diversify resources invested by students, the public, and private stakeholders in a responsible way to ensure economic viability of the institution.

For more details on WSU's Strategic Plan, visit <http://strategicplan.wsu.edu>.

WASHINGTON STATE UNIVERSITY FOUNDATION

WSU Foundation, 800-448-2978

Town Centre, Suite 301

PO Box 641925, Pullman, WA 99164-1925

<https://foundation.wsu.edu>

The Washington State University Foundation promotes, accept, and maximizes philanthropic support for Washington State University students, faculty, research, programs and services University-wide. 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 received more than \$2 billion in philanthropic support for WSU to fund scholarships for deserving undergraduate and graduate students, retain and attract top faculty, build state-of-the-art facilities, and enable cutting-edge research and educational programs to flourish. Private gifts and grants are designated to the WSU campus, college, program, or fund of the donor's choosing. Contributions can be made by contacting the WSU Foundation office at 800-448-2978 or by making a gift online at <https://foundation.wsu.edu/give>. For more information, visit the WSU Foundation's web site or e-mail: foundation@wsu.edu. Mail inquiries may be addressed to WSU Foundation, PO Box 641925, Pullman, WA 99164-1925.

Student Services and Facilities

Academic Success and Career Center (ASCC)

Lighty Building, Rooms 160 - 180
509-335-6000, or 888-978-7252
<https://ascc.wsu.edu>
ascc@wsu.edu

Access Center

(Student Disability Services)
Washington Building, Room 217
509-335-3417
<https://accesscenter.wsu.edu>
access.center@wsu.edu

Bursar's Office (Tuition and Fees)

(Formerly Student Accounts)
French Administration Building, Room 342
509-335-9651
<https://bursar.wsu.edu>
bursar.office@wsu.edu

WSU Children's Center

1425 NE Olympia Ave
509-335-8847
<http://childrenscenter.wsu.edu>
childrens.center@wsu.edu

Center for Civic Engagement

Compton Union Building (CUB), Room L45/L48
509-335-7708
<https://cce.wsu.edu>
cce@wsu.edu

The Office of Civil Rights Compliance and Investigation

(Formerly Office for Equal Opportunity)
French Administration Building, Room 225
509-335-8288
<https://crcl.wsu.edu>
crcl@wsu.edu

Compton Union Building (CUB)

Student Union
Information Desk
509-335-8426
<https://cub.wsu.edu>

CougarCard Center

Compton Union Building (CUB), Room G-60
509-335-CARD (2273)
<https://cougarcards.wsu.edu>
cougarcards@wsu.edu

Cougar Health Services

<https://cougarhealth.wsu.edu>
Washington Building
1125 NE Washington St.
Medical Clinic 509-335-3575;
Pharmacy 509-335-5742;
cougarhealth@wsu.edu
Vision Clinic 509-335-0360
cougarhealth.visionclinic@wsu.edu
Student Medical Insurance 509-335-3575
student.insurance@wsu.edu

Cougar Health Services (cont.)

Counseling and Psychological Services 509-335-4511
After hours crisis: 509-335-2159
counseling@wsu.edu

Office of the Dean of Students

Student Assistance Programs
French Administration Building, Room 122
509-335-5757
<https://deanofstudents.wsu.edu>
deanofstudents@wsu.edu

Dining Services

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

Gender Identity/Expression and Sexual Orientation Resource Center

Compton Union Building (CUB), Room 401
509-335-8841
<https://thecenter.wsu.edu>
matthew.jeffries@wsu.edu

Housing and Residence Life

Streit-Perham Administrative Suite
Financial Services on 2nd floor
509-335-4577
<https://housing.wsu.edu>
housing@wsu.edu

Information Technology Services (ITS)

Crimson Service Desk
CUE 302
509 335-4357; 1-800-608-3839
<https://its.wsu.edu>
CrimsonServiceDesk@wsu.edu

International Programs

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

Intensive American Language Center (IALC)

Kruegal Hall, Room 10A
509-335-6675
<https://ip.wsu.edu/learn-english>
ialc@wsu.edu

The Libraries

509-335-9671
<https://libraries.wsu.edu>

Multicultural Student Services

Compton Union Building (CUB), Fourth Floor
509-335-7852
<https://mss.wsu.edu>
mss@wsu.edu
oeo@wsu.edu

The WSU Ombudsman Office

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

The Registrar's Office

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

Student Entertainment Board

Compton Union Building (CUB), Room 304
509-335-3503
<https://seb.wsu.edu>
seb.ad@wsu.edu

Student Financial Services

Financial Aid and Scholarship Services
Lighty Building, Room 380
509-335-9711
<https://financialaid.wsu.edu>
financialaid@wsu.edu

Student Government

Undergraduate Students - ASWSU:
Compton Union Building (CUB), Room 312 and 314
509-335-9591
<https://aswsu.wsu.edu>
Graduate and Professional Students - GPSA:
Compton Union Building (CUB), Room 308
509-335-9545
<https://gpsa.wsu.edu>

Student Involvement

CUB 320
509-335-9667
<https://studentinvolvement.wsu.edu>
getinvolved@wsu.edu

Student Recreation Center

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

Student Support Services TRIO Program

Lighty Student Services Building, Room 260
509-335-0192
<https://sssp.wsu.edu>
sssp@wsu.edu

Summer Session

Pullman and Global:
Van Doren Hall, Rm 104
509-335-3557; 800-222-4978
<https://learn365.wsu.edu/summer-session/>
learn365@wsu.edu

Everett

425-405-1600
everett.wsu.edu/summer/
everett.admission@wsu.edu

Spokane:

Student Affairs: 509-358-7978
Spokane.wsu.edu/studentaffairs/
spok.sa@wsu.edu

Summer Session (cont.)

Tri-Cities:

509-372-7250
<https://tricitie.wsu.edu/summer/>

Vancouver:

360-546-9779
<https://studentaffairs.vancouver.wsu.edu/admissions/summer-classes>

Transfer Center

CUE 403
509-335-8704
<https://transfercredit.wsu.edu>
transfer@wsu.edu

Office of Veterans Affairs

Federal Veterans Benefits
Holland Library, Room 120BA
509-335-1857;
<https://va.wsu.edu>
veterans@wsu.edu

Women's Center

Wilson-Short Hall, Room 8
509-335-6849
<https://women.wsu.edu>
womens.center@wsu.edu

The Writing Program

Smith Center for Undergraduate Education (CUE), Room 305
509-335-7959
<https://writingprogram.wsu.edu>
writing.program@wsu.edu
Information includes:
Writing Placement Process
Junior Writing Portfolio
The Writing Center

Admission

Lighty Building, Room 370
888-468-6978 or 509-335-5586

<https://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 degree-seeking 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 <https://admission.wsu.edu/apply>.

Applicants must apply with a full and complete application packet by March 31 (first-year students) and July 15 (transfer students) for priority consideration for the fall semester. First-year priority application date for Top Scholar selection is January 31. Applicants for spring semester should apply by November 15 for priority consideration. Applications submitted after census day of classes will not be considered.

Any first-year applicant planning to compete in intercollegiate athletics should check with the WSU Athletics Compliance Office for information regarding eligibility requirements for the 2023-2024 academic year.

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 Admissions and Enrollment Committee or its designee.

Retention of Students

The grade point average for first-year students entering from high school in the fall semester 2021 was 3.50 (all campuses). Of the 3,872 first-year full-time students who entered in the fall 2021, 3,510 were enrolled in the spring of 2022 (90.7% retention rate).

First-Year Admission Requirements

<https://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 College Academic Distribution Requirements (CADRs), and other relevant materials as requested. See Academic Regulation 2.

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. See Academic Regulation 1a. 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.

A complete application includes the application form, the high school transcript, and the nonrefundable application fee. Students are encouraged to apply online at <https://admission.wsu.edu/apply>.

Factors considered in first-year admission include unweighted grade point average, 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. 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.

As of March 2021, WSU no longer requires students to submit SAT/ACT test scores as part of the application process.

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), and Cambridge International Examinations

<https://admission.wsu.edu/>

See Academic Regulation 15 and Academic Regulation 6.

Transfer Admission Requirements

<https://admission.wsu.edu/>

Overall academic preparation, including cumulative grades as well as grade trends are factors in the admission process for all students. See Academic Regulation 4.

Transfer Credit Policy

See Academic Regulation 6.

Associate Degree Transfer

See Academic Regulation 6.

Homeschooled Students

<https://admission.wsu.edu/>

WSU welcomes homeschooled students.

Adult Student Admission

<https://admission.wsu.edu/>

Washington State University recognizes that students who have been away from the classroom for extended periods of time may have special circumstances. Therefore, in accordance with the policies set forth by the Washington Student Achievement Council, 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 and grades 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 Provost for Enrollment Management 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 Provost for Enrollment Management 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 Provost for Enrollment Management, or designees, 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 ensure that the program is functioning to the advantage of the students and the university community as a whole.

Admission to WSU Everett, WSU Spokane, WSU Tri-Cities, WSU Vancouver, and Global Campus

<https://everett.wsu.edu/>

<https://spokane.wsu.edu/>

<https://tricitities.wsu.edu/>

<https://www.vancouver.wsu.edu/>

<http://globalcampus.wsu.edu/>

Former Students Returning (FSR) Not Enrolled the Previous Academic Semester

<https://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.

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 <https://ascc.wsu.edu>) prior to admission. Applications submitted after census day of classes will not be considered.

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 <https://admission.wsu.edu/apply>.

Non-Degree Admission

<https://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. Financial aid is not available for non-degree students. Students who are interested in applying as a non-degree-seeking student may apply at <https://admission.wsu.edu/apply>.

International Student Admission Requirements

<https://ip.wsu.edu/future-students/>

International Student Non-Degree Admission Requirements

<https://ip.wsu.edu/future-students/>

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://eweb.wsu.edu/advancepaywsu/>

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

<https://gradschool.wsu.edu>

Colleges

To see a complete listing of all undergraduate degrees, majors, and options within the major, as well as all undergraduate minors and certificates, please see the Achieving Academic Success section of this catalog.

COLLEGE OF AGRICULTURAL, HUMAN, AND NATURAL RESOURCE SCIENCES

Wendy Powers, Cashup Davis Family Endowed Dean
Hulbert Hall, Room 421
509-335-4561

<https://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; 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 and labs or through internships and international study abroad programs.

Overall, the agricultural industry remains one of Washington's largest economic engines, 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 and sustainable 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 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, 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 careers working with children, adolescents, and adults in a variety of professional settings, including human service agencies, early childhood education, public health, and teachers of family and consumer sciences. Other careers include apparel design and merchandising, consumer services, and commercial food service. Students in the human sciences are also well prepared for graduate school and often go on to positions in higher education, research firms, Extension, governmental agencies, and industry.

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 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	Academic Area
Bachelor of Science	
Agricultural and Food Systems	CAHNRS Academic Programs Crop and Soil Sciences
Animal Sciences	Animal Sciences
Economic Sciences	Economic Sciences
Earth and Environmental Sciences	Environment
Food Science	Food Science
Integrated Plant Sciences	CAHNRS Academic Programs Crop and Soil Sciences Horticulture
Viticulture and Enology	Integrated Plant Sciences
Bachelor of Arts	
Apparel, Merchandising, Design, and Textiles	Apparel, Merchandising, Design, and Textiles
Human Development	Human Development
Master of Applied Economics	Economic Sciences
Master of Science	
Agriculture	CAHNRS Academic Programs
Animal Sciences	Animal Sciences
Apparel, Merchandising, Design, and Textiles	Apparel, Merchandising, Design, and Textiles
Biological and Agricultural Engineering	Biological Systems Engineering
Crop Science	Crop and Soil Sciences

Economics	Economic Sciences
Entomology	Entomology
Environmental Sciences	Environment
Food Science	Food Science
Geology	Environment
Horticulture	Horticulture
Molecular Plant Sciences	Molecular Plant Sciences
Natural Resource Sciences	Environment
Plant Pathology	Plant Pathology
Prevention Science	Human Development
Soil Science	Crop and Soil Sciences

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	Economic Sciences
Entomology	Entomology
Environmental and Natural Resource Sciences	Environment
Food Science	Food Science
Geology	Environment
Horticulture	Horticulture
Molecular Plant Sciences	Molecular Plant Sciences
Plant Pathology	Plant Pathology
Prevention Science	Human Development
Soil Science	Crop and Soil Sciences

COLLEGE OF ARTS AND SCIENCES

Todd Butler, Dean
Thompson Hall, Room 309
509-335-4581

<https://cas.wsu.edu>

The College of Arts and Sciences (CAS) fosters an open and inclusive environment where faculty and students seek to discover, to create, and to educate in service to our state, the nation, and the world. We are the big thinkers, asking bold questions that drive knowledge forward. We encourage an openness to unfamiliar ideas and collaboration across boundaries, and we share a commitment to lifelong learning and creative thinking. Our efforts advance the frontiers of knowledge and artistic expression, and are leading a reimagining of what WSU can achieve on our campuses and in the wider world.

Encompassing disciplines within the arts, humanities, social sciences, and the physical, natural, and life sciences, CAS academic programs provide students with a sound and challenging education where inquiry and teaching proceed in tandem, and which prepares them for a wide range of careers, further graduate and professional education, and—most importantly—rich and rewarding lives.

Undergraduate and graduate degree programs within the college deliver multifaceted learning opportunities that include classroom instruction, seminars, labs, special projects, scholarship, and research. Together faculty and students pursue the learning demanded by our increasingly diverse, technologically sophisticated, and global society. The college provides leadership development opportunities through its student ambassador program and more than forty registered student organizations and promotes career-skill development through internships and other experiential learning options. Many undergraduate students conduct research and complete creative projects under the mentorship of a faculty member. Competitive grants are available through the college to support these activities.

Undergraduate students planning to pursue advanced degrees are counseled by professional advisors and faculty mentors on programs of study and planning course selections that meet admission requirements for advanced study or professional schools. The college also provides academic preparation for human and animal healthcare-related fields through the School of Biological Sciences, and pre-law curricula through the School of Politics, Philosophy, and Public Affairs, and in departments and programs such as comparative ethnic studies, English, history, and sociology.

At the graduate level, the college offers numerous advanced degrees that further prepare students for successful professional and academic careers. Rigorous and intensive training enhances their disciplinary expertise and prepares them to take on leadership roles across the state and around the world.

A number of CAS programs are externally accredited. For example, the doctoral program in clinical psychology is accredited by the American Psychological Association and the School of Music is a full member of the National Association of Schools of Music.

Sciences

Major scientific 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, radiochemistry and environmental remediation, mathematical modeling of biological and physical processes, data analysis, reliability and fatigue studies, resource management, protein synthesis and export, chemotaxis, coevolution of plants and animals, and reproductive biology.

Humanities, Arts, and Social Sciences

CAS scholars in the arts, humanities, music, and social sciences are making significant contributions in the fields of environmental studies and peace and security; identifying the personal and sociopolitical factors that influence chronic diseases and other threats to health, including substance abuse, accidents, and high-risk behaviors; fostering mutual understanding and cooperation across cultures and nations; and building partnerships with diverse communities—from the cultures of the Pacific Rim to Native American and Latinx cultures closer to home.

Faculty

The faculty in the College of Arts and Sciences are skilled practitioners who have a passion for excellence in research and education. Many are nationally and internationally recognized for their expertise and have received prestigious honors and awards, including election to the American Association for the Advancement of Science, American Chemical Society, American Physical Society, and other professional organizations; fellowships with the Guggenheim Foundation, U.S. Fulbright program, National Endowment for the Humanities, American Council of Learned Societies; as well as national career development awards, National Institutes of Health Merit Awards, an Eli Lilly Award, and numerous state and national teaching awards. Faculty frequently serve on national review panels of granting agencies for instructional and research support and on editorial boards of international journals.

Interdisciplinary Commitment

Beyond its own degree programs, CAS provides a significant portion of the courses which fulfill the University Common Requirements for all WSU undergraduate students. The college also provides extensive foundational course work for students earning degrees in disciplines offered by other WSU colleges. CAS is the founder and sponsor of the WSU Mathematics Learning Center, which helps all university students succeed in attaining the math skills they will need to complete their programs of studies.

Additionally, CAS sponsors and oversees the Health Professions Student Center and the Pre-Law Resource Center, both of which serve all university students interested in pursuing careers in healthcare or the legal field, respectively.

Working in cooperation with the College of Education, CAS prepares teachers for all levels of educational work. Students preparing for teaching at the elementary, secondary, and college levels usually complete course work in their chosen subject-matter field within the College of Arts and Sciences. The specific requirements for obtaining K-12 teaching credentials are listed under the Department of Teaching and Learning in the College of Education.

At the graduate level, CAS offers joint degrees in materials science and engineering and through the independent interdisciplinary doctoral program.

Facilities and Resources

Hands-on opportunities and learning are enhanced by high-quality teaching and research laboratories, computer facilities, music and arts studios, museums, and

other infrastructure within the college. The Thomas S. Foley Institute for Public Policy and Public Service, Franceschi Microscopy and Imaging Center, School of Music Recording Studio, Nuclear Magnetic Resonance Center, Geoanalytical Laboratory, Ownbey Herbarium, Conner Natural History Museum, Language Learning Resource Center, Museum of Anthropology, Center for Digital Scholarship and Curation, Hudson Biological Reserve, Avery Microcomputer Lab, Center for Arts and Humanities, and Meyer's Point Environmental Field Station are just a few of the many facilities within the college. Joint academic and research programs with the Pacific Northwest National Laboratory provide access to leading scientists and additional state-of-the-art scientific technology. An expert technical services unit on the Pullman campus provides custom instrumentation and electronics design, construction, and repair.

Admission

The general requirements for admission to the College of Arts and Sciences are the same as those for Washington State University. Some academic units may have selective admissions criteria requiring demonstration of artistic achievement and/or completion of specific courses with specific grades prior to admission to the respective major; requirements can be found in degree descriptions in this catalog.

High school students should include the following subjects as preparation for work in the college: four years of English, 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 Common Requirements plus additional College of Arts and Sciences requirements in arts and humanities, social sciences, and sciences. Each degree 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	Academic Area
Bachelor of Arts	
Anthropology	Anthropology
Asian Studies	Asia
Chemistry	Chemistry
Comparative Ethnic Studies	Languages, Cultures, and Race
Criminal Justice and Criminology	Criminal Justice and Criminology
Digital Technology and Culture	Digital Technology and Culture
English	English
Fine Arts	Fine Arts
Foreign Languages and Cultures (Chinese Language and Culture, French, Japanese, Spanish)	Languages, Cultures, and Race
History	History
Human Biology	Anthropology and Biological Sciences
Humanities	Languages, Cultures, and Race
Music	Music
Philosophy	Politics, Philosophy, and Public Affairs
Political Science	Politics, Philosophy, and Public Affairs
Public Affairs (Vancouver campus)	Politics, Philosophy, and Public Affairs
Social Sciences	Languages, Cultures, and Race
Social Studies	History
Sociology	Sociology
Women's, Gender, and Sexuality Studies	Women's, Gender, and Sexuality Studies
Bachelor of Fine Arts	
Fine Arts	Fine Arts

Bachelor of Music

Music

Music

Bachelor of Science

Biology
Chemistry
Data Analytics
Earth and Environmental Science
Mathematics
Physics
Psychology
Science (Bachelor of)
Zoology

Biological Sciences
Chemistry
Data Analytics
Environment
Mathematics and Statistics
Physics and Astronomy
Psychology
General Studies
Biological Sciences

Master of Arts

American Studies
Anthropology
Criminal Justice and Criminology
English
History
Music
Political Science

Languages, Cultures, and Race
Anthropology
Criminal Justice and Criminology
English
History
Music
Politics, Philosophy, and
Public Affairs
Sociology

Sociology

Master of Fine Arts

Fine Arts

Fine Arts

Master of Public Affairs

Public Affairs (Vancouver campus)

Politics, Philosophy, and
Public Affairs

Master of Science

Biology
Chemistry
Environmental Science
Geology
Mathematics
Molecular Plant Sciences
Natural Resource Sciences
Physics
Plant Biology
Plant Pathology
Psychology
(Clinical and Experimental)
Statistics

Biological Sciences
Chemistry
Environment
Environment
Mathematics and Statistics
Molecular Plant Sciences
Environment
Physics and Astronomy
Biological Sciences
Plant Pathology
Psychology

Mathematics and Statistics

Doctor of Philosophy

American Studies
Anthropology
Biology
Chemistry
English
Environmental and Natural
Resource Sciences
Geology
History
Materials Science and Engineering
(*Interdisciplinary Program*)
Mathematics
Molecular Plant Sciences
Physics
Plant Biology
Plant Pathology
Political Science

Languages, Cultures, and Race
Anthropology
Biological Sciences
Chemistry
English
Environment
Environment
History
Materials Science and Engineering
Mathematics and Statistics
Molecular Plant Sciences
Physics and Astronomy
Biological Sciences
Plant Pathology
Politics, Philosophy, and
Public Affairs
Psychology

Sociology

Psychology
(Clinical and Experimental)

Sociology

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

CARSON COLLEGE OF BUSINESS

Larry W. (Chip) Hunter, Dean
Todd Hall, Room 570
509-335-3596
<https://business.wsu.edu>

The Carson College of Business (CCB) 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 Global campus, and urban campuses located in Everett, Vancouver, and the Tri-Cities area, as well as international partnerships and/or programs at the undergraduate or graduate level in Asia, Europe, and Latin America including Chile, China, France, Greece, Ireland, Italy, Korea, Spain, Switzerland, Tanzania, and Thailand.

The college conducts scholarly and applied research, and offers degree programs in a variety of business disciplines, supplementing face-to-face offerings through innovative online learning and international programs. Of note, the CCB 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.

Through the Carson College's interactive and collaborative classes, undergraduate business students develop a global business perspective, and gain skills in business data analytics, effective communication, team management, and professionalism that employers demand.

Through the International Experience Requirement (IER), students develop a global perspective through education abroad, internships abroad, and internationally-focused courses. In addition to learning about another culture and interacting with students from around the world, study abroad provides students with a lifetime of memories and experiences that will shape their future careers. The CCB's undergraduate international business program accounts for more than 30 percent of WSU's participation in study abroad activities and has been ranked in the top 25 nationally since 2005 by *U.S. News & World Report*.

Expertise in managing and analyzing big data is critical in today's businesses. Through the Analytics in the Major (AIM) initiative, students are introduced to data analytics in the first year upon admission into the College, and they build upon these skills through several data-intensive courses in their major.

An integral component to the Carson College's undergraduate business degrees is the Carson Career Amplifier Program (CCAP). Required by all undergraduate students, this program is designed to walk students through the career development process and help them gain the experiences and skills that strengthen their interpersonal communication and professional skills so that they are career-ready by graduation.

Innovation and business creation are essential for global competitiveness in the 21st century. Through the CCB's annual business plan competition and national venture forums, students execute and deliver innovative ventures with real-world applications. The business plan competition provides undergraduate, graduate, and select high school students an opportunity to develop their ideas in interdisciplinary team settings, with experienced entrepreneurs, executives, and venture capitalists as mentors and judges.

Additionally, the CCB's Carson Center for Student Success supports the academic, professional, and personal success of the more than 3,000 undergraduate students. The Carson Center integrates academic advising, career development, business club involvement, international experience, and scholarships in a single location.

The CCB has offered a Master of Business Administration (MBA) for more than 60 years, with graduates occupying leadership positions in all fields of business. The Carson College's online MBA and the online Executive MBA are ranked #20 among the *U.S. News & World Report* "Best Online MBA Programs" for 2021, and have been listed among the top 15% for nine straight years. In addition, the online MBA is among the top-ranked best online graduate business programs for Veterans for 2021 by *U.S. News & World Report* and *Poets and Quants*. Additional graduate program offerings include the Ph.D. in Business Administration. The Doctor of Philosophy in Business prepares its graduates for careers in teaching and research positions and places students at prestigious research institutions.

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
- Management Information Systems
- Marketing

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

- Hospitality Business Management
- Senior Living Management
- Wine and Beverage Business Management

In addition to the online MBA programs, the college offers graduate work leading to the Doctor of Philosophy degree in Business Administration (all areas). The Master of Accounting is not accepting applications at this time.

The doctor of philosophy in business administration program at WSU 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 CCB offers minors in business administration, human resource management, entrepreneurship, event planning, hospitality business management, senior living management, and wine and beverage 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 may apply for admission after their first year. Please see the following section for the minimum requirements to be eligible for admission. To be eligible to enroll in most 300-400-level business or HBM courses, business and hospitality business management students must have been admitted to their respective majors.

For specific information regarding the acceptability of college courses taken at other institutions in areas of study offered by the departments of the CCB, prospective students should communicate with the WSU Transfer Clearinghouse first, then with a CCB advisor.

Diversity, Recruitment, and Retention

The CCB 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 Carson College of Business lead to the following degrees:

Pullman Campus

- Bachelor of Arts, Business Administration
- Bachelor of Arts, Hospitality Business Management
- Master of Accounting (Not accepting applications for the 2022-2023 year.)
- Master of Science in Business Administration (MS)
- Doctor of Philosophy, Business Administration

Tri-Cities Campus

- Bachelor of Arts, Business Administration
- Bachelor of Arts, Hospitality Business Management

WSU Global Campus

- Bachelor of Arts, Business Administration
- Bachelor of Arts, Hospitality Business Management
- Master of Business Administration (MBA)
- Executive MBA

Vancouver Campus

Bachelor of Arts, Business Administration
 Bachelor of Arts, Hospitality Business Management

Everett Campus

Bachelor of Arts, Hospitality Business Management

THE EDWARD R MURROW COLLEGE OF COMMUNICATION

Bruce Pinkleton, Dean**Goertzen Hall, Room 101****509-335-8535**<https://murrow.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 recognized nationally for its television news and public relations sequences, and has a diverse faculty and student body in terms of both gender and race.

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, a data analysis lab, a 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 degree programs in Journalism and Media Production (Broadcast News; Broadcast Production; Media and Technology; Multimedia Journalism), and Strategic Communication (Advertising; Integrated Strategic Communication; Public Relations; Risk and Crisis Communication). 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

Undergraduate Students are admitted directly into their desired major in the College of Communication upon admission and enrollment at Washington State University.

To remain admitted in any major in the College of Communication, a student must complete all required courses and remain in good academic standing.

COM 300 must be completed with a C or better, and only two attempts are allowed and a "W" is counted as an attempt. With an appeal to the department chair, a student may request to take COM 300 for a 3rd attempt during a summer session. All pre-requisites must be met in order to move through the Murrow curriculum. If a student fails to complete the required curriculum, they will not be able to remain admitted in the Murrow College. If a student is failing to complete academic requirements in a reasonable timeline, an advisor will work with the student to identify another academic path. Students must remain in good academic standing in order to graduate with a degree from the Murrow College.

Direct to Degree for Transfer Students

Transfer students bringing in 30 or more semester credits from an outside institution, and a 3.0 or higher transfer GPA will be directly admitted into the Murrow College. After consulting with a Murrow academic advisor, a student transferring with junior status (60 or more semester credits), with a 3.0 or higher transfer GPA, and who has completed COM 101 or COM 105 from another institution, will be allowed to take COM 300 in their first semester at WSU with all remaining 100 level required communication courses. All transfer students are required to consult with a Murrow academic advisor prior to enrollment at WSU.

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.

Degrees

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

Degree	Emphasis
Bachelor of Arts	
Journalism and Media Production	Broadcast News Broadcast Production Media and Technology Multimedia Journalism
Strategic Communication	Advertising Integrated Strategic Communication Public Relations Risk and Crisis Communication
Master of Arts	
	Communication Health Communication and Promotion Strategic Communication
Doctor of Philosophy	Communication

COLLEGE OF EDUCATION**Michael S. Trevisan, Dean****Cleveland Hall****509-335-1738**<https://education.wsu.edu>

The College of Education consists of the Department of Educational Leadership and Sport Management, the Department of Kinesiology and Educational 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 kinesiology and athletic training. 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 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 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	Academic Area or Emphasis
Bachelor of Arts Education Sport Management	Teaching and Learning Educational Leadership and Sport Management
Bachelor of Science Kinesiology Sports Medicine (part of the Master in Athletic Training degree program)	Kinesiology and Educational Psychology Kinesiology and Educational Psychology
Master of Arts	Curriculum and Instruction Educational Leadership Educational Psychology Language, Literacy, and Technology Education Special Education Sport Management
Master of Science	Kinesiology
Master of Education	Curriculum and Instruction Educational Leadership Language, Literacy, and Technology Education Special Education
Master in Athletic Training	(5-year program, which includes BS in Sports Medicine)
Master in Teaching	Elementary Education Secondary Education
Doctor of Education	Educational Leadership (K-12) Educational Leadership (Teacher Leadership)
Doctor of Philosophy	Cultural Studies and Social Thought in Education Educational Leadership Educational Psychology Language, Literacy, and Technology Mathematics and Science Education Special Education

VOILAND COLLEGE OF ENGINEERING AND ARCHITECTURE

Mary Rezac, Dean
Carpenter Hall, Room 526
509-335-5593

<https://vcea.wsu.edu>

The Voiland College of Engineering and Architecture provides instruction, research, and public service in various engineering disciplines, architecture, construction management, computer science, and materials science. The college offers several engineering degrees including bioengineering, chemical engineering, civil engineering, computer engineering, construction engineering, electrical engineering, materials science and engineering, mechanical engineering, and software engineering. The School of Design and Construction offers degrees in architecture, interior design, landscape architecture, and construction management. The Ph.D. in materials science is offered through an interdisciplinary program through the Voiland College of Engineering and Architecture and the College of Arts and Sciences. Online master's degrees are offered in electrical power engineering, engineering and technology management, and software engineering.

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.

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.

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 members of the college also serve as editors, authors, and reviewers for professional journals serving the nation and the world.

Students majoring in degrees offered by the Voiland College of Engineering and Architecture are guided in selection of courses in arts and humanities, social sciences, diversity, and communication to University Common Requirements (UCORE) consistent with the needs of the major. Students are encouraged to take UCORE 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 regarding the Voiland College of Engineering and Architecture is available online at <https://vcea.wsu.edu>.

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 ABET, <http://www.abet.org>.

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 engineering programs of the Voiland College of Engineering and Architecture are encouraged (and sometimes required) to take the FE Examination toward professional registration during their final academic year.

The 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 Mathematics and Statistics, Physics and Astronomy, Chemistry, and Biological Sciences. The graduate programs are also supported by many excellent University facilities such as the Water Research Center, Laboratory for Atmospheric Research, Composite Materials and Engineering Laboratory, Electron Microscopy Center, Power Systems Engineering Research Center, Energy Systems Innovations Center, Center for Multiphase Environmental Research, Integrated Design Experience, Institute for Sustainable Design, Bioengineering Research Center, Center for Materials Research, Smart Environments Research Center, Center for Asphalt Technology, Sports Science Laboratory, and Washington State Transportation 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 to practical problems. The Bachelor of Science in Computer Science, offered through the School of Electrical Engineering and Computer Science, the School of Engineering and Applied Sciences (Tri-Cities), and the School of Engineering and Computer Science (Vancouver) is accredited by the Computing Accreditation Commission of ABET, <http://www.abet.org>. Curricular specializations available include computer engineering, databases, distributed computing, networks, network security, operating systems, and software engineering.

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 degree is accredited by the Computing Accreditation Commission of ABET, <http://www.abet.org>.

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 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 Landscape Architecture Accreditation Board (LAAB). The school also offers a Master of Arts in Interior Design and a Master of Science in Landscape Architecture.

Undergraduate Admission

When admitted to Washington State University, students are typically assigned advisors in their desired major. Students may be admitted to a major in the college by upon demonstrating that they are calculus-ready or by completing any departmental-approved alternative pathway, and by making their intention known to the department offering the major. See vcea.wsu.edu/directadmit.

The departmental section of the catalog lists admission requirements as well as information about requirements to remain in good standing in the major.

Prospective students are welcome to contact the department administering their choice of majors to discuss their readiness for the major and to determine if other preparation is warranted.

Degrees

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

Degree	Academic 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 (also Tri-Cities) Computer Engineering Computer Science (also Tri-Cities, Vancouver) Construction Engineering Construction Management Electrical Engineering (also Bremerton, Everett, Tri-Cities, Vancouver) Materials Science and Engineering Mechanical Engineering (also Bremerton, Everett, Tri-Cities, Vancouver) Software Engineering (also Everett)
Master of Architecture	Architecture
Master of Arts	Interior Design
Master of Engineering	Civil Engineering
Master of Engineering and Technology Management	Engineering and Technology Management (Spokane, Tri-Cities, Vancouver only)
Master of Science	Biological and Agricultural Engineering Chemical Engineering Civil Engineering Computer Science (also Tri-Cities, Vancouver) Electrical Engineering (also Tri-Cities) Engineering Environmental Engineering (also Tri-Cities) Landscape Architecture Materials Science and Engineering Mechanical Engineering (also Tri-Cities, Vancouver) Software Engineering (Global only)
Doctor of Philosophy	Biological and Agricultural Engineering

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

HONORS COLLEGE

M. Grant Norton, Dean
Elmina White 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 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 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, discussion-based 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 as well as a thesis, students acquire broad foundations of 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 competency in a second language before graduation.

Admission to the Honors College

High school students who have shown excellent scholastic ability, intellectual achievement, and motivation should apply directly to the Honors College after they have submitted their application to WSU. Current Washington State University students and transfer students who have achieved a college grade point average of at least 3.5 should contact Honors directly to apply. International students should contact Honors to find out how they can be considered for admission. For more information on the Honors College and its curriculum, please refer to the departmental section of this catalog and the Honors College website.

ELSON S. FLOYD COLLEGE OF MEDICINE

John Tomkowiak, Founding Dean
WSU Health Sciences
Elson S. Floyd College of Medicine/SAC 503F
412 E. Spokane Falls Blvd.
Spokane, WA 99202
509-358-7944
<https://medicine.wsu.edu/>
medicine@wsu.edu

The Elson S. Floyd College of Medicine is Washington's community-based medical school. Named after the University's late president, Elson S. Floyd, the college was created to expand medical education and health care access in communities across the state of Washington. Led by Founding Dean Dr. John Tomkowiak, the College of Medicine is driven by its mission to solve problems in challenging health care environments across the state of Washington.

The College of Medicine administration is located on the WSU Health

Sciences Campus in Spokane with clinical campuses in Everett, Spokane, Tri-Cities, and Vancouver. Employing a community-based model in which students gain clinical experiences in hospital and health care settings within approximately 100 miles of the four campus locations, the college emphasizes training in the kind of environments where students will ultimately settle to practice as physicians. All campuses foster active learning environments, interdisciplinary teaching, research, outreach, and clinical services.

The college consists of the departments of Community and Behavioral Health, Medical Education and Clinical Sciences, Nutrition and Exercise Physiology, Speech and Hearing Sciences, and Translational Medicine and Physiology.

The Department of Translational Medicine and Physiology is the central hub of foundational and translational biomedical research at the Elson S. Floyd College of Medicine. The faculty represent a diverse set of interests, ranging from the neuroscience of sleep to cancer. Their work encompasses both foundational and translational research, extending from cell and molecular physiology to behavioral studies and they employ a full range of model systems as well as human subjects. The department provides research opportunities to graduate students in participating Ph.D. programs and to medical students.

The Department of Community and Behavioral Health, established in November 2020, extends the reach of the college's mission by addressing health at the community level through research, patient care and degree programs. The department provides the opportunity for the college's research enterprise to hone its focus in these areas and bring behavioral health to the fore.

The Department of Medical Education and Clinical Sciences delivers the MD program, training medical students to be insightful and compassionate physicians. It immerses students in a variety of real-world and simulated learning environments that provide them with the clinical and behavioral competencies to be successful in the future practice of medicine. In addition to preparing students to care for individual patients, it readies them to take the lead in addressing community healthcare issues. Students learn to recognize problems in health care delivery, innovate solutions, and mobilize change that improves the health of entire populations. The department also delivers two professional certificates, the Certificate in Leadership and the Certificate in Medical Ethics.

The Department of Nutrition and Exercise Physiology focuses on the effects of nutrition and physical activity on human health. The interdisciplinary program combines study in human nutrition, exercise physiology, and biological sciences, along with population, social, and psychological sciences. Opportunities for research and applied, practical experiences are the core of the instructional methods for both undergraduate and graduate students. The program offers degrees at the B.S., M.S., and Ph.D. levels.

The Department of Speech and Hearing Sciences offers programs leading to a Bachelor of Arts in Speech and Hearing Sciences and a Master of Science in Speech and Hearing Sciences in speech-language pathology. Training in speech and hearing sciences through the bachelor's degree prepares students for a range of careers in health professions, education and social services, among others. State and national clinical and educational licensure and certification require completion of the master's degree. Graduate students are prepared as speech-language pathologists to provide direct and consultative services in medical and educational settings. The faculty's research contributes to the evidence base of the profession, ensuring that future generations of professionals are prepared to provide the best possible health care. The program offers degrees at the B.A. and M.S. levels.

Degrees

The Elson S. Floyd College of Medicine offers the following degree programs:

Degree	Academic Area
Bachelor of Arts	Speech and Hearing Sciences
Bachelor of Science	Nutrition and Exercise Physiology
Master of Science	Coordinated Program in Dietetics, Nutrition, and Exercise Physiology Nutrition and Exercise Physiology Speech and Hearing Sciences
Doctor of Medicine	Medical Education and Clinical Sciences
Doctor of Philosophy	Nutrition and Exercise Physiology

COLLEGE OF NURSING

Mary Koithan, Dean
WSU Spokane
412 E. Spokane Falls Blvd.
Spokane, WA 99202
509-324-7332
<https://nursing.wsu.edu>

The College of Nursing offers degrees in nursing at the baccalaureate (BSN), master's (MN), and doctoral (Doctor of Nursing Practice and PhD) levels. The undergraduate program prepares students as generalists in the practice of nursing. The curriculum at the graduate level provides preparation for advanced, specialized nursing practice, leadership, education, and research.

Admission and application deadlines for all programs can be found at the College of Nursing website: <https://nursing.wsu.edu>.

Undergraduate Programs

WSU College of Nursing's undergraduate programs are approved by the Washington State Nursing Care Quality Assurance Commission and are accredited by the Commission on Collegiate Nursing Education. Approximately 800 BSN and Registered Nurse students are enrolled in the baccalaureate nursing programs at the Health Sciences campus in Spokane, and at WSU campuses in the Tri-Cities and Vancouver and sites in Yakima and Walla Walla.

The BSN program is open to students beginning a nursing career. The curriculum consists primarily of 300-400-level courses and is four academic years in length. The first two years of the curriculum (lower-division component) are completed on the Pullman campus, at Eastern Washington University or Whitworth University, or at any institution offering courses equivalent to those taught at Washington State University. Courses are offered in Spokane, Yakima, and the Tri-Cities. Graduates are eligible to apply for licensure as Registered Nurses.

The RN-BSN (post-licensure) undergraduate program is open to Registered Nurses who completed an associate degree in nursing and who wish to obtain a baccalaureate degree in nursing. The RN-BSN courses (300-400-level courses) are provided at WSU campuses in Spokane, Tri-Cities, and Vancouver as well as in Yakima and Walla Walla.

Graduates may 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.

Admission

All students planning to pursue either the BSN or RN-BSN programs must apply to the Office of Admissions at WSU and be admitted to the University. Requirements may be met at WSU or through transfer credits from another institution of higher education. The College of Nursing uses a Centralized Application Service (CAS) for BSN applicants.

All Registered Nurses planning to apply to the RN-BSN nursing major at WSU must do so through the Admissions Office at the WSU campus where they will attend classes. Applications are available throughout the year for admission to fall semester and another admission to spring semester. Students are encouraged to contact an advisor at their campus for lower-division advising.

Registered Nurse applicants (RN-BSN) must be graduates of an approved community college 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.

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 Programs

The MN in Population Health (MN-PH) prepares graduates for an advanced practice nursing role in acute, outpatient and community settings. You may enter the program with a BSN or the RN-MN program as an RN with a bachelor's degree in another field. The MN-PH program also offers three graduate certificate options in nursing leadership, nursing education and public health.

The Doctor of Nursing Practice (DNP) post-baccalaureate program offers prospective students with a BSN in nursing the opportunity to earn a doctoral

degree in one of three areas: Family Nurse Practitioner (DNP-FNP), Psychiatric Mental Health Nurse Practitioner (DNP-PMHNP), or Population Health (DNP-PH). Graduates of the FNP and PMHNP programs are eligible to complete a national certification examination leading to state licensure as Advanced Registered Nurse Practitioners. The post-master's DNP general plan program offers prospective students with a master's degree in nursing the opportunity to add expertise in research and leadership to their current practice or pursue new specialization as a DNP-FNP, DNP-PMHNP, or DNP-PH.

The Ph.D. program in Nursing includes a core set of courses in nursing science, research, and theory guiding the student to conduct qualitative or quantitative inquiry. The Ph.D. program prepares students as nurse scientists, able to carry out independent research; and to serve as leaders in nursing education. Full or part-time plans of study are available. The Post-Baccalaureate to Ph.D. in Nursing allows students with a baccalaureate degree and a RN license to enter the Ph.D. program after two semesters of Master's level courses.

All MN, DNP, and Ph.D. graduate programs and courses are offered in hybrid delivery (requiring attendance at some on-campus courses and including the completion of some learning activities via live interactive videoconference and using internet-based course management software).

Professional Development

The Office of Professional Development at the WSU College of Nursing focuses on meeting 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 <https://nursing.wsu.edu>.

Degrees

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

Degree	Academic Area
Bachelor of Science in Nursing	Generalized practice of professional nursing
Master of Nursing	Advanced Population Health
Doctor of Nursing Practice	Advanced Population Health
Doctor of Philosophy	Nursing

COLLEGE OF PHARMACY AND PHARMACEUTICAL SCIENCES

Mark Leid, Dean
WSU Health Sciences Spokane Campus
Pharmaceutical & Biomedical Sciences Building, Room 120K
412 E. Spokane Falls Blvd.
Spokane, WA 99202
509-368-6700
<https://pharmacy.wsu.edu/>

Doctor of Pharmacy

The Doctor of Pharmacy (PharmD) schedule of studies involves four professional years. The first three professional years of the PharmD curriculum are delivered at the WSU Health Sciences campus in Spokane and the Pacific Northwest University of Health Sciences campus in Yakima. During your four years in pharmacy school you will have 1,720 hours of professional pharmacy experience in a variety of settings. Our experiential learning program ensures that you will gain the real-world skills you need to be practice ready upon graduation. The college boasts a vast network of 250 sites in Washington, Oregon, California and Idaho with more than 400 volunteer preceptors and faculty members. Together, they form the backbone of your introductory pharmacy practice experiences (IPPE) and advanced pharmacy practice experiences (APPE). Experiential learning takes place in a variety of health care environments, including community, institutional, and long-term care settings.

Certificates and dual degrees allow you to expand your skillset beyond the traditional Doctor of Pharmacy curriculum. The college offers four dual degrees and certificates to open up a world of possibilities for your future while saving time and money thanks to integrated coursework. Along with your PharmD, you can also pursue your studies in Engineering and Technology Management, Master of Business Administration, Communication, or a PhD in Pharmaceutical Sciences and Molecular Medicine.

The application period each academic year is July to January, and students should prepare to submit their application one calendar year before they intend to begin the pharmacy program. A bachelor's degree is not required for admission; prerequisites for admission typically require three years of prepharmacy education. For additional information regarding the Doctor of Pharmacy curriculum, please see the College of Pharmacy and Pharmaceutical Sciences home page at <http://www.pharmacy.wsu.edu>, or contact the Office of Student Services at 509-368-6605.

Graduate Programs

The college's pharmaceutical sciences and molecular medicine graduate program prepares graduates for careers in academia, industry, and other public and private institutions dedicated to the promotion of human health. The PhD program provides graduate training in cancer biology, drug discovery, and translational pharmacology. Faculty in the program utilize multi-disciplinary and translational research approaches to (1) understand mechanisms of disease, (2) identify novel therapeutic targets, (3) develop novel treatments, and (4) optimize therapeutic regimens. The program strives to prepare you to become independent and creative problem solvers who will develop into leaders in your respective fields.

Students entering the program should have completed undergraduate work that includes biology, chemistry (including organic chemistry and biochemistry), mathematics (through calculus), and organ/mammalian physiology. Students working toward the PhD in Pharmaceutical Sciences and Molecular Medicine are expected to develop an area of research emphasis that is consistent with the capabilities and interests of the faculty.

A PharmD/PhD combined degree option is available to train clinician scientists. Interested students may apply for PhD admission in their second or third year of the PharmD program.

Applications for admission to the graduate program must include: official GRE scores, official transcripts for all college level work, three letters of recommendation, and a letter discussing career goals, previous research experience, and research interests. For students whose native language is not English, TOEFL/IELTS scores are required. Inquiries should be emailed to: gradprograms@pharmacy.wsu.edu.

Degrees

The College of Pharmacy and Pharmaceutical Sciences offers the following degree programs:

Degree	Academic Area
Master of Science	Pharmaceutical Sciences and Molecular Medicine
Doctor of Pharmacy	Pharmacy
Doctor of Philosophy	Pharmaceutical Sciences and Molecular Medicine

COLLEGE OF VETERINARY MEDICINE

Dori L. Borjesson, Dean
Bustad Hall, Room 110
509-335-9515
<https://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. Undergraduate, professional, and graduate degree programs within the college include classroom instruction, seminars, special projects, and research opportunities, which together provide the education needed to meet society's needs.

Four undergraduate majors are housed in the College of Veterinary Medicine - Biochemistry, Genetics & Cell Biology, Microbiology, and Neuroscience. Graduating students choose to pursue many different career paths after graduation such as human or veterinary health professions, research careers, K-12 education, public health, and other careers that rely on a solid foundation of knowledge and skills in basic and applied biomedical sciences. The benefits of being a major in these programs include: preparation for postbaccalaureate professional or graduate education, research opportunities with WSU faculty members beginning the freshman year, academic scholarships, and faculty advising for students.

Graduate students are prepared for 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, mechanism of muscle contraction, chemotaxis, reproductive biology, immunology, infectious diseases of humans and animals, cellular and systems neurosciences, and global health. In addition to requirements unique to each degree granting program, graduate students participate in interdisciplinary training and professional development opportunities sponsored by the integrated Program in Biomedical Sciences (iPBS). There are also combined graduate degree and clinical residency or pathology residency programs administered through the Departments of Veterinary Clinical Sciences and Veterinary Microbiology and Pathology, respectively, as well as investigator-initiated programs with selected individuals.

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 National Academy of Medicine and Washington State Academy of Sciences, 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:

Degree	Academic Area
Doctor of Veterinary Medicine	Veterinary Medicine
Bachelor of Science	Biochemistry Genetics and Cell Biology Microbiology Neuroscience
Master of Science	Biomedical Sciences Molecular Biosciences Neuroscience
Doctor of Philosophy	Molecular Biosciences Neuroscience Veterinary Science

Washington, Idaho, Montana, Utah (WIMU) Regional Program in Veterinary Medical Education

Washington State University's DVM education program is offered in a regional partnership with the University of Idaho, Montana State University, and Utah State University. This regional program involves instruction on the WSU campus, at Montana State University (Bozeman, MT), and at Utah State University (Logan, UT). Specific quotas of students to be admitted from Idaho, Montana, 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, New Mexico, Nevada, and Wyoming. Under the terms of this agreement, a student admitted to the college who is 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, <https://www.wiche.edu/>.



The Graduate School

Tammy Barry, Vice Provost for Graduate and Professional Education

French Administration Building, Room 324

509-335-6424

<https://gradschool.wsu.edu>

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 one that offers a superior program in the chosen field. The student should study the accomplishments of the members of the graduate program faculty, the adequacy of the research facilities, and the appropriateness of the curricula. For many, the Graduate School at 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, to more 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 doctoral degree is awarded in recognition of distinctive scholarship. The period of study for the doctoral 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, many departments give special attention to the preparation of students for careers in the teaching profession.

Graduate students are subject to the usual procedures and regulations of the institution and to the Graduate School rules and procedures as outlined on the following pages and in the Graduate School Policies and Procedures.

The Graduate School facilitates advanced study and research with members of WSU faculty. 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 Faculty Senate's 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 other selected 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 occasionally serving as a member 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 <https://gradschool.wsu.edu/policies-procedures>.

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 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 consider entering the Graduate School should apply online from the Graduate School web-site at <https://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. 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 granted based on graduate study elsewhere when it has been accomplished in a recognized graduate school with at least a B (3.00) average in 6 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.

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 graduate level 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 as 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.

No workshops, extension credits, or continuing education courses from other institutions, or credit earned by special examination may be used to meet advanced degree requirements.

Summer Session

Credit earned during summer session at Washington State University may be applied in the same manner and is 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 the WSU Global Campus

Credit earned in graduate-level courses taken online through the WSU Global Campus will be accepted on graduate student programs without limit, subject only to customary admission and program approvals.

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 in a thesis program or 9 semester hours of work in a non-thesis program 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 the following: 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 not enrolled for up to four consecutive semesters (excluding summer) must complete a re-enrollment form and pay a re-enrollment 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 Independent Capstone Project and / or Examination (701), Master's Special Problems, Directed Study, and/or Examination (702), and Doctoral Research, Dissertation, and/or Examination (800) shall have as prerequisite degree-seeking or provisional student status in the Graduate School. The grades assigned for 700, 701, 702, and 800 credits will be S, U, X, I, or W. For students enrolled in these credits, the F grade is not available.

Registration Policy for Graduate Students Completing Degree Requirements

Graduate students must register for a minimum of two 700, 701, 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 non-class period must be enrolled in a minimum of two research credits in the previous semester.

Academic 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 taken after more than one semester of graduate study, or who receives two or more U (unsatisfactory) grades for research/special project credits, will be dismissed from the University. Reinstatement of an academically deficient student may be considered only through a recommendation made by the chair of the major department to 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.

Funding Your Education

Assistantships

One of the most common sources of funding is the graduate assistantship, which provides financial support to a graduate student who engages in teaching, research, and/or service. Graduate assistantships may include a tuition waiver, health insurance, and a monthly salary. The Graduate School website and Graduate School Policies and Procedures Manual should be consulted concerning qualifications, eligibility, and appointment procedures.

Departments and programs generally make assistantship offers during the admissions process; however, current students may be eligible for an assistantship in their program if funding is available. Students should contact their department chair and/or program director for more information about available assistantships in their program. Most offers of assistantship 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. See <https://gradschool.wsu.edu/student-finance-page/>.

Scholarships and Awards

Each year graduate students of outstanding achievement are recognized with numerous awards, including the Achievement Rewards for College Scientists, AFW Graduate Student Awards, Graduate and Professional Student Awards, President's Award, and the GPSA Research Exposition. Students can learn more about these awards by visiting <https://gradschool.wsu.edu>. Students can also refer to the Office of Financial Services and their departments for scholarship opportunities.

Fellowships

Fellowships and traineeships vary considerably, each with its own set of guidelines and restrictions set by the funding agency. WSU offers fellowships and traineeships through the Graduate School and academic departments as well as other external agencies. Graduate fellows who meet all eligibility criteria will be appointed through their respective academic departments. Students can also refer to the Office of Grant and Research Development Informer website at <https://informer.ogrd.wsu.edu/RecentFacultyAwards.aspx> to learn more about grant funding opportunities.

Internships

Internships can enhance students' future employment opportunities by providing relevant skills, workplace experience, and a network of business professionals in career fields. Students should work with faculty advisors to identify potential internship opportunities that fit within their program of study. Students who wish to participate in a fall or spring internship are required to meet the University's continuous enrollment policy by either enrolling in a minimum of two graduate credits, be in continuous doctoral status, or be approved for official internship leave. Please see the complete Internship Leave policy.

Degrees and Certificates Granted

--See Program Location Key and Degree Acronyms following this list.

Doctor of Philosophy, PhD

Agricultural Economics (P)
 American Studies (P)
 Animal Sciences (P)
 Anthropology (P)
 Biological and Agricultural Engineering (P)
 Biology (P)
 Biomedical Sciences
 Clinical and Translational Science (P)
 Combined Anatomic and Pathological Residency (P)
 Combined Clinical Microbiology Residency (P)
 Immunology and Infectious Diseases (P)
 Integrative Physiology and Neuroscience (P)
 Business Administration
 Accounting (P)
 Finance (P)
 Hospitality and Tourism (P)
 Information Systems (P)
 Management (P)
 Marketing (P)
 Operations and Management Science (P)
 Chemical Engineering (P)
 Chemistry (P)
 Civil Engineering (P)
 Communication (P)
 Computer Science (P)
 Criminal Justice and Criminology (P)
 Crop Science (P)
 Economics (P)

Education
 Cultural Studies and Social Thought in Ed. (P)
 Educational Leadership (P)
 Educational Psychology (P)
 Language, Literacy, and Technology (P)
 Mathematics and Science Education (P)
 Special Education (P)
 Electrical and Computer Engineering (P)
 Engineering Science (P)
 English (P)
 Entomology (P)
 Environmental and Natural Resource Sciences (P)
 Food Science (P)
 Geology (P)
 History (P)
 Horticulture (P)
 Individual Interdisciplinary (P)
 Materials Science and Engineering (P)
 Mathematics (P)
 Mechanical Engineering (P)
 Molecular Biosciences (P)
 Molecular Plant Sciences (P)
 Neuroscience (P)
 Nursing (S)
 Nutrition and Exercise Physiology (S)
 Pharmaceutical Sciences and Molecular Medicine (S)
 Physics (P)
 Plant Biology (P)
 Plant Pathology (P)
 Political Science (P)
 Prevention Science (P, S, V)
 Psychology
 Clinical (P)
 Experimental (P)
 Sociology (P)
 Soil Science (P)
 Statistical Science (P)

Master of Arts, MA

American Studies (P)
 Anthropology (P)
 Communication (P)
 Criminal Justice and Criminology (P, S)
 Education
 Curriculum and Instruction (P, S, T, V)
 Educational Leadership (P, S)
 Educational Psychology (P)
 Language, Literacy, and Technology Education (P, S)
 Special Education (P, V, G)
 Sport Management (P, G)
 English (P)
 Health Communication and Promotion (G)
 History (P, V)
 Interior Design (P)
 Music (P, G)
 Political Science (P)
 Sociology (P)
 Strategic Communication (G)

Master of Science, MS

Agriculture (G)
 Food Science and Management (G)
 General (G)
 Plant Health Management (G)
 Animal Sciences (P)
 Apparel, Merchandising, Design, and Textiles (P)
 Applied Economics (P)
 Biological and Agricultural Engineering (P)
 Biology (P, T)

Biomedical Sciences

Immunology and Infectious Diseases (P)
Integrative Physiology and Neuroscience (P)
Veterinary Clinical Training Program (P)
Business Administration (P)
Chemical Engineering (P)
Chemistry (P)
Civil Engineering (P, T)
Computer Engineering (P)
Computer Science (P, T)
Computer Science - Vancouver
Coordinated Program in Dietetics, Nutrition, and Exercise Physiology (S)
Crop Science (P)
Economics (P)
Electrical Engineering (P, T, V)
Engineering (P)
Entomology (P)
Environmental Engineering (P, T)
Environmental Science (P, T, V)
Food Science (P)
Geology (P)
Horticulture (P)
Kinesiology (P)
Landscape Architecture (P)
Materials Science and Engineering (P)
Mathematics (P)
Mechanical Engineering (P, T)
Mechanical Engineering - Vancouver
Molecular Biosciences (P)
Molecular Plant Sciences (P)
Natural Resource Sciences (P)
Neuroscience (P)
Nutrition and Exercise Physiology (S)
Pharmaceutical Sciences and Molecular Medicine (S)
Physics (P)
Plant Biology (P)
Plant Pathology (P)
Prevention Science (P, S, V)
Psychology (P)
Software Engineering (G)
Soil Science (P)
Speech and Hearing Sciences (S)
Statistics (P)

Specialized Graduate Degrees

Accounting, M.Acc. (P) (Not accepting applications at this time.)
Applied Economics, MAE (P)
Architecture, M.Arch. (P)
Athletic Training, MAT (P)
Civil Engineering, ME (P)
Education Degrees
Curriculum and Instruction, EdM (P)
Curriculum and Instruction, EdD (P)
Educational Leadership, EdM (P, S, T, V)
Educational Leadership, EdD (P, S, T, V)
Educational Psychology, EdM (P)
Language, Literacy, and Technology Education, EdM (P, S, T, V)
Special Education, EdM (P, V, G)
Sport Management, EdM (P)
Teaching (elementary), MIT (P, S, T, V)
Teaching (secondary), MIT (P, S, T, V)
Electrical Power Engineering, PSM (G)
Engineering & Technology Management, METM (G)
Master of Fine Arts, MFA (P)
Molecular Biosciences, PSM (G)
Nursing
Advanced Population Health, DNP (S, T, V)
Advanced Population Health, MN (S, T, V)
Public Affairs, MPA (V)

Professional Programs

Doctor of Medicine (S)
Doctor of Pharmacy (S)
Doctor of Veterinary Medicine (P)
Master of Business Administration (G)

Graduate Certificates

Applied Educational Research Methods (P)
Applied Measurement and Quantitative Methods (P)
Bioethics (P, G)
Bioinformatics (P, E, S, T, V)
C-NSPIRE: Carbon and Nitrogen Systems Policy Oriented Integrate Research and Education (P, G, S, T, V)
Constraints Management (G)
Digital Humanities and Culture (P)
Education Technology Across the Curriculum (P)
English Language Learner (P, T, V)
Global Justice and Security Studies (P)
Health Assistive Smart Environment Design (P)
Health Communication and Promotion (G)
Human Nutrition (S)
Industrial Leadership (G)
Logistics and Supply Chain Management (G)
Nuclear Materials, Science and Engineering (P, T)
Nurse Educator (S, T, V)
Nursing Leadership (S, T, V)
Professional Molecular Science (P, G)
Project Management (G)
Protein Biotechnology (P)
Public Health (S, T, V)
Research Communication (G)
Six Sigma Quality Management (G)
Strategic Communication (G)
Sustainable Agriculture (P, G)
Systems Engineering Management (G)
Teaching College Mathematics (P, V)
Teaching English as a Second Language (P)

--Program Location Key

(E) Everett
(G) Global, Online
(P) Pullman
(S) Spokane
(T) Tri-Cities
(V) Vancouver

--Degree Acronyms

DNP = Doctor of Nursing Practice
EdD = Doctor of Education
EdM = Master of Education
MA = Master of Arts
MAcc = Master of Accounting
MArch = Master of Architecture
MAT = Master of Athletic Training
MBA = Master of Business Administration
MD = Doctor of Medicine
ME = Masters of Engineering
METM = Master of Engineering & Technology Management
MFA = Master of Fine Arts
MHPA = Master of Health Policy and Administration
MIT = Master in Teaching
MN = Master of Nursing
MPA = Master of Public Affairs
MS = Master of Science
PharmD = Doctor of Pharmacy
PhD = Doctor of Philosophy
PSM = Professional Science Masters

Global and Statewide Campuses and Statewide Sites

BREMERTON

Murari Kejariwal, Clinical Associate Professor and Program Coordinator, Electrical Engineering

1600 Chester Avenue
Bremerton, WA 98337
360-473-2843

murari.kejariwal@wsu.edu

<https://school.eecs.wsu.edu/academics/undergraduate-program/electrical-engineering/bremerton/>

Washington State University's School of Electrical Engineering and Computer Science offers a Bachelor of Science in Electrical Engineering program in Bremerton, Washington. The majority of courses at the Bremerton site are taught by full-time resident faculty in Bremerton. Adjunct faculty also enhance the educational opportunities for the students. Courses at the Bremerton campus are a combination of those provided by local faculty and those delivered from other campuses. Students are advised by WSU faculty and staff who are resident in Bremerton.

The WSU BSEE degree program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Marvin Pitts, Scholarly Professor and Program Coordinator, Mechanical Engineering

1600 Chester Avenue
Bremerton, WA 98337
360-475-7543

pitts@wsu.edu

<https://mme.wsu.edu/undergraduate/mechanical-engineering/bremerton/>

Washington State University's School of Mechanical and Materials Engineering offers a Bachelor of Science in Mechanical Engineering program in Bremerton, Washington. The majority of courses at the Bremerton site are taught by full-time resident faculty in Bremerton. Adjunct and visiting faculty also enhance the educational opportunities for the students. Courses at the Bremerton campus are a combination of those provided by local faculty and those delivered from other campuses. Students are advised by WSU faculty and staff who are resident in Bremerton.

The WSU BSME degree program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Degrees Offered at Bremerton

Undergraduate Degrees

Electrical Engineering, BS
Mechanical Engineering, BS

EVERETT CAMPUS

Paul Pitre, Chancellor

915 N. Broadway
Everett, WA 98201
425-405-1600

<https://everett.wsu.edu>

At WSU Everett you are part of a rich and colorful history. Our city campus is part of Washington State University's 130-year-old legacy, dedicated to accessibility and public service. Our urban location is surrounded by a growing community, which offers unique access to internships, networking opportunities, and

ongoing career. WSU Everett's degree programs align with the growing needs of our region. We graduate career and citizen ready professionals who can contribute to the economic health and vitality of Washington State.

Our industry-aligned, interdisciplinary undergraduate degree-completion programs are designed to be affordable, accessible, and flexible. Students can fulfill general education requirements by taking their first two years of courses at any community college and complete their undergraduate degree at WSU Everett.

We are in the City of Everett, home to the Port of Everett and employers in all industries, like Fortive, Boeing, FUNKO, the AquaSox and more.

Degrees and Certificates Offered at WSU Everett

When you attend Washington State University Everett, your program curriculum and your degree are identical to those earned at any of the WSU campuses. Students can pursue additional majors and/or minors in any of the fields of study available at WSU Everett.

Undergraduate Degrees

Agricultural Food Systems, BS

(Major: Organic and Sustainable Agriculture)

Business Administration, BA

(Major: Management; Options: Human Resource Management (pending future faculty), and Innovation and Change)

Data Analytics, BS

(Options: Actuarial Science; Business; and General)

Electrical Engineering, BS

Hospitality Business Management, BA

(Majors: Hospitality Business Management; and Senior Living Management)

Mechanical Engineering, BS

Software Engineering, BS

Strategic Communication, BA

(Major: Integrated Strategic Communication)

Undergraduate Certificates

Sustainable Organizational Leadership

Graduate Certificates

Bioinformatics

Campus and Student Life

WSU Everett is an intimate campus with numerous advantages. Small class sizes and cohort-based programs give students the opportunity to form a strong support system and sustainable relationships with students and faculty. There are many opportunities for students to participate in cross-disciplinary, industry projects, which include local businesses assisting students in developing a network for future employment opportunities. WSU Everett currently has numerous student clubs, many activities and campus events for students to participate in throughout the year. We offer several student clubs, activities, and campus events throughout the year.

WSU Everett's new 95,000 square foot facility now offers state-of-the-art classrooms, computer labs, engineering laboratories, student collaboration areas, study areas, a coffee shop, fully accessible staff to assist in all academic areas of need and a tutoring center. Students have easy access to a local fitness center, libraries, study areas, engineering laboratories, and computer labs. WSU Everett also has housing agreements with Everett Community College and Edmonds College.

The city of Everett offers a wide variety of restaurants, community events, sporting events, a beautiful view of Puget Sound and the Everett marina, and

easy access to Seattle and Canada by being situated directly off I-5. Snohomish County offers sports programs, hiking, camping, boating, fishing, art shows, county fairs, museums, shopping, and a culture that complements the Cougar spirit.

Industry-Aligned Programs

WSU Everett goes beyond higher education to help address the region's most pressing economic challenges as we compete in a worldwide marketplace. Local businesses, large and small, rely on an economic infrastructure of industrial, commercial and professional services. Area businesses need a talented, well-trained workforce to thrive and expand. To fill this need, we maintain close ties to employers in the region to facilitate internships and secure opportunities for local employment for our students after graduation.

GLOBAL CAMPUS

David Cillay, Vice President Academic Outreach and Innovation and Global Campus Chancellor

106 Van Doren Hall

Pullman, WA 99164-5210

800-222-4978 / 509-335-3557

<https://online.wsu.edu>

WSU Global Campus extends the land-grant mission of the University by serving residents of Washington and citizens of the world who require the flexibility of online higher education coupled with the rigor of a top research institution. WSU Global Campus works in collaboration with WSU academic departments to offer bachelor's and master's degrees and undergraduate and graduate certificates completely online.

Degrees and Certificates Offered through WSU Global Campus

A degree earned at WSU Global Campus is the same as a degree earned on a WSU physical campus. WSU faculty teach online courses and WSU staff provide academic advising, career counseling, and other student support services. Global Campus students can also take advantage of online tutoring and WSU library services.

Undergraduate Degrees

Anthropology, BA

Biology, BS

(Option: General)

Business Administration, BA

(Majors available: Accounting; Management; Management Information Systems; Marketing)

Criminal Justice and Criminology, BA

Data Analytics, BS

(Options: Business; and General)

Earth and Environmental Science, BS

(Major: Environmental and Ecosystem Sciences)

Economic Sciences, BS

(Option: Business Economics)

English, BA

(Option: Rhetoric and Professional Writing)

History, BA

Hospitality Business Management, BA

(Majors: Hospitality Business Management; and Senior Living Management)

Human Development, BA

(Options: Child and Youth Development; Early Childhood Education; Gerontology; Human Services; Lifespan Development; and Prevention Science)

Humanities, BA

Political Science, BA

(Options: General; and Pre-Law)

Psychology, BS

Social Sciences, BA

Sociology, BA

Strategic Communication, BA

(Major: Integrated Strategic Communication)

Graduate Degrees

Agriculture, MS

Education:

(Specializations: Special Education, EdM, MA; and Sport Management, MA)

Electrical Power Engineering, PSM

Engineering and Technology Management, METM

Health Communication and Promotion, MA

Music, MA

Molecular Biosciences, PSM

Software Engineering, MS

Strategic Communication, MA

Professional Degrees and Certificates

Business Administration, MBA

Finance Certificate

General Business Administration Certificate

Hospitality and Tourism Certificate

International Business Certificate

Marketing Certificate

Master of Healthcare Administration and Leadership, MHAL

Medical Ethics Certificate

Undergraduate Certificates

American Indian Studies

Core Competencies in Spanish Language and Culture

Early Childhood Education

Family Studies

Gerontology

Global Leadership

Human Services Case Management and Administration

Organic Agriculture

Professional Science and Technology Writing

Professional Writing

Sustainable Organizational Leadership

Graduate Certificates

Bioethics

C-NSPIRE: Carbon and Nitrogen Systems Policy Oriented Integrate Research and Education

Constraints Management

Health Communication and Promotion

Industrial Leadership

Logistics and Supply Chain Management

Professional Molecular Science

Project Management

Research Communication

Six Sigma Quality Management

Strategic Communication

Sustainable Agriculture

Systems Engineering Management

Student Life

Students attending WSU Global Campus can engage in activities and events similar to those enjoyed by on-campus students, including virtual career events, academic showcases, art exhibitions, musical performances, common reading programs, and webinars featuring content experts from WSU and industry. The Global Campus student government hosts face-to-face events around the state and a combination in person and virtual commencement. Students also have access to free e-Tutoring, personal academic advisors, and an online exam proctoring service.

Global Campus is one of four units of WSU Academic Outreach and Innovation (AOI) that works to research, identify and implement innovations that improve access to higher education, enhance faculty engagement in teaching, and facilitate student success. The other AOI units include, Learn 365, Professional Education, and Learning Innovations.

SPOKANE CAMPUS

**Daryll DeWald, Vice President for Health Sciences and Chancellor
WSU Spokane**
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Spokane, WA 99202
509-358-7978
<https://spokane.wsu.edu>

As Washington State University's health sciences campus, WSU Spokane prepares future health care professionals and engages in world-class research that leads to healthier people and communities. 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 three of the 11 WSU colleges: the Elson S Floyd College of Medicine, the College of Nursing, and the College of Pharmacy and Pharmaceutical Sciences.

The College of Medicine offers a Doctor of Medicine degree and encompasses medical education and biomedical research. The college seeks applicants with ties to Washington who want to leave a legacy of improving the health of Washington communities and, specifically, individuals who want to help solve problems in challenging health care environments within the state. Students gain clinical experience starting in their first year. Their training takes them to a wide range of settings, from large hospitals in urban centers to small clinics at rural crossroads. Students find themselves immersed in hands-on lessons from seasoned practitioners. This approach is known as a community-based model of medical education.

The College of Medicine also houses the department of Speech and Hearing Sciences, which offers programs leading to a Bachelor of Arts in Speech and Hearing Sciences and a Master of Science in Speech and Hearing Sciences in speech-language pathology. Training in speech and hearing sciences through the bachelor's level degree is considered a pre-professional degree. State, national, clinical, and educational certifications require completion of the master's degree. Graduate students are prepared as speech-language pathologists to provide direct and consultative services in educational and medical settings. The department of Nutrition and Exercise Physiology is also housed in the college, and offers a Bachelor's in Nutrition and Exercise Physiology, a Master of Science Coordinated Program in Dietetics, Master of Science in Nutrition and Exercise Physiology, and a Doctor of Philosophy in Nutrition and Exercise Physiology. Students in this dynamic setting are immersed in biological studies of the human body along with relevant social and psychological sciences. Classroom and practical experiences prepare students for careers in health care, including exercise physiology, dietetics, public health, research, and academia.

The WSU College of Nursing educates more than 900 upper-division undergraduate and graduate-level nursing students each year across its five sites statewide. The college graduates the most bachelor-prepared nurses in the state through its Bachelor of Science in nursing program and its registered nurse to Bachelor of Science program for licensed registered nurses. The college also offers graduate programs that prepare nurses to become advanced practitioners and nurse educators, leaders, and scholars. These include the Master of Nursing, focused on population health; the Doctor of Nursing Practice, with specialties in family nurse practitioner, psychiatric mental health nurse practitioner or population health focus; and Doctor of Philosophy programs to develop nurse scientists.

The WSU College of Pharmacy and Pharmaceutical Sciences offers a four-year Doctor of Pharmacy professional degree program. Students in this program train to provide patient-centered care as part of the integrated health care team. In addition, the Doctor of Pharmacy program is also offered at a site in Yakima and has been enrolling students there since Fall of 2015. The college also offer a Doctor of Pharmacy in pharmaceutical sciences where students interact face-to-face with research faculty and students in pharmacy, medicine, nursing, and other health sciences, and learn from preeminent researchers who are world-renowned experts in their fields.

Also offered in Spokane is a master's degree in education with a focus on educational leadership. The education degrees include master's, doctoral, and certificate programs for aspiring principals, program administrators, and superintendents, as well as a Master of Teaching program.

WSU Spokane also boasts a robust Native American Health Sciences program, which acts as a supporting program for Native students. The program hosts numerous events throughout the calendar year and offers pipeline programs for aspiring Native health care leaders.

Co-sponsored by WSU Health Sciences Spokane and Eastern Washington University, the Spokane MESA Center is a career connected learning program that focuses on supporting students from underrepresented populations to improve the diversity and retention of students in science, technology, engineering, and math (STEM) fields. During the academic year, MESA Center staff work with high school and middle school teachers to enhance their students' education with curriculum-aligned field trips, guest speakers, competitions, and hands-on activities, as well as college preparation support services. MESA partner teachers are also offered professional development regarding project-based learning in STEM.

The Upward Bound program at WSU Health Sciences Spokane is designed for students in grades 9-12 at three high schools: Columbia, Mary Walker, and Wellpinit. The program helps students gain the academic skills and motivation they need for success in high school, college, and everyday life by providing support during the academic year, followed by a four-week summer residential program.

Degrees and Certificates Offered at WSU Spokane

Undergraduate Degrees

Nursing, BSN, RN-BSN
Nutrition and Exercise Physiology, BS
Speech and Hearing Sciences, BA

Graduate Degrees

Coordinated Program in Dietetics, Nutrition, and Exercise Physiology, MS
Criminal Justice and Criminology, MA
Education:
(Specializations: Curriculum and Instruction, EdM, MA; Educational Leadership, EdD, EdM, MA; and Teaching, Elementary or Secondary, MIT)
Nursing:
RN-Masters of Nursing
Master of Nursing, Population Health
Doctor of Nursing Practice (Specializations: Family Nurse Practitioner; Psychiatric/Mental Health Nurse Practitioner; Advanced Population Health)
Post-Master Doctor of Nursing Practice (general)
PhD
Nutrition and Exercise Physiology, MS, PhD
Pharmaceutical Sciences and Molecular Medicine, MS, PhD
Prevention Science, MS, PhD
Speech and Hearing Sciences, MS

Professional Degrees and Certificates

Doctor of Medicine, MD
Doctor of Pharmacy, PharmD
Healthcare Leadership Certificate
Medical Ethics Certificate

Undergraduate Certificates

Sustainable Organizational Leadership

Graduate Certificates

Bioinformatics
C-NSPIRE: Carbon and Nitrogen Systems Policy Oriented Integrate Research and Education
Education Administrator Credential (Program Administrator, Principle, Superintendent)
Human Nutrition
Nurse Educator
Nursing Leadership
Public Health

Learning Opportunities

Health sciences students at WSU Spokane are encouraged to adopt an interprofessional, team-based approach to health care. They are given opportunities to learn side by side with students from other health disciplines. This includes at area health screening clinics and other community service opportunities, as well as an interprofessional core curriculum with learning activities addressing roles and responsibilities, communication, ethics and teamwork.

Students can take advantage of a wide variety of clinical placements and internship options through campus partnerships with the health care community in the Spokane area. These options extend to an on-campus community health care clinic that acts as a rotation site for students to hone their skills in an interdisciplinary setting. Care in the clinic is led by medical residents under the direction of practicing physicians.

Students also enjoy opportunities to participate in laboratory and clinical research conducted at WSU Spokane in the areas of sleep, neuroscience, genetics, pharmacology, addictions, diabetes, other chronic diseases, cancer, community population health, and others.

Campus Resources

WSU Spokane's 50-acre campus in the University District is close to the downtown core, bordered by the scenic Spokane River and Centennial Trail.

The growing campus was established in 1989 and features seven modern buildings that house state-of-the-art classrooms, labs, and clinics as well as additional remodeled and existing facilities. The newest campus building is the Spokane Teaching Health Clinic, which opened in August 2016 with faculty and students from all disciplines working together among an underserved patient population whose primary care providers are medical residents.

Student Life

Students at WSU Spokane range from full-time, traditional students to working adults balancing family responsibilities and community involvement with their studies. Close to 1,700 students from across the nation and around the world choose WSU Spokane as their destination. The Associated Students of Washington State University Health Sciences (ASWSUHS), Student Entertainment Board (SEB), Diversity Center, the Student Equity, Leadership and Community Hub, and many student clubs provide leadership and service opportunities.

ASWSUHS and SEB offer a variety of activities and programs to encourage social interaction and create a sense of connection to the city, such as discounted tickets to concerts and sporting events, fitness memberships, tailgates and BBQs, ski trips, a fitness center, and other recreational outings. They also sponsor a program that provides students with free transportation on Spokane Transit Authority's bus system.

Student Support Services

WSU Spokane Student Affairs staff members inspire student growth through education beyond the classrooms and enhance the students' experience by providing assistance with a variety of needs, including personal and crisis counseling, tutoring, writing, learning and English as a Second Language (ESL) support, international and veteran student services, off-campus housing assistance, admissions, enrollment, financial aid, Cougar Cards, community engagement opportunities, and accommodations for students with disabilities.

TRI-CITIES CAMPUS

Sandra D. Haynes, Chancellor
WSU Tri-Cities
2710 Crimson Way
Richland, WA 99354-1671
509-372-7000
<https://www.tricitie.wsu.edu>

WSU Tri-Cities offers hands-on, project-based learning at an affordable price where students truly graduate career-prepared and job-connected. Fifty percent of students pay no out-of-pocket expenses for tuition and many are connected to internships at prestigious companies located within a few miles of campus.

The vibrant campus community resides alongside the beautiful Columbia River in the Tri-Cities Research District - a destination for industry in energy, environment and agriculture. Boasting the world-renowned Ste. Michelle Wine Estates WSU Wine Science Center, a nationally-acclaimed Bioproducts, Science, and Engineering Laboratory and partnerships with the Pacific Northwest National Laboratory and U.S. Department of Energy at the Hanford Nuclear Site, WSU Tri-Cities is a hub for innovation and collaboration.

The WSU Tri-Cities student experience is characterized by personalized instruction, a close-knit campus community and diversity merged to provide an unparalleled college experience. Nearly half of students who attend WSU Tri-Cities are the first in their family to attend college.

Degrees and Certificates Offered at WSU Tri-Cities

Choose among a variety of courses and fields of study leading to 20 bachelors', and eight master's degrees. 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. See a complete list on the WSU Tri-Cities website.

Undergraduate Degrees

Biology, BS
 (Options: General; and Basic Medical Sciences)
 Business Administration, BA
 (Majors: Accounting; Business Administration; and Management)
 Civil Engineering, BS
 Computer Science, BA, BS
 Digital Technology and Culture, BA
 Earth and Environmental Science, BS
 (Major: Environmental and Ecosystem Sciences)
 Elementary Education, BA
 Electrical Engineering, BS
 English, BA
 (Options: Literary Studies; and Rhetoric and Professional Writing)
 Fine Arts, BFA
 History, BA
 Hospitality Business Management, BA
 (Majors: Hospitality Business Management; Senior Living Management; and Wine and Beverage Business Management)
 Humanities, BA
 (Options: English; Fine Arts; and History)
 Mechanical Engineering, BS
 Nursing, BSN
 Psychology, BS
 Science, Bachelor of
 (Options: General Biological Sciences; General Mathematics; and General Physical Sciences)
 Social Sciences, BA
 (Options: Anthropology; History; and Psychology)
 Viticulture and Enology, BS

Graduate Degrees

Biology, MS
 Chemistry, MS
 Computer Science, MS
 Education:
 (Specializations: Curriculum and Instruction, MA; Educational Leadership, EdD, EdM; English Language Learners, EdM; and Language, Literacy, and Technology Education, EdM; and Teaching, Elementary or Secondary, MIT)
 Electrical Engineering, MS
 Environmental Engineering, MS
 Environmental Science, MS
 Mechanical Engineering, MS
 Nursing:
 RN-Masters of Nursing
 Master of Nursing, Population Health
 Doctor of Nursing Practice (Specializations: Family Nurse Practitioner; Psychiatric/Mental Health Nurse Practitioner; Advanced Population Health)
 Post-Master Doctor of Nursing Practice (general)

Undergraduate Certificates

Education:
 (Administrative Credentials; Endorsements; and Teacher Professional Certification Program)
 Game Studies and Design
 Global Leadership
 Human Development:
 (Early Childhood Education; Family Studies; and Gerontology)
 Molecular Biosciences
 Organic Agriculture
 Professional Science and Technology Writing
 Professional Writing
 Sustainable Organizational Leadership

Graduate Certificates

Bioinformatics
 C-NSPIRE: Carbon and Nitrogen Systems Policy Oriented Integrate Research and Education
 English Language Learner
 Nuclear Materials, Science and Engineering
 Nurse Educator
 Nursing Leadership
 Public Health
 Radiation Protection

Faculty and Research

The strength of an institution lies in the quality of the faculty and academic programs. At WSU Tri-Cities, students are invited to engage in rigorous and relevant coursework and experiential learning. The focus is on hands-on, relevant, and team-based problem solving.

Here students will work closely with a world-class group of faculty who will know them personally and are committed to their success from the day they enter the classroom to when their names are called at graduation.

Campus Life

The campus is set along the scenic Columbia River in Richland, Washington. The arid desert region is known for its sunny, dry weather. 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 runs along the campus.

Community Partnerships

At Washington State University Tri-Cities, students conduct research and complete projects while working with and learning from nationally and world-renowned professors who have ties to a variety of world-class organizations in the local Tri-Cities community. WSU Tri-Cities partners with the same organizations, some of which include Pacific Northwest Laboratory, Hanford Site contractors, ConAgra Foods and Energy Northwest, to provide students with opportunities for internships, co-ops and other extracurricular learning opportunities. These opportunities provide students with the relevant skills they need to supplement their education, as well as ensure they are career-ready by graduation.

VANCOUVER CAMPUS

Emile “Mel” Netzhammer, Chancellor
14204 NE Salmon Creek Avenue
Vancouver, WA 98686
360-546-WSUV (9788)
vancouver.wsu.edu

Washington State University Vancouver is the only four-year research university in Southwest Washington. It offers a small-college atmosphere for a public-university price. With about 3,500 students, WSU Vancouver is the second largest campus in the WSU system.

Degrees and Certificates Offered at WSU Vancouver

Choose among a variety of courses and fields of study leading to bachelor's, master's, and doctorate degrees. Some graduate programs are officially offered through the Pullman campus although students may complete all or some of their degree requirements on the Vancouver campus. See a complete list on the WSU Vancouver website vancouver.wsu.edu/programs.

Undergraduate Degrees

Anthropology, BA
 Biology, BS
 (Options: Basic Medical Sciences; and General)
 Business Administration, BA
 (Majors: Accounting; Business Administration; Entrepreneurship; Finance; Management; Marketing; and Management Information Systems)
 Chemistry, BA
 (Options: Standard)
 Computer Science, BS

Data Analytics, BS
 (Options: Actuarial Science; Business; Data Visualization; and General)
 Digital Technology and Culture, BA
 Earth and Environmental Science, BS
 (Major: Environmental and Ecosystem Sciences)
 Education, BA
 Electrical Engineering, BS
 English, BA
 (Options: Creative Writing; Literary Studies; Rhetoric and Professional Writing; and Teaching)
 History, BA
 Hospitality Business Management, BA
 Human Biology, BA
 Human Development, BA
 (Options: Child and Youth Development; Early Childhood Education; Gerontology; Human Services; Lifespan Development; and Prevention Science)
 Humanities, BA
 (Options: Anthropology; Communication; Digital Technology and Culture; English; Fine Arts; Foreign Languages and Cultures; History; Spanish; and Women's, Gender, and Sexuality Studies)
 Mathematics, BS
 (Options: Applied Mathematics; and Teaching without Certification)
 Mechanical Engineering, BS
 Neuroscience, BS
 Nursing, RN-BSN
 Psychology, BS
 Public Affairs, BA
 Social Sciences, BA
 (Options: Anthropology; Communication; Criminal Justice and Criminology; History; Human Development; Personnel Psychology and Human Resources; Political Science; Psychology; Sociology; and Women's, Gender, and Sexuality Studies)
 Sociology, BA
 Strategic Communication, BA
 (Major: Integrated Strategic Communication)

Graduate Degrees

Computer Science, MS
 Education:
 (Specializations: Curriculum and Instruction, MA; Educational Leadership, EdD, EdM; English Language Learners, EdM; Language, Literacy, and Technology Education, EdM; Special Education, EdM, MA; and Teaching, Elementary or Secondary, MIT)
 Electrical Engineering, MS
 Environmental Science, MS
 History, MA
 Mechanical Engineering, MS
 Nursing:
 RN-Masters of Nursing
 Master of Nursing, Population Health
 Doctor of Nursing Practice (Specializations: Family Nurse Practitioner; Psychiatric/Mental Health Nurse Practitioner; Advanced Population Health)
 Post-Master Doctor of Nursing Practice (general)
 Prevention Science, MS, PhD
 Public Affairs, MPA

Undergraduate Certificates

Biology:
 (Quantitative Biology)
 Business:
 (Professional Sales; Stakeholder Leadership)
 Core Competencies in Spanish Language and Culture
 Digital Technology and Culture:
 (Game Studies and Design)
 Education:
 (Administrative Credentials; Endorsements; and Field-based Superintendent Certification Program)
 English:
 (Professional Science and Technology Writing; and Professional Writing)

Human Development:
(Early Childhood Education; Family Studies; Gerontology; and Human Services Case Management and Administration)
Molecular Biosciences
Social Media
Sustainable Organizational Leadership
Water Resources Science and Management

Graduate Certificates

Bioinformatics
C-NSPIRE: Carbon and Nitrogen Systems Policy Oriented Integrate Research and Education
English Language Learner
Nurse Educator
Nursing Leadership
Public Health
Teaching College Mathematics

Faculty and Research

More than 200 PhD faculty at WSU Vancouver provide quality instruction and expertise in such diverse topics as augmented reality, brain health, sustainable water, sensor networks and micro- and nano-devices. The 14:1 student-faculty ratio allows for rich interaction and individual attention.

Campus and Student Life

WSU Vancouver is an inclusive, innovative, non-residential research university dedicated to offering premier undergraduate and graduate educational and research experiences. The campus is located in dynamic and increasingly diverse Southwest Washington state, just across the Columbia River from Portland, Oregon. Both Portland and Vancouver offer extraordinary and accessible cultural and recreational opportunities in theater, dance, visual arts, and community activities. WSU Vancouver's strategic plan includes a commitment to equity; one of the University's goals is to increase the success of under-represented students, particularly Latinx, Black, Native American, and Pacific Islander students.

Located on 351 scenic acres, the WSU Vancouver campus features not only state-of-the-art buildings and student gathering places, but also a system of biking and walking trails with views of Mount Hood and Mount St. Helens.

An active student government and more than 50 student clubs make it easy for students to connect with each other. There are literally hundreds of events and activities for students to choose from each year. Campus centers—Access, Career Services, Student Diversity, Student Wellness, and Veterans—provide support networks for students.

Community Partnerships

WSU Vancouver is committed to engaging with its community. Community activities include:

The Business Growth Mentor & Analysis Program: Part of the Carson College of Business, Business Growth MAP provides pro-bono, student-conducted analysis and consulting services to small businesses. Students gain experience while helping businesses grow and prosper. The program contributes to the economic development of Southwest Washington and the Portland metropolitan area.

Center for Intercultural Learning and Affirmation: Commonly referred to as CILA on campus, the center strives to cultivate an inclusive community where historically underserved students are affirmed and have sense of belonging at WSU Vancouver. Students and community members engaged in CILA programs and initiatives develop strong, culturally responsive skill-sets required to build the capacity for intercultural learning and affirmation.

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. Each semester Senior Seminar students partner on projects that range from developing websites and apps to creating virtual tours and interactive experiences for business and nonprofit organizations in Southwest Washington and the Portland metropolitan area.

VanCoug American Democracy Project: As part of a nationwide initiative, participants learn about how to use policy to promote change, create an individual voice for themselves and increase their civic awareness. The project promotes participation in the democratic process, deliberative dialogue, civil discourse, and civic engagement. Participants become engaged on campus and in the community to create a more educated, democratic society.

YAKIMA

NURSING

Mary Koithan, PhD, RN, CNS-BC, FAAN, Dean
Watson Hall, 200 University Parkway, Yakima, WA 98901
509-494-7900

<https://nursing.wsu.edu/locations/#yakima>

The College of Nursing in Yakima is located in Watson Hall on the Pacific Northwest University-Health Sciences campus. In keeping with its mission to offer excellent academic programs with educational institutions and community stakeholders, the College of Nursing Yakima site admits students to the Bachelor of Science in Nursing (BSN), RN-BSN, and Master of Nursing programs. Additionally, students have opportunities to pursue advanced degrees such as Doctor of Nursing Practice (DNP) and PhD in Nursing in conjunction with other WSU College of Nursing campuses. Students who attend classes and complete clinically-based learning experiences in Yakima have unique opportunities to participate in the transformation of health care. This transformation includes evaluation of our health-care models and initiatives to improve community and rural health. The Yakima Campus College of Nursing has been actively engaged with a number of other health institutions and disciplines to develop and enhance collaborative learning opportunities through expansion of Interprofessional Education (IPE).

PHARMACY

Angela Stewart, PharmD, BCPS, Associate Dean
3110 Inspiration Drive, Yakima, WA 98901
509-249-7923

<https://pharmacy.wsu.edu/doctor-of-pharmacy/how-to-apply/>

The WSU Doctor of Pharmacy program in Yakima offers students the unique experience of being educated on the Pacific Northwest University (PNWU) campus along with the medical students in the PNWU Doctor of Osteopathic Medicine program and nursing students from the WSU College of Nursing.

The collaboration with PNWU follows the College's vision to be a leader in advancing, promoting and protecting human health and its mission to develop outstanding healthcare professionals. The Yakima extension offers our Doctor of Pharmacy students the opportunity to learn in an interprofessional environment that focuses on developing tomorrow's leaders in innovative and accessible community-centered care. The WSU College of Pharmacy and Pharmaceutical Sciences extension in Yakima is an ideal learning environment for students interested in working with rural and underserved populations. Small class sizes at WSU's Yakima extension gives students a personalized learning environment so that instructors can tailor to every student's needs.

Degrees Offered at Yakima

Undergraduate Degrees

Nursing, BSN

Professional Degrees

Doctor of Pharmacy, PharmD

Achieving Academic Success

ACADEMIC ADVISING

Academic advising builds collaborative student-centered relationships that support achievement of personal development and academic success. It is an educational relationship in which students and advisors are partners in planning academic, personal, and career goals.

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

The academic and career advisors and coaches at the ASCC engage students in critical thinking about career development and required components of a degree at WSU. The ASCC recommends that students gain experiential learning through opportunities such as undergraduate research, student employment, internships, summer positions, 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 to define and develop realistic goals.
- Teach students decision-making skills and how to assume responsibility to explore their own educational plans, options, and achievements.
- Understand and effectively communicate the curriculum, graduation requirements, and university and college policies and procedures.
- Teach and support students by offering information and strategies for utilizing 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 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 to discuss with the advisor when you meet.
- Discuss any problems that effect academic performance, for example: study skills, difficulties in course work, time management, personal concerns.
- Ask questions and 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 learning and checking the electronic resources available in myWSU 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 skills and knowledge of the advising professionals within their academic department as well as advising professionals available in the ASCC. The responsibility of making decisions about personal goals and educational plans ultimately rests with the student.

CHOOSING A MAJOR

Washington State University has ten 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, Honors 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 their skills and abilities. Further, students who are academically successful are more likely to be competitive in the job market and/or when pursuing graduate degrees. The Academic Success and Career Center (ASCC) assists students in major and career selection through individual career counseling, courses such as College Majors and Career Exploration (UNIV 100), or through various resources within the center.

Admission to the Major

Entering students may identify an area of interest. Students are assigned an advisor in their academic area of interest by the Academic Success and Career Center (ASCC). The advisor assignment most likely will change as the student's interest area changes. Students who do not specify a major interest area and would like to explore various major options will be assigned an academic and career advisor in the ASCC.

Undergraduate students can be admitted to a major upon enrollment if they satisfy the requirements set by the academic department. Consult the departmental section of the catalog for specific departmental requirements for admission to the major. Admission to Washington State University does not ensure acceptance into any department or program.

Some students choose to complete a minor, additional major, or certificate to enhance their degree program. 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 and careers 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 as well as courses within their college major, 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 identify 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 is out there

The Academic Success and Career Center (ASCC) has many resources and programs to help students with career planning. Experienced counselors, advisors, and coaches are available to help with academic major and career decisions. Career professionals 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 ASCC also provides information about internship opportunities that enhance an academic major or area of interest.

Students should use this catalog and other resources to identify departmental or University Common Requirements (UCORE) courses that sound interesting. In addition, students should consult with various departments regarding courses or programs that meet interests and abilities. Students may also access departmental information through the WSU homepage at <https://wsu.edu/>. Finally, working carefully with an academic advisor or career coach 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 and Sustainable Agriculture

Animal Sciences, Bachelor of Science

- Animal Sciences (options: Animal Science, Technology, and Production; Accelerated Pre-Vet, and Pre-Veterinary Medicine/Science)

Apparel, Merchandising, Design, and Textiles, Bachelor of Arts

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

Economic Sciences, Bachelor of Science

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

Food Science, Bachelor of Science

- Food Science (option: General)

Human Development, Bachelor of Arts

- Human Development (options: Child and Youth Development; Early Childhood Education; Family and Consumer Science; Gerontology; Human Services; Lifespan Development; and Prevention Science)

Integrated Plant Sciences, Bachelor of Science

- Agricultural Biotechnology
- Field Crop Management
- Fruit and Vegetable Management
- Landscape, Nursery, and Greenhouse Management
- Turfgrass Management

Viticulture and Enology, Bachelor of Science (Tri-Cities)

- Viticulture and Enology

College of Arts and Sciences

— Arts

Anthropology, Bachelor of Arts

- Anthropology

Comparative Ethnic Studies, Bachelor of Arts

- Comparative Ethnic Studies

Criminal Justice and Criminology, Bachelor of Arts

- Criminal Justice and Criminology

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: Creative Writing; Integrative English Studies; Linguistics; Literary Studies; Rhetoric and Professional Writing; Teaching with Certification; and Teaching without Certification)

Fine Arts, Bachelor of Arts

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

Fine Arts, Bachelor of Fine Arts

- Fine Arts (BFA)

Foreign Languages and Cultures, Bachelor of Arts

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

History, Bachelor of Arts

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

Human Biology, Bachelor of Arts

- Human Biology

Humanities, Bachelor of Arts

- Humanities (General Studies options: International Area Studies; Plan A; and Plan B)

Music, Bachelor of Arts (BA)

- Music

Music, Bachelor of Music (BMus)

- Music Business
- Music Composition
- Music Education (options: Choral / General Endorsement; Choral / Instrumental / General Endorsement; Instrumental / General Endorsement; and Elective Studies in Education)
- Music Performance (options: Brass, Percussion, Strings, Winds; Jazz Studies; Keyboard; Keyboard with Elective Studies in Pedagogy; and Voice)

Philosophy, Bachelor of Arts

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

Political Science, Bachelor of Arts

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

Public Affairs, Bachelor of Arts (Vancouver)

- Public Affairs

Social Sciences, Bachelor of Arts

- Social Sciences (General Studies options: Personnel Psychology/Human Resources (Vancouver only); Plan A; and Plan B)

Social Studies, Bachelor of Arts

- Social Studies

Sociology, Bachelor of Arts

- Sociology

Women's, Gender, and Sexuality Studies, Bachelor of Arts

- Women's, Gender, and Sexuality Studies

— Sciences

Biology, Bachelor of Science

- Biology (options: Basic Medical Sciences; Ecology and Evolutionary Biology; Education; Entomology; General; Plant Biology; Pre-Physical Therapy, Pre-Occupational Therapy, and Pre-Physician Assistant; and Teaching)

Chemistry, Bachelor of Arts

- Chemistry (options: Standard; and Teaching)

Chemistry, Bachelor of Science

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

Data Analytics, Bachelor of Science

- Data Analytics (options: Actuarial; Agricultural and Environmental Systems; Business; Computation; Data Visualization; Economics; General; Life Sciences; Physical Sciences; and Social Sciences)

Earth and Environmental Science, Bachelor of Science

- Earth Sciences
- Environmental and Ecosystem Sciences
- Forest Ecology and Management
- Wildlife Ecology and Conservation Sciences (options: Basic; Pre-Veterinary; and Honors Accelerated Pre-Veterinary)

Mathematics, Bachelor of Science

- Mathematics (options: Actuarial Science; Applied Mathematics; Statistics; Theoretical Mathematics; Secondary Mathematics Teaching with Certification; and Secondary Mathematics Teaching without Certification)

Physics, Bachelor of Science

- Physics (options: Applied Physics; Astrophysics; Planetary Sciences; and Standard)

Psychology, Bachelor of Science

- Psychology

Science, Bachelor of

- General Studies—Biological Sciences, Mathematical Sciences, or Physical Sciences (options: varies by plan)

Zoology, Bachelor of Science

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

College of Business

Business Administration, Bachelor of Arts

- Accounting
- Business Administration (Vancouver and Tri-Cities campuses only)
- Entrepreneurship
- Finance
- International Business
- Management (tracks: Human Resource Management; and Innovation and Change)
- Management Information Systems
- Marketing

Hospitality Business Management, Bachelor of Arts

- Hospitality Business Management
- Senior Living Management
- Wine and Beverage Business Management

College of Communication

Journalism and Media Production, Bachelor of Arts

- Broadcast News
- Broadcast Production
- Media and Technology
- Multimedia Journalism

Strategic Communication, Bachelor of Arts

- Advertising
- Integrated Strategic Communication
- Public Relations
- Risk and Crisis Communication

College of Education

Education, Bachelor of Arts

- Elementary Education
- Specific Subject Secondary Teacher Certificate (primary majors – Agricultural Education; Biology; Chemistry; Earth and Space Science; English Language Arts; Family and Consumer Sciences; French; History; Mathematics; Music Education—choral, instrumental, or general; Physics; Social Studies; and Spanish)

Kinesiology, Bachelor of Science

- Kinesiology

Sport Management, Bachelor of Arts

- Sport Management

Sports Medicine, Bachelor of Science

- Sports Medicine

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)

Civil Engineering, Bachelor of Science

- Civil Engineering

Computer Engineering, Bachelor of Science

- Computer Engineering (tracks: Artificial Intelligence; Data Science; General; and Systems and Networking)

Computer Science, Bachelor of Arts

- Computer Science (BA)

Computer Science, Bachelor of Science

- Computer Science (BS)

Construction Engineering, Bachelor of Science

- Construction Engineering (options: Environmental Facilities; Foundations/Heavy Civil; Infrastructure/Pavement; and Structures/Buildings)

Construction Management, Bachelor of Science

- Construction Management

Electrical Engineering, Bachelor of Science

- Electrical Engineering (options: Computer Engineering; General; Microelectronics; Power; and Systems)

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

Software Engineering, Bachelor of Science

- Software Engineering

College of Medicine (Spokane)

Nutrition and Exercise Physiology, Bachelor of Science

- Nutrition and Exercise Physiology

Speech and Hearing Sciences, Bachelor of Arts

- Speech and Hearing Sciences

Doctor of Medicine

- Medicine

College of Nursing

Nursing, Bachelor of Science

- Nursing (Third and Fourth years are at Spokane, Tri-Cities, Vancouver, or Yakima)

College of Pharmacy and Pharmaceutical Sciences (Spokane)

Doctor of Pharmacy

- Pharmacy

College of Veterinary Medicine

Biochemistry, Bachelor of Science

- Biochemistry (options: Biophysics; Molecular Biology; and Accelerated Pre-Pharmacy)

Genetics and Cell Biology, Bachelor of Science

- Genetics and Cell Biology (options: Molecular Biology)

Microbiology, Bachelor of Science

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

Neuroscience, Bachelor of Science

- Neuroscience (options: Biomedical Business; Computational Breath of Field; Computational Hardware; Computational Software; General; PreMed/PreDent; Pre-Veterinary; and Accelerated 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.

Pursuing an Additional Major

Students who have been admitted to a primary major may be admitted to pursue an additional major with the approval of the offering department. The student should consult with the department offering the major concerning credits and grade point requirements. Once requirements for the additional 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 additional 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.

Majors Offered Only as Additional Majors

The following additional majors may only be earned in conjunction with a student's primary major and degree. They are not offered as a student's only major.

Additional Major Only	Department
French for the Professions	Languages, Cultures, and Race
German for the Professions	Languages, Cultures, and Race
Japanese for the Professions	Languages, Cultures, and Race
Spanish for the Professions	Languages, Cultures, and Race

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.

Students who have been admitted to a primary major may be admitted to pursue a minor with the approval of the offering department or designee.

A minor requires a minimum of 16 semester credits, 9 of which must be in upper-division course work and taken in taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Upon completion of the degree, 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
Agriculture Technology and Production Management	Agricultural and Food Systems
Agricultural Systems	Agricultural and Food Systems
American Indian Studies	Languages, Cultures, and Race
Animal Sciences	Animal Sciences
Anthropology	Anthropology
Architectural Studies	Design and Construction
Art	Fine Arts
Art History	Fine Arts
Astronomy	Physics
At-Risk Youth	Sociology
Biochemistry	Molecular Biosciences
Biology	Biological Sciences
Business Administration	Business
Business Economics	Economic Sciences
Chemistry	Chemistry
Chinese	Languages, Cultures, and Race
Communication	Communication
Comparative Ethnic Studies	Languages, Cultures, and Race
Computer Engineering	Electrical Engineering and Computer Science
Computer Science	Electrical Engineering and Computer Science
Construction Management	Design and Construction
Creative Writing	English
Criminal Justice and Criminology	Criminal Justice and Criminology
Crop Science	Crop and Soil Sciences
Digital Technology and Culture	Creative Media and Digital Culture / Digital Technology and Culture

Earth Sciences	Environment
Economics	Economic Sciences
Electrical Engineering	Electrical Engineering and Computer Science (Pullman) and Engineering and Computer Science (Vancouver)
Engineering	Engineering and Architecture
English	English
Entrepreneurship	Business
Environmental and Resource Economics and Management	Economic Sciences
Environmental Science	Environment
Ethics	Philosophy
Event Management	Hospitality Business Management
Exhibition Studies	Fine Arts
Film Studies	Languages, Cultures, and Race
Food Science	Food Science
Forestry	Environment
French	Languages, Cultures, and Race
French Area and Culture Studies	Languages, Cultures, and Race
French for Design and Merchandising	Languages, Cultures, and Race
Genetics and Cell Biology	Molecular Biosciences
Geospatial Analysis	Crop and Soil Sciences
German	Languages, Cultures, and Race
German Area and Culture Studies	Languages, Cultures, and Race
Global and Ethnic Narrative Traditions	Languages, Cultures, and Race
Global Studies	International Programs
Health Communication and Promotion	Strategic Communication
Health and Society	Sociology
History	History
Horticulture	Horticulture
Hospitality Business Management	Hospitality Business Management
Human Development	Human Development
Human Resource Management	Management, Information Systems, and Entrepreneurship
Humanities	English
Interior Design	Design and Construction
Japanese	Languages, Cultures, and Race
Jazz Studies	Music
Latin American and Spanish Area Studies	Languages, Cultures, and Race
Linguistics	English
Materials Science and Engineering	Mechanical and Materials Engineering
Mathematics	Mathematics and Statistics
Mechanical Engineering	Mechanical and Materials Engineering
Microbiology	Molecular Biosciences
Military Science	Military Science
Modern Asia	Asia
Molecular Biology	Molecular Biosciences
Music	Music
Music Technology	Music
Natural Resources	Environment
Naval Science	Naval Science
Neuroscience	Neuroscience
Philosophy	Philosophy
Physics	Physics
Political Science	Political Science
Popular Culture	Languages, Cultures, and Race
Precision Agriculture	Agricultural and Food Systems
Pre-Genetic Counseling	Molecular Biosciences
Professional Writing	English
Psychology	Psychology
Queer Studies	Women's, Gender, and Sexuality Studies
Religious Studies	History
Senior Living Management	Hospitality Business Management
Sociology	Sociology
Software Engineering	Electrical Engineering and Computer Science
Soil Science	Crop and Soil Sciences

Spanish	Languages, Cultures, and Race	Leadership in Coaching	Kinesiology and Educational Psychology
Sports Communication	Journalism and Media Production	Mindfulness-based Emotional and Social Intelligence	Honors College
Sport Management	Educational Leadership and Sport Management	Molecular Biosciences	Molecular Biosciences
Statistics	Mathematics and Statistics	Organic Agriculture	CAHNRS
Strength and Conditioning	Kinesiology and Educational Psychology	Professional Sales	Business
Sustainable Development	Economic Sciences	Professional Science and Technology Writing	English
Viticulture and Enology	Horticulture	Professional Writing	English
War and Society	History	Quantitative Biology	Biology/Mathematics and Statistics
Wildlife Ecology	Environment	Social Media	Creative Media and Digital Culture / Digital Technology and Culture
Wine and Beverage Business Management	Hospitality Business Management	Sustainable Organizational Leadership Studies	Sociology/Management, Information Systems, and Entrepreneurship
Women's Studies	Women's, Gender, and Sexuality Studies	Teaching English as a Foreign Language	English
Workplace Diversity	Sociology	Water Resources Science and Management	Environment
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 be admitted to the program and complete the online graduation application. Application fees and deadlines may be found on the academic calendar, at <https://registrar.wsu.edu/academic-calendar/>.

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

Certificate	Department
Adolescence	Human Development
American Indian Studies	Languages, Cultures, and Race
Behavioral Business Research	Business
Business of Art	Fine Arts/Management, Information Systems, and Entrepreneurship
Business of Biomedicine	Neuroscience
Core Competencies in Spanish Language and Culture	Languages, Cultures, and Race
CySER Basics	Management, Information Systems, and Entrepreneurship
CySER CAE-CO Fundamentals	Electrical Engineering and Computer Science
Early Childhood Education	Human Development
Eco Arts and Public Engagement	Fine Arts
Editing and Publishing	English
Education Technology	Teaching and Learning
English Language Learners	Teaching and Learning
Family Studies	Human Development
Game Studies and Design	Creative Media and Digital Culture / Digital Technology and Culture
Gerontology	Human Development
Global Competencies	Honors College
Global Leadership	Undergraduate Education
Graphic Design	Digital Technology and Culture
Human Services Case Management and Administration	Human Development
Italian Language	Languages, Cultures, and Race

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 credits, 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. **Credits and grade points**—A minimum of 120 semester credits with a grade point average of 2.0 or better.
2. **Upper-Division (300-400-level)**—A minimum of 40 semester credits.
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 semester credits. 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. **Awarding the Degree**—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 Rules 45, 115-117, 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]—Additional 1 lab credit of [BSCI] or [PSCI] for a total of 8 semester credits (2 labs).

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.

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:

Common Reading Program – WSU’s Common Reading Program uses a common text each year to create a shared campus experience and to highlight WSU’s research and resources, especially for first-year students. The book is frequently used in courses. It is also the springboard for events throughout the year that introduce students to WSU’s leading researchers and to the various but interconnected ways in which different disciplines approach similar problems. Contact <https://common.reading@wsu.edu>.

First-Year Focus Living-Learning Communities – First-Year Focus is a residential living/learning community program in which first-semester students living in the same residence hall are co-enrolled in a UCORE course. Students form classroom connections, instant study groups, and social networks. First-Year Focus eases the transition to college life by creating a solid academic focus enhanced by additional interaction with faculty and residence hall peers. Contact: First-Year Programs, CUE 503, 509-335-5488, <https://firstyear.wsu.edu/>.

First-Year Success Seminar – The First-Year Success Seminar (UNIV 104) is a two-credit, small interactive course in which students explore values, set academic and personal goals, and pursue them through reflective writing, core texts, and other course activities. The seminar provides instruction in skills necessary for college success and encourages critical thinking about the connections between the self and others, classroom learning, and the larger world. Students are introduced to a variety of key learning strategies as well as to the resources and opportunities within the university community that will allow them to excel in the first year. Contact: First-Year Programs, CUE 503, 509-335-5488, <https://firstyear.wsu.edu/>.

Seminar in Focused Exploration – University 304 (UNIV 304) is a transition seminar serving upper-division students and transfer students. This seminar is designed to assist students with narrowing down and choosing a good fit major, based on personal passions, purpose, values, strengths and interests. The seminar also supports students with information about their chosen major, what they can do with it, and potential career opportunities. Contact: Academic Success and Career Center, Lighty 180, 509-335-6000.

Veterans Transition Seminar – (specified section of UNIV 304) is designed to assist veterans with their transition from the military to a major research university. This course helps veterans navigate a large university, settle into their new role as students, and learn about WSU resources.

Accessing Information for Research – This one-credit course is intended to assist students in exploring skills, strategies, and resources available for conducting academic research. Transfer students who may not be familiar with the print and online resources of WSU Libraries are also encouraged to enroll. Contact: Undergraduate Services, Terrell Library, 509-335-8950.

Community Engaged Learning – Students in academic courses across the curriculum are provided with opportunities to learn through engagement in community-based service. Service learning experiences and projects done in collaboration with community partners inform classroom learning, enhance civic awareness, promote personal growth, and foster skill development. Contact: Center for Civic Engagement, 509-335-7708, cce@wsu.edu, <https://cce.wsu.edu>.

Global Learning – Students from all academic majors are encouraged to incorporate global experiences into their academic programs of study. One way to do this is through a study abroad experience, which includes studying and learning abroad on a WSU Faculty-led program with WSU faculty and other Cougs, taking courses at a university outside the US, doing an internship, or conducting service or research internationally. Each year, over 800 students take advantage of the opportunity to engage in academic, career-related, and culturally enriching experiences abroad. Students may also become Global Cougs by earning a Global Leadership Certificate or by completing the Global Coug Digital Badge Program to enhance their experiences at home and abroad. The Global Learning Department within the Office of International Programs advises all WSU students on all of these opportunities. Contact: Global Learning, ip.globallearning@wsu.edu, 509-335-6204, <https://ip.wsu.edu/>.

Writing Center:

- **Free individual peer tutoring for writing** – Writing Center tutors assist students with writing for all University courses. Free support on any and all types of writing assignments is available in the WSU Writing Center, Smith Center for Undergraduate Education (CUE), Room 303.

To check on open hours go to: <https://writingprogram.wsu.edu/undergraduate-writing-center/> or <https://writingprogram.wsu.edu/graduate-writing-center/>.

- **Writing Tutorial** – ENGLISH 102 and 107 are one-credit courses that offer students who are concurrently enrolled in first-year writing courses opportunities to improve their writing skills. These courses are student-centered group tutorials, facilitated by Writing Center tutors. Contact: WSU Writing Center, Smith Center for Undergraduate Education (CUE), Room 303, 509-335-1323.
- **Advanced Writing Tutorial** – WRIT 302 can be taken concurrently with an M course or upper-division writing-intensive course in the student’s major. This advanced course employs a small-group, student-centered approach focusing on students’ discipline-specific needs. Additionally, WRIT 205 “Sentences and Paragraphs” can be taken concurrently with an M course or upper-division writing-intensive course. This course also employs a small-group, student-centered approach but focuses on issues of academic English grammar and sentence structure. Contact: WSU Writing Center, Smith Center for Undergraduate Education (CUE), Room 303, 509-335-1323.

Learning Assistance Programs

The **Academic Success and Career Center (ASCC)** 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. Other topics include stress and time management, how to choose a major, and how to prepare for an academic advising appointment. 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 <https://ascc.wsu.edu> to become familiar with the variety of workshops available.

Tutoring – Tutoring should be sought anytime a student wants to check their understanding of course concepts/lessons or when additional help is needed. The goal of tutoring is to provide students with assistance that enables them to develop academic mastery and independence. During tutoring, students can get help with homework, help with understanding concepts necessary to pass a course, 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 teaching assistants’ office hours.

The Peer Tutorial Program is free to all students and provides one-on-one assistance or small group tutoring in a wide range of subjects and undergraduate courses. ASCC 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 found at <https://ascc.wsu.edu> provides an up-to-date list each semester of free, drop-in tutoring services available in ASCC, the Smith Center for Undergraduate Education (CUE), various residence halls, and throughout the university. Contact: Academic Success and Career Center, Lighty 180, 509-335-6000.

TRIO Student Support Services Program (SSS) – TRIO SSS is a federally-funded academic assistance program that assists undergraduate students on the Pullman and Tri-Cities campuses. The TRIO SSS program is designed to provide comprehensive academic support on a one-to-one basis focusing on a student’s personal, academic, and social success. Services include: academic advising, financial literacy and college success workshops, degree and career guidance, 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, show academic need, 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. All services are provided at no cost to the participant. Interested students must submit a program application. Contact information: PULLMAN: (509) 335-7324, Lighty Building, Room 260, <https://sssp.wsu.edu>. For students interested in teaching, visit the

ATLAS program: (509) 335-4768; Education Addition Building 321; <https://provost.wsu.edu/atlas/>. TRI-CITIES: (509) 372-7122, East Building, Room 203, triestudentsupport@tricity.wsu.edu, <https://tricity.wsu.edu/trio/>.

The College Assistance Migrant Program (CAMP) – The mission of the College Assistance Migrant Program is to provide outreach, academic, and financial assistance to effectively transition students from migrant and seasonal farmworker backgrounds to successfully complete the first academic year at Washington State University and to continue in postsecondary education. Due to continual mobility, CAMP students are faced with academic inconsistencies throughout their primary education. CAMP is specifically designed to identify, recruit, and monitor the academic achievement and retention of migrant students. Eligible students, or an eligible immediate family member, have completed 75 days or more of qualified and verified agricultural activities across industries directly related to the production of crops, dairy products, poultry, or livestock, fish farms, and the cultivation and harvesting of trees. The College Assistance Migrant Program (CAMP) is a federally funded program. For more information, visit us at Lighty Building Room 260, <https://camp.wsu.edu>, or call 509-335-4503.

The **Office of Academic Engagement** supports students through the College Success Programs, College Affordability Programs, and College Access and Transitions Programs:

College Success Programs – College Success Programs advance increased engagement, persistence, and success for WSU students. Programs include Passport Program, National Student Exchange, STEM SSS, Teacher Prep SSS, and Veterans SSS. College Success Programs collaborate with campus and community partners to offer intensive individualized services and experiential opportunities and foster an institutional climate supportive of the success of students from first-generation backgrounds, limited-income households, former foster youth and unaccompanied homeless youth, students with disabilities, and student Veterans. Visit <https://provost.wsu.edu/oea/programs/> or email oea.csp@wsu.edu.

Passport Program: All WSU campuses – Funded by the Washington Student Achievement Council, and in partnership with Student Financial Services, Passport supports eligible former foster youth and unaccompanied homeless youth. Participant benefits include a Passport scholarship, intensive advising, academic support, peer advising, financial education, and basic needs assistance. Visit <https://provost.wsu.edu/passport/> or email oea.csp@wsu.edu.

National Student Exchange: WSU Pullman – NSE provides students with opportunities to engage in high impact practices through study away experiences responding to their needs and goals through a collaboration with the National Student Exchange Consortium. Eligible students participate in an accessible, affordable domestic study away experiences at one of over 160 institutions across the United States, Canada, Guam, Puerto Rico, and the US Virgin Islands. Visit <https://nse.wsu.edu/> or email nse@wsu.edu.

Student Support Services (SSS): Eligible students are US citizens or permanent residents from limited-income households, first-generation backgrounds, and those with disabilities.

STEM SSS: WSU Pullman and Global – STEM SSS partners with WSU's College of Arts and Sciences to support eligible students pursuing degrees in STEM and health sciences. Additional participant benefits include faculty mentoring and undergraduate research opportunities. Visit <https://provost.wsu.edu/stem-sss/> or email oea.stem-sss@wsu.edu.

Teacher Prep SSS: WSU Pullman – Teacher Prep SSS partners with WSU's College of Education to support eligible Cougs who are future teachers. Additional participant benefits include instructional experiences and teacher certification support. Visit <https://provost.wsu.edu/teacherprep-sss/> or email oea.csp@wsu.edu.

Veterans SSS: All WSU campuses – Veterans SSS partners with WSU's Office of Veterans Affairs to support eligible student Veterans and active-duty service members. Additional participant benefits include professional mentoring and support transitioning from military to academics. Visit <https://provost.wsu.edu/veterans-sss/> or email oea.veterans-sss@wsu.edu.

College Affordability Programs – A system-wide effort to support the engagement, persistence, and graduation of students through financial education and direct financial supports. Financial education efforts are delivered through Cougar Money Matters utilizing a strengths-based, individualized approach, focusing on student self-advocacy and efficacy. Direct financial supports provide

funding for educational purposes, including scholarships, matched savings and emergency grant aid. Unmet need and lack of financial support are one of the biggest indicators of persistence, and College Affordability Programs provides access to financial wellness and educational resources to support students holistically in their educational experience.

Washington State Opportunity Scholars: All WSU campuses – The Washington State Opportunity Scholarship supports students with a scholarship as well as professional development, skill-building workshops, and industry exposure to help increase the rate at which students enter the workforce. WSOS serves students from low and middle income households working to attain a bachelor's degree in high demand fields including science, technology, engineering, math and healthcare fields. <https://provost.wsu.edu/wsos/>

Crimson Community Grants: All WSU campuses – Crimson Community Grants supports students enduring a financial hardship by providing emergency grant aid between \$200-\$1000 for educational supplies. We support students through a financial crisis inhibiting their ability to stay academically engaged by providing emergency funding, peer to peer mentoring, post emergency advising, and individualized financial education. <https://provost.wsu.edu/ccg/>

Invest in Cougs: All WSU campuses – Invest in Cougs supports students in persisting in graduation through matched savings, peer mentoring, financial education, and individualized supports to alleviate financial barriers. Students have the opportunity to save \$1000 and have their savings matched at 400% to use toward their WSU education. <https://provost.wsu.edu/investincougs/>

Cougar Money Matters: All WSU campuses – Cougar Money Matters is an effort to bring together financial resources across all our campuses for all our Cougs. Students have access to a number of online tools that will assist in their financial wellness journey--today and into the future. In partnership with BECU, CMM offers access to financial counseling, resources, and grants and scholarship. One facet of Cougar Money Matters is our CMM Learning Portal. When you sign up for the CMM Learning Portals, you unlock mini courses to improve your personal finance skills. CMM Learning Portal is customized for students, and offers relevant resources based on individual student need. CMM Learning portal also has many articles, infographics, videos, and tools, all to help a student be successful in their academic and financial journey. <https://cmm.wsu.edu>

College Access & Transition Programs – College Access & Transition Programs is at the heart of Washington State University's land-grant mission - expanding educational opportunities to those historically excluded. Our equity-infused approaches begin by developing pathways at the secondary level and implementing high-impact practices to advance a culture of academic excellence and ensure post-secondary, and long-term success. Visit <https://provost.wsu.edu/oea/programs/> or contact oea.collegeaccess@wsu.edu for more info.

Cougs Rise: Pre-College and Bridge Program: WSU-Pullman – Cougs Rise works with students as they transition to college, providing support to finish high school strong and start their higher education journey successfully. In addition to assisting with the process of going to college (financial aid applications, admission, registration, housing, etc.), Cougs Rise provides transitioning students with a mentor who is a current Coug and had similar experiences along their journey. Visit <https://provost.wsu.edu/cougsrise/> or email provost.cougsrise@wsu.edu for more info.

Dare to Dream Pre-College Program: Statewide – Dare to Dream provides an introduction to sciences, math, engineering and self-development content to promote an academic identity and confidence in high school students of migrant/ seasonal farm-working backgrounds throughout the state. Participants receive academic credit and the skills gained during the academies help students develop career visions and frame the importance of academic engagement during high school. Additionally, participants are mentored by current WSU students from similar backgrounds, helping them achieve their academic goals. Visit <https://provost.wsu.edu/daretodream/> or email oea.dtd@wsu.edu for more info.

College Success Foundation Achievers Program: All WSU Campuses – Participants are high-achieving students from low-income families aspiring to earn a baccalaureate degree. In addition to receiving scholarship support to make college more affordable, students are also provided with holistic advising and programming which includes academic advising, career development, financial-aid planning, individual support, and social activities. Visit <https://provost.wsu.edu/csf/> or email oea.csf@wsu.edu for more info.

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.

Cooperative courses are offered at both institutions during the fall and spring semesters; summer courses are not cooperatively offered.

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 credits at UI will count toward their total number of credits 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 <https://webpages.uidaho.edu/schedule/>.

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

Subject	Number	Course Title	Credits
AGEC	452	Water Economics and Policy	3
AGEC	525	Master's Econometrics	3
AGEC	526	Master's Microecon Analysis	3
AGEC	527	Mathematics for Economists	3
AGEC	529	Research Methods	1 to 2
AGEC	532	Natural Recourse Econ/Policy	3
AGEC	533	International Trade and Policy	3
AGEC	534	Production Economics	3
AGEC	535	Applied Industrial Orgnztn	3
AGEC	587	Regional Econ Dev Methods	3
AIST	422	Contemporary PNW Indians	3
ANTH	411	Human Evolution	3
ANTH	422	Contemporary PNW Indians	3
ANTH	431	Historical Archaeology	3
ANTH	511	Human Evolution	3
ANTH	531	Historical Archaeology	3
ARCH	154	Intro to Architectrl Graphics	3
ARCH	421	China Program Preparation	2
ARCH	430	Rome Preparatory Seminar	2
ARCH	521	China Program Preparation	2
ARCH	580	British Green Architecture	2
ASM	107	Beginning Welding	3
ASM	305	GPS and Precision Agriculture	3
ASM	315	Irrig Syst/Water Mgmt	3
ASM	331	Elec Power Syst/Agric	3
AVFS	101	Intro to Animal Vet & Food Sci	1
AVS	263	Live Animal & Carcass Evaluatn	3
AVS	267	Anat & Phys Domestic Animals	3
AVS	305	Animal Nutrition	4
AVS	306	Feeds and Ration Formulation	3
AVS	306L	Feeds & Ration Formulation Lab	1
AVS	330	Genetics/Livestock Improvement	3
AVS	363	Animal Products/Hum Consumptn	4
AVS	452	Physiology of Reprductn	4
AVS	466	Equine Science and Management	3
AVS	472	Dairy Cattle Mgmt	3
AVS	474	Beef Cattle Science	3
AVS	475	Advanced Dairy Management	3
AVS	476	Sheep Science	3
BE	441	Instrumentation/Measurements	3
BE	541	Instrumentation/Measurements	3
BIOL	426	Systems Biology	3
BIOL	456	Computer Skills for Biologists	3
BIOL	461	Neurobiology	3
BIOL	522	Molecular Evolution	3
BIOL	526	Systems Biology	3
BIOL	536	Phylogenetics Reading Group	1
BIOL	545	Phylogenetics	3
BIOL	549	Computer Skills for Biologists	3
BIOL	551	Seminar/Reproductive Biology	1
BIOL	563	Mathematical Genetics	3
BIOL	565	Neurobiology	3
CE	421	Engineering Hydrology	3
CE	422	Hydraulic Struct Anlys/Design	3
CE	428	Open Channel Hydraulic	3
CE	432	Dsgn Water/Wastewater Sysys II	3
CE	474	Traffic Systems Design	3
CE	510	Adv Mechanics of Materials	3
CE	513	Bridge Design	3
CE	521	Sedimentation Engineering	3
CE	522	Hydraulic Struct Anlys/Design	3
CE	532	Dsgn Water/Wastewater Sysys II	3
CE	541	Reliability of Engr Systems	3
CE	542	Adv Design of Steel Structures	3
CE	543	Dynamics of Structures	3
CE	546	Finite Element Anly	3
CE	556	Pavement Materials	3
CE	561	Engr Properties of Soils	3
CE	562	Adv Foundation Engr	3
CE	563	Seepage and Slope Stability	3
CE	566	Geot Eq Engineering	3
CE	571	Traffic Flow Theory	3
CE	572	Intersection Traffic Operation	3
CE	573	Transportation Planning	3
CE	574	Public Transportation	3
CE	575	Adv Pavement Design/Analysis	3
CE	577	Pavement Preserve/Management	3
CHE	515	Transport Phenomena	3
CHE	527	Thermodynamics	3
CHE	529	Chem Engr Kinetics	3
CHE	541	Chem Engr Analysis I	3
CORS	254	Our National Parks	3
CS	324	Computer Graphics	3
CS	398	Cmptr Science Coop Internship	1 to 3
CS	438	Network Security	3
CS	510	Programming Language Theory	3
CS	538	Network Security	3
DAN	105	Dance	1
DAN	116	Technique	1
DAN	216	Technique	1
DAN	416	Technique	1
DAN	516	Technique	1
ECE	413	Radio-Frequency IC Design	3
ECE	415	Analog Integrated Circuit Dsgn	3
ECE	417	Mixed Signal IC Design	3
ECE	418	Intro to Electronic Packaging	3
ECE	419	Image Sensors and Systems	3
ECE	427	Power Electronics	3
ECE	452	Communication Systems	3
ECE	469	Critical Infrastructure	3
ECE	470	Control Systems	3

ECE	513	Radio-Frequency IC Design	3	FS	416	Food Microbiology	3
ECE	515	Analog Integrated Circuit Dsgn	3	FS	417	Food Microbiology Lab	2
ECE	516	Image Sensors and Systems	3	FS	432	Food Engineering	3
ECE	517	Mixed Signal IC Design	3	FS	433	Food Engineering Lab	1
ECE	518	Intro to Electronic Packaging	3	FS	436	Principles of Sustainability	3
ECE	520	Advanced Electrical Machinery	3	FS	464	Food Toxicology	3
ECE	522	Induction Machines	3	FS	475	Qual Mgmt Tools for Food Prod	3
ECE	523	Symmetrical Components	3	FS	498	Internship	1 to 16
ECE	524	Transients in Power Systems	3	FS	499	Directed Study	1 to 16
ECE	525	Power Syst Protectn/Relaying	3	FS	502	Directed Study	1 to 16
ECE	526	Protection Power Systems II	3	FS	503	Workshop	1 to 16
ECE	530	Adv Electromagnetic Theory I	3	FS	504	Special Topics	1 to 16
ECE	533	Antenna Theory	3	FS	509	Princ Environmental Toxicology	3
ECE	569	Critical Infrastructure	3	FS	517	Scientific Writing	2
ECE	570	Random Signals	3	FS	518	Oral Seminar	1
ECE	572	Linear System Theory	3	FS	521	Food Rheology	3
ECE	579	Engineering Acoustics	3	FS	525	Engineering Princ for Foods	3
EDAD	535	School Finance	3	FS	536	Principles of Sustainability	3
ENGR	210	Engineering Statics	3	FS	564	Food Toxicology	3
ENGR	220	Engineering Dynamics	3	FS	575	Food Quality Management	3
ENGR	320	Engr Thermodynamic/Heat Transfer	3	FS	583	Advances in Cereal Chem & Tech	3
ENGR	335	Engr Fluid Mechanics	3	FS	588	Food Science Tchg Practicum	1 to 3
ENGR	350	Engr Mechanics of Materials	3	FS	598	Internship	1 to 16
ENT	440	Insect Identification	4	FSP	536	Biocomposites	3
ENT	441	Insect Ecology	3	FSP	538	Lignocellulosic Biomass Chem	3
ENT	540	Insect Identification	4	GEOE	428	Geostatistics	3
ENT	541	Insect Ecology	3	GEOE	535	Seepage and Slope Stability	3
ENT	549	Insect-Plant Interactions	3	GEOG	200	World Cultures & Globalization	3
ENVS	436	Principles of Sustainability	3	GEOG	317	Dendrochronology	3
ENVS	536	Principles of Sustainability	3	GEOG	350	Sustainability of Global Devel	3 to 4
FISH	314	Fish Ecology	3	GEOG	365	Geopolitics and Conflict	3
FISH	418	Fisheries Management	4	GEOG	385	Foundations of GIS	3
FISH	422	Concepts in Aquaculture	4	GEOG	407	Spatial Analysis and Modeling	3
FISH	424	Fish Health Management	4	GEOG	410	Biogeography	3
FISH	450	Freshwater Invertebrates	2	GEOG	420	Land/Resources/Environment	3
FISH	451	Freshwater Invert Methods	2	GEOG	424	Hydro Apps/GIS&Remote Sensing	3
FISH	503	Workshop	1 to 16	GEOG	430	Climate Change Ecology	3
FISH	504	Special Topics	1 to 16	GEOG	435	Climate Change Mitigation	3
FISH	511	Fish Physiology	2	GEOG	475	Intermediate GIS	3
FISH	515	Large River Fisheries	2	GEOG	479	GIS Programming	3
FISH	525	Aquaculture/Wild Fisheries	2	GEOG	483	Remote Sens/GIS Integr	3
FISH	526	Climate Effects & Cons Manage	2	GEOG	507	Spatial Analysis and Modeling	3
FISH	550	Freshwater Invertebrates	2	GEOG	517	Dendrochronology	3
FISH	551	Freshwater Invert Methods	2	GEOG	524	Hydro Apps/GIS&Remote Sensing	3
FISH	560	Advanced Fisheries Techniques	3	GEOG	535	Climate Change Mitigation	3
FOR	102	Intro to Forest Mgmt	2	GEOG	550	Sustainability of Global Devel	3 to 4
FOR	230	Forest Operations	3	GEOG	565	Geopolitics and Conflict	3
FOR	321	Cultural Use of Fire	3	GEOG	583	Remote Sens/GIS Integratn	3
FOR	324	Forest Regeneration	3	GEOL	212	Dinosaurs and Prehistoric Life	4
FOR	398	Renew Natural Resources Intern	1 to 16	GEOL	226	Crime Scene Science	3
FOR	430	Forest Operations	3	GEOL	302	Field Geology Methods	3
FOR	472	Remote Sensing of Environment	4	GEOL	407	Basin Analysis	3
FOR	498	Renew Natural Resources Intern	1 to 16	GEOL	424	Adv Topics in Sedimentary Rock	3
FREN	407	French/Francophone Literatures	3	GEOL	428	Geostatistics	3
FS	110	Introduction to Food Science	3	GEOL	433	Geodynamics	4
FS	201	Science on Your Plate	3	GEOL	435	Glaciology & Dyn Frozen Earth	3
FS	204	Special Topics	1 to 16	GEOL	447	Geo/Thermochronology	3
FS	220	Food Safety/Quality	3	GEOL	462	Petroleum Systems	3
FS	299	Directed Study	1 to 16	GEOL	467	Volcanology	3
FS	301	Food Mycology	3	GEOL	471	Ore Deposits and Exploration	3
FS	303	Food Processing	3	GEOL	474	Stable Isotopes Environment	3
FS	304	Cereal Chemistry & Processing	3	GEOL	489	Virtual Field Camp	3
FS	350	Instrum & Sens Analysis Food	5	GEOL	490	Geology Field Camp	3
FS	363	Animal Products/Hum Consumptn	4	GEOL	507	Basin Analysis	3
FS	398	Internship	1 to 16	GEOL	510	Geosystems	3
FS	401	Industrial Fermentations	3	GEOL	533	Geodynamics	4
FS	403	Workshop	1 to 16	GEOL	534	Geostatistics	3
FS	404	Special Topics	1 to 16	GEOL	535	Glaciology & Dyn Frozen Earth	3
FS	406	Evaluation of Dairy Products	2	GEOL	547	Geo/Thermochronology	3
FS	407	Eval of Dairy Products Lab	1	GEOL	549	Electron Microscopy	3
FS	409	Princ Environmental Toxicology	3	GEOL	562	Petroleum Systems	3

GEOL	567	Volcanology	3	NS	403	Workshop	1 to 16
GEOL	584	Stable Isotopes Environment	3	NS	404	Special Topics	1 to 16
GERM	301	German Reading and Writing	3	NS	406	Naval Operations	3
GERM	420	Topics/Germ Cltre & Lit-Themes	3	NS	412	Maneuver Warfare	3
HYDR	576	Fund Modeling Hydrogeol Syst	3	NS	421	Intro to Naval Science Lab 7	1
JAPN	101	Elementary Japanese I	4	NS	422	Intro to Naval Science Lab 8	1
JAPN	102	Elementary Japanese II	4	NS	423	Intro to Naval Science Lab 9	1
JAPN	201	Intermediate Japanese I	4	NS	424	Intro to Naval Science Lab 10	1
JAPN	202	Intermediate Japanese II	4	NS	499	Directed Study	1 to 16
LARC	389	Hist of Landscape Arch	3	OM	446	Six Sigma Innovation	3
LAW	947	Environmental Law	3	ORGS	535	Personnel	3
MATH	388	History of Mathematics	3	ORGS	541	Human Relations in Workplace	3
MATH	437	Mathematical Biology	3	PEP	404	Special Topics	1 to 16
MATH	451	Probability Theory	3	PEP	504	Special Topics	1 to 16
MATH	452	Mathematical Statistics	3	PHIL	221	Philosophy in Film	3
MATH	453	Stochastic Models	3	PHIL	320	History Ancient/Medieval Phil	3
MATH	521	Topology I	3	PHIL	321	History of Modern Philosophy	3
MATH	528	Differentiable Manifld	3	PHIL	351	Philosophy of Science	3
MATH	531	Complex Variables	3	PHIL	442	Philosophy of Mind	3
MATH	538	Stochastic Models	3	PHIL	443	Philosophy of Language	3
MATH	539	Thry Ord Differential Equatns	3	PHIL	446	Metaphysics	3
MATH	540	Partial Differential Equations	3	PHIL	447	Theory of Knowledge	3
MATH	555	Groups and Fields I	3	PHYS	465	Particle and Nuclear Physics	3
MATH	556	Groups and Fields II	3	PHYS	484	Astrophysics	3
MATH	557	Ring Theory	3	PHYS	521	Advanced Mechanics	3
MATH	558	Intro to Algebraic Geometry	3	PHYS	533	Statistical Mechanics	3
MATH	563	Mathematical Genetics	3	PHYS	541	Electromagnetic Theory I	3
ME	414	HVAC Systems	3	PHYS	542	Electromagnetic TheoryII	3
ME	417	Turbomachinery	3	PHYS	550	Quantum Mechanics I	3
ME	436	Sustainable Energy Sources	3	PHYS	551	Quantum Mechanics II	3
ME	438	Sustainability & Green Design	3	PHYS	565	Particle and Nuclear Physics	3
ME	450	Fund Comp Fluid Dynamics	3	PHYS	571	Math Methods of Physics	3
ME	458	Finite Element Applications	3	PLP	411	Virus Diseases of Plants	3
ME	472	Mechanical Vibrations	3	PLP	511	Virus Diseases of Plants	3
ME	481	Control Systems	3	PLSC	340	Nursery Management	3
ME	513	Engineering Acoustics	3	PLSC	410	Invasive Plant Biology	3
ME	514	HVAC Systems	3	PLSC	451	Vegetable Crops	3
ME	517	Turbomachinery	3	PLSC	490	Potato Science	3
ME	527	Thermodynamics	3	PLSC	510	Invasive Plant Biology	3
ME	538	Sustainability & Green Design	3	PLSC	533	Plant Tissue Culture Technique	3
ME	539	Adv Mechanics of Materials	3	PLSC	546	Plant Breeding	3
ME	540	Continuum Mechanics	3	PLSC	551	Vegetable Crops	3
ME	541	Mech Engr Analysis	3	PLSC	590	Potato Science	3
ME	546	Convection Heat Transf	3	PSYC	446	Engineering Psych	3
ME	549	Finite Element Analy	3	PSYC	509	Human Factors in Engr Design	3
ME	550	Adv Comp Fluid Dynamics	3	PSYC	516	Industrial/Organizational Psyc	3
ME	551	Exp Methods Fluid Dynamics	3	PSYC	541	Human Relations in Workplace	3
ME	558	Finite Element Applications	3	PSYC	552	Ergonomics/Biomechanics	3
ME	583	Reliability of Engr Systems	3	PSYC	561	Human-Computer Interaction	3
MEDS	404	Special Topics	1 to 16	PSYC	562	Advanced Human Factors	3
MEDS	597	Graduate Practicum	1 to 3	SOIL	409	Princ Environmental Toxicology	3
NRS	472	Remote Sensing of Environment	4	SOIL	415	Soil and Environmental Physics	3
NRS	506	Fundamentals of Research	2	SOIL	422	Environmental Soil Chemistry	3
NRS	555	Human Dimensions of Nat Res	3	SOIL	436	Principles of Sustainability	3
NS	101	Introduction to Naval Science	3	SOIL	454	Pedology	3
NS	104	Seapwr & Maritime Affr	3	SOIL	456	North Idaho Field Trip	1
NS	121	Intro to Naval Science Lab 1	1	SOIL	458	Soil and Site Evaluation	2
NS	122	Intro to Naval Science Lab 2	1	SOIL	464	Food Toxicology	3
NS	203	Workshop	1 to 16	SOIL	509	Princ Environmental Toxicology	3
NS	204	Special Topics	1 to 16	SOIL	521	Environmental Soil Chemistry	3
NS	205	Navigation	3	SOIL	536	Principles of Sustainability	3
NS	206	Naval Leadership & Mgmt	3	SOIL	556	North Idaho Field Trip	1
NS	221	Intro to Naval Science Lab 3	1	SOIL	564	Food Toxicology	3
NS	222	Intro to Naval Science Lab 4	1	STAT	407	Experimental Design	3
NS	299	Directed Study	1 to 16	STAT	414	Nonparametric Statistics	3
NS	303	Ship Systems I	3	STAT	418	Multivariate Analysis	3
NS	304	Ship Systems II	3	STAT	422	Survey Sampling Methods	3
NS	311	Evolution Of Warfare	3	STAT	431	Statistical Analysis	3
NS	321	Intro to Naval Science Lab 5	1	STAT	451	Probability Theory	3
NS	322	Intro to Naval Science Lab 6	1	STAT	452	Mathematical Statistics	3
NS	402	Naval Leadership and Ethics	3	STAT	453	Stochastic Models	3

Achieving Academic Success

STAT	507	Experimental Design	3
STAT	514	Nonparametric Statistics	3
STAT	519	Multivariate Analysis	3
STAT	544	Stochastic Models	3
STAT	550	Regression	3
STAT	555	Statistical Ecology	3
STAT	565	Computer Intensive Statistics	3
WLF	503	Workshop	1 to 16
WLF	504	Special Topics	1 to 16
WLF	521	Communicating Science Broadly	2
WLF	540	Conservation Genetics	1 to 3
WLF	545	Wildlife Habitat Ecol	2 to 3
WLF	550	Quant Analysis Fish Wildlife	2
WLF	551	Applied Mixed Effects Modeling	2
WLF	552	Ecological Modeling	3
WLF	555	Statistical Ecology	3
WLF	561	Landscape Genetics	2
WLF	562	Landscape Genetics Lab	1 to 2
WLF	575	Behavioral Ecology	2
WR	552	Water Economics and Policy	3

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 credits 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 participate in the WSU Writing Placement Process for the purpose of placement in appropriate writing and writing support courses. This process is mandatory. The Writing Placement Process is administered during the summer New Student Orientation, at the beginning of fall semester, and prior to spring registration. Placement results will fine-tune students' placement into an appropriate first-year writing course(s). In some instances, students may be exempted from ENGLISH 101 on the basis of their performance in the Placement Process or because of prior participation in a first-year composition course (e.g., through AP or similar programs). Students who are determined to be exempted from ENGLISH 101 will receive credit for the course and will be determined to have met the UCORE WRTG requirement. For more information, contact the Writing Assessment Office in Smith Center for Undergraduate Education (CUE) 305, or call 509-335-7959 or visit us at <http://writingprogram.wsu.edu>.
- c. Honors College students need to work with the Honors College to determine placement into first-year composition courses. For more information, contact the Honors College 509-335-4505 or visit them at <http://honors.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 credits 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. Accordingly, 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 two papers they have written as a result of previously assigned college course work and reflect on their writing submissions in a Qualtrics survey. 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 should complete the University Writing Portfolio before enrolling in an [M] course.

WSU Graduation Requirements



University Honors College students do not complete University Common Requirements. Contact the Honors College for additional information.

Students who have completed an approved transferable A.A. 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 (<https://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.

FOUNDATIONAL REQUIREMENTS: 12 credits*

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

*Courses meeting the Foundational Requirements should be completed within the first year.

WAYS OF KNOWING: 16 credits

- 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 Arts [ARTS] (3 cr.)
course: _____ semester/year F Sp Su _____
- Inquiry in the Natural Sciences [BSCI] [PSCI] (7 cr.)*
course: _____(L) semester/year F Sp Su _____
course: _____ semester/year F Sp Su _____

*At least 7 credits comprised of one course in Biological Science [BSCI] and one course in Physical Science [PSCI], including one lab. Students in the College of Arts and Sciences complete one additional lab credit for a total of 8 semester credits.

DIVERSITY: 3 credits

- Diversity [DIVR]
course: _____ semester/year F Sp Su _____

INTEGRATIVE LEARNING: 3 credits

- Integrative Capstone [CAPS]
course: _____ semester/year F Sp Su _____

UNIVERSITY GRADUATION REQUIREMENTS

- 120 semester credits (or total credits for a specific degree program) of which 30 minimum are from Washington State University.
- 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 including a minimum 2.0 cumulative GPA in the major (see relevant catalog section)

WRITING PROFICIENCY REQUIREMENTS

Graduation requirements that all students must complete:

- University Writing Portfolio/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 (<https://writingprogram.wsu.edu>) or the WSU Catalog (<https://catalog.wsu.edu>).

COLLEGE OF ARTS AND SCIENCES ADDITIONAL REQUIREMENTS

All students, including transfer students with an approved transferable associate's degree, 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 college-level foreign language (includes ASL or NAL) in the same language.
- Additional 3 semester credits of [SSCI], [HUM], or [ARTS]
- Additional 1 lab credit of [BSCI] or [PSCI] for a total of 8 semester credits (2 labs)

Prepared by the Academic Success and Career Center

WSU's Learning Goals of Undergraduate Education

Bachelor's degree requirements are rooted in the University's Learning Goals of Undergraduate Education described below, which are expressed broadly so as to frame study in the major as well as in general education. The example outcomes listed under each goal provide a model set of learning outcomes through which students can demonstrate achievement of the goals, whether in general education courses or courses in the major.

Learning Goals of Undergraduate Education

CRITICAL AND CREATIVE THINKING

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

Example learning outcomes: Graduates may demonstrate critical and creative thinking by...

1. Defining, analyzing, and solving problems.
2. Integrating and synthesizing knowledge from multiple sources.
3. Assessing the accuracy and validity of findings and conclusions.
4. Examining how one thinks, reasons, and makes value judgments, including ethical and aesthetic judgments.
5. Identifying diverse viewpoints, including different philosophical and cultural perspectives.
6. Combining and synthesizing existing ideas, images, or expertise in original ways.
7. Thinking and working in imaginative ways characterized by innovation, divergent thinking, and risk-taking.

QUANTITATIVE REASONING

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

Example learning outcomes: Graduates may demonstrate quantitative and symbolic reasoning by...

1. Explaining information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, and words).
2. Converting relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, and words).
3. Applying quantitative principles and methods in the solution of problems.
4. Making judgments and drawing appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis.
5. Identifying and evaluating important assumptions in estimation, modeling, and data analysis.
6. Expressing 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.

Example learning outcomes: Graduates may demonstrate scientific literacy by...

1. Identifying scientific issues underlying global, national, local, and personal decisions and communicating positions that are scientifically and technologically informed.
2. Evaluating the quality of scientific and health-related information on the basis of its source and the methods used to generate it.
3. Posing and evaluating arguments based on evidence and applying conclusions from such arguments appropriately.
4. Recognizing 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.

Example learning outcomes: Graduates may demonstrate information literacy by...

1. Determining the extent and type of information needed.
2. Implementing well-designed search strategies.
3. Accessing information effectively and efficiently from multiple sources.
4. Assessing credibility and applicability of information sources.
5. Using information to accomplish a specific purpose.
6. Accessing and using information ethically and legally.

COMMUNICATION

Graduates will communicate successfully with audiences through written, oral, and other media as appropriate for the audience and purpose.

Example learning outcomes: Graduates may demonstrate communication skills by...

1. Analyzing how circumstances, background, values, interests, and needs shape communication sent and received.
2. Tailoring messages to audiences according to purpose, occasion, and technology used.
3. Expressing concepts, propositions, and beliefs in coherent, concise, and technically correct form.
4. Choosing appropriate communication media and technology.
5. Speaking confidently and effectively in front of groups.
6. Following social and disciplinary norms for individual and small group interactions, including active listening.

DIVERSITY

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

Example learning outcomes: Graduates may demonstrate their recognition of diverse cultures, values, and perspectives by...

1. Moving beyond perception-based comparisons, prior knowledge, and individual experiences to understand how social positioning and cultural differences and/or interrelations are constructed.
2. Recognizing how factors including history; politics; economics; systems of discrimination and inequality; structures of power and privilege; and/or cultural values, beliefs, and practices determine social and cultural conditions.
3. Using vocabulary, language, concepts, and/or theoretical models to engage and analyze how social realities are shaped and how stereotypes are created by cultural and socio-economic differences in the US and/or globally.
4. Analyzing and critiquing the cultural and social underpinnings of knowledge claims about individuals and groups and their relations to one another.
5. Assessing one's own core values, cultural assumptions, and biases in relation to those held by other individuals, cultures, and societies.

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.

Example learning outcomes: Graduates may demonstrate depth, breadth, and integration of learning...

1. Through broad study in the sciences and mathematics, social sciences, humanities, history, languages, and the arts.

2. By demonstrating 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 (major) relate to those of other disciplines and by engaging in cross-disciplinary activities.
5. By synthesizing multiple bodies of knowledge to address real-world problems and issues.
6. By reflecting upon changes in learning and outlook over time and by making personal, professional, and civic plans based on that self-reflection.

The University Common Requirements (UCORE) Program

WSU's general education program is structured by the University Common Requirements (UCORE). The University Common Requirements help students acquire foundational skills and a broad knowledge of the world that complements their specific areas of study. Through this broad exposure to multiple disciplines, students develop intellectual and civic competencies, practical skills, and the ability to apply knowledge and skills in real-world settings. WSU graduates are prepared to address diverse, complex issues for the benefit of themselves, their communities, their employers, and for society at large.

The University Common Requirements (UCORE) constitute the center of the undergraduate curriculum. The faculty developed these graduation requirements to advance student achievement of the learning outcomes of WSU's Learning Goals of Undergraduate Education. While the greater part of students' courses of study is devoted to their major field(s), the UCORE curriculum equips students with a broad set of skills applicable to coursework in all majors and highly sought by employers. Accordingly, the program offers a wide variety of elective choices and provides many individual pathways through the curriculum, including introductory, advanced, and integrative forms of learning.

The UCORE program is structured by four broad categories that are divided into eleven requirements. Only courses approved by the UCORE committee fulfill the eleven requirement areas. The program is bookended by a required first-year course [ROOT] and a senior capstone experience [CAPS]. Foundational courses and inquiry-based learning in the disciplines are complemented by a diversity requirement that embraces both American and global issues. The program's structure includes coursework in contemporary issues, social sciences, humanities, creative or professional arts, quantitative reasoning, natural sciences, diversity, and communication, to support achievement of WSU's Learning Goals of Undergraduate Education.

The University Common Requirements (UCORE) apply to all students who enter WSU with three exceptions: (1) Honors students complete the Honors College version of the general education curriculum outlined in the Honors section of this catalog. (2) The Direct Transfer Agreement (DTA) associate's degree from a Washington state public community college and certain approved out-of-state associate degrees with a general education curriculum that approximates the disciplinary breadth of the UCORE curriculum will satisfy the lower-division UCORE requirements for students with transfer credit (this excludes the [CAPS] requirement). (3) An Interstate Passport earned at another Western Interstate Commission for Higher Education (WICHE) Passport Network member institution will satisfy all lower-division UCORE requirements (this excludes the [CAPS] requirement). Former students who return should consult Academic Regulation 110 for the appropriate set of graduation requirements.

To select courses and to plan an individual pathway through the UCORE program, 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 courses (3 or 4 credits each) may be taken within the major (defined by course prefix). Some majors may require specific courses in UCORE categories. Please check with an academic advisor for more information.

UCORE Curriculum

FIRST-YEAR EXPERIENCE	Credits
Roots of Contemporary Issues - HISTORY 105 [ROOT] ¹	3
FOUNDATIONAL COMPETENCIES	
Quantitative Reasoning [QUAN]	3
Communication [COMM] [WRTG] ²	6
WAYS OF KNOWING	
Inquiry in the Social Sciences [SSCI]	3
Inquiry in the Humanities [HUM]	3
Inquiry in the Arts [ARTS]	3
Inquiry in the Natural Sciences [BSCI] [PSCI] ³	7 or 8
DIVERSITY	
Diversity [DIVR]	3
INTEGRATIVE LEARNING	
Integrative Capstone [CAPS]	3
Total Required Semester Credit Hours	34 or 35 cr.

¹ Transfer students with 45 credits or more but without a direct transfer agreement (DTA) or other approved associate's degree will complete HISTORY 305 for this requirement.

² At least 3 credits must be in writing [WRTG] and three additional credits may be in either [WRTG] or [COMM].

³ At least 7 credits comprised of one course in Biological Science [BSCI] and one course in Physical Science [PSCI], including one lab. Students in the College of Arts and Sciences complete one additional lab credit for a total of 8 semester credits.

General Rules

- While some courses with a UCORE designation can be taken on a pass, fail basis as electives or to fulfill major requirements, **they will not satisfy UCORE requirements if not taken for a letter grade** (i.e., A, B, C, D, and F), with only a few exceptions for a limited number of CAPS courses, which carry S,F grading.
- A maximum of three (3 or 4 credit) UCORE courses may be taken within the major (defined by course prefix). For the purpose of this limitation, three 1-credit UCORE courses may be combined to count for a single 3-credit UCORE course.
- Quantitative Reasoning [QUAN]: This requirement can be satisfied by passing a designated course or courses in mathematics, or through satisfactory performance on the Advanced Placement examination.
- A course from another institution that articulates (transfers) as a direct equivalent to a UCORE category will satisfy a UCORE category requirement if it is at least two (2) credits for a three (3) credit requirement, and three (3) credits for a four (4) credit requirement. The total UCORE credits must be no fewer than thirty-four (34), and no category may be more than one (1) credit short of the total category requirement (e.g., no less than five [5] credits for the Communication category, no less than six [6] for the Natural Sciences category). Courses taken at WSU do not fall under this policy (two one-credit WSU courses will not fulfill a three-credit requirement; one two-credit WSU course will not fulfill a three-credit requirement).
- Capstone courses are taken in residence.

Transfer Students: Junior standing (60 semester credits) and completion of lower-division University Common Requirements normally will be granted to students who have been awarded the Direct Transfer Agreement (DTA) associate's degree from a Washington state public community college. Certain

approved out-of-state associate degrees with a general education curriculum that approximates the disciplinary breadth of the UCORE curriculum will satisfy the lower-division UCORE requirements for students with transfer credit, but do not guarantee junior status (60 semester credits). For details on specific degrees consult the Office of Admissions.

An Interstate Passport earned at another Western Interstate Commission for Higher Education (WICHE) Passport Network member institution will satisfy all lower-division UCORE requirements (this excludes the [CAPS] requirement).

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 Integrative Capstone [CAPS] are not lower-division requirements and therefore cannot be satisfied by the approved AA or AS degrees. Please note that other degrees without a general education curriculum that approximates the disciplinary breadth of the UCORE curriculum do not automatically fulfill University Common Requirements. See Academic Regulation 6 for further details.

Interstate Passport Network: Washington State University participates in the Interstate Passport Network, a nationwide network of institutionally accredited institutions that agree to transfer completed general education requirements as a block in a seamless and efficient process among its members. Students who transfer into Washington State University with a Passport from another Network-member institution will not have to repeat or take additional courses to satisfy lower-division general education requirements. Earning a Passport recognizes that a student has achieved learning outcomes in the following nine knowledge and skill areas, which all Network member institutions agree are consistent with their own general education learning outcomes:

- Foundational Skills: oral communication, written communication, quantitative literacy
- Knowledge of Concepts: natural sciences, human cultures, creative expression, human society and the individual
- Cross-cutting Skills: critical thinking and teamwork/value systems.

Note that WSU students who complete lower-division UCORE requirements do not automatically earn a Passport. For a list of courses that currently satisfy Passport learning outcomes, please see WSU's Institutional Profile. Contact ucore@wsu.edu for more information.

UCORE Categories and Course Lists

FIRST-YEAR EXPERIENCE

Roots of Contemporary Issues [ROOT]

As the academic centerpiece of WSU's First-Year Experience, Roots of Contemporary Issues (HIST 105 or 305) provides a strong intellectual foundation for college learning, which students can build upon for the rest of their careers. Roots of Contemporary Issues (RCI) introduces students to five learning goals: critical and creative thinking; information literacy; communication; diversity; and integration of learning. The course examines the historical roots of global issues that affect human life in the 21st century, including environmental change, globalization, inequality, competing systems of knowledge, and conflict.

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

FOUNDATIONAL COMPETENCIES

Ideally, these are completed in the student's first year, as they provide fundamental skills for academic and career success.

Quantitative Reasoning [QUAN]

QUAN courses broaden students' understanding of and appreciation for mathematical reasoning while at the same time giving them a skill set that will be of value to everyday life. These courses advance the fundamentals of quantitative reasoning; develop skills for interpreting and evaluating quantitative representations (charts, graphs, algorithms, etc.); and promote identification of the strengths and weaknesses of quantitative methods for representing and solving problems.

CPT S 111	Introduction to Computer Programming
ECONS 335	Business Finance Economics
ENGR 107	Introductory Mathematics for Engineering Applications
FIN 223	Personal Finance
MATH 105	Exploring Mathematics
MATH 140	Calculus for Life Scientists
MATH 171	Calculus I
MATH 202	Calculus for Business and Economics
MATH 252	Fundamentals of Elementary Mathematics II
PHIL 201	Introduction to Formal Logic
PSYCH 311	Statistics in Psychology
STAT 212	Introduction to Statistical Methods

Communication: Written Communication [WRTG] and Communication [COMM]

—**Writing:** Written communication courses promote the clear, concise, and effective development and expression of ideas through writing. WRTG courses prepare student writers to use writing to increase knowledge, foster understanding, and/or to promote change in readers' attitudes or behaviors. Additionally, student writers will hone organizational and analytical skills, clarity, fluency, flexibility, and accuracy in their written communication.

ENGLISH 101	College Composition
ENGLISH 105	College Composition for Multilingual Writers
ENGLISH 201	Writing and Research
ENGLISH 301	Writing and Rhetorical Conventions
ENGLISH 365	Proposal Writing
ENGLISH 402	Technical and Professional Writing
ENGLISH 403	Technical and Professional Writing ESL
PHIL 200	Critical Thinking and Writing

—**Communication:** COMM courses help to develop and express ideas beyond the medium of writing. Defined as public speaking; musical expression; interpersonal, intercultural, visual communication; multi-media authoring; conversational foreign language, practice with non-written communication helps students develop skills in adapting content and conventions to appropriate contexts, audiences, and purposes, and in the skillful use of credible, relevant sources to communicate ideas appropriate to the medium. Development of communication abilities may involve working with technologies, including interplay between texts, data, and images. It also may involve oral presentations and discourse, such as public speaking, small-group interaction, one-on-one conversation, and active listening.

COM 102	Public Speaking in the Digital Age
COM 210	Multimedia Content Creation
COM 400	Communicating Science and Technology
DTC 202	Internet Revolutions
ENGLISH 106	Communicating in Academic Contexts
FRENCH 361	Advanced French for the Professions
GERMAN 307	Intermediate Speaking and Listening
GERMAN 361	German for the Professions
H D 205	Developing Effective Communication and Life Skills
MKTG 279	Professional Persuasive Communications
NEUROSCI / MBIOS 201	Introduction to Communication in the Molecular Life Sciences
SOC 103	Social Psychology of Communication

FOUR WAYS OF KNOWING: Social Sciences, Humanities, Arts, and Natural Sciences

In completing the series of Inquiry courses, students gain broad exposure to and comfort with critical and creative thought processes across a variety of disciplinary areas. By asking and attempting to answer the "big questions" in a variety of disciplines, students learn how to generate, evaluate, disseminate and apply knowledge within those disciplinary contexts and beyond.

The organization of these requirements into these four broad areas—natural sciences, social sciences, humanities, and arts—ensures that students engage with a wide variety of methods of scholarly inquiry (e.g., rhetorical, aesthetic, ethnographic, historical, scientific, and qualitative).

Inquiry in the Social Sciences [SSCI]

Inquiry in the Social Sciences teaches students how social sciences apply empirical principles and methods to understand human beings as social agents in cultural, group, and individual contexts.

AFS 336	Agriculture, Environment, and Community
ANTH 130	Great Discoveries in Archaeology
ANTH 135	Mythbusting in Archaeology
ANTH 205	Health, Healing, and Medicine Across Cultures
ANTH 232	The Pyramids of Egypt: Why and How?
ANTH 302	Childhood and Culture
ANTH 304	Cross-Cultural Perspectives of Mental Health and Illness
ANTH 305	Anthropology of Epidemic Disease and Bioterrorism
ANTH 309	Cultural Ecology
ANTH / AIS 331	Archaeology of the Americas
CAS 311	Special Topics in Social Sciences: Cross-disciplinary Studies
CES 171	Introduction to Indigenous Studies
CES 244	Critical Globalizations
CES 254	Comparative Latino/a Cultures
CES 308	Cultural Politics of Sport
CES 335 / HISTORY 360	Black Freedom Struggle
COM 101	Media and Society
CRM J 101	Introduction to the Administration of Criminal Justice
ECONS 101	Fundamentals of Microeconomics
ECONS 102	Fundamentals of Macroeconomics
ENGLISH 256	Introduction to the Study of Language
ENGLISH 457	Sociolinguistics
H D 101	Human Development Across the Lifespan
H D 204	Family Interactions
H D 334	Principles of Community Development
HBM 235	Travel, Society, and Business
HISTORY 309	Place-based Digital History
HISTORY / ASIA 379	History of East Asian Economic Development Since 1945
NEP 200	Place and Health
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
SOC 332	Sustainability and Society

Inquiry in the Humanities [HUM]

The humanities grapple with the human condition in its complexity through time and across space and cultures. The humanities include knowledge of history, philosophical traditions, major religions, diverse cultural legacies, and contested questions. As fields of study, the humanities emphasize analysis, interpretation, and reflection. They engage centrally with questions of meaning and purpose, which serve as bridges of relevance between past, present, and future.

ANTH 201	Art and Society
ANTH 355	Historical Linguistics
CAS 310	Special Topics in the Humanities
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 / HISTORY 235	African American History
CES 260	Race and Racism in US Popular Culture
CES 313 / ENGLISH 311	Asian Pacific American Literature
CHINESE / ASIA 121	Modern Chinese Culture
COM 105	Communication in Global Contexts
ENGLISH 108	Introduction to Literature

ENGLISH 109	Creative Writing Now
ENGLISH 110	Reading Now
ENGLISH 112	Language in the Real World
ENGLISH 205	Introduction to Shakespeare
ENGLISH 210	Readings in American Literature
ENGLISH 219	Introduction to the Environmental Humanities
ENGLISH 305	Shakespeare
ENGLISH 366	The British Novel to 1900
ENGLISH 368	The American Novel to 1900
ENGLISH 372	19th Century Literature of the British Empire and the Americas
ENGLISH 373	20th and 21st Century Global Literatures in English
FOR LANG 101	Introduction to the World of Languages
FOR LANG 120	Introduction to Foreign Cultures
FOR LANG / HUMANITY 130	Global Literature in Translation
FRENCH 110	French/Francophone Film
FRENCH 120	French Culture
FRENCH 320	French/Francophone Culture
GERMAN 120	Germanic Culture
GERMAN 320	German Culture
HISTORY 101	Ancient, Medieval, and Early Modern Europe
HISTORY 102	Modern Europe
HISTORY 110	American History to 1877
HISTORY 111	American History Since 1877
HISTORY 121	World History II
HISTORY 230	Introduction to Latin American History
HISTORY 318	United States, 1914-1945
HISTORY 319	United States, 1945-Present
HISTORY 331	Latin American Cultural History
HISTORY 332	20th Century Latin America
HISTORY 340	Ancient Greece from Homer to Alexander the Great
HISTORY 341	The Rise and Fall of Ancient Rome
HISTORY 343	The Early Middle Ages, 330-1050
HISTORY 347	Europe in the French Revolutionary and Napoleonic Era, 1789 to 1815
HISTORY / WGSS 350	European Women's History, 1400-1800
HISTORY 354	Age of Empire: Europe, 1871-1914
HISTORY 355	Life and Culture of the Popular Classes in Europe, 1200-1800
HISTORY 356	Europe Since 1945
HISTORY / ASIA 373	Chinese Civilization
HISTORY / ASIA 374	Japanese Civilization
HISTORY 382	History of Science and Technology Since Newton
HUMANITY 101	Humanities in the Ancient World
HUMANITY 103	Mythology
HUMANITY 302	Humanities in the Middle Ages and Renaissance
HUMANITY 304	Humanities in the Modern World
JAPANESE / ASIA 123	Modern Japanese Culture
KINES 201	Exploring Meaning in Sport and Movement
LND ARCH 150	Landscapes of the Palouse
MUS 265 / CES 271	Native Music of North America
MUS 359	History of Music: Antiquity to 1650
MUS 360	History of Music: 1650 - 1850
MUS 361	Music and Social Justice
PHIL 101	Introduction to Philosophy
PHIL 103	Introduction to Ethics
PHIL 207	Philosophy of Religion
PHIL 210	Philosophy in Film
PHIL 220	Philosophy of Food
PHIL / ASIA 280	Islam in Theory and Practice
PHIL / ASIA 314	Philosophies and Religions of India
PHIL / ASIA 315	Philosophies and Religions of China and Japan
PHIL 360	Business Ethics
PHIL 365	Biomedical Ethics
PHIL 370	Environmental Ethics

PHIL 450	Data Analytics Ethics
SPANISH 120	Peninsular Spanish Culture
SPANISH 121	Latin American Culture
WGSS / ENGLISH 211	Sex Matters: Introduction to Queer Culture and Literature
WGSS 338	Gender, Race, and Popular Culture

Inquiry in the Arts [ARTS]

Creative expression, whether for personal expression or to communicate with others, is a fundamental human activity that results in the production of objects, environments, and experiences that engage the senses, emotions, and/or intellect. The creative and professional arts offer direct participation in such activities and provides a framework for their interpretation, evaluation, and appreciation, past and present. Arts is broadly defined to include not only the fine arts and performing arts, but also the professional arts, such as architecture, graphic design, and digital arts.

AMDT 408	Visual Analysis and Aesthetics
ANTH 301	Arts and Media in Global Perspective
DTC 101	Introduction to Digital Technology and Culture
DTC 201	Tools and Methods for Digital Technology
DTC 208	Introduction to Digital Cinema
DTC / ENGLISH 354	Digital Storytelling
ENGLISH 150	Introduction to Film as Narrative
ENGLISH 212	Introduction to Comics and Graphic Novels
ENGLISH 251	Introduction to Creative Writing: Exploring the Genres
ENGLISH 339	Topics in Film as Literature
ENGLISH 342	Documentary Film Theory and Production
FINE ART 101	Introduction to Art
FINE ART 102	2D Art and Design
FINE ART 103	3D Art and Design
FINE ART 110	Drawing
FINE ART 201	World Art History I
FINE ART 202	World Art History II
FINE ART 303	Modern Art - 19th Century
FINE ART 305	Arts of Ancient Greece and Rome
FINE ART 307	The Arts of Renaissance Europe
FINE ART 340	Ceramics
FINE ART 350	Sculpture
HISTORY 232	The Mexican Revolution and the Arts
HISTORY 320	Modern US History Through Film
MUS 120	Class Guitar
MUS 153	Musical Style in Composition
MUS 160	Survey of Music Literature
MUS 163	World Music
MUS 262	Rock Music: History and Social Analysis
MUS 266	Film Music
MUS 428	Opera Workshop
MUS 429	Tenor/Bass Choir
MUS 430	Treble Choir
MUS 431	Concert Choir
MUS 432	University Singers
MUS 433	Madrigal/Chamber Singers
MUS 434	Symphony Orchestra
MUS 436	Symphonic Band
MUS 437	Symphonic Wind Ensemble
MUS 438	Jazz-Lab Band
MUS 439	Vocal Jazz Ensemble
SDC 100	World of Design and Construction
SPANISH 110	Peninsular Spanish Film
SPANISH 111	Latin American Film
SPANISH 310	Peninsular Spanish Film
SPANISH 311	Latin American Film
SPANISH 350	Introduction to Peninsular Spanish Literature
SPANISH 351	Introduction to Latin American Literature
WGSS / HISTORY 369	Queer Identities in Contemporary Cultures

Inquiry in the Natural Sciences [BSCI] [PSCI]

Science is an approach to asking and answering questions about the natural world that values empirical observation as a key foundation for developing theories that explain observations. Science articulates the processes that underlie the world around us. Inquiry using a scientific framework rests upon empirical observations (including experimentation); draws logical conclusions supported by such evidence; and articulates an evidence-based argument to advance those conclusions within the scientific community.

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

— Biological Sciences [BSCI]

ANIM SCI 205	Companion Animal Nutrition
ANTH 260	(L) Introduction to Biological Anthropology
ANTH 268	Sex, Evolution, and Human Nature
ANTH 280	Skeleton Keys: The Basics of Forensic Anthropology
ANTH 381	Primate Behavioral Ecology
BIOLOGY 101	Biology of Humans
BIOLOGY 102	(L) General Biology
BIOLOGY 106	(L) Introductory Biology: Organismal Biology
BIOLOGY 107	(L) Introductory Biology: Cell Biology and Genetics
BIOLOGY 111	(L) Laboratory Experiments in Biology and Genetics
BIOLOGY 120	(L) Introduction to Botany
BIOLOGY 140	Introduction to Nutritional Science
BIOLOGY 150	Evolution
BIOLOGY 298	(L) Honors Biology for Non-Science Majors
BIOLOGY 308	Marine Biology
BIOLOGY 333	Human Nutrition and Health
ENTOM 101	Insects and People: A Perspective
ENTOM 103	(L) Discover Insects: A Laboratory Course for Non-Science Majors
ENTOM 150	(L) Insects, Science, and World Cultures
ENTOM 201	Science in the Public Eye
FS 201	Science on Your Plate
HORT 150	(L) Science and Art of Growing Plants
MBIOS 101	(L) Introductory Microbiology
MBIOS 320	DNA and Society
NEUROSCI 105	Meet Your Brain
NEUROSCI 150	Art and the Brain
PSYCH 372	Biological Basis of Behavior
SCIENCE 102	(L) Integrated Science: Dynamic Systems in the Natural World
SOE 110	(L) The Environment, Human Life, and Sustainability
SOIL SCI 201	Soil: A Living System
SOIL SCI 202	(L) Introductory Soil Science Laboratory

— Physical Sciences [PSCI]

AMDT 210	(L) Textiles
ASTRONOM 135	(L) Astronomy
ASTRONOM 138	Planets and Planetary Systems
ASTRONOM 390	(L) The Night Sky
CHEM 101	(L) Introduction to Chemistry
CHEM 105	(L) Principles of Chemistry I
PHYSICS 101	General Physics
PHYSICS 111	(L) General Physics Lab
PHYSICS 137	Physics and Society
PHYSICS 150	Physics and Your World
PHYSICS 201	Physics for Scientists and Engineers I
PHYSICS 205	(L) Physics for Scientists and Engineers I - Honors
PHYSICS 211	(L) Physics Lab for Scientists and Engineers
PHYSICS 322	(L) Sound Waves and Music
SCIENCE 101	(L) Integrated Science: Origins in the Natural World

SOE 101	(L) Welcome to the Earth: An Introduction to Geology
SOE 103	Other Worlds: Comparative Planetology of our Solar System
SOE 105	Natural Resources and Natural Hazards
SOE 210	(L) Earth's History and Evolution
SOE 230	Introductory Oceanography
SOE 250	Introduction to Earth System Science
SOE 280	How the Earth's Climate System Works

DIVERSITY

Diversity [DIVR]

Diversity courses contribute to stronger, more complex cross-cultural understanding and communication by helping students engage various social and cultural contexts and interactions using knowledge, critical thinking, and a flexibility in perspective. Courses encourage students to ask deeper questions about cultural systems and systems of power, and to pursue answers that reflect multiple cultural and intellectual perspectives beyond personal experience.

AMDT 317	Multicultural Perspectives on the Body and Dress
AMDT / WGSS 422	Fat Studies
ANTH 101	Introduction to Anthropology
ANTH 203	Global Cultural Diversity
ANTH 220	Perspectives on Race
ANTH 307	Contemporary Cultures and Peoples of Africa
ANTH / WGSS 316	Gender in Cross Cultural Perspective
ANTH / AIS 320	Native Peoples of North America
ANTH / AIS 327	Contemporary Native Peoples of the Americas
ANTH 350	Speech, Thought, and Culture
ASIA 301	East Meets West
ASIA 322*	Ecology in East Asian Cultures
BIOLOGY / WGSS 307	Biology of Women
CES 101	Race and Racism in the United States
CES 291	Anti-Semitism
CES 325	Traveling Cultures: Tourism in Global Perspective
COMSOC 321	Intercultural Communication
COUN PSY 457	Chicano/a Latino/a Psychology
CRM J 205	Realizing Justice in a Multicultural Society
DTC 206	Digital Inclusion
DTC / AMER ST 475	Digital Diversity
ECONS 428	Global Capitalism Today: Perspectives and Issues
ENGLISH 322 / CES 332	Topics in African American Literature
ENGLISH 362	Rhetorics of Racism
ENGLISH 489	20th/21st Century British and Postcolonial Literatures
FOR LANG 110	Introduction to Global Film
H D 350	Family Diversity
HISTORY 120	World History I
HISTORY 250	Peoples of the United States
HISTORY / ASIA 270	India: History and Culture
HISTORY / ASIA 271	Southeast Asian History: Vietnam to Indonesia
HISTORY / ASIA 272	Introduction to Middle Eastern History
HISTORY / ASIA 273	Islam in Global History
HISTORY / ASIA 275	Introduction to East Asian Culture
HISTORY 281	History of Organized Crime in America
HISTORY / WGSS 298	History of Women in American Society
HISTORY 308	North American Indian History, Precontact to Present
HISTORY 321	US Popular Culture, 1800 to 1930
HISTORY 322	US Popular Culture Since 1930
HISTORY / WGSS 335	Women in Latin American History
HISTORY 361	American Roots: Immigration, Migration, and Ethnic Identity
HISTORY / ASIA 377	Modern Japanese History

HISTORY / WGSS 398	Women, Gender, and the History of the Un-West
HISTORY / WGSS 399	LGBTQ+ History: Culture, Politics, and Social Change in the U.S.
JAPANESE 320*	Issues in East Asian Ethics
MUS 267	Black American Music: Roots to Fruit
MUS 362	History of Jazz
MUS / WGSS 363	Women in Music
SOC / WGSS 251	The Sociology of Sex, Relationships, and Marriage
SOC 340	Social Inequality
SOC / WGSS 351	The Family
SOC 361	Criminology
SOE 312	Natural Resources, Society, and the Environment
SPANISH 321	Latin American Cultures
SPMGT 101	Sport and Popular Culture: Trends and Issues
WGSS 101	Introduction to Women's, Gender, and Sexuality Studies
WGSS 120	Sex, Race, and Reproduction in Global Health Politics
WGSS 220	Gender, Culture, and Science
WGSS 300*	Intersections of Race, Class, Gender, and Sexuality
WGSS / SOC 385	Introduction to Lesbian, Gay, Bisexual, and Transgender Studies

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

INTEGRATIVE LEARNING

Integrative Capstone [CAPS]

CAPS courses provide a culminating student experience by asking students to integrate their learning to address authentic situations. Students apply skills, concepts, and methods of inquiry developed throughout their general education experience and/or experience in the major to develop a substantial, culminating research, applied, or creative project, and to initiate investigations and explorations of open-ended issues and problems. CAPS courses feature at least one substantial deliverable for evaluation and assessment (including but not limited to a presentation, research paper, creative artifact, multi-modal design product, team project, practicum experience). Given their position as the culminating experience within the UCORE curriculum, CAPS courses carry a strong responsibility to provide evidence of student achievement of WSU learning goals.

AFS 401	Advanced Systems Analysis and Design in Agricultural and Food Systems
AG ED 407	Student Teaching in Agricultural Education
AMDT 413	Global Sourcing
ANIM SCI 464	Companion Animal Management
ANIM SCI 472	Dairy Cattle Management
ANIM SCI 474	Beef Cattle Production
ANTH 404	The Self in Culture
ANTH 464	Hormones and Human Reproduction
ANTH 490	Integrative Themes in Anthropology
ARCH 403	Comprehensive Design Studio I
ASTRONOM 450	Life in the Universe
BIO ENG 411	Bioengineering Capstone Project II
BIOLOGY 401	Plants and People
BIOLOGY 408	Contemporary Genetics
BIOLOGY / ANTH 473	Evolution and Society
BIOLOGY 483	Organisms and Global Change
BIOLOGY 485	Biology of the Oceans
BIOLOGY 489	Synthesis and Communication of Independent Research
CAS 410	Interdisciplinary Approaches to the University
CE 465	Integrated Civil Engineering Design
CES 405 / ENGLISH 410	Cultural Criticism and Theory
CES 440	Global Social Justice
CES 489	Everyday Struggles for Justice and Equality
CHE 451	Chemical Process Analysis and Design II

CHEM 485	Senior Thesis in Chemistry	NEP 495	Interprofessional Capstone in Nutrition and Exercise Physiology
COM 471	Stereotypes in Communication	NEUROSCI 490	Senior Project
COMSOC 421	Intercultural Communication and Globalization	NURS 430	Senior Practicum
CPT S 423	Software Design Project II	NURS 495	Nursing Practice: Advanced Clinical Practicum
CRM J / WGSS 403	Violence Toward Women	PHIL 413	Science and Religion
CRM J 480	Senior Capstone in Criminal Justice and Criminology	PHIL 442	Philosophy of Mind
CROP SCI 435	Interdisciplinary Solutions in the Plant Sciences	PHIL 475	Zombie Apocalypse
CS 420	Software Design Project I	PHYSICS 408	Physics and Society
CST M 475	Senior Capstone	POL S 428	Issues in Political Psychology
DATA 424	Data Analytics Capstone	POL S 430	The Politics of Natural Resource and Environmental Policy
DTC 497	Senior Seminar	POL S 432	Comparative Public Policy
E E 416	Electrical Engineering Design	POL S 472	European Politics
ECE 452	Capstone Design II	PSYCH 401	Historical Development of Psychology
ECONS 490	Economics Capstone	PSYCH 412	Psychological Testing and Assessment
ENGLISH 415	Traditions of Comedy and Tragedy	SHS 480	Senior Seminar
ENGLISH 446	Form and Theory in Creative Writing: Prose and Poetry	SOC 415	Globalization
ENGLISH 494	Advanced Topics in Literature	SOC 495	Internship Capstone
ENGR 421	Multidisciplinary Engineering Design II	SOC 497	Capstone Research Practicum
ENGR 431	Interdisciplinary Design II	SOE 404	The Ecosystem
ENTRP 492	Small Business Strategy and Planning	SOE 454	Restoration Ecology
FINE ART 408	Art History Thesis	SOE 471	International Wildlife Conservation
FINE ART 498	Contemporary Issues Seminar	SOE 477	Environmental Dispute Resolution and Conflict Management
FOR LANG 410	Advanced Topics in Global Cinema	SOE 474	Physics and Chemistry of the Earth
FRENCH 410	French Film in Translation	SPANISH 420	Cultural Topics
FRENCH 420	French Culture Through Wine	SPANISH 450	Seminar in Spanish Studies - Themes
FRENCH 430	Topics in French/Francophone Literature in Translation	SPMGT 489	Theory and Application in Sports Event Management
FS 489	Food Product Development	TCH LRN 490	Pre-Internship for Elementary Teachers
GERMAN 420	Socio-Cultural History of the German Language	VIT ENOL 433	Critical Thinking in Vineyard and Winery Management
HBM 475	Senior Living Management Capstone	WGSS 495	Re-Directions in Women's, Gender, and Sexuality Studies: Theory and Practice
HBM 493	Food and Beverage Strategies		
HBM 495	Case Studies and Research		
H D 403	Families and Poverty		
H D 415	Peak Experiences in Leadership		
H D 418	Early Experiences and Lifespan Health		
HISTORY 409	American Environmental History		
HISTORY 417	United States, 1877-1914		
HISTORY 420	American History, 1980-Present		
HISTORY 435	European Colonization of the Globe, 1400-1800		
HISTORY 436	Empire and Decolonization, 1800 to the Present		
HISTORY 444	The Renaissance: Art, Violence, and Early Globalization		
HISTORY / ASIA 474	Modern South Asia: Community and Conflict		
HISTORY / ASIA 483	Medicine, Science, and Technology in World History		
HISTORY 492	Cultural Appetites: Food in World History		
HISTORY 495	Space, Place, and Power in History: Historical Geography in Global Perspective		
HORT 425	Trends in Integrated Plant Sciences		
I D 426	Interior Design Studio VII		
KINES 484	Exercise Prescription and Medical Conditions		
LND ARCH 485	Senior Comprehensive Project		
MATH 432	Mathematics for College and Secondary Teachers		
MATH 464	Linear Optimization		
MBIOS 494	Senior Project in Molecular Biosciences		
ME 416	Mechanical Systems Design		
MECH 417	Mechanical Systems Design II		
MGMT 491	Strategic Management		
MUS 461	The Musician in Society: Philosophies and Practices, 1850 - Present		



Departments, Requirements, and Courses

Academic Engagement and Student Achievement

daesa.wsu.edu/univ-courses/
French Administration, Room 436 and CUE 519
509-335-8044
oue@wsu.edu

William B. Davis, Interim Vice Provost.

The Division of Academic Engagement and Student Achievement offers programs and courses that support all undergraduates at WSU. One- and two-credit courses are designed to fit student schedules and can be paired with other University courses or courses in the major for high-impact learning.

The curriculum assists students in gaining the skills to manage key transitions of the college years: from high school or a community college to a research university, transition into a major, transition into research and creative activities, 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 an inclusive community of peers, faculty, and advising staff. Students' progress in their degree programs is supported by 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.

Certificates

Global Leadership Certificate

Academic Engagement and Student Achievement offers the Global Leadership Certificate, in partnership with the Office of 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 (4 sections, 15 credits total):

1) Four (4) Courses (12 credits): A minimum of four globally-related courses (twelve credits) may be applied to fulfill the academic coursework requirement for the Global Leadership Certificate. At least six credits must be taken at the 300-400 level. Approved courses include but are not limited to ANTH 203, 316, 418, COM 105, COMSOC 321,

ECONS 101, FINE ART 202, I BUS 380, POL S 103, 427, SOE 110, WGSS 332; or as approved by advisor. Courses taken during an education abroad experience may also be applied, as well as up to four credit hours of foreign language at or above the 200 level.

2) Leadership in a Global Context (1 credit, UNIV 497): All students will complete the section of UNIV 497, Peer Leadership, specifically designed to fulfill requirements for the Global Leadership Certificate.

3) Experiential Learning (1 credit; UNIV 493): Experiential global learning may occur "at home or abroad." This course enables students to develop skills to extend and apply that learning to enhance global self-awareness, intercultural competency, and professional preparation.

4) Integrative Capstone (1 credit, UNIV 491): Completion of the Integrative Capstone course enables the student to plan and design a project that advances their global leadership knowledge, experiences, and skills.

For additional information, contact the department of Global Learning in the Office of International Programs.

Description of Courses

UNIVERSITY-WIDE

UNIV

100 College Majors and Career Exploration 1

Career development and the decision-making process; exploration of academic majors and careers. Credit not granted for both UNIV 100 and 101.

101 College Majors and Career Choice 2

Course Prerequisite: By permission only. Career development and the decision-making process; exploration of academic majors and careers. Credit not granted for both UNIV 100 and 101.

104 First-Year Success Seminar 2 Course

Prerequisite: Less than 30 credits. Strategies for college success, goal setting, integrative learning, and developing community connections in order to excel in the first year.

110 Developing Academic Strategies for Reading and Writing 4 Course

Prerequisite: TOEFL iBT 64-75, TOEFL PBT 185-205, or IELTS 5.5-6; INTO Pathways Students only. Development of academic English vocabulary, grammatical competence, reading strategies, and academic writing skills.

111 Developing Academic Strategies for Listening and Discussion 4 Course

Prerequisite: UNIV 110 with a grade of B or better; TOEFL iBT of 64-75, TOEFL PBT of 185-205, or IELTS of 5.5-6; INTO Pathways students only. Refinement of academic English skills, focusing on listening and speaking in classroom contexts, as well as further development of critical thinking skills and academic success strategies in an American university setting.

199 Introduction to Directed Research V

1-3 May be repeated for credit; cumulative maximum 12 hours. Introduction to independent research, scholarship, reading analysis, creative project, or field experiences.

250 Success in College and Beyond 1 Skills and

strategies that are critical for college success, professional development, and personal growth. S, F grading.

295 Introduction to Models of Leadership 2

Introduction to leadership theories; development of personal leadership skills and application of leadership strategies via experiential learning.

300 Accessing Information for Research 1

Scholarly research process and strategies, with emphasis on electronic resources for conducting academic research in the disciplines.

301 Career Exploration and Professional Development 1 Course

Prerequisite: Sophomore standing. Career exploration through various types of research and professional development work including self assessments and preparation for entry into professional environments.

304 Transfer Student Seminar 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, personal, and career success.

394 Research Skills V 1-2

May be repeated for credit; cumulative maximum 4 hours. Basic research skills including developing experiments, reading literature, building mentor/mentee relationship.

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.

490 Global Leadership Experience 1 (0-3)
Course Prerequisite: Admitted to the Global Leadership Certificate program; by permission. Intensive or sustained experiential global learning through experiences such as education abroad or local intercultural activities. S, F grading.

491 Global Leadership Integrative Capstone 1
Course Prerequisite: Admitted to the Global Leadership Certificate program. Integrative culminating experience for global leadership.

492 Education Abroad Integrative Capstone 1
Integrative culminating experience for education abroad. Recommended preparation: Study abroad.

493 Global Leadership Experience 1
Course Prerequisite: By department permission. Enhancement of student skills, perspectives, and competencies relating to global experience at home or abroad.

494 Advanced Research Skills V 1-2
May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: UNIV 394; admitted to the MARC-WSU program. Advanced research skills including research ethics, science communication, building professional networks.

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.

UNIVERSITY WRITING

WRIT

103 Writing Collaborative for History 105 or 305 1
May be repeated for credit; cumulative maximum 2 hours. Peer review, scaffolded feedback, and other reading and writing supports for students enrolled in HISTORY 105 or 305. S, F grading.

108 Writing Collaborative for Multilingual Writers in History 105 or 305 1
May be repeated for credit; cumulative maximum 2 hours. Peer review, scaffolded feedback, and other reading and writing supports for multilingual students enrolled in HISTORY 105 or 305. S, F grading.

205 Sentence and Paragraph Construction Across the Disciplines 1
May be repeated for credit; cumulative maximum 3 hours. Individualized and small group instruction to improve basic sentence and paragraph writing skills in various disciplinary fields; sentence and paragraph skill development will focus on the types of sentences (simple, compound, complex, and compound-complex) and how they fit into genres of paragraphs (expository, narrative, comparison, and causal) based on fields of study. S, F grading.

302 Advanced Writing Collaborative 1
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.

309 Plagiarism Labyrinth: The Complex Relationship between Culture, Language, and Academic Integrity 1
May be repeated for credit; cumulative maximum 3 hours. Develop an understanding of the complexities of plagiarism, with an emphasis on culture and the needs of international students. S, F grading.

311 Composing and Evaluation Strategies for Writing Professional Documents 1
May be repeated for credit; cumulative maximum 3 hours. Strategies of composition and evaluation for writing-intensive courses, and for creating brief professional documents (personal statements/letters of intent).

405 Writing Tutorial for Syntactic Structures in Professional and Academic Contexts 1
May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Junior standing. Individualized and small group instruction focusing on sentence and paragraph structure for professional and academic purposes. S, F grading.

431 Writing Center Theory and Practice 1
May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: By instructor permission. Education and training for work at the WSU Undergraduate Writing Center with focus on the scholarship of theory and practice.

432 Small Group Collaboratives Theory and Practice V 1-2
Course Prerequisite: By instructor permission. Education and training for work at the WSU Undergraduate Writing Center's Small Group Collaboratives program with focus on the scholarship of theory and practice.

Department of Aerospace Studies

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

Lieutenant Colonel B. A. Balazs, Major C. Rocco, Major P. Hyde, Captain B. O'Neill.

Air Force Reserve Officer Training Corps (AFROTC) AFROTC is a nationwide program that allows full-time college students to pursue military commissions and become officers in the United States Air Force (USAF) and United States Space Force (USSF) while simultaneously attending university. AFROTC classes are held on college campuses throughout the United States and Puerto Rico, and students can register through normal course registration processes.

The AFROTC program consists of four years of

Aerospace Studies classes, to include: Heritage and Values, Team and Leadership Fundamentals, Leading People and Effective Communication, and National Security, Leadership Responsibilities, and Commissioning Preparation. Each of the four years is accompanied by a corresponding Leadership Laboratory course. During Leadership Laboratory, students apply leadership skills, demonstrate command principles, practice effective communication skills, develop physical fitness, and learn military customs and courtesies. College students pursuing a military commission are enrolled in the AFROTC program as "cadets". Upon successful completion of AFROTC training and college degree requirements, cadets will graduate and commission as Second Lieutenants in the Active-Duty component of the USAF or the USSF.

The AFROTC program is currently offered at Washington State University, but there are agreements that allow University of Idaho, Lewis-Clark State College, and Whitworth University students to enroll in AFROTC and become full-fledged cadet participants. Students interested in learning about military culture, but not in pursuing a military commission, are eligible to enroll in the Heritage and Values or Team and Leadership Fundamentals courses as participating students rather than cadets. For more information on AFROTC course descriptions, please review the Washington State University course catalog. For more information on the AFROTC program, please visit afrotc.wsu.edu.

Minors

Aerospace Studies

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

Description of Courses

AEROSPACE STUDIES

AERO

101 Heritage and Values I 1 Introduces students to the Air Force and AFROTC.

102 Heritage and Values II 1 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 Team and Leadership Fundamentals I 1 Fundamental principles of leadership, followership, team building, and accountability within the military; develops communication skills. Cadets also attend weekly leadership laboratory.

202 Team and Leadership Fundamentals

II 1 Fundamental principles of leadership, followership, team building, and accountability within the military; develops communication skills. Cadets also attend weekly leadership laboratory.

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.

311 Leading People and Effective Communication I 3 Course Prerequisite: Concurrent enrollment in AERO 313 required. Applied leadership through supervision, mentorship, and case studies; expands on military knowledge, ethics, and communications. Cadets attend weekly leadership laboratory.

312 Leading People and Effective Communication II 3 Course Prerequisite: Concurrent enrollment in AERO 313 required. Applied leadership through supervision, mentorship, and case studies; expands on military knowledge, ethics, and communications. Cadets attend weekly leadership laboratory.

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, Leadership, and Commissioning Preparation I 3 Course Prerequisite: Concurrent enrollment in AERO 413 required. National security, regional studies, ethics, and doctrine; discusses military profession, justice, communications, and active-duty preparation. Cadets attend weekly leadership laboratory.

412 National Security, Leadership, and Commissioning Preparation II 3 Course Prerequisite: Concurrent enrollment in AERO 413 required. National security, regional studies, ethics, and doctrine; discusses military profession, justice, communications, and active-duty preparation. Cadets attend weekly leadership laboratory.

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.

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
509-335-8439**

Chair, R. Weaver.

The Program in Aging offers an interdisciplinary curriculum in gerontology, including courses in the social and health sciences. Students may earn a Minor or Certificate in Gerontology*. The program is designed to achieve the following objectives:

- 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;
- 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;
- To prepare students for graduate and professional training in gerontology; and
- To further university and societal goals of equity for persons of all ages.

Coursework in gerontology prepares students for a variety of careers or graduate education in a significantly growing field that focuses on adults, older adults, and intergenerational programs/outreach. While example careers can include direct care to older people and their families (e.g., activities coordination, counseling, recreational therapy, health programs and services), there are also many opportunities for teaching, research, planning, and advocacy work in business and industry, product development, non-profits or government agencies (e.g., marketing, long-term care administration, data analyst for aging policy issues).

*Contact the Department of Human Development, hd.pullman@wsu.edu.

Minors**Aging**

The minor in aging requires a minimum of 18 hours of credit including BIOLOGY 140; H D 308 or 405; 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.

Certificates**Gerontology**

The department of Human Development offers a Certificate in Gerontology. The certificate reflects a high standard of training and experience in the specific area of human development. Non-human development majors are required to complete any prerequisites for the internship requirement. The

requirements include 6 credits in H D core courses that support the area of certification, 15 credits in required and optional courses, and 3 credits of internship that reflect the area of certification. Students must maintain an overall GPA of 2.6 in those courses that count toward the certificate.

Certificate requirements:

Required courses: BIOLOGY 140; H D 308 or 405; HD 497; HD 498; PSYCH 363 or 490; SOC 351 or 356. Elective Courses, 6 credits minimum from the following: BIOLOGY 233; HBM 375, 497; H D 308 or 405 (if not used in required), 360; KINES 264, 361; MGMT 101, 301; PHIL 103, 365; PSYCH 320, 363, 490 (if not used in required); SOC 250, 351, 356 (if not used in required).

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**

Animal Sciences Department Chair and Professor, G. Murdoch; Crop and Soil Sciences Department Chair and Professor, R. Koenig; School of Economic Sciences Director and Professor, J. McCluskey; Plant Pathology Department Chair and Professor, T. Murray; Horticulture Department Chair and Professor, D. Main; Entomology Department Chair and Professor, L. Lavine; School of Food Science Director and Associate Professor, G. Ganjyal; Regents Professor, J. Reganold; Professors, I. Burke, L. Carpenter-Boggs, A. Carter, A. Felso, J. Goldberger, P. Jacoby, V. McCracken, H. Pappu, C. Peace, M. Pumphrey, N. Rayapati; Associate Professors, M. Brady, D. Crowder, L. DeVetter, K. Murphy, C. Neely, J. Owen, K. Sanguinet; Assistant Professors, D. Griffin-LaHue, G. LaHue, H. Neely, A. Warner; Teaching Associate Professor, J. Baser, C. Perillo; Instructor, J. Holden; Teaching Assistant Professors, L. Brueggeman, H. Henning-Yeager, M. Maquiver, T. Wheeler; Associate in Research, B. Jaeckel; Adjunct Faculty, C. Campbell; D. Cobos.

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. Join WSU's Agricultural and Food Systems (AFS) degree program and focus 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, animal science, food science, 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 and Sustainable Agriculture. 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.

A student may be admitted to an AFS major upon making their intention known to the department. For complete information about all majors within the AFS degree programs, please see the AFS webpage at: <http://afs.wsu.edu>.

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.

Capstone courses. At the end of their program, most students take an AFS capstone course. Agricultural Education students take a teaching experience capstone. These capstone courses are designed specifically to provide a culminating experience to help in preparing students to be "job-ready, day one". In the standard AFS capstone, guest lectures from industry professionals challenge students on topics including developing your personal brand, project management, sales 101, private agricultural business ownership and succession planning, and the performance review process. A fundamental part of the capstone experience is a team-based, semester-long project where small groups of students each work on addressing an emerging issue or problem and providing recommendations to one of several industry partners (co-ops, private companies, etc.). Students meet regularly with industry partners (face-to-face, videoconference, phone) to define their project, collect research information, and develop a project plan. They prepare meeting agendas, take minutes and report back to instructors to identify what worked, what did not work, and what changes they plan to make for the next meeting. Besides introducing students to their business and colleagues, industry partners provide in-house research background information, assist in distributing employee surveys and provide excellent professional mentoring for students. At the end of the semester, student teams provide both a comprehensive written report and an oral presentation about their project and industry recommendations both to their peers and to industry leaders. In the teaching experience

capstone (Agricultural Education majors), students teach their last semester as their internship in education. Students are required to complete the Teacher Performance Assessment (edTPA) as part of the course. Additionally, Agricultural Education student teachers supervise students in and outside of a classroom and laboratory setting. Extensive lesson planning, materials preparation, SAE (Supervised Agricultural Experience) supervision, FFA activity involvement, and professional engagement are major components of the field experience of student teaching.

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

- Agricultural Systems: Identify the basic human, socioeconomic, environmental, and biophysical dimensions of agricultural and food systems at the local, regional, and global levels.
- Apply systems thinking and principles to explore linkages and leverage points in agricultural and food systems.
- Describe how physical, social, and political factors impact global agriculture and food systems.
- Scientific Reasoning: Describe the context and scientific basis of current practice and future changes in agricultural and food systems.
- Interpret and integrate basic and applied science knowledge to explain and evaluate agricultural and food systems.
- Collect, analyze, and interpret scientific data to inform decision making.
- Discern appropriate scientific evidence and research to inform decisions.
- Critical Thinking: Evaluate real-world agricultural and food systems and paradigms considering agricultural science, social, economic, and environmental outcomes.
- Obtain and apply scholarly information to expand student understanding and knowledge of agricultural systems.
- Identify the scientific, cultural, economic, and environmental context and diverse perspectives influencing agricultural food systems.
- Understand the students' own values and perspectives in shaping agricultural food systems.
- Draw conclusions and make recommendations based on an understanding of the system, scientific evidence, contextual factors, and desired outcomes.
- Science and Professional Communication: Communicate scientific principles, research, and findings to diverse audiences.
- Deliver professional oral and written communication.
- Use graphic representation to present data and scientific findings.
- Work effectively as a member of a team and collaboratively across disciplines.
- Depth (Major-Level Outcome): Demonstrate major-specific mastery of a topic with specialized knowledge and skills in at least one area of inquiry within the AFS degree.

Agricultural Education

- Demonstrate the necessary subject matter knowledge for success as an agricultural teacher.
- Develop and deliver effective lessons based upon sound pedagogy and student needs in a culturally responsive manner.
- Construct, analyze, and appraise formative and summative assessment data in order to inform teaching practice.

- Implement the components of a complete agricultural education program.

Agricultural and Food Business Economics

- Apply appropriate economic principles, analysis, and quantitative methods to analyze problems and issues of social importance.
- Collect, organize, evaluate, and analyze appropriate economic data to apply economic theory to AFS managerial problems.
- Illustrate and communicate analytical results, conclusions, and limitations of the econometric testing in real world applications.

Agriculture and Food Security

- Being developed by the curriculum committee.

Agricultural Technology and Production Management

- Being developed by the curriculum committee

Organic and Sustainable Agriculture

- Locate, access, and interpret principles and certification guidelines (if applicable) of organic and other agroecological systems, such as conservation agriculture, and mixed crop-livestock.
 - Be competent with using important sustainable agriculture website sources, including the USDA National Organic Program (NOP), UN Food and Agriculture Organization (FAO), OrganicMaterials Review Institute (OMRI) and National Sustainable Agriculture Information Service (ATTRA).
 - Understand agricultural sustainability metrics in the areas of social wellbeing, financial performance, environmental quality, and productivity for measuring these components of any farming system.
 - Develop the ability to plan, certify, and manage production on an organic farm, including practical skills in farm production, marketing, and teamwork.
- Hands-on opportunities 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, study abroad, 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. See <https://cahnrs.wsu.edu/academics/clubs/>.

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 (<https://cahnrs.wsu.edu/academics/scholarships/>).

Transfer Students

Students planning to transfer into the AFS program should take courses that meet the University Common Requirements (UCORE) and the AFS core requirements, when possible. Transfer articulation agreements have been developed with several Washington state community colleges degree programs. More information can be found on our Transfer Student website: <https://cahnrs.wsu.edu/academics/transfer/>, as well as the general major website: <https://afs.wsu.edu>. Prospective transfer students are strongly encouraged to consult with an advisor within the AFS program for further

guidance.

Graduate Studies

Master of Science in Agriculture (Pullman and Global Campus)

The MS in Agriculture is an advanced degree program that 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 and to prepare these individuals for leadership opportunities. This degree offers individuals already working in the field, or those with a personal want for more training, the opportunity to continue their education. Students may elect to customize their program or choose from three options: General Agriculture, Food Science and Management, or Plant Health Management (online only). Access complete program description on-line at: <http://msag.wsu.edu/>.

Master of Science and Doctor of Philosophy degrees are also offered in Crop Science, Economics, Entomology, Food Science, Horticulture, Plant Pathology, and Soil Science. More information can be found on the CAHNRS Graduate Studies website: <https://cahnrs.wsu.edu/academics/graduate-studies/>.

Schedules of Studies

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

AGRICULTURAL AND FOOD BUSINESS ECONOMICS (120 CREDITS)

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.

A student may be admitted to the Agricultural and Food Business Economics major upon making their intention known to the department.

First Year

<i>First Term</i>	<i>Credits</i>
ANIM SCI 101	3
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
HORT / CROP SCI 102	3
MATH 201 ¹	3
<i>Second Term</i>	<i>Credits</i>
[COMM] Course (COM 102 [COMM] or H D 205 [COMM] recommended)	3 or 4
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
MATH 202 [QUAN] ¹	3

Second Year

<i>First Term</i>	<i>Credits</i>
AFS 201	3
CHEM 101 [PSCI] or 105 [PSCI]	4
Diversity [DIVR]	3
STAT 212 or MGTOP 215	4
Electives	3

<i>Second Term</i>	<i>Credits</i>
ACCTG 220 or 230	3
Arts [ARTS]	3
CHEM 102 or 106	4
SOIL SCI 201 [BSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
AFS Core Systems Elective ²	3
BIOLOGY 120	4
ECONS 301	3
ECONS 350 ³	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106	4
ECONS 302	3
ECONS 311 [M]	3
ECONS 335	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level Electives	6
CROP SCI 360	3
ECONS 452 [M]	3

<i>Second Term</i>	<i>Credits</i>
300-400-level Electives	3
AFS 401 [CAPS]	3
ECONS 450 [M] or 453	3
ECONS 451	3
Electives	4

¹ An alternative to MATH 201 is MATH 106, 172, or 220. An alternative to MATH 202 is MATH 171.

² AFS Core Systems Electives: AGTM 310, ANIM SCI 464 [M], 472 [M], 474 [M], BIOLOGY 372 [M], CROP SCI 302, ECONS 351, HORT 320, SOE 300, SOIL SCI 368, or other systems courses approved by your advisor. Coursework must include a total of two [M] courses.

³ ECONS 352, which is only offered in the spring, may be used as an alternative for ECONS 350.

AGRICULTURAL EDUCATION (125 CREDITS)

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.

A student may be admitted to an AFS major upon making their intention known to the department.

First Year

<i>First Term</i>	<i>Credits</i>
AG ED 110	2
BIOLOGY 120 [BSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
HORT / CROP SCI 102	3

<i>Second Term</i>	<i>Credits</i>
AGTM 201	3
ANIM SCI 101	3
BIOLOGY 106 or 107 ¹	4
ENGLISH 201 [WRTG]	3
Humanities [HUM]	3

Second Year

<i>First Term</i>	<i>Credits</i>
AFS 201	3
Arts [ARTS]	3
CHEM 101 [PSCI]	4
ECONS 101 [SSCI]	3
TCH LRN 301	3

<i>Second Term</i>	<i>Credits</i>
CHEM 102	4
Diversity [DIVR]	3
SOIL SCI 201	3
STAT 212 [QUAN], MATH 140 [QUAN], 171 [QUAN], or 202 [QUAN]	3 or 4
300-400-level Agricultural Elective ²	3
Apply to College of Education	
Complete Writing Portfolio	

<i>Third Term</i>	<i>Credits</i>
TCH LRN 317	2

Third Year

<i>First Term</i>	<i>Credits</i>
AFS Core Systems Elective ³	3
AG ED 471	2
CROP SCI 360	3
ECONS 350 ⁴	3
300-400-level Agricultural Elective ²	3

<i>Second Term</i>	<i>Credits</i>
AGTM 402	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2
300-400-level Agricultural Elective ²	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
AG ED 440 [M]	2
AG ED 450	3
ED PSYCH 468	3
TCH LRN 467 [M]	3
TCH LRN 469	2
TCH LRN 470	3

<i>Second Term</i>	<i>Credits</i>
AG ED 407 [CAPS]	8
TCH LRN 415	8

¹ BIOLOGY 106 is recommended.

² Agricultural 300-400-level Electives (minimum 9 credits) - required for teacher certification in Agricultural Education. Any 300-400-level course with one of the following subjects: AGTM, AFS, ANIM SCI, CROP SCI, ECONS, ENTOM, FS, HORT, IPM, LND ARCH, PL P, SOE, SOIL SCI, or VIT ENOL not used to satisfy major requirements can be accepted to fulfill this requirement, per advisor approval. AG ED 430 and/or 431 are suggested for CASE Certification.

³ AFS Core Systems Electives: AGTM 305, 310, ANIM SCI 464 [M], 472 [M], 474 [M], BIOLOGY 372 [M], CROP SCI 302, ECONS 351, HORT 320, SOE 300, SOIL SCI 368, or other systems courses approved by your advisor.

⁴ ECONS 351 and 352, which are only offered in the spring, may be used as an alternative for ECONS 350.

AGRICULTURAL TECHNOLOGY AND PRODUCTION MANAGEMENT (120 CREDITS)

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.

A student may be admitted to the Agricultural Technology and Production Management major upon making their intention known to the department.

First Year

<i>First Term</i>	<i>Credits</i>
AFS 103	1
ANIM SCI 101	3
CHEM 101 [PSCI] or 105 [PSCI]	4
HISTORY 105 [ROOT]	3
HORT / CROP SCI 102	3
UNIV 104 or Electives ¹	2

<i>Second Term</i>	<i>Credits</i>
CHEM 102 or 106	4
ECONS 101 [SSCI]	3
ENGLISH 101 [WRTG]	3
MATH 140 [QUAN], 171 [QUAN], 202 [QUAN] or STAT 212 [QUAN]	4
SOIL SCI 201 [BSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
AFS 201	3
AGTM 314	3
AGTM 315	3
BIOLOGY 120	4
Humanities [HUM]	3

<i>Second Term</i>	<i>Credits</i>
[COMM] Course (COM 102 [COMM] or H D 205 [COMM] recommended)	3 or 4
ACCTG 220	3
AFS 102	1
Arts [ARTS]	3
BIOLOGY 106 or 107	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
AFS 336 ²	3
AGTM 305	3
CROP SCI 305, 403, ENTOM 343 [M], or PL P 429 ³	3
CROP SCI 360	3
ECONS 350 ⁴	3

<i>Second Term</i>	<i>Credits</i>
AGTM 330	3
AGTM 405	2
Diversity [DIVR]	3
ECONS 450 [M] or [M] Elective ⁵	3
MGMT 301 or Elective ⁵	3

<i>Third Term</i>	<i>Credits</i>
Internship (recommended) ⁶	0 - 2

Fourth Year

<i>First Term</i>	<i>Credits</i>
400-level Business or Elective ⁵	3
AFS Core Systems Elective ⁷	3
ENGLISH 402 [M], ENGLISH 403 [M], or COM 400	3
MKTG 360 or Elective ⁵	3
Electives	4

<i>Second Term</i>	<i>Credits</i>
AFS 401 [CAPS]	3
AGTM 412	3
AGTM 416	3
Electives ⁵	3

¹ UNIV 104 recommended.

² SOE 312 [DIVR] can be taken in the spring as an alternative to AFS 336.

³ ENTOM 351 can be taken in the spring as an alternative to the other courses listed.

⁴ ECONS 352, which is only offered in the spring, may be used as an alternative for ECONS 350.

⁵ Completion of a Business minor is recommended. Working with their advisors, students are encouraged to apply electives towards a minor of their choice.

⁶ Completion of a 2-credit AGTM 495 internship is recommended.

⁷ AFS Core Systems Electives: AGTM 310, ANIM SCI 464 [M], 472 [M], 474 [M], BIOLOGY 372 [M], CROP SCI 302, ECONS 351, HORT 320, SOE 300, SOIL SCI 368, or other systems courses approved by your advisor. Coursework must include a total of two [M] courses.

AGRICULTURE AND FOOD SECURITY (120 CREDITS)

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.

A student may be admitted to the Agriculture and Food Security major upon making their intention known to the department.

First Year

<i>First Term</i>	<i>Credits</i>
ANIM SCI 101	3
CHEM 101 [PSCI] or 105 [PSCI]	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
HORT / CROP SCI 102	3

<i>Second Term</i>	<i>Credits</i>
[COMM] Course (COM 102 [COMM] or H D 205 [COMM] recommended)	3 or 4
CHEM 102 or 106	4
ENGLISH 101 [WRTG]	3
HORT / CROP SCI 202	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI] or 120 [BSCI]	4
Diversity [DIVR]	3
Humanities [HUM]	3
SOIL SCI 201	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
AFS 201	3
Arts [ARTS]	3
BIOLOGY 106	4
ENTOM 351	3
STAT 212 [QUAN]	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CROP SCI 305	3
CROP SCI 360	3
ECONS 350 ¹	3
ENTOM 343 [M]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
AFS Core Systems Elective ²	3
IPM 452	3
SOIL SCI/AFS 302 [M] ³	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
AFS 336	3
CROP SCI 403	3
PL P 300	2
PL P 429	3
Electives	3
<i>Second Term</i>	<i>Credits</i>
400-500-level Seminar in CAHNRS ⁴	1
AFS 401 [CAPS]	3
SOIL SCI 441	3
Electives	6

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

² AFS Core Systems Electives: AGTM 310, ANIM SCI 464 [M], 472 [M], 474 [M], BIOLOGY 372 [M], CROP SCI 302, ECONS 351, HORT 320, SOE 300, SOIL SCI 368, or other systems courses approved by your advisor. Coursework must include a total of two [M] courses.

³ SOIL SCI 414 and 415 can be taken as an alternative to SOIL SCI 302 [M]. However another [M] course will be required.

⁴ 400-500-level Seminar: AGTM 451, CROP SCI/SOIL SCI 412, HORT/VIT ENOL 409, or as approved by advisor.

ORGANIC AND SUSTAINABLE AGRICULTURE (120 CREDITS)

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 and Sustainable 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.

Students may be admitted to the Organic and Sustainable Agriculture major upon making their intentions known to the department.

First Year

<i>First Term</i>	<i>Credits</i>
ANIM SCI 101 or FS 110	3
CHEM 101 [PSCI] or 105 [PSCI]	4
ECONS 101 [SSCI]	3
ENGLISH 101 [WRTG]	3
HORT / CROP SCI 102	3

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

Second Year

<i>First Term</i>	<i>Credits</i>
AFS 201	3
BIOLOGY 106 [BSCI] or 120 [BSCI]	4
Humanities [HUM]	3
STAT 212 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
[COMM] Course (COM 102 [COMM] or H D 205 [COMM] recommended)	3 or 4
Arts [ARTS]	3
BIOLOGY 107	4
ENTOM 351	3
SOIL SCI 201	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
AFS 336	3
CROP SCI 305	3
CROP SCI 360	3
Horticulture Production Elective ¹	3
PL P 429	3

<i>Second Term</i>	<i>Credits</i>
AFS 445	3
Diversity [DIVR]	3
ECONS 352 ²	3
SOIL SCI 302 [M]	3
SOIL SCI 478	2

Fourth Year

<i>First Term</i>	<i>Credits</i>
AFS Core Systems Elective ³	3
CROP SCI 403	3
SOIL SCI 443 [M]	3
SOIL SCI 479	2
Electives	5

<i>Second Term</i>	<i>Credits</i>
AFS 401 [CAPS]	3
SOIL SCI 441	3
SOIL SCI 480	2
SOIL SCI 498	3
Electives	4

¹ Horticulture Production Electives: HORT 310, HORT 313, HORT 357 (spring), or as approved by advisor.

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

³ AFS Core Systems Electives: AGTM 310, ANIM SCI 464 [M], 472 [M], 474 [M], BIOLOGY 372 [M], CROP SCI 302, ECONS 351, HORT 320, SOE 300, SOIL SCI 368, or other systems courses approved

by your advisor. Coursework must include a total of two [M] courses.

Minors**Agricultural Systems**

The minor in Agricultural Systems requires a minimum of 18 credits, 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 credits from AFS 201, ANIM SCI 101, CROP SCI/HORT 102, and SOIL SCI 101; 3 credits from CROP SCI/HORT 202, ECONS 101 and SOIL SCI 201; and 3 credits each from approved courses in three of four areas: Biotic Influences on Crop Production (CROP SCI 305, ENTOM 343, PL P 429), Economic Aspects of Agricultural Systems (ECONS 350, 351, 352), Sustainability (AFS 336, AGTM 305, SOIL SCI 302, 441, SOIL SCI/AFS 445), and Production (CROP SCI 403, HORT 310, 313, 320, 357, 413, 418, 421).

Agricultural Technology and Production Management

The Agricultural Technology and Production Management minor is composed of a minimum of 18 credits, 9 of which must be upper-division courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Course that may apply to the Agriculture and Production Management minor include: AFS 201; AGTM 305, 314, 315, 330, 405, 412, 416, 495; CROP SCI/HORT 102; and SOIL SCI 201. Students majoring in Agricultural Technology and Production Management are not eligible to declare a minor in Agricultural Technology.

Precision Agriculture

The Precision Agricultural minor is composed of a minimum of 18 credits, 9 of which must be upper-division courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Required courses include CROP SCI/HORT 102, SOIL SCI 201, and one from CROP SCI/HORT 202; CROP SCI 403; SOIL SCI 302, 414/415, 441. The Precision Agriculture minor also requires 9 credits from the following technical courses AGTM 305, 315, 405, 495; SOIL SCI 368, 374, 468.

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 online 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 Introduction to the disciplines and integration of the fields of agriculture, food production, manufacturing and distribution to define and solve real-world problems.

102 Professional Development in the Agricultural and Natural Resource Sciences 1 Professional skill development with an emphasis on behavior, goal setting, internship selection, and building a portfolio.

103 Field Experience in Agricultural and Food Systems 1 Professional development with hands on experience through interactive class sessions and field trips with faculty and external partners. Two field trips required.

201 Systems Skills for Agricultural and Food Systems 3 Introduction to the foundational concepts and vocabulary of food systems, building skills and critical systems thinking.

250 Civic Engagement in Sustainable Food Systems 2 Introduction to sustainable food systems through lecture, discussion, and engagement. Spring Break field trip required.

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: Sophomore standing Sociological perspectives on major agrifood trends, alternative agrifood movements, and impacts on human communities and the natural environment.

350 Food Systems in Western Washington 3 Course Prerequisite: CROP SCI/HORT 102; ECONS 101; SOIL SCI 201. Introduction to local and regional food systems unique to western Washington with an emphasis on the farm-to-table processes of foods and beverages. (Course offered as HORT 350, AFS 350).

401 [CAPS] [M] Advanced Systems Analysis and Design in Agricultural and Food Systems 3 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 sites to develop understanding of issues in food systems sustainability. Field trip required. Credit not granted for both AFS 445 and 545.

483 Special Topics in Study Abroad V 2-6 May be repeated for credit; cumulative maximum 6 hours. Interdisciplinary course that integrates experiential learning activities in agricultural food systems in an international context.

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

505 Topics in Computational and Analytical Methods for Scientists V 1-6 May be repeated for credit; cumulative maximum 6 hours. Applied computational methods for researchers processing, managing, and analyzing data in scientific and engineering fields.

511 Statistical Methods for Graduate Researchers 4 (3-2) Fundamentals of experimental design and statistical methods for graduate students in the sciences. Covers t-test for one and two means, ANOVA through completely randomized designs with one and two factors, chi-square tests and regression analysis using R. Recommended preparation: One prior course in statistics. Cannot be used for credit in the Department of Mathematics and Statistics graduate programs. (Crosslisted course offered as STAT 511, AFS 511).

545 Field Analysis of Sustainable Food Systems 3 Experiential course visiting farms, food processing and marketing sites to develop understanding of issues in food systems sustainability. Field trip required. Credit not granted for both AFS 445 and 545.

590 Sociology of Agriculture and Food Systems 3 Theories, concepts, debates, and methods associated with the sociology of agriculture and food systems. Cooperative: Open to UI degree-seeking students.

AGRICULTURAL EDUCATION

AG ED

110 Introduction to Agricultural Education 2 Introduction to Agricultural Education Model, requirements for becoming an agricultural teacher; roles of the agricultural teacher.

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 [CAPS] Student Teaching in Agricultural Education V 4-16 Course Prerequisite: AG ED 440; AG ED 450; AG ED 471; senior standing. 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.

430 Reinforcing Core Academics in Agricultural Education 4 (3-3) Strategies of reinforcing core academics in secondary agricultural education. This course leads to CASE certification.

431 Applied Instructional Strategies in Agricultural Education 4 (2-6) Introduction to agriculture, food, and natural resource systems, and strategies for reinforcing core academics in secondary education. Leads to CASE certification in AFNR.

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 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 Communications in Agriculture 3 Ways to effectively communicate research and extension information to diverse audiences, including scientific writing and oral presentations in each style.

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) Credit not granted for students who have already completed AGTM/ENGR 202, 203, or 204. Theory, applications, and practices of welding, machining, and associated techniques in fabricating with metals. (Crosslisted course offered as AGTM 201, ENGR 201).

202 Welding 1 (1-3) Credit not granted for students who have already completed AGTM/ENGR 201. Theory application and practices of welding and associated techniques in fabricating with metals. One of 3 two-week sessions of Metal Fabrication. Each session includes 3 hours lecture and 12 hours lab per week. (Crosslisted course offered as AGTM 202, ENGR 202).

203 Machining 1 (1-3) Credit not granted for students who have already completed AGTM/ENGR 201. Theory application and practices of machining and associated techniques in fabricating with metals. One of 3 two-week sessions of Metal Fabrication. Each session includes 3 hours lecture and 12 hours lab per week. (Crosslisted course offered as AGTM 203, ENGR 203).

204 Metal Fabrication 1 (1-3) Credit not granted for students who have already completed AGTM/ENGR 201. Theory application and practices of cutting and associated techniques in fabricating with metals. One of 3 two-week sessions of Metal Fabrication. Each session includes 3 hours lecture and 12 hours lab per week. (Crosslisted course offered as AGTM 204, ENGR 204).

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. Cooperative: Open to UI degree-seeking students.

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. Cooperative: Open to UI degree-seeking students.

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 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.

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.

Department of Animal Sciences

ansci.wsu.edu/
Clark Hall 116
509-335-5523

Professor and Chair, G. K. Murdoch; Professors, M. Du, Z. Jiang, K. A. Johnson, H. L. Neibergs; Associate Professors, A. Adams-Progar; Assistant Professors, N. Law, M. Marcondes, M. Phelps; Clinical Associate Professors, N. A. Irlbeck, M. Maquivar; Instructors, C. Matuk-Sarinana, B. McCann, A. L. Reitmeyer, J. Swain; Adjunct and Affiliate Faculty, T. Hudson, P. S. Kuber, D. A. Llewellyn, S. M. Smith, K. Steensma; Faculty Emeriti, M. E. Benson, J. R. Busboom, M. V. Dodson, L. K. Fox, C. T. Gaskins, R. L. Kincaid, J. P. McNamara, D. D. Nelson, M. L. Nelson, J. J. Reeves, R. W. Wright.

The Department of Animal Sciences 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.

Bachelor of Science in Animal Sciences

The Department of Animal Sciences provides training in the biological systems important to animals, including principles and practices associated with the management and well-being of agricultural animal production. Care and well-being of companion and laboratory animals is also taught. Animal Scientists at WSU are experts in animal nutrition, physiology, reproduction, genetics and genomics, nutrient management, meat and muscle biology, and animal behavior. They bring this expertise to the classroom and to the experiential learning activities offered to our students. Unique hands-on learning opportunities with animals allow our students to practice and apply what they learn in the classroom. Most departmental faculty are engaged in the many multidisciplinary Centers across the WSU campus which provides additional broadening and experiential opportunities for undergraduate and graduate students.

The undergraduate curriculum prepares graduates for a wide variety of career paths. These paths include animal production and food processing (meats, dairy products, etc.); animal research; biomedical research; wild and zoological animal care; companion animal services; the agricultural service industries (including feed manufacturing and sales, pharmaceuticals, artificial insemination, agricultural equipment, financial institutions, etc.); and government agencies. Graduates of the Animal Sciences program are well prepared to continue

their education by pursuing graduate or professional degrees in the sciences and veterinary and human medicine fields. Employers seek out graduates in Animal Sciences for their strong foundation in science, practical and technical knowledge of animal care, and hands-on experience with animal production.

Student Learning Outcomes

Upon completion of the Bachelor's Degree in Animal Sciences, it is expected that graduates will be able to:

- Develop and evaluate animal production and management systems by integrating knowledge of animal genetics, nutrition, reproduction, and other relevant disciplines and applying scientific and quantitative reasoning to solve real-world challenges.
- Locate, critically evaluate, and apply information from scholarly animal science literature and other sources to expand personal understanding and knowledge of animal sciences, providing a foundation for lifelong learning.
- Create and interpret graphs, tables and diagrams illustrating scientific data and concepts, and understand basic concepts relating to the design and analysis of research in the animal sciences.
- Communicate effectively, both orally and in writing, about animal sciences to a range of audiences using appropriate traditional and emerging media.
- Engage actively and effectively in discussion of complex issues relevant to animal sciences by understanding and appreciating:
- the importance of animals to the health and well-being of society;
- economic, environmental, animal welfare, and societal impacts of animal production and management systems at the local and global levels;
- varied ethical perspectives on animal practices;
- the role of science in informing debates.
- Appreciate the breadth and depth of professional opportunities in animal sciences relating to: the keeping of animals for food and fiber production and other purposes (e.g., species conservation, companionship, research and teaching, biotechnology, sports); the application of scientific principles to animal breeding, reproduction, feeding, growth and development, health management, housing, handling, and end-product safety and quality.

Degree Options in Animal Sciences

Students in Animal Sciences take a wide variety of agricultural and non-agricultural courses, receiving in-depth training in the comparative biology of farm and companion animals. Students select a degree option to coincide with their interests. Each option has both required courses and electives, which allow individual program specialization in areas of animal science, technology, and production or pre-veterinary medicine/science. The Animal Science, Technology, and Production curriculum is designed to provide students with the scientific, technological, and practical knowledge, and communication skills to make them productive members of the food production, animal care and related industries. The Pre-veterinary/Science option is designed to provide graduates with the skills to be successful in the biomedical or veterinary sciences, biotechnology or other science related fields.

The Animal Science, Technology, and Production Option emphasizes the business, economic and science-based 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/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 other post-baccalaureate degree, or work in technical or specialized areas of animal science, such as extension, academia, research, technical consulting, or laboratory research.

Many opportunities outside the classroom are available for students to further their educational experiences. Animal Sciences students are strongly encouraged to participate as part-time employees in the livestock centers, or in research and teaching programs within the department. Opportunities are available to students for on-the-job training in professional internships within diverse segments of the agricultural, companion animal, veterinary, biomedical, or research sectors. The department offers experiential learning opportunities with dairy cattle, 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.

Animal Sciences courses are attractive to students in other majors and from any background. Animal Sciences courses broaden a student's knowledge of applied and basic biology, agriculture and the environment, and society in general. Many students find that obtaining 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 University Common Requirements (UCORE) courses as possible prior to transferring. Inquiries about specific courses should be directed to the Undergraduate Academic Coordinator in the department.

Schedules of Studies

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

ANIMAL SCIENCE, TECHNOLOGY, AND PRODUCTION OPTION (120 CREDITS)

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

Newly matriculated students may be admitted to the animal sciences major upon making their intention known to the department.

Current students seeking admission to the major must have a cumulative GPA of 2.0 or better and be in good academic standing with the University.

First Year

<i>First Term</i>	<i>Credits</i>
ANIM SCI 101	3
ANIM SCI 180	1
CHEM 101 [PSCI] or 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH Requirement ¹	3 or 4
<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI]	4
CHEM 102 or 106	4
ENGLISH 101 [WRTG]	3
H D 205 [COMM] (recommended) or other [COMM] course	3 or 4

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 107 [BSCI]	4
Lab Management Requirement ²	1
MATH Requirement and /or Electives ¹	6
<i>Second Term</i>	<i>Credits</i>
ANIM SCI 240	3
Diversity [DIVR]	3
ECONS 101 [SSCI]	3
STAT 212 [QUAN], 412, or PSYCH 311 [QUAN] ³	3 or 4
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ANIM SCI 313	4
ANIM SCI 330	3
ANIM SCI 380	1
ANIM SCI Group 1 Elective ⁴	2 or 3
Business and Economics Course ⁵	3
Electives	3
<i>Second Term</i>	<i>Credits</i>
ANIM SCI 350	3
ANIM SCI 351	1
ANIM SCI Group 1 Elective ⁴	2 or 3
Business and Economics Course ⁵	3
Humanities [HUM]	3
VET CLIN 361, 367, or VET PH 308	3 or 4

Fourth Year

<i>First Term</i>	<i>Credits</i>
Ag Sciences Elective ⁶	3
ANIM SCI 464 [CAPS] [M] or 472 [CAPS] [M] ⁷	3
ANIM SCI Group 2 Electives ⁸	6
Electives ⁹	3
<i>Second Term</i>	<i>Credits</i>
ANIM SCI Group 2 Electives ⁸	6
Electives ⁹	11

¹ MATH requirement may be satisfied by completing MATH 106 and 108, 140 [QUAN], 171 [QUAN], or 202 [QUAN].

² Lab Management Requirement courses (One course) include ANIM SCI 166, 172, 174 (Fall-only), 178, 280 (Spring only).

³ Students who have not yet completed a [QUAN]

course should select STAT 212 or PSYCH 311.

⁴ ANIM SCI Group 1 Electives (Two courses) include ANIM SCI 205, 260, 266, 267, 274, 285, 314, 345, 346, 360, and other courses as approved by advisor.

⁵ Business and Economics Electives (Two courses) include ACCTG 230; B LAW 210; ECONS 330, 335, 350, 351, 352, 450, and other courses as approved by advisor.

⁶ Ag Sciences Electives: Any level AFS, AGTM, CROP SCI, ENTOM, FS, HORT, and SOIL SCI course. To meet University requirements for upper division coursework, students may need to select a 300-400 level course.

⁷ ANIM SCI 474 [CAPS][M] may be taken as an alternative in Spring semester.

⁸ ANIM SCI Group 2 Electives (Four courses) must include one [M] course. Students may choose any of the following courses that have not been used to fulfill other requirements: ANIM SCI 314, 345, 346, 360, 378, 408 [M], 440 [M], 451 [M], 454, 460, 464 [CAPS] [M], 472 [CAPS] [M], 473 [M], 474 [CAPS] [M], 478 [M], 485 [M], 488 [M], and other courses as approved by advisor.

⁹ Elective courses should include sufficient credits and 300-400-level coursework to meet the University requirement of 120 credits and 40 credits of upper-division coursework.

ANIMAL SCIENCES - ACCELERATED PRE-VETERINARY OPTION (127 CREDITS)

NOTE: Students must complete a minimum of 90 undergraduate credits – including 30 credits of 300-400-level course work - and be accepted into the Veterinary Medicine program to complete this option.

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 (DVM) degree within a seven-year program. Students will take a three-year animal science program, completing all UCORE requirements, animal sciences requirements, and pre-veterinary medicine requirements. This program includes mathematics; chemistry, including organic and biochemistry; general biology; physics; and animal sciences courses, including an introduction to livestock; then further education in animal nutrition, breeding and genetics, reproduction, and the economics of animal 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.

Qualified students in the Department of Animal Sciences with high scholastic achievement and demonstrated experience and interest in working with livestock will be invited to apply for the accelerated program after the second semester of the first year. Selected students are admitted to the major in the first semester of the sophomore year. Application and acceptance procedures for the DVM program are 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 DVM program, the student is required to complete additional undergraduate coursework to earn the BS in Animal Sciences.

First Year

<i>First Term</i>	<i>Credits</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 Requirement ¹	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI]	4
CHEM 106	4
ENGLISH 101 [WRTG]	3
H D 205 [COMM] or Communication [COMM]/ [WRTG]	3 or 4
MATH Requirement or Electives ¹	2 or 3

Second Year

<i>First Term</i>	<i>Credits</i>
ANIM SCI Electives ²	3
BIOLOGY 107	4
CHEM 345	4
Diversity [DIVR]	3
Humanities [HUM]	3

<i>Second Term</i>	<i>Credits</i>
ANIM SCI 240	3
Arts [ARTS]	3
ECONS 101 [SSCI]	3
MBIOS 301	4
STAT 212 [QUAN]	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ANIM SCI 313	4
ANIM SCI 330	3
ANIM SCI 380	1
ANIM SCI 440 [M], 464 [CAPS] [M], 472 [CAPS] [M], or 488 [M] ³	3
CHEM 370 or MBIOS 303	3 or 4

<i>Second Term</i>	<i>Credits</i>
ANIM SCI 350	3
ANIM SCI 351	1
ANIM SCI 408 [M], 451 [M], 473 [M], 474 [CAPS] [M], or 485 [M] ³	3
ANIM SCI Electives ²	6
PHYSICS 101	3
PHYSICS 111	1

Fourth Year

<i>First Term</i>	<i>Credits</i>
DVM Coursework	15

<i>Second Term</i>	<i>Credits</i>
DVM Coursework	15

¹ MATH requirement may be satisfied by completing MATH 106 and 108, 140 [QUAN], or 171 [QUAN].

² ANIM SCI Electives (9 credits): Any 300-400-level ANIM SCI course not S, F-graded and not used to fulfill other requirements, or as approved by advisor.

³ To fulfill UCORE [CAPS] requirement, must include one of the following courses: ANIM SCI 464 [CAPS], 472 [CAPS], or 474 [CAPS].

PRE-VETERINARY MEDICINE/SCIENCE (120 CREDITS)

Newly matriculated students may be admitted to the animal sciences major upon making their intention known to the department.

Current students seeking admission to the major must have a cumulative GPA of 2.0 or better and be in good academic standing with the University.

First Year

First Term	Credits
ANIM SCI 101	3
ANIM SCI 180	1
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH Requirement ¹	3 or 4

Second Term	Credits
BIOLOGY 106 [BSCI]	4
CHEM 106	4
ENGLISH 101 [WRTG]	3
MATH Requirement, and/or Electives ¹	5

Second Year

First Term	Credits
Arts [ARTS]	3
BIOLOGY 107	4
CHEM 345	4
H D 205 [COMM] (recommended) or Communication [COMM]/[WRTG] Lab Management Requirement ²	3 or 4 1

Second Term	Credits
ANIM SCI 240	3
CHEM 370 or MBIOS 303	3 or 4
Humanities [HUM]	3
STAT 212 [QUAN], 412, or PSYCH 311 [QUAN] ³	3 or 4
Electives	3
Complete Writing Portfolio	

Third Year

First Term	Credits
ANIM SCI 313	4
ANIM SCI 330	3
ANIM SCI 380	1
MBIOS 301	4
200-300-level ANIM SCI Electives ⁴	2 or 3

Second Term	Credits
ANIM SCI 350	3
ANIM SCI 351	1
Diversity [DIVR]	3
ECONS 101 [SSCI]	3
PHYSICS 101	3
PHYSICS 111	1
200-300-level ANIM SCI Electives ⁴	2 or 3

Fourth Year

First Term	Credits
ANIM SCI 464 [CAPS] [M] or 472 [CAPS] [M] ⁵	3
400-level ANIM SCI Electives ⁶	5 or 6
Electives ⁷	7

Second Term	Credits
BIOLOGY 324, VET CLIN 361, or VET PH 308	3 or 4
400-level ANIM SCI Electives [M] ⁶	3
Electives ⁷	9

¹ MATH requirement may be satisfied by completing MATH 106 and 108, 140 [QUAN], or 171 [QUAN].

² Lab Management Requirement courses (One course) include ANIM SCI 166, 172, 174 (Fall-only), 178, 280 (Spring only).

³ Students who have not yet completed a [QUAN] course should select STAT 212 or PSYCH 311.

⁴ 200-300-level ANIM SCI Electives: Select two courses from: ANIM SCI 205, 260, 266, 267, 274, 285, 314, 345, 346, 360, or as approved by advisor.

⁵ Students may substitute ANIM SCI 474 [CAPS] [M] in the spring.

⁶ 400-level ANIM SCI Electives: Select three courses from ANIM SCI 408 [M], 440 [M], 451 [M], 454, 460, 464 [M], 472 [M], 473 [M], 474 [M], 478 [M], 481, 485 [M], or 488 [M] not used to fulfill a major requirement, or as approved by advisor. Students are required to complete two [M] courses to meet University requirements.

⁷ Elective courses should include sufficient credits and 300-400-level coursework to meet the University requirement of 120 credits and 40 credits of upper-division coursework.

Minors

Animal Sciences

Students may apply for a minor in Animal Sciences once they have been admitted to a major and completed 60 credits. A minor in Animal Sciences requires a minimum of 16 credits of courses with the ANIM SCI prefix. At least 9 of the 16 credits must be upper-division, taken in residence at WSU or through WSU-approved education abroad or educational exchange courses, and include a minimum of 7 credits from the following list: ANIM SCI 313, 330, 350, and/or 351. In addition, students may use up to 4 credits of ANIM SCI 399 or 499. Students must maintain a minimum 2.0 GPA within ANIM SCI courses to retain the Animal Science minor.

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.

166 Horse Handling 1 (0-3) Course Prerequisite: ANIM SCI 101. Effective horse handling skills and techniques; safety for both horse and human will be emphasized and prioritized throughout the course. S, F grading.

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.

240 Introduction to Domestic Animal Anatomy and Physiology 3 Course Prerequisite: ANIM SCI 101; BIOLOGY 106. Fundamental knowledge, terminology and basic principles of domestic animal anatomy and physiology for future advanced courses. The major organ systems (e.g. muscle, skeletal, neural, endocrine, cardiovascular, respiratory, and renal) are covered with emphasis on comparative anatomy, integrated function, and homeostatic control mechanisms.

260 Live Animal and Carcass Evaluation 3 (1-6) Basic principles of live animal and carcass evaluation. Cooperative: Open to UI degree-seeking students.

266 Equine Management 2 Foundational learning of best practices in equine management.

267 Equine Science 2 Fundamental Scientific principles of equine anatomy and physiology including nutrition, reproduction, and muscle biology.

274 Beef Feedlot Systems 2 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 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; MATH 106, 108, 140, 171, 172, 182, or 202. 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.
- 315 Captive Exotic Animal Nutrition, Husbandry and Management** 3 Course
Prerequisite: ANIM SCI 205, ANIM SCI 314, or SOE 431. Nutrition, husbandry, and management of captive exotic animals emphasizing the requirements of the animal environment.
- 330 Animal Genetics** 3 Course Prerequisite: BIOLOGY 107; STAT 212. 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: BIOLOGY 106; BIOLOGY 107; junior standing. 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 Course Prerequisite: BIOLOGY 106. 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. Cooperative: Open to UI degree-seeking students.
- 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: Admitted to the 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.
- 405 Ciders and Other Fermented Foods** 3 (2-3) Course Prerequisite: BIOLOGY 106 and 107, or MBIOS 101, or MBIOS 304 and 305. Chemistry, microbiology, and technology associated with the production of cider, beer, and other food fermentations. Two half-day field trips required. (Crosslisted course offered as FS 405, ANIM SCI 405). Recommended preparation: FS 304 and 465. Cooperative: Open to UI degree-seeking students.
- 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; one of the following: ANIM SCI 440, BIOLOGY 352, MBIOS 303, or MBIOS 401. 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.
- 453 Biomedical Science and Human/Animal Health: Underlying Science, Diagnosis, and Therapies of Diseases** 3 (2-2) Course Prerequisite: ANIM SCI 330 or MBIOS 301; ANIM SCI 345 or 350 or BIOLOGY 475; MBIOS 303 or 401 or 404. Biomedical aspects of health outcomes; mechanisms and fundamental principles of diagnostic techniques and professional skills.
- 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 Course Prerequisite: CHEM 102 or 106; junior standing. 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 [CAPS] [M] Companion Animal Management** 3 (2-3) Course Prerequisite: ANIM SCI 313; ANIM SCI 330; ANIM SCI 350. Care and management of companion animal species throughout the life cycle, including nutrition, reproduction, exercise and behavior. Cooperative: Open to UI degree-seeking students.
- 468 [M] Applied Physiology of Cultured Fish** 3 Course Prerequisite: ANIM SCI 313; ANIM SCI 330; ANIM SCI 350. Development and management of finfish aquaculture systems and production strategies. Cooperative: Open to UI degree-seeking students.
- 472 [CAPS] [M] Dairy Cattle Management** 3 Course Prerequisite: ANIM SCI 313; ANIM SCI 330; ANIM SCI 350; junior standing. 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 [CAPS] [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.
- 481 Special Topics in Study Abroad: Animal Production Systems in the World** V 2-6 May be repeated for credit; cumulative maximum 6 hours. Immersive course integrating experiential learning activities in animal production systems into international locations where ANIM SCI Faculty are already working and conducting research.
- 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.
- 495 Research in Animal Sciences** V 1-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Junior standing. Planned and supervised undergraduate research experience.

- 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.
- 545 Statistical Genomics** 3 (2-3) Develop concepts and analytical skills for modern breeding by using Genome-Wide Association Study and genomic prediction in framework of mixed linear models and Bayesian approaches. (Crosslisted course offered as CROP SCI 545, ANIM SCI 545, BIOLOGY 545, HORT 545, PL P 545.) Recommended preparation: BIOLOGY 474; MBIOS 478. Cooperative: Open to UI degree-seeking students.
- 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. Course Prerequisite: Admitted to the Animal Sciences PhD program. 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

anthro.wsu.edu
College Hall 150
509-335-3441

Professor and Department Chair, A. Duff; Professors, E. Chilton, C. Grier, E. Hagen, B. S. Hewlett, J. M. Mageo, C. L. Meehan, R. J. Quinlan; Associate Professors, A.D. Blackwell, J. Cassaniti, L. Premo, M. B. Quinlan, E. Thornton, S. Tushingham, C. Wilkinson; Assistant Professors, J. Blong, R. Horowitz, A. Pisor; Professor, Career Track, M. Mansperger; Associate Professors, Career Track, N. Hess, B. L. Hewlett, M. Sugerman; Assistant Professor, Career Track, N. Grow; Professors Emeriti, R. E. Ackerman, W. Andrefsky, Jr., J. H. Bodley, T. A. Kohler, W. D. Lipe, N. P. McKee.

The curriculum includes courses in the four major subfields of anthropology: archaeology, cultural/social anthropology, linguistic anthropology, and

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 research and training in the prehistory of the Americas, including the Pacific Northwest from Alaska to northern California, the Columbia Plateau, the Pueblo societies of the Southwest, Mesoamerica, and the Andes. Faculty research employs ceramic and lithic analysis, paleoeconomic and paleoenvironmental approaches including geoarchaeology, paleobotany and zooarchaeology, as well as stable isotope analysis, archaeometry via gas chromatography-mass spectrometry, and modeling and simulation. The department also conducts summer archaeological field schools. The program in cultural anthropology emphasizes globalization, historical ethnography, psychological anthropology, medical anthropology, gender and culture, biocultural perspectives, and public health anthropology. Faculty research is based in North and Central America, Polynesia, Sub-Saharan Africa, and South and Southeast 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 biological anthropology, isotope and 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, Bachelor of Arts in Human Biology, 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, non-governmental organizations, private consulting firms, and international business. In addition, anthropology provides a strong general foundation for a pre-professional education.

Human Biology

Human Biology is an explicitly interdisciplinary degree jointly administered by the Department of Anthropology and the School of Biological Sciences. The BA in Human Biology offers students an opportunity to explore how human biology influences and is influenced by the environment, cultural and social structures, and economic and political policies. Human Biology melds approaches and content from social and biological sciences to provide students with a synthetic understanding of the roles of culture, the dynamics of natural and social systems, and biological attributes responsible for shaping the human being. Our aim is to prepare

students to be engaged, creative, insightful, and skillful in diverse professions that encompass the arenas of health and environmental sciences, societal support, and public policy that influence the welfare of humans.

Student Learning Outcomes

- We expect that our graduating students will have:
- Familiarity with the basic principles and findings of ethnology, archaeology, biological anthropology, and linguistics, the four subfields of American anthropology as well as the ways in which these four subfields are interrelated;
 - Awareness of the basic research and analytical methods and underlying theories of the four subfields of anthropology;
 - Ability to read critically and synthesize information produced by professional anthropologists and published in academic books and journals;
 - 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;
 - Ability to apply the principles, findings, and research and analytical methods of anthropology to new situations and data, including those of everyday life.

See <https://anthro.wsu.edu/undergraduate-studies/program-learning-goals/>

Schedules of Studies

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

ANTHROPOLOGY (120 CREDITS)

A student may be admitted to the anthropology major upon making their intention known to the department. To graduate, a minimum of 34 credits in anthropology courses are required. Grades of C- or higher are required for all anthropology courses. No required course can be taken pass, fail.

First Year

<i>First Term</i>	<i>Credits</i>
ANTH 203 [DIVR]	3
Biological Sciences [BSCI] with lab ¹	4
Communication [COMM] or Written Communication [WRTG]	3
ENGLISH 101 [WRTG]	3
Foreign Language, if necessary, or Elective ²	3 or 4

<i>Second Term</i>	<i>Credits</i>
ANTH 260	4
Foreign Language, if necessary, or Elective ²	3 or 4
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN] ³	3 or 4

Second Year

<i>First Term</i>	<i>Credits</i>
ANTH 230	3
Arts [ARTS]	3

Physical Sciences [PSCI] with lab ¹	4
Social Sciences [SSCI]	3
Electives	3
<i>Second Term</i>	<i>Credits</i>
ANTH Electives ⁴	6
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ANTH 390 [M]	3
ANTH Elective ⁴	3
Humanities [HUM]	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
300-400-level Electives ⁵	9
ANTH Electives ⁴	6
Consider study abroad or summer field school	

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level Electives ⁵	12
ANTH Elective ⁴	3

<i>Second Term</i>	<i>Credits</i>
300-400-level Electives ⁵	9
ANTH 490 [CAPS] [M]	3
Electives	3

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² Two years of one foreign language from high school or one year at college required.

³ STAT 212 preferred.

⁴ ANTH Electives (18 credits required): Minimum of 3 credits from each of the following areas: Archeology: ANTH 300, 330, 331, 334, 336, 340, 370, 430; Biological: ANTH 268, 380, 381, 463, 464, 465, 466, 469, 473; Cultural: ANTH 300, 301, 302, 303, 304, 305, 307, 309, 316, 320, 327, 402, 404, 405, 417, 418; Linguistics: ANTH 350, 355, 450.

⁵ Concentrating electives beginning in the junior year in one sub-area of anthropology or in a minor discipline in consultation with the adviser is recommended.

HUMAN BIOLOGY, BA (120 CREDITS)

Completion of the Human Biology major requires a minimum of 20 credits of coursework in each of Anthropology (ANTH) and Biology (BIOLOGY), which can include required courses.

First Year

<i>First Term</i>	<i>Credits</i>
ANTH 203 [DIVR]	3
BIOLOGY 106 [BSCI]	4
CHEM 101 or 105 [PSCI]	4
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 102 or 106	4
HISTORY 105 [ROOT]	3
STAT 212 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
ANTH 260	4
Arts [ARTS]	3
Communication [COMM] or Written Communication [WRTG]	3
Social Sciences [SSCI]	3
Major Elective ^{1,2}	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI] ³	3
BIOLOGY 301	4
Human Behavior Requirement ⁴	3
Science and Society Requirement ⁵	3
Major Elective ^{1,2}	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Genetics and Evolution Requirement ⁶	3
Human Behavior Requirement ⁴	3
Humanities [HUM]	3
Foreign Language, if needed, and/or Major Electives ^{1,2,7}	6

<i>Second Term</i>	<i>Credits</i>
Genetics and Evolution Requirement ⁶	3
Writing in the Major [M] course ⁸	2-4
Foreign Language, if needed, and/or Major Electives ^{1,2,7}	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
Human Cultural Diversity Requirement ⁹	3
Integrative Capstone [CAPS] ¹⁰	3 or 4
Writing in the Major [M] course	2-4
Major Electives and/or Electives ^{1,2,11}	7

<i>Second Term</i>	<i>Credits</i>
Major Electives and/or Electives ^{1,2,11}	15
Complete School of Biological Sciences Exit Survey	

¹ Major Electives (18 credits) approved courses include: ANTH 301, 303, 304, 305, 330, 331, 340 [M], 380, 404, 405, 495, 498, 499; BIOLOGY 251 or 353, 315, 321 [M], 333, 340 [M], 354, 372, 476, 491, 495, 499; H D 220; MBIOS 303, 305, 405, 446; PSYCH 320, 361. 363; and any ANTH or BIOLOGY course listed in the Science and Society, Genetics and Evolution, Human Behavior, and Human Cultural Diversity modules that were not taken to satisfy the requirement in those areas.

² A maximum of 4 credits of coursework that are graded S,F (ANTH 498, 499; BIOLOGY 491, 495, 499) may be used toward fulfilling Major Electives.

³ An additional [ARTS], [HUM], or [SSCI] is required by the College of Arts and Sciences.

⁴ Human Behavior Requirement (6 credits) approved courses include: ANTH 268, 381, 466; BIOLOGY 307, 438; PSYCH 230, 321, 324, 372.

⁵ Science and Society Requirement (3 credits) approved courses include: ANTH 309; BIOLOGY 330; PHIL 350, 365, 370; SOC 331, 332; SOE 390, 402, 444.

⁶ Genetics and Evolution Requirement (6 credits) approved courses include: ANTH 302, 463, 469; BIOLOGY 335, no more than one from BIOLOGY 395, 403, or 405; MBIOS 423.

⁷ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁸ [M] courses must be chosen from ANTH or BIOLOGY.

⁹ Human Cultural Diversity Requirement (3 credits) approved courses include: ANTH 201, 307, 316, 320, 327.

¹⁰ Integrated Capstone [CAPS] course must be chosen from either ANTH 464, 473 [M], 490 [M], BIOLOGY 401, 408, 473 [M], or 483 [M].

¹¹ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework.

Minors

Anthropology

A minor in Anthropology requires a minimum of 18 credits, including three of the following: ANTH 101, 203, 230, and 260. At least 9 credits 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

AMERICAN INDIAN STUDIES

AIS

320 [DIVR] Native Peoples of North America 3 A holistic exploration of various indigenous peoples and cultures of North America, through the lens of anthropology. (Crosslisted course offered as ANTH 320, AIS 320).

327 [DIVR] Contemporary Native Peoples of the Americas 3 Contemporary cultures of Native American communities emphasizing North America. (Crosslisted course offered as ANTH 327, AIS 327).

331 [SSCI] Archaeology of the Americas 3 Cultures and environments of the Americas from the arrival of the earliest hunter-gatherers to the development of complex civilizations. (Crosslisted course offered as ANTH 331, AIS 331.)

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. (Crosslisted course offered as ANTH 334, AIS 334).

401 Tribal Nation Building Leadership - Research I 2 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By permission only. Ontology and epistemology; indigenous research methods; participatory research, collaborative research, critical ethnography.

402 Tribal Nation Building Leadership - Research II 2 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By permission only. Indigenous research methods; participatory research, collaborative research, critical ethnography.

ANTHROPOLOGY

ANTH

101 [DIVR] Introduction to Anthropology 3 Explores what it means to be human through the major subfields of anthropology, including biological anthropology (human evolution and variation), archaeology, sociocultural anthropology, 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.

135 [SSCI] Mythbusting in Archaeology 3 A critical exploration of pseudo-scientific claims and fantastical interpretations of archaeological sites and objects in popular media.

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

203 [DIVR] Global Cultural Diversity 3 Introduction to the field of cultural anthropology; examination of how cultures vary and are similar.

205 [SSCI] Health, Healing, and Medicine Across Cultures 3 Anthropological perspective on health, disease, and medical/curing systems; relationships between culture, biology, political-economic environments, disease, and curing examined. Recommended preparation: ANTH 101 or 203.

214 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.

220 [DIVR] Perspectives on Race 3 Critical examination of racial classification and social hierarchy, influences of biology and culture on human variation, and differences among groups.

230 Archaeological Methods and Interpretation 3 Archaeological fieldwork methods; lab-based analysis of archaeological materials as applied to reconstructing past human lifeways.

232 [SSCI] The Pyramids of Egypt: Why and How? 3 Archaeology of the social, political, economic, and technological developments that are indicated by the pyramids of ancient Egypt.

260 [BSCI] Introduction to Biological Anthropology 4 (3-3) Evidence for human evolution; evolutionary explanations of human variation; techniques of biological anthropology.

268 [BSCI] 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.

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

280 [BSCI] Skeleton Keys: The Basics of Forensic Anthropology 3 Examination of forensic anthropology techniques to identify human skeletal remains in a medicolegal context.

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

301 [ARTS] 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 The Anthropology of Religious Experience 3 Body, meaning, and power in religion cross culturally.

304 [SSCI] Cross-Cultural Perspectives of Mental Health and Illness 3 Cross-cultural mental health and illness; common U.S. mental illnesses and treatments in diverse cultures around the world; mental illnesses specific to particular cultures. Recommended preparation: PSYCH 105; ANTH 101 or 203.

305 [SSCI] Anthropology of Epidemic Disease and Bioterrorism 3 Cross-cultural understanding of how humans respond to epidemics, including high mortality diseases, diseases common in the developing world, and diseases that pose future threats.

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.

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, WGSS 316.) Recommended preparation: Sophomore standing; ANTH 101, PSYCH 105, SOC 101, or WGSS 101 or 120.

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 WGSS 332, ANTH 317.)

320 [DIVR] Native Peoples of North America 3 A holistic exploration of various indigenous peoples and cultures of North America, through the lens of anthropology. (Crosslisted course offered as ANTH 320, AIS 320).

- 327 [DIVR] Contemporary Native Peoples of the Americas** 3 Contemporary cultures of Native American communities emphasizing North America. (Crosslisted course offered as ANTH 327, AIS 327).
- 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 [SSCI] Archaeology of the Americas** 3 Cultures and environments of the Americas from the arrival of the earliest hunter-gatherers to the development of complex civilizations. (Crosslisted course offered as ANTH 331, AIS 331.)
- 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. (Crosslisted course offered as ANTH 334, AIS 334).
- 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 [DIVR] Speech, Thought, and Culture** 3 The role of language in social situations and as a reflection of cultural differences.
- 355 [HUM] Historical Linguistics** 3 Origins and evolution of human language, relationships between peoples and languages, development of contemporary ethnicities, linguistic change, reconstructive methods, and writing systems.
- 370 The Archaeology of Climate Change** 3 Exploration of the connections between climate change and people from the Ice Age to the present in order to understand the factors that cause environmental change.
- 380 Human 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 [CAPS] The Self in Culture** 3 Course Prerequisite: One course at the 100-level and one course at the 200-level in any of the following subjects: AMER ST, ANTH, CES, COM, ENGLISH, FINE ART, H D, HISTORY, HUMANITY, PHIL, POL S, PSYCH, SOC, or WGSS; 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.
- 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] Archaeological Theory and Explanation** 3 Archaeological theory and the role of theories of culture change in crafting explanations for the human past. Recommended preparation: ANTH 230; ANTH 330 or 331.
- 450 Ethnolinguistics** 3 Anthropological theory and methods applied to the study of cognitive linguistics, or the interrelation of language, mind, and culture. Credit not granted for more than one of ANTH 450 and ANTH 550. Cooperative: Open to UI degree-seeking students.
- 463 Introduction to Anthropological Demography and Epidemiology** 3 Small-scale population dynamics; culture change; event history analysis; evolutionary life history; risk; reproduction; morbidity; and mortality in ethnographic, 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.
- 464 [CAPS] Hormones and Human Reproduction** 3 Course Prerequisite: Senior standing. Hormones, diet, and stress in the regulation of human reproduction, behavior, and physiology; menstruation, parenting, and pregnancy; evolution of reproduction. Recommended preparation: ANTH 260, BIOLOGY 107, 150, or equivalent.
- 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.
- 466 Evolution of Cooperation** 3 Human cooperation from an evolutionary perspective, as informed by research from anthropology, biology, ecology, economics, and psychology; discussion-based seminar.
- 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.
- 473 [CAPS] [M] Evolution and Society** 3 Course Prerequisite: ANTH 260 or BIOLOGY 301; junior standing. Survey of how the theory of evolution is used to better understand ourselves, the societies in which live, and the biological world on which we depend. Recommended preparation: BIOLOGY 405 or concurrent enrollment. (Crosslisted course offered as BIOLOGY 473, ANTH 473).
- 480 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 490 [CAPS] [M] Integrative Themes in Anthropology** 3 Course Prerequisite: ANTH 203; ANTH 230; ANTH 260; ANTH 390; junior standing. Current research crosscutting traditional subdisciplines of anthropology.
- 495 Research Practicum** V 1-6 May be repeated for credit; cumulative maximum 10 hours. Hands-on experience in selection of a research problem, review of literature, developing methodology, data collection, and reporting results.
- 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 Culture, Ecology, and International Development** 3 Sociocultural properties of ecological systems in developing nations; cultural transformation in dynamic systems; ethnographic description, comparison; mixed and collaborative methods.
- 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.
- 522 Culture and Mind** 3 Examination of cultural variation in mind and mental processing, and how shared ideas and personal perceptions are necessarily co-constitutive of one another.
- 525 Medical Anthropology** 3 Examination of the interactions between culture and well-being, including illness concepts, distributions, prevention, and treatments in global perspective.
- 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 May be repeated for credit; cumulative maximum 6 hours. Methodological, stylistic and craft issues in the process and product of ethnography.
- 530 Theory in Archaeology** 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 statistical software in anthropological research.
- 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.
- 545 Political Economy** 3 An exploration of anthropological and archaeological approaches to the study of political economy, including theoretical and methodological perspectives.
- 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 Environment and Culture Change in Complex Societies** 3 Development of food production, and evaluation of environment's role in changing social, economic, and political configurations in past complex societies. Recommended preparation: ANTH 530.
- 550 Ethnolinguistics** 3 Anthropological theory and methods applied to the study of cognitive linguistics, or the interrelation of language, mind, and culture. Credit not granted for more than one of ANTH 450 and ANTH 550. Cooperative: Open to UI degree-seeking students.
- 554 Anthropological Field Methods Seminar** 3 May be repeated for credit; cumulative maximum 6 hours. Elicitation, recording techniques and analysis of sociocultural and linguistic field data. Recommended preparation: ANTH 450 or 550.
- 561 Current Trends in Evolutionary Anthropology** 3 May be repeated for credit. Intensive review of current trends in biological anthropology.
- 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 Introduction to Anthropological Demography and Epidemiology** 3 Small-scale population dynamics; culture change; event history analysis; evolutionary life history; risk; reproduction; morbidity; and mortality in ethnographic, 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 May be repeated for credit; cumulative maximum 6 hours. 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.
- 566 Evolutionary Psychology** 3 Overview of evolutionary psychology; theoretical foundations, insights, and key research contributions and applications from this interdisciplinary field.
- 567 Primate Behavioral Ecology** 3 Seminar-based course focusing on evolutionary analysis of primate behavior, morphology and ecology.
- 568 Research Design and Grant Writing** 3 Project development, research design, and successful proposal writing.
- 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.
- 571 Stable Isotope Analysis in Anthropology** 4 (3-3) Lab and seminar course on stable isotope applications, methods, and interpretations within the field of Anthropology.
- 572 Residue Analysis and Experimental Archaeology** 4 (3-3) The science of archaeological residues, identification of organic and inorganic compounds, method and theory of interpretation, experimental archaeology, ethnoarchaeology.
- 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 Paleoethnobotany** 4 (3-3) Methods of analysis and interpretation of botanical remains recovered from archeological sites, including pollen, phytoliths, starch, wood, and macro-botanical remains.
- 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.

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. Course Prerequisite: Admitted to the Anthropology PhD program. 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
Johnson Annex, C 30
509-335-1233

Department Chair and Professor, T. Chi; Assistant Professors, A. Ghalachyan, H. Liu, X. Lou, J. Son; Instructors, Y. Chen, S. Hiscock, M. Shaheen, C. Silva; Professors Emeriti, L. Bradley, C. Salusso.

Apparel, Merchandising, Design, and Textiles offers Bachelor of Arts and Master of Science degrees, and also participates in the Individual Interdisciplinary Doctoral Program.

As the largest and most comprehensive 4-year apparel and textiles program that offers a full Apparel Design program and an in-depth Merchandising program in Washington, we offer students all of the tools necessary to succeed in the fashion, textiles and apparel industry. We have state of the art classroom and laboratory 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 across the supply chain. The curriculum options are designed to teach students to:

- Recognize the global world that we live in today by understanding 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 and retail complex.

Students majoring in Apparel, Merchandising, Design, and Textiles 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 business administration, communication, and fine arts.

An internship is required of students in both emphasis areas. Internships are a valuable way to gain experience and contacts in the industry and make students more competitive when they graduate. A large number of companies in the U.S. and abroad offer internships in the textile and apparel field. Internship exposures help students 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 <https://gradschool.wsu.edu/>.

Student Learning Outcomes

The goal of Apparel, Merchandising, Design, and Textiles is to provide high-quality education that prepares graduates for success in the fashion, retails, textiles and apparel industry. State of the

art classroom equipment, fully equipped apparel design studios, a program and curriculum aligned with current industry needs, and nationally and internationally recognized faculty, give the students in WSU's AMDT program a learning advantage.

You may find all Student Learning outcomes at: <http://amdt.wsu.edu/undergraduate/outcomes>

Schedules of Studies

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

APPAREL DESIGN (120 CREDITS)

Apparel design focuses on the interaction between design and merchandising and offers depth in apparel design.

Students are admitted to the apparel design option upon making their intention known to the department.

Students seeking to remain admitted to the apparel design option are accepted through a portfolio review process. Applications are available in the Academic Coordinator's office and must be submitted during the spring semester of the second year. Transfer students 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.

Students who major in Apparel, Merchandising, Design, and Textiles must have a minimum 2.0 cumulative GPA and receive a C or better grade in all AMDT courses. 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>Credits</i>
AMDT 105	1
AMDT 108	3
Biological Sciences [BSCI]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Credits</i>
AMDT 268	3
ENGLISH 101 [WRWG]	3
H D 205 [COMM]	4
Humanities [HUM]	3
Electives	4

Second Year

<i>First Term</i>	<i>Credits</i>
AMDT 210 [PSCI]	4
AMDT 211	3
AMDT 220	3
Arts [ARTS]	3
ECONS 101 [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
AMDT 212	3
AMDT 221	3
AMDT 250	3
AMDT 311	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
AMDT 310	4
AMDT 314	3
AMDT 315 [M]	3
AMDT 318	3
AMDT 488	1

<i>Second Term</i>	<i>Credits</i>
AMDT 308	3
AMDT 312	3
AMDT 317 [DIVR] [M]	3
AMDT 492	3
AMDT Electives ¹	3

<i>Third Term</i>	<i>Credits</i>
AMDT 490	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
AMDT 409	3
AMDT 411	3
AMDT Electives ¹	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
AMDT 412	3
AMDT 413 [CAPS]	3
AMDT Electives ¹	3
Electives	3

¹ AMDT Electives (9 credits): Any AMDT course not used to fulfill major requirements or as approved by advisor.

**MERCHANDISING
(120 CREDITS)**

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 are admitted to the merchandising option upon making their intention known to the department.

Students who major in Apparel, Merchandising, Design, and Textiles must have a minimum 2.0 cumulative GPA and receive a C or better grade in all AMDT courses and the business industry elective. 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>Credits</i>
AMDT 105	1
AMDT 108	3
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
AMDT 221	3
H D 205 [COMM]	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
AMDT 268	3
Arts [ARTS]	3
Biological Sciences [BSCI]	3
ECONS 101 [SSCI]	3
Electives	4

<i>Second Term</i>	<i>Credits</i>
ACCTG 220	3
AMDT 210 [PSCI]	4
AMDT 212	3
AMDT 250	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
AMDT 314	3
AMDT 318	3
AMDT 488	1
Electives ¹	6

<i>Second Term</i>	<i>Credits</i>
AMDT 307	3
AMDT 308	3
AMDT Electives ²¹	3
Business Industry Elective ³	3
Electives ¹	3

<i>Third Term</i>	<i>Credits</i>
AMDT 490	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
AMDT 317 [DIVR] [M]	3
AMDT 430	3
AMDT 435	3
AMDT Electives ²¹	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
AMDT 413 [CAPS]	3
AMDT 450 [M]	3
AMDT Electives ¹²	3
Electives ¹	4

¹ AMDT and general electives should include sufficient 300-400-level coursework to meet University requirement of 40 upper-division credits.

² AMDT Electives (9 credits): Any AMDT course not used to fulfill major requirements or as approved by advisor.

³ Business Industry Elective: B LAW 210; ECONS 321, 326, 352, 430; H D 320 [M]; MGMT 301, 315; MIS 250; PHIL 360.

Description of Courses**APPAREL, MERCHANDISING, DESIGN, AND TEXTILES****AMDT**

105 Introductory College Seminar in Apparel, Merchandising, Design, and Textiles 1 Course Prerequisite: Concurrent enrollment in AMDT 108. Concepts of shared responsibility in planning and actual completion of AMDT undergraduate study.

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.

210 [PSCI] Textiles 4 (3-3) 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 Product Development 3 Course Prerequisite: AMDT 210. Examination and evaluation of ready-to-wear apparel as it applies to the retail industry; explores concepts and principles of apparel production and terminology in the apparel industry.

220 Historic Costumes and Textiles 3 Global survey of dress and textiles from prehistory to mid-1800s.

221 Historic Costume II 3 Course Prerequisite: AMDT 210 or concurrent enrollment. Overview of apparel design, designers and social history in the 20th century.

230 Creating Visual Advertising in Fashion 3 Hands-on opportunity to visualize and execute cross-sector visual advertising campaigns within the commercial, editorial, and lifestyle world of fashion in advertising.

250 Principles of Merchandising 3 Course Prerequisite: AMDT 108. Concepts and functions of merchandising in apparel and textiles industries; cost, pricing, and profit; marketing and retailing strategies.

268 Communicating Creative Concepts in Fashion 3 (0-6) Illustration and rendering used for fashion and costume design; drawing fashion figures and apparel; studies or composition for fashion presentation, advertising, and portfolio.

307 Consumer Behavior in Fashion 3 Course Prerequisite: AMDT 314. Concepts and theories from social sciences to consumer behavior research related to fashion and apparel marketing.

308 Visual Merchandising and Promotion 3 (2-2) Course Prerequisite: AMDT 250; AMDT 268. Examination of fashion promotion components of visual display and store layout; application of principles and elements of design and concept development.

310 Advanced Apparel Assembly 4 (1-6) Course Prerequisite: AMDT 211; admitted to the major in Apparel, Merchandising, Design, and Textiles. 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. 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; admitted to the major in Apparel, Merchandising, Design, and Textiles. Exploration of draping and flat pattern techniques; fitting techniques emphasized; development and creation of original design.
- 314 Fashion Forecasting 3** Course Prerequisite: AMDT 210; AMDT 221; AMDT 250; AMDT 268. Developing forecasting expertise needed to work in merchandising environment; examined through influences on acceptance and rejection of apparel/textile products; analysis of the forces such as socio-cultural indicators, past and present trends that influence existing trends, and the role of fashion forecasting theory and technique method in determining future trends in fashion and related industries.
- 315 [M] Textile Product Analysis 3** (2-2) Course Prerequisite: AMDT 210. Analysis of textile product characteristics including fiber, structure, finish, apparel product properties, garment performance, and overall quality assessment and assurance.
- 317 [DIVR] [M] Multicultural Perspectives on the Body and Dress 3** Course Prerequisite: Junior standing. Engagement in multidisciplinary approaches that explore the social importance of the body, gender and dress. (Formerly AMDT 417.)
- 318 Merchandise Buying and Planning 3** (2-2) Course Prerequisite: AMDT 250; MATH [QUAN]; admitted to the major in Apparel, Merchandising, Design, and Textiles. In-depth study of apparel buying and planning, application of buying and planning principles, problem solving skill development.
- 408 [ARTS] Visual Analysis and Aesthetics 3** Course Prerequisite: Junior standing. In-depth analysis of the visual interaction among apparel, accessories and the body; identifying effective visual communication.
- 409 Technical Apparel Design 3** (0-6) Course Prerequisite: AMDT 312; AMDT 492; admitted to the major in Apparel, Merchandising, Design, and Textiles. Advanced understanding of technical applications in apparel production, development, and construction related to modern manufacturing. Credit not granted for both AMDT 409 and 509.
- 411 Advanced Apparel Design 3** (0-6) Course Prerequisite: AMDT 312; AMDT 492; admitted to the major in Apparel, Merchandising, Design, and Textiles; senior standing. 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; admitted to the major in Apparel, Merchandising, Design, and Textiles. Problem-solving creation and presentation of two and three-dimensional high quality original apparel and designs.
- 413 [CAPS] Global Sourcing 3** Course Prerequisite: ADMT 307; ADMT 318; admitted to the major in Apparel, Merchandising, Design, and Textiles; junior standing. Knowledge, skills, and effective solutions for textile and apparel sourcing in a global context.
- 414 Creativity: Development of Consumer Products 3** Course Prerequisite: Admitted to the major in Apparel, Merchandising, Design, and Textiles; junior standing. Processes and techniques to stimulate creativity from a multidisciplinary approach for the development of new consumer products.
- 419 Regional Experience in Apparel/Textiles Field V 1-3** Course Prerequisite: Admitted to 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.
- 422 [DIVR] Fat Studies 3** Course Prerequisite: Junior standing. Examination of weight-based oppression as a social justice issue with other systems of oppression based on gender, race, class, age, sexual orientation, and ability. (Crosslisted course offered as AMDT 422, WGSS 422.)
- 429 National Experience in Apparel/Textiles Field V 1-3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to the major in Apparel, Merchandising, Design, 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; admitted to the major in Apparel, Merchandising, Design, and Textiles. Stages and functional areas of soft goods supply chain management.
- 435 Retailing in the Apparel and Textile Industries 3** Exploration of apparel and textile multi-channel retailing from a managerial point of view; use of industry-standard software to work through common scenarios; critical examination of current industry issues.
- 439 International Experience in Apparel/Textiles Field V 1-3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to 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 Organizational Leadership 3** (2-2) Application of organizational leadership principles using experiential learning models for skill transfer to industry.
- 450 [M] Strategy Planning and Decision Making 3** Course Prerequisite: AMDT 307; AMDT 318; admitted to the major in Apparel, Merchandising, Design, 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.
- 488 Internship Preparation 1** May be repeated for credit; cumulative maximum 2 hours. Orientation and practical information for students in preparation for an internship.
- 490 Cooperative Education Internship V 1-6** 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 268; admitted to the major in Apparel, Merchandising, Design, and Textiles. 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 211 or 308; admitted to the major in Apparel, Merchandising, Design, 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 1-4** 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.
- 508 Environmental and Social Issues in the Apparel Industry 3** Exploration of current environmental and social issues in the global apparel industry.
- 509 Technical Apparel Design 3** (0-6) Advanced understanding of technical applications in apparel production, development, and construction related to modern manufacturing. Credit not granted for both AMDT 409 and 509.
- 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.
- 515 Textile Product Development and Innovation 3** Apply knowledge of textile component and emerging materials/techniques to innovative textile product development. Recommended preparation: AMDT 210.

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 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.

550 Social Networking and Omni-channel Retailing 3 Analysis of social networking technology and consumer trends, industry practices, and marketing strategies that comprise omni-channel retailing; assessment and solution of market challenges; presentation of academic research.

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.

School of Biological Sciences

sbs.wsu.edu
Abelson 301
509-335-3553

Professor and Director, P. Carter (P); Professor and Associate Director of Graduate Program, R. Gomulkiewicz (P); Professor and Associate Director of Undergraduate Program, R.D. Evans (P); Professor and Associate Director of Research, A. Cousins (P); Professors, K. Beerman (P), J. Bishop (V), S. Bollens (V), J. Busch (P), H. Hellmann (P), M. Knoblauch (P), C. Portfors (V), E. Roalson (P), C. Robbins (P), C. Schultz (V), H. Schwabl (P), M. Skinner (P), A. Storfer (P), M. Tegeder (P); Associate Professors, J. Brunner (P), A. Cavagnetto (P), O. Cornejo (P), E. Crespi (P), W. Dowd (P), M. Dybdahl (P), J. Kelley (P), A. McCubbin (P), J. Pioviah-Scott (V), S. Porter (V), E. Schwartz (P), P. Verrell (P), H. Watts (P); Assistant Professors, T. Cheeke (TC), S. Rudman (V), J. Zambrano (P); Associate Professors, Career Track, D. Allison (P), N. Ankras (P), M. Berger (V), L. Carloye (P), E. Johnson (P), K. McAteer (TC) S. Ritchie (P), E. Sweet (TC), D. Wilmington (V); Assistant Professors, Career Track, G. Cox (V), G. Gakhar (V), M. Jorgensen (P), Y. Liu (TC), D. Monk (P), L. Nelson (TC); Research Faculty, E. Nilsson (P); Professors Emeriti, R. A. Black, G. Edwards, L. Hufford, M. Ku, J. Larsen, R.N. Mack, J. Mallatt, D. Miller, D. Moffett, S. Moffett, C. Omoto, J. Paznokas, P. Schroeder, G. Thorgaard, E. Uribe. Campus: (P) Pullman; (V) Vancouver; (TC) Tri-Cities.

The School of Biological Sciences offers training in molecular, cellular, organismal, ecology, and evolutionary biology. The School offers Bachelor of Science degree programs in Biology and Zoology, a Bachelor of Arts in Human Biology in collaboration with the Department of Anthropology, and Master of Science and Doctor of Philosophy programs in Biology and Plant Biology. The School also offers undergraduate minors in Zoology and Biology, and the Certificate in Quantitative Biology, provided in collaboration with the Department of Mathematics.

Facilities

There are modern facilities for study of molecular and genomics, cellular biology, genetics, plant and animal physiology, anatomy and ultrastructure, functional morphology, ecology, molecular systematics, behavior, ecology, environmental biology, and evolutionary biology. The University's location is conducive to field studies at sites such as the 325 hectare 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 genotyping, DNA sequencing, and genomics, the WSU Stable Isotope Core Facility for stable isotope analyses, and the collections of the Charles R. Conner Museum of Natural History 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 coursework in either biology or zoology prepares students to pursue career opportunities in ecology and environmental biology, laboratory research and biotechnology, human health, animal health and welfare, plant biology, entomology, education, and a variety of other biological specializations.

Candidates for the Bachelor of Science in Biology, the Bachelor of Science in Zoology, or the Bachelor of Arts in Human Biology must fulfill the University and the College of Arts and Sciences requirements for graduation as described elsewhere in this catalog. Requirements for admission to the majors, University degree requirements, and the School and the individual degree option requirements can be found in the individual schedules of studies for the degree options.

We expect that students graduating with a Bachelor of Science in Biology or Zoology will meet the following learning outcomes: (1) have a mastery of fundamental biological concepts and an ability to integrate this conceptual knowledge across different subfields within the discipline; (2) use critical thinking and scientific skills to analyze and solve biological problems; (3) effectively communicate biological problems and solutions to the scientific community and the public at-large in writing and in oral discussion; (4) have the ability to formulate logical hypotheses, to test hypotheses using quantitative and other appropriate methods involving collection and analysis of data, and to make valid inferences from experimental results; (5) identify and access the central body of knowledge in biology or zoology through utilization of a wide range of methods for researching the primary literature; (6) use scientific literacy and knowledge of biology or zoology to analyze contemporary social, cultural, and environmental issues to make informed rational decisions.

Biology

Seven options are available for the Bachelor of Science degree in Biology: general biology, biology education, plant biology, ecology/evolutionary biology, entomology, pre-physical therapy/pre-occupational therapy/pre-physician assistant, and basic medical sciences. Each option includes a common core curriculum, plus additional specialized courses. 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 plant biology option is available for students with a special interest in plants and serves students who would like careers in plant sciences or 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 assistant option is designed for students who would like to pursue studies in physical therapy, occupational therapy, or physician assistant programs. The basic medical sciences option supports students who aim for a career in the health fields, including professional training in medicine,

dentistry, and pharmacy. This degree will help students to meet the requirements for admission to medical, dental, or pharmacy schools, or other health science professional programs. Student work with their academic advisor in the School of Biological Sciences to plan individual courses of study.

Human Biology

Human Biology is an explicitly interdisciplinary degree jointly administered by the Department of Anthropology and the School of Biological Sciences. The BA in Human Biology offers students an opportunity to explore how human biology influences and is influenced by the environment, cultural and social structures, and economic and political policies. Human Biology melds approaches and content from social and biological sciences to provide students with a synthetic understanding of the roles of culture, the dynamics of natural and social systems, and biological attributes responsible for shaping the human being. Our aim is to prepare students to be engaged, creative, insightful, and skillful in diverse professions that encompass the arenas of health and environmental sciences, societal support, and public policy that influence the welfare of humans.

Please see the Department of Anthropology for degree program requirements, including the schedule of studies.

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. 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.

Accelerated Pre-Vet Option in Zoology

The School of Biological Sciences has an academic track that can allow highly qualified students to earn both a Bachelor of Science in Zoology and a Doctor of Veterinary Medicine degree within a seven-year span. Students can enroll in the undergraduate zoology program and complete all UCORE requirements, the necessary zoology core courses, and all veterinary medicine prerequisite coursework in a three-year period. The required prerequisite courses can be found on the WSU CVM website: <https://dvm.vetmed.wsu.edu/admissions/prerequisites>. Such students who are accepted into the College of Veterinary Medicine DVM program after completing this three-year program will then be allowed to transfer credit back from their first

year DVM curriculum to fulfill the requirements that will allow them to earn a BS in Zoology.

Interested students must be advised in the School of Biological Sciences. High scholastic achievement, along with demonstrated experience and interest in working with animals and within the veterinary profession, will be a few of the main criteria for inclusion. Interested students should contact the School of Biological Sciences no later than the first semester of the sophomore year. Students would then declare zoology with the pre-vet option as a major in the first semester of the sophomore year.

The procedures for application into the DVM program will be the same as those for all other applicants to the program excluding those applicants applying to the Early Acceptance Undergraduate Programs through the Honors College or Department of Animal Sciences. Students in this program are not given preferential consideration for admission into the DVM program. Participants who complete the three-year zoology program and are accepted into the DVM program during their junior year, will begin the veterinary medicine curriculum in their fourth year of study. These students would complete only the DVM curriculum from this point on, and credits from the first year of the DVM program will be used to fulfill the remaining requirements that will allow them to earn a BS in Zoology. If the student is not accepted into the DVM program or withdraws from it, they may continue to earn the BS in Zoology and may be eligible to apply to the College of Veterinary Medicine as a senior or following completion of the BS.

Transfer Students

Science courses taken at other institutions will be evaluated and credits accepted when possible. Inquiries should be directed to the Associate Director of Undergraduate Programs.

Graduate Programs

The school awards Master of Science and Doctor of Philosophy degrees in Biology and Plant Biology at the graduate level. Faculty interests and research programs are diverse, including genomics, molecular and cellular biology, animal and plant physiology, various aspects of organismal biology of plants and animals, systematics, ecology, evolutionary biology, and biology education. A list of specific faculty interests can be obtained at <https://sbs.wsu.edu/people/> or by writing to the school. Communication with faculty members prior to applying for the graduate program is strongly encouraged.

Preparation for Graduate Study in Biology and Plant Biology

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.

Students who complete Master of Science and Doctor of Philosophy degrees in our program find careers as faculty in colleges and universities, conservation biologists and managers of natural resources, biologists and technicians for state and federal agencies, specialists in informatics, 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 - BASIC MEDICAL SCIENCES (120 CREDITS)

Candidates for the Bachelor of Science in Biology must fulfill the University and the College of Arts and Sciences requirements for graduation as described in the WSU general catalog. Admission to the major requires completion of 24 semester credits and 2.0 GPA.

Honors students complete honors requirements in place of UCORE requirements. The math and science components of those requirements are fulfilled as part of the School requirements described below. Other University requirements include: 120 total credits, 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). The College of Arts and Sciences requires two years of high school foreign language or at least two semesters of college-level foreign language. Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester credits of core BIOLOGY courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], and 395 or 403 or 405). An additional 21 semester credits of biological sciences coursework selected in consultation with your biology advisor is required. The 21 semester credits must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey. Students may not double major or take a minor in any combination of Biology, Zoology, General Studies Biological Sciences, or Human Biology.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI] ¹	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107 ¹	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 301	4
CHEM 345	4
Electives ^{2,3}	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 370 [M] or 372 [M] ¹	4
CHEM 348	4
Social Sciences [SSCI]	3
Electives ²³	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 395, 403, or 405 ¹	3
Communication [COMM] or Written Communication [WRTG]	3
Program Option Elective ⁴	3 or 4
Foreign Language or Electives ^{2,3,5}	4

<i>Second Term</i>	<i>Credits</i>
CHEM 370 or MBIOS 303 ⁶	3 or 4
PHIL 365 [HUM]	3
Program Option Elective ⁴	3 or 4
Foreign Language or Electives ^{2,3,5}	4
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Program Option Elective ⁷	2 or 0
Electives ^{2,3}	12

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 473 [CAPS] [M], 483 [CAPS] [M], or 489 [CAPS] [M] ⁸	3
Electives ^{2,3}	12

¹ All biology majors must complete 19 credits of Biology Core courses (BIOLOGY 106; 107; 301; 370 [M] or 372 [M]; one from 395, 403, or 405); and 21 credits of option requirements or electives. These must include 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses except those used to fulfill core requirements. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor. Coursework must include a total of two BIOLOGY [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division credits.

² Students are encouraged to pursue a minor in other areas of more in-depth science minor.

³ PHYSICS 101/111 and 102/112 may be required for entrance to a graduate or professional program. Check with your advisor.

⁴ Program Option Electives (8 credits required): Approved courses are BIOLOGY 315, 321, 324, 350, 352, 353, 393, 418; ENGLISH 402, MBIOS 304, 305, 401, 413, 414, 423, 440, 442, 446; NEUROSCI 301, 403, 404, and 430.

⁵ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁶ An elective may be substituted for PHYSICS 101/111 and 102/112 if it is not required for entrance to a graduate or professional program.

⁷ Degree Program Electives (8 credits required): Approved courses are BIOLOGY 315, 321 [M], 324, 350, 352, 353, 393 [M], one from 395 or 403 or 405, 418 [M]; MBIOS 304, 305, 401, 413, 414, 423,

440, 442, 446; NEUROSCI 301, 403 [M], 404, and 430 [M].
⁸ Students in Honors College complete HONORS 450 in lieu of a BIOLOGY [CAPS] course.

BIOLOGY - ECOLOGY AND EVOLUTIONARY BIOLOGY OPTION (120 CREDITS)

Candidates for the Bachelor of Science in Biology must fulfill the University and the College of Arts and Sciences requirements for graduation as described in the WSU general catalog. Admission to the major requires completion of 24 semester credits and 2.0 GPA.

Honors students complete honors requirements in place of UCORE requirements. The math and science components of those requirements are fulfilled as part of the School requirements described below. Other University requirements include: 120 total credits, 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). The College of Arts and Sciences requires two years of high school foreign language or at least two semesters of college-level foreign language. Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester credits of core BIOLOGY courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], and 395 or 403 or 405). An additional 21 semester credits of biological sciences coursework selected in consultation with your biology advisor is required. The 21 semester credits must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey. Students may not double major or take a minor in any combination of Biology, Zoology, General Studies Biological Sciences, or Human Biology.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI] ¹	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107 ¹	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 301 ¹	4
CHEM 345	4
Humanities [HUM]	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 395, 403, or 405 ¹	3
Program Option Course: Ecology or Evolution Emphasis ²	3 or 4
STAT 212, 412, or PSYCH 311	3 or 4
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 370 [M] or 372 [M] ¹	4
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Option Course: Physiology Emphasis ²	3 or 4
Foreign Language or Electives ³	4

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Program Option Course, Ecology or Evolution Emphasis ²	3 or 4
Foreign Language or Electives ³	4
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 473 [CAPS] [M], 483 [CAPS] [M], or 489 [CAPS] [M] ⁴	3
Program Option Course: Ecology or Evolution Emphasis ^{2,5,6}	3 or 4
Electives	9

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Program Option Course: Ecology or Evolution Emphasis, or Electives ^{2,5}	3
Electives	9
Complete School of Biological Sciences Exit Survey	

¹ All biology majors must complete 19 credits of Biology Core courses (BIOLOGY 106; 107; 301; 370 [M] or 372 [M]; one from 395, 403, or 405); and 21 credits of option requirements or electives. These must include 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses except those used to fulfill core requirements. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor. Coursework must include a total of two BIOLOGY [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division credits.

² Ecology and Evolution Option requirements include one course from the Physiology Emphasis area (BIOLOGY 350 or BIOLOGY 420); 12 total credits from the Ecology Emphasis (BIOLOGY 330, 410, 462, 469, 483 [CAPS]) and the Evolution/Organismal Emphasis (BIOLOGY 322, 324, 332, 335, 408 [CAPS], 409, 412, 418, 423, 428, 432, 438). At least one course must be from the Ecology Emphasis and one course from the Evolution/Organismal Emphasis.

³ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁴ Students in Honors College complete HONORS 450 in lieu of a BIOLOGY [CAPS] course.

⁵ All biology majors must complete 21 semester credits of biological coursework including 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses except those used to fulfill core requirements (BIOLOGY 106, 107, 301, 370 [M] or 372 [M]), one from 395, 403, or 405), and any courses approved by advisor. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor. Coursework must include a total of two BIOLOGY [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division credits.

⁶ Ecology and Evolution Option requirements include one course from the Physiology Emphasis area (BIOLOGY 350 or BIOLOGY 420); 12 total credits from the Ecology Emphasis (BIOLOGY 330, 410, 462, 469, 483 [CAPS]) and the Evolution/Organismal Emphasis (BIOLOGY 322, 324, 332, 335, 408 [CAPS], 409, 412, 418, 423, 428, 432, 438). At least one course must be from the Ecology Emphasis and one course from the Evolution/Organismal Emphasis.

BIOLOGY - EDUCATION OPTION (120 CREDITS)

Candidates for the Bachelor of Science in Biology must fulfill the University and the College of Arts and Sciences requirements for graduation as described in the WSU general catalog. Admission to the major requires completion of 24 semester credits and 2.0 GPA.

Honors students complete honors requirements in place of UCORE requirements. The math and science components of those requirements are fulfilled as part of the School requirements described below. Other University requirements include: 120 total credits, 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). The College of Arts and Sciences requires two years of high school foreign language or at least two semesters of college-level foreign language. Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester credits of core BIOLOGY courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], and 395 or 403 or 405). An additional 21 semester credits of biological sciences coursework selected in consultation with your biology advisor is required. The 21 semester credits must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey.

Students may not double major or take a minor in any combination of Biology, Zoology, or General Studies Biological Sciences.

Students completing this degree will earn a B.S. in Biology. In order to obtain teaching credentials in the State of Washington, students must complete additional requirements. Completion of the Master in Teaching (MIT) program at WSU will meet state certification requirements (for details, please see <https://education.wsu.edu/graduate/mit/>). A 3.0 is the minimum GPA for admission to the MIT program at WSU. Students obtaining Biology Education Option would also be competitive for other post-baccalaureate teacher certification programs.

First Year

First Term	Credits
Arts [ARTS]	3
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI] ¹	4
HISTORY 105 [ROOT]	3

Second Term	Credits
BIOLOGY 107	4
CHEM 106	4
ENGLISH 101 [WRTG]	3
ENGR 120	2
Humanities [HUM]	3

Second Year

First Term	Credits
BIOLOGY 301	4
CHEM 345	4
Diversity [DIVR]	3
TCH LRN 301	3
Foreign Language, if needed ²	0 - 4

Second Term	Credits
CHEM 370 or MBIOS 303	3 or 4
Communication [COMM] or Written Communication [WRTG]	3
MATH 140 [QUAN] or 171 [QUAN] ¹	4
PSYCH 105 [SSCI]	3
Foreign Language, if needed, or Electives ²	3 or 4
Complete Writing Portfolio	

Third Year

First Term	Credits
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
BIOLOGY 370 [M] or 372 [M]	4
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Electives ³	4

Second Term	Credits
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
TCH LRN 465	3
Program Option Requirements ⁴	3 or 4
Program Electives ³	4

Fourth Year

First Term	Credits
BIOLOGY/TCH LRN 430	3
STAT 212, 412, or PSYCH 311	3 or 4
TCH LRN 467 [M]	3
TCH LRN 470	3
Program Electives ³	4

Second Term	Credits
BIOLOGY [CAPS] or HONORS 450 ⁵	3
BIOLOGY 403 or 405	3
BIOLOGY/TCH LRN 431	3
Program Option Requirements ⁴	3 or 4
Program Electives or Electives ³	3
Complete School of Biological Sciences Exit Survey	

¹ MATH 106 may be taken as a pre-/co-requisite to CHEM 105 and other MATH courses. MATH 108 may also be needed.

² Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

³ Beyond the core requirements (BIOLOGY 106, 107, 301, 370 [M] or 372 [M]), one from 395, 403, or 405, BIOLOGY [CAPS] or HONORS 450), all biology majors must complete 21 semester credits of biological coursework including 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses except those used to fulfill core requirements, and any courses approved by advisor. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor.

⁴ Program Option requirements include one Biology Plant Elective (BIOLOGY 332[M], 401[CAPS], 409, or 420) and one Biology Animal Elective (BIOLOGY 322[M], 324, 423, 428, 432[M], or 438[M]). To obtain an additional general science endorsement students need to pass a general science exam (e.g., Chemistry, Physics, Biology, Earth and Space science). Students may consider taking one or more of the following courses to prepare them for general science endorsement exam: ASTRONOM 135, GEOLOGY 102, 210.

⁵ Students in Honors College complete HONORS 450 in lieu of a BIOLOGY [CAPS] course.

BIOLOGY - ENTOMOLOGY OPTION (120 CREDITS)

Candidates for the Bachelor of Science in Biology must fulfill the University and the College of Arts and Sciences requirements for graduation as described in the WSU general catalog. Admission to the major requires completion of 24 semester credits and 2.0 GPA.

Honors students complete honors requirements in place of UCORE requirements. The math and science components of those requirements are fulfilled as part of the School requirements described below. Other University requirements include: 120 total credits, 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). The College of Arts and Sciences requires two years of high school foreign language or at least two semesters of college-level foreign language. Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester credits of core BIOLOGY courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], and 395 or 403 or 405). An additional 21 semester credits of biological sciences coursework selected in consultation with your biology advisor is required. The 21 semester credits

must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey. Students may not double major or take a minor in any combination of Biology, Zoology, General Studies Biological Sciences, or Human Biology.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI] ¹	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107 ¹	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 301 ¹	4
CHEM 345	4
ENTOM 343	3
<i>Second Term</i>	<i>Credits</i>
BIOLOGY 395, 403, or 405 ¹	3
Humanities [HUM]	3
Social Sciences [SSCI]	3
STAT 212, 412, or PSYCH 311	3 or 4
Program Option Course: Biochemistry Emphasis ^{2,3}	3 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 370 [M] or 372 [M] ¹	4
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Option Course: Animal Biology Emphasis ³	4
Foreign Language or Electives ⁴	4
<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Program Option Course: Plant Biology Emphasis ³	3
Foreign Language or Electives ⁴	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 473 [CAPS] [M], 483 [CAPS] [M], or 489 [CAPS] [M] ⁵	3
Communication [COMM] or Written Communication [WRTG]	3

Program Option Course: Entomology Emphasis	3
Electives	6
<i>Second Term</i>	<i>Credits</i>
Program Option Course: Entomology Emphasis ³	3
Electives	12
Complete School of Biological Sciences Exit Survey	

¹ All biology majors must complete 19 credits of Biology Core courses (BIOLOGY 106; 107; 301; 370 [M] or 372 [M]; one from 395, 403, or 405); and 21 credits of option requirements or electives. These must include 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses except those used to fulfill core requirements. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor. Coursework must include a total of two BIOLOGY [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division credits.

² Entomology Program option electives include 6 credits of 300-400-level ENTOM courses excluding ENTOM 343.

³ Entomology Option Requirements include one course from the one course from the Biochemistry Emphasis (CHEM 370 or MBIOS 303); one course from the Plant Biology Emphasis area (BIOLOGY 332[M] or 420); one course from the Animal Biology Emphasis area (BIOLOGY 322, 350, or 418) and two courses from the Entomology Emphasis (any ENTOM-prefix, upper division course).

⁴ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁵ Students in Honors College complete HONORS 450 in lieu of a BIOLOGY [CAPS] course.

BIOLOGY - GENERAL OPTION (120 CREDITS)

Candidates for the Bachelor of Science in Biology must fulfill the University and the College of Arts and Sciences requirements for graduation as described in the WSU general catalog. Admission to the major requires completion of 24 semester credits and 2.0 GPA.

Honors students complete honors requirements in place of UCORE requirements. The math and science components of those requirements are fulfilled as part of the School requirements described below. Other University requirements include: 120 total credits, 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). The College of Arts and Sciences requires two years of high school foreign language or at least two semesters of college-level foreign language. Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester credits of core BIOLOGY courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], and 395 or 403 or 405). An additional 21 semester credits of biological sciences coursework selected in consultation with your

biology advisor is required. The 21 semester credits must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey. Students may not double major or take a minor in any combination of Biology, Zoology, General Studies Biological Sciences, or Human Biology.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI] ¹	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107 ¹	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 301 ¹	4
CHEM 345	4
Humanities [HUM]	3
<i>Second Term</i>	<i>Credits</i>
BIOLOGY 370 [M] or 372 [M] ¹	4
Program Option Course: Biochemistry Emphasis ²	3 or 4
Social Sciences [SSCI]	3
STAT 212, 412, or PSYCH 311	3 or 4
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 395, 403, or 405 ¹	3
Communication [COMM] or Written Communication [WRTG]	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Option Courses: Cell Biology Emphasis ²	3
Foreign Language or Electives ³	4
<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Program Option or Electives	3 or 4
Foreign Language or Electives ³	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 473 [CAPS] [M], 483 [CAPS] [M], or 489 [CAPS] [M] ⁴	3

Program Option or Electives ²	6 - 8	coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey. Students may not double major or take a minor in any combination of Biology, Zoology, General Studies Biological Sciences, or Human Biology.
Electives	6	
<i>Second Term</i>	<i>Credits</i>	
Program Option or Electives ²	6 - 8	
Electives	9	
Complete School of Biological Sciences Exit Survey		

¹ All biology majors must complete 19 credits of Biology Core courses (BIOLOGY 106; 107; 301; 370 [M] or 372 [M]; one from 395, 403, or 405); and 21 credits of option requirements or electives. These must include 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses except those used to fulfill core requirements. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor. Coursework must include a total of two BIOLOGY [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division credits.

² General Biology Option Electives include a minimum of 15 credits of Biological Science selected in consultation with a biology advisor. These should include coursework to fulfill the University requirement of 40 upper division credits.

³ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁴ Students in Honors College complete HONORS 450 in lieu of a BIOLOGY [CAPS] course.

BIOLOGY - PLANT BIOLOGY OPTION (120 CREDITS)

Candidates for the Bachelor of Science in Biology must fulfill the University and the College of Arts and Sciences requirements for graduation as described in the WSU general catalog. Admission to the major requires completion of 24 semester credits and 2.0 GPA.

Honors students complete honors requirements in place of UCORE requirements. The math and science components of those requirements are fulfilled as part of the School requirements described below. Other University requirements include: 120 total credits, 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). The College of Arts and Sciences requires two years of high school foreign language or at least two semesters of college-level foreign language. Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester credits of core BIOLOGY courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], and 395 or 403 or 405). An additional 21 semester credits of biological sciences coursework selected in consultation with your biology advisor is required. The 21 semester credits must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI] ¹	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107 ¹	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 301 ¹	4
CHEM 345	4
Humanities [HUM]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 370 [M] or 372 [M] ¹	4
Social Sciences [SSCI]	3
STAT 212, 412, or PSYCH 311	3 or 4
Electives	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 395, 403, or 405 ¹	3
BIOLOGY 420	3
Communication [COMM] or Written Communication [WRTG]	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Foreign Language or Electives ²	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
BIOLOGY 332 [M]	4
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Foreign Language or Electives ²	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 409	4
BIOLOGY 473 [CAPS] [M], 483 [CAPS] [M], or 489 [CAPS] [M] ¹	3
Program Option Courses or Electives ³	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 462 or 469	3
Program Option or Electives ³	4
Electives ⁴	8
Complete School of Biological Sciences Exit Survey	

¹ All biology majors must complete 19 credits of Biology Core courses (BIOLOGY 106; 107; 301; 370 [M] or 372 [M]; one from 395, 403, or 405); and 21 credits of option requirements or electives. These must include 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses except those used to fulfill core requirements. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor. Coursework must include a total of two BIOLOGY [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division credits.

² Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

³ Plant Biology Option Electives include a minimum of 7 credits of Biological Science selected in consultation with a biology advisor. These should include coursework to fulfill the University requirement of 40 upper division credits.

⁴ Students in Honors College complete HONORS 450 in lieu of a BIOLOGY [CAPS] course.

BIOLOGY - PRE-PHYSICAL THERAPY / PRE-OCCUPATIONAL THERAPY / PRE-PHYSICIAN ASSISTANT OPTION (120 CREDITS)

Candidates for the Bachelor of Science in Biology must fulfill the University and the College of Arts and Sciences requirements for graduation as described in the WSU general catalog. Admission to the major requires completion of 24 semester credits and 2.0 GPA.

Honors students complete honors requirements in place of UCORE requirements. The math and science components of those requirements are fulfilled as part of the School requirements described below. Other University requirements include: 120 total credits, 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). The College of Arts and Sciences requires two years of high school foreign language or at least two semesters of college-level foreign language. Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester credits of core BIOLOGY courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], and 395 or 403 or 405). An additional 21 semester credits of biological sciences coursework selected in consultation with your biology advisor is required. The 21 semester credits must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey. Students may not double major or take a minor in any combination of Biology, Zoology, or General Studies Biological Sciences.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI] ¹	4
ENGLISH 101 [WRTG]	3
SOC 101 [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN] ¹	4

Second Year

<i>First Term</i>	<i>Credits</i>
ANTH 203 [DIVR] or Diversity [DIVR] ²	3
BIOLOGY 251 or 353	4
CHEM 345	4
PSYCH 105 [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 301	4
PHIL 365 [HUM]	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
STAT 212, 412, or PSYCH 311	3 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 315 or 354	4
BIOLOGY 393 [M], 490 [M], or BIOLOGY [M] ²³⁴	2 - 4
Foreign Language, if needed, or Program Emphasis Requirements ⁵²³⁴	3 or 4
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
PSYCH 333	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 370 [M] 372 [M]	4
H D 101 or PSYCH 361 ²³⁴	3
Foreign Language, if needed, and/or Electives ⁵⁶	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 402 [WRTG]	3
Program Emphasis Requirements or Electives ²³⁴⁶	12

<i>Second Term</i>	<i>Credits</i>
BIOLOGY [CAPS] or HONORS 450 ⁷	3
BIOLOGY 395, 403, or 405	3
Program Emphasis Requirements or Electives ²³⁴⁶	10
Complete School of Biological Sciences Exit Survey	

¹ MATH 106 may be taken as a pre-/co-requisite to CHEM 105 and other MATH courses. MATH 108 may also be needed.

² Pre-Occupational Therapy Program emphasis (13 credits) includes ANTH 203, BIOLOGY 220, BIOLOGY 393 [M], COM 102, H D 101.

³ Pre-Physical Therapy Program emphasis (8-9 credits) includes BIOLOGY 393 [M] or 490 [M], KINES 380 or BIOLOGY 350 or BIOLOGY 352, PSYCH 361 or H D 101.

⁴ Pre-Physician Assistant Program emphasis (14-15 credits) includes CHEM 370 or MBIOS 303, MBIOS 304 or 306, MBIOS 305, PSYCH 361 or H D 101. Students in this emphasis will also need to complete a BIOLOGY [M] course to fulfill the University requirement of 2 [M] courses.

⁵ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁶ Pre-Physical Therapy / Pre-Occupational Therapy / Pre-Physician Assistant Program emphasis courses should be selected in consultation with a biology advisor and include coursework to fulfill the University requirement of 40 upper division credits.

In addition to core biology courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], one from 395, 403, or 405, BIOLOGY [CAPS] or HONORS 450), all biology majors must complete 21 semester credits of biological coursework including 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved program electives include CHEM 370, KINES 380, MBIOS 303, 304, 305, 306, PHIL 365, and 200-400-level BIOLOGY courses except those used to fulfill core requirements, and any courses approved by advisor. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements.

⁷ Students in Honors College complete HONORS 450 in lieu of a BIOLOGY [CAPS] course.

ZOOLOGY - ACCELERATED PRE-VETERINARY OPTION (121 CREDITS)

The Accelerated Pre-Veterinary Option track allows qualified students to earn both a Bachelor of Science in Zoology and Doctor of Veterinary Medicine within a seven-year span. Interested students must be advised by faculty in the School of Biological Sciences, and should contact the school no later than the first semester of the sophomore year. Candidates for the Bachelor of Science in Zoology must fulfill the University and the College of Arts and Sciences requirements for graduation as described in the WSU general catalog. Students must complete a minimum of 90 undergraduate credits, including 30 credits of 300-400 level coursework, and be accepted into the Veterinary Medicine program to complete this degree.

Honors students complete honors requirements in place of UCORE requirements. The math and science components of those requirements are fulfilled as part of the School requirements described below. Other University requirements include: 120 total credits, 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). The College of Arts and Sciences requires two years of high school foreign language or at least two semesters of college-level foreign language. Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester credits of core BIOLOGY courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], and 395 or 403 or 405). An additional 21 semester credits of biological sciences coursework selected in consultation with your biology advisor is required. The 21 semester credits must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one

additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). VET MED credits fulfill other Program Option electives requirements. An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey. Students may not double major or take a minor in any combination of Biology, Zoology, General Studies Biological Sciences, or Human Biology.

For more information about the Accelerated Pre-Vet Option program contact the School of Biological Sciences.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI] ¹	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107 ¹	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 301 ¹	4
CHEM 345	4
STAT 212, 412, or PSYCH 311	3 or 4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 395, 403, or 405 ¹	3
CHEM 370 or MBIOS 303	3 or 4
Communication [COMM] or Written Communication [WRTG]	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 321 [M] or BIOLOGY 322 [M] ¹	4
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Program Option Course: Development Emphasis; or Humanities [HUM] ²	3 or 4
Social Sciences [SSCI]	3
Foreign Language or Elective ³	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
BIOLOGY 473 [CAPS] [M], 483 [CAPS] [M], or 489 [CAPS] [M] ⁴	3
Program Option Course: Development Emphasis; or Humanities [HUM] ²	4 or 3
Foreign Language or Elective ³	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
VET MED 510	4

VET MED 511 ⁵	5	coursework selected in consultation with your biology advisor is required. The 21 semester credits must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings. An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey. Students may not double major or take a minor in any combination of Biology, Zoology, General Studies Biological Sciences, or Human Biology.
VET MED 513	4	
VET MED 568	2	
VET MED 586	1	
<i>Second Term</i>	<i>Credits</i>	
VET MED 512	4	
VET MED 520 ⁵	5	
VET MED 521	3	
VET MED 534	3	
VET MED 545	3	
VET MED 580	1	
Complete School of Biological Sciences Exit Survey		

¹ All zoology majors must complete 19 credits of Biology Core courses (BIOLOGY 106; 107; 301; 370 [M] or 372 [M]; one from 395, 403, or 405); and 21 credits of option requirements or electives. These must include 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses except those used to fulfill core requirements. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor. Coursework must include a total of two BIOLOGY [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division credits.

² Accelerated Pre-Vet Option Requirements include one course from the Development Emphasis area (BIOLOGY 321 or 322).

³ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁴ Students in Honors College complete HONORS 450 in lieu of a BIOLOGY [CAPS] course.

⁵ Accelerated Pre-Vet Option requirements fulfill Anatomy option requirement (VET MED 511) and Physiology option requirement (VET MED 520) toward the Zoology degree.

ZOOLOGY - GENERAL OPTION (120 CREDITS)

Candidates for the Bachelor of Science in Zoology must fulfill the University and the College of Arts and Sciences requirements for graduation as described in the WSU general catalog. Admission to the major requires completion of 24 semester credits and 2.0 GPA.

Honors students complete honors requirements in place of UCORE requirements. The math and science components of those requirements are fulfilled as part of the School requirements described below. Other University requirements include: 120 total credits, 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). The College of Arts and Sciences requires two years of high school foreign language or at least two semesters of college-level foreign language. Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester credits of core BIOLOGY courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], and 395 or 403 or 405). An additional 21 semester credits of biological sciences

coursework selected in consultation with your biology advisor is required. The 21 semester credits must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings. An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey. Students may not double major or take a minor in any combination of Biology, Zoology, General Studies Biological Sciences, or Human Biology.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI] ¹	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107 ¹	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 301 ¹	4
CHEM 345	4
Humanities [HUM]	3
STAT 212, 412, or PSYCH 311	3 or 4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 370 [M] or 372 [M] ¹	4
Program Option Course: Anatomy/Invertebrate Biology Emphasis ²	4
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 395, 403, or 405 ¹	3
Communication [COMM] or Written Communication [WRTG]	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Option Course: Physiology Emphasis ²	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Program Option Course: Anatomy/Invertebrate Biology Emphasis ²	4
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 473 [CAPS] [M], 483 [CAPS] [M], or 489 [CAPS] [M] ³	3
Program Option or Electives ⁴	3 or 4

Foreign Language or Electives ⁵	4
Electives	6

<i>Second Term</i>	<i>Credits</i>
Program Option or Electives ⁴	6
Foreign Language or Electives ⁵	4
Electives	6
Complete School of Biological Sciences Exit Survey	

¹ All zoology majors must complete 19 credits of Biology Core courses (BIOLOGY 106; 107; 301; 370 [M] or 372 [M]; one from 395, 403, or 405); and 21 credits of option requirements or electives. These must include 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses except those used to fulfill core requirements. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor. Coursework must include a total of two BIOLOGY [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division credits.

² Zoology General Program Option requirements include two courses from the Anatomy/Invertebrate biology emphasis (BIOLOGY 321, 322 or 418, and 324) and one course from the Physiology emphasis (BIOLOGY 350 or 353).

³ Students in Honors College complete HONORS 450 in lieu of a BIOLOGY [CAPS] course.

⁴ General Zoology Program Option Elective requirements include a minimum of 9 credits of Biological Science selected in consultation with a biology advisor. These should include coursework to fulfill the University requirement of 40 upper division credits. Approved program electives include ANIM SCI 314; BIOLOGY 352, 393, 407, 410, 412, 418, 423, 428, 432, 438, 469, 486, 495; ENTOM 340, 343, 344, 448; MBIOS 303.

⁵ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

ZOOLOGY - PRE-MEDICINE/PRE-DENTISTRY OPTION (120 CREDITS)

Candidates for the Bachelor of Science in Zoology must fulfill the University and the College of Arts and Sciences requirements for graduation as described in the WSU general catalog. Admission to the major requires completion of 24 semester credits and 2.0 GPA.

Honors students complete honors requirements in place of UCORE requirements. The math and science components of those requirements are fulfilled as part of the School requirements described below. Other University requirements include: 120 total credits, 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). The College of Arts and Sciences requires two years of high school foreign language or at least two semesters of college-level foreign language. Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester credits of core BIOLOGY courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], and 395 or 403 or 405). An

additional 21 semester credits of biological sciences coursework selected in consultation with your biology advisor is required. The 21 semester credits must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings. An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey. Students may not double major or take a minor in any combination of Biology, Zoology, General Studies Biological Sciences, or Human Biology.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI] ¹	4
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107 ¹	4
CHEM 106	4
ENGLISH 101 [WRTG]	3
STAT 212, 412, or PSYCH 311	3 or 4

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 345	4
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Option Course: Microbiology/ Invertebrate Biology Emphasis ²	3 or 4

<i>Second Term</i>	<i>Credits</i>
CHEM 348	4
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Social Sciences [SSCI]	3
Electives	5
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 301 ¹	4
Communication [COMM] or Written Communication [WRTG]	3
MBIOS 303 (recommended) or CHEM 370	4 or 3
Foreign Language or Electives ³	4

<i>Second Term</i>	<i>Credits</i>
PHIL 365 [HUM]	3
Program Option Course: Anatomy/ Development Emphasis ²	3 or 4
Program Option Course: Physiology Emphasis ²	3
Foreign Language or Electives ³	3 or 4
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 395, 403, or 405 ¹	3
Diversity [DIVR]	3
Program Option Course: Microbiology/ Invertebrate Biology Emphasis ²	3 or 4
Electives	6

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
BIOLOGY 370 [M] or 372 [M] ¹	4
BIOLOGY 473 [CAPS] [M], 483 [CAPS] [M], or 489 [CAPS] [M] ⁴	3
Program Option Course: Anatomy/ Development Emphasis ²	3
Electives	3
Complete School of Biological Sciences Exit Survey	

¹ All zoology majors must complete 19 credits of Biology Core courses (BIOLOGY 106; 107; 301; 370 [M] or 372 [M]; one from 395, 403, or 405); and 21 credits of option requirements or electives. These must include 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses except those used to fulfill core requirements. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor. Coursework must include a total of two BIOLOGY [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division credits.

² Pre-Med/Pre-Dent Zoology Program Option Requirements include two courses from the Anatomy/Development Biology requirement (BIOLOGY 315, 321, or 324); two courses from the Microbiology/Invertebrate Biology requirement (MBIOS 305 and MBIOS 304 or 306) or (MBIOS 305, or BIOLOGY 322, or BIOLOGY 418) and one course from the Physiology Requirement (BIOLOGY 353 and (352 or MBIOS 401)).

³ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁴ Students in Honors College complete HONORS 450 in lieu of a BIOLOGY [CAPS] course.

ZOOLOGY - PRE-VETERINARY/ANIMAL CARE OPTION (120 CREDITS)

Candidates for the Bachelor of Science in Zoology must fulfill the University and the College of Arts and Sciences requirements for graduation as described in the WSU general catalog. Admission to the major requires completion of 24 semester credits and 2.0 GPA.

Honors students complete honors requirements in place of UCORE requirements. The math and science components of those requirements are fulfilled as part of the School requirements described below. Other University requirements include: 120 total credits, 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). The College of Arts and Sciences requires

two years of high school foreign language or at least two semesters of college-level foreign language. Bachelor of Science degree options in Biology and Zoology require a minimum of 19 semester credits of core BIOLOGY courses (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], and 395 or 403 or 405). An additional 21 semester credits of biological sciences coursework selected in consultation with your biology advisor is required. The 21 semester credits must include 15 upper division credits, six of which must be BIOLOGY courses taken in residence at WSU, one additional BIOLOGY writing in the major course (identified by [M] in the course listings), and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings. An overall GPA of at least 2.0 must be maintained in all College and School requirements. A maximum of 4 credits of coursework that are graded S, F may be used toward fulfilling School requirements or program options, and no other courses taken S or P can be applied toward fulfilling School requirements or program options. Students must complete an exit survey. Students may not double major or take a minor in any combination of Biology, Zoology, General Studies Biological Sciences, or Human Biology.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI] ¹	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107 ¹	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 301 ¹	4
CHEM 345	4
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 395, 403, or 405 ¹	3
Humanities [HUM]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
STAT 212, 412, or PSYCH 311	3 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 370 [M] or 372 [M] ¹	4
Communication [COMM] or Written Communication [WRTG]	3
Program Option Course: Anatomy/ Development Emphasis ²	4
Program Option Electives ³	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
MBIOS 303 (recommended) or CHEM 370	4 or 3
Program Option Course: Anatomy/ Development Emphasis ²	4
Program Option Elective ³	3
Electives	2

Fourth Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Program Option Course: Physiology/Cell Biology Emphasis ²	4
Program Option Courses or Electives ⁴	3
Foreign Language or Electives ⁵	4
Electives	3
<i>Second Term</i>	<i>Credits</i>
BIOLOGY 473 [CAPS] [M], 483 [CAPS] [M], or 489 [CAPS] [M] ⁶	3
Program Option or Electives ³	3
Foreign Language or Electives ⁵	4
Electives	6
Complete School of Biological Sciences Exit Survey	

¹ All zoology majors must complete 19 credits of Biology Core courses (BIOLOGY 106; 107; 301; 370 [M] or 372 [M]; one from 395, 403, or 405); and 21 credits of option requirements or electives. These must include 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses except those used to fulfill core requirements. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor. Coursework must include a total of two BIOLOGY [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division credits. ² Pre-Vet/Animal Care Zoology Option Requirements include two courses from the Anatomy/Development Biology emphasis (BIOLOGY 315, 321, or 324); one course from the Physiology/Cell Biology emphasis (BIOLOGY 350 or 353).

³ Pre-Vet/Animal Zoology Option Electives include a minimum of 12 credits of Biological Science selected in consultation with a biology advisor. These should include coursework to fulfill the University requirement of 40 upper division credits. Approved program electives include BIOLOGY 352, 360, 393 [M], 412, 423, 428, 432, 438 [M], 495, CHEM 370 or MBIOS 303, MBIOS 304, 305, SOE 431.

⁴ Zoology, Pre-Veterinary/Animal Care Program Option electives should be selected in consultation with a biology advisor and must include 12 credits selected from BIOLOGY 352, 360, 393 [M], 412, 423, 428, 432, 438 [M], 495, CHEM 370 or MBIOS 303, 304, 305, SOE 431, or as approved by advisor. Beyond the core requirements (BIOLOGY 106, 107, 301, 370 [M] or 372 [M], one from 395, 403, or 405, BIOLOGY [CAPS] or HONORS 450) all zoology majors must complete 21 semester credits of biological coursework including 15 upper-division credits, 6 of which must be a BIOLOGY prefix taken in residence at WSU. Approved courses include 200-400-level BIOLOGY courses not used to fulfill core requirements, and any courses approved by advisor. A maximum of 4 credits of coursework graded S/F may be used toward fulfilling departmental requirements or program options and must be approved by advisor.

⁵ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁶ Students in Honors College complete HONORS 450 in lieu of a BIOLOGY [CAPS] course.

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 from the following courses: BIOLOGY 315, 330, 333, 335, 350, 352, 353, 354, 407, 410, 412, 418, 423, 428, 432, 438, 456, 475, 476, 486, 490, 491, 495, 496, 497, 499. No more than 2 hours of BIOLOGY 490, 491, 495, 496, 497, or 499 may be included in the 20 hours. Credit hours for the minor must include 9 hours of 300-400-level courses 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 17 credits. Students must earn a grade of C or higher in each course and no P, F or S, F graded course work may be applied to the certificate.

Requirements:

- MATH/BIOLOGY 340
- 6 credits of mathematics (MATH 172 or higher) and/or statistics (300-400-level), of which 3 credits must be taken in residence at Washington State University
- 8 credits of 300-400-level life sciences courses selected in consultation with a biology advisor, of which 3 credits must be taken in residence at Washington State University

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. Credit not granted towards elective requirements for majors in the School of Biological Sciences.

102 [BSCI] General Biology 4 (3-3) Enrollment not allowed if credit for BIOLOGY 105 already earned. Understanding current and future advances in biology as 'citizen scientists'. Lecture and laboratory; not for students majoring in the life sciences. Credit not allowed for students who have already completed BIOLOGY 105. Credit not granted towards elective requirements for majors in the School of Biological Sciences.

103 Science and Scientific Thinking 1 (0-3) Exploring science as a tool for understanding nature using case studies, experimentation, and data analysis. Topics range from atoms to ecosystems including physiology, inheritance, and the carbon cycle. Credit not granted towards elective requirements for majors in the School of Biological Sciences. Recommended for students with an ALEKS math placement score of less than 45%. (Crosslisted course offered as BIOLOGY 103, SCIENCE 103).

105 General Biology Laboratory 1 (0-3) Course Prerequisite: Junior standing. Enrollment not allowed if credit for BIOLOGY 102 already earned. Understanding biology as a science and its effect on issues within society. Laboratory only. Credit not allowed for students who have already completed BIOLOGY 102. Credit not granted towards elective requirements for majors in the School of Biological Sciences.

106 [BSCI] Introductory Biology: Organismal Biology 4 (3-3) Course Prerequisite: One of the following -- a minimum ALEKS math placement score of 40%, MATH 100 with an S, MATH 101 with a C or better, MATH 103 or higher, BIOLOGY 103 with a C or better, BIOLOGY 102, BIOLOGY 120, or 3 credits of biology with a lab. 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 Biological Perspectives on Environmental Issues** 3 Current case studies of human interaction with the environment exploring concepts in ecology, biodiversity, global chemical cycles, and climate change. Credit not granted towards elective requirements for majors in the School of Biological Sciences.
- 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. Credit not granted towards elective requirements for majors in the School of Biological Sciences.
- 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. Credit not granted towards elective requirements for majors in the School of Biological Sciences.
- 125 Genetics and Society** 3 Genetic topics in media and daily life including human health, agriculture, ecology and forensics for the educated non-biologist. Credit not granted towards elective requirements for majors in the School of Biological Sciences.
- 135 Animal Natural History** 3 Identification, life history, habitat relations, ecology, behavior, and conservation of animals commonly found in the Pacific Northwest. Credit not granted towards elective requirements for majors in the School of Biological Sciences.
- 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. Credit not granted towards elective requirements for majors in the School of Biological Sciences.
- 150 [BSCI] Evolution** 3 Basic principles and implications of Darwinian evolution. Credit not granted towards elective requirements for majors in the School of Biological Sciences.
- 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).
- 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.
- 221 Exploring Health Careers** 1 Introduction to human and animal health care careers. S, F grading.
- 225 Preparation for the Health Care Workplace** 2 (1-3) Basic content and skills to prepare for health related internships.
- 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) Course Prerequisite: Must be an Honors student. 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).
- 307 [DIVR] Biology of Women** 3 Course Prerequisite: BIOLOGY 102 or 106. 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 307, WGSS 307.)
- 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 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.
- 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.
- 333 [BSCI] Human Nutrition and Health** 3 Course Prerequisite: BIOLOGY 102, 106, 107, 251, 315, or concurrent enrollment in BIOLOGY 251. Credit not granted for students who have already completed BIOLOGY 233 with a grade of C or above. Foundations in nutritional science and its relationship to human health through the application of fundamental principles of biology.
- 335 [M] 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, 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).
- 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 Cells** 3 Course Prerequisite: BIOLOGY 107; CHEM 345. Diversity and processes at the cellular level; structure and function.
- 353 Advanced Human Physiology** 4 (3-3) Course Prerequisite: BIOLOGY 106; BIOLOGY 107. 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 102 or 345. History and anatomy of humans with non-cadaver-based laboratory utilizing preserved and histological specimens, models and software.
- 360 Molecular Processes of Living Organisms** 3 Course Prerequisite: BIOLOGY 107. Exploration of fundamental molecular processes to encourage thinking beyond biological species in order to comprehend larger-scale biological issues and relevance for society.
- 370 [M] Ecology of Health and Disease** 4 (3-3) Course Prerequisite: BIOLOGY 106; CHEM 102 or 105. Enrollment in BIOLOGY 370 not allowed if credit already earned for BIOLOGY 372. Ecology of species interactions in changing environments and how they influence human and animal health. Credit not granted for both BIOLOGY 370 and 372. Field trips may be required.

- 372 [M] General Ecology 4** (3-3) Course Prerequisite: BIOLOGY 106; CHEM 102 or 105. Enrollment in BIOLOGY 372 not allowed if credit already earned for BIOLOGY 370. Relationship of organisms with physical and biotic components of their environment at the population, community, and ecosystem level. Credit not granted for both BIOLOGY 370 and 372. Field trips may be required.
- 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: Admitted to the major in Biology or Zoology. Literature investigation, oral presentation and written reports of selected topics in biology.
- 394 Medicine as a Career 2** Course Prerequisite: Junior standing. Current issues in medicine; ethical, financial, and personal aspects of medical practice. S, F grading.
- 395 Evolutionary Medicine 3** Course Prerequisite: BIOLOGY 301. Modern medical issues from an evolutionary perspective, integrated with other biological fields in medical research; topics include disease diversity, immune function, the evolution of virulence, human disease management, cancer, obesity, and human mental and reproductive health issues and their management.
- 401 [CAPS] [M] Plants and People 3** Course Prerequisite: BIOLOGY 106 or 120; BIOLOGY 107; junior standing. Relationships between plants and people, especially cultural and economic applications of plants.
- 402 [M] Beneficial Microbes in Nature and Society 3** Course Prerequisite: BIOLOGY 372, 403, or 405; junior standing. In-depth investigations of interdisciplinary topics addressing the importance of beneficial microbes to organisms, natural systems, and society from across the disciplines of microbiology, medicine, evolutionary ecology, and agricultural science.
- 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.
- 408 [CAPS] [M] 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 106. The ecology and conservation of marine organisms, communities, and ecosystems.
- 412 Biology of Fishes 3** (2-3) Course Prerequisite: BIOLOGY 106. Evolution, identification, life history, and characteristics of important fish species.
- 418 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 Secondary Science I 3** Course Prerequisite: Junior standing. Application of learning and theory and philosophy and structure of science in teaching middle and secondary school science courses. (Crosslisted course offered as BIOLOGY 430, MBIOS 480, TCH LRN 430).
- 431 Methods of Teaching Secondary Science II 3** Course Prerequisite: BIOLOGY 430, MBIOS 480, or TCH LRN 430; junior standing. Integration of assessment, curricular, and technological tools into instruction that aligns with learning theory and the philosophy/structure of science. (Crosslisted course offered as BIOLOGY 431, MBIOS 481, TCH LRN 431).
- 432 Biology of Amphibians and Reptiles 4** (3-3) Course Prerequisite: BIOLOGY 106; BIOLOGY 372 or SOE 300. 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.
- 446 Mutualism and Symbiosis 3** Course Prerequisite: BIOLOGY 372, 403, or 405. Critical evaluation of the ecology, evolution, and molecular biology of mutualism and symbiosis. Credit not granted for both BIOLOGY 446 and 546.
- 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 372 with a C or better. 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 [M] 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. Credit not granted for both BIOLOGY 469 and 569. Cooperative: Open to UI degree-seeking students.
- 470 Diversity of Plants 3** Morphological, life history, and ecological diversity of major plant clades; emphasis on principles of homology, character transformation, and macroevolution.
- 473 [CAPS] [M] Evolution and Society 3** Course Prerequisite: ANTH 260 or BIOLOGY 301; junior standing. Survey of how the theory of evolution is used to better understand ourselves, the societies in which live, and the biological world on which we depend. Recommended preparation: BIOLOGY 405 or concurrent enrollment. (Crosslisted course offered as BIOLOGY 473, ANTH 473).
- 474 Computational Biology 4** (3-3) Course Prerequisite: BIOLOGY 301; MATH 140 or 171; STAT 212, 412, or PSYCH 311. Theory and current literature on a wide range of computational techniques used to address and solve problems in biology; a practical introduction to R/python as scientific languages useful in the solution of problems in biology.
- 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: Admitted to the major in Biology or Zoology. Discussion and practice in relating thinking and writing; popular and professional communication in biology.
- 483 [CAPS] [M] Organisms and Global Change 3** Course Prerequisite: BIOLOGY 372; junior standing. Interaction between organisms and global change across scales of biology.
- 485 [CAPS] Biology of the Oceans 3** Course Prerequisite: BIOLOGY 372; junior standing. Interdisciplinary capstone course that explores the ocean world from molecules to ecosystems in the context of scientific discovery and society.
- 486 [M] Marine Invertebrate Communities 3 (2-3)** Course Prerequisite: BIOLOGY 106. Survey of marine invertebrates and their habitats. One-week field/lab course at a marine station.
- 489 [CAPS] [M] Synthesis and Communication of Independent Research 3** Course Prerequisite: 2 credits BIOLOGY 499; admitted to major in Biology or Zoology; junior standing; by permission only. Integration of broad topics from biology and other science fields to inform scientific writing and presentation of independent research projects.
- 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 4 (2-6)** 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** 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.
- 534 Modern Methods in Population Genomics 3** Course Prerequisite: BIOLOGY 519. Problems and prospects of designing a study with genomic data: from raw data to demography and selection inferences.
- 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** Theory and practice of measuring stable isotope ratios of biologically important elements. 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).
- 545 Statistical Genomics 3 (2-3)** Develop concepts and analytical skills for modern breeding by using Genome-Wide Association Study and genomic prediction in framework of mixed linear models and Bayesian approaches. (Crosslisted course offered as CROP SCI 545, ANIM SCI 545, BIOLOGY 545, HORT 545, PL P 545.) Recommended preparation: BIOLOGY 474; MBIOS 478. Cooperative: Open to UI degree-seeking students.
- 546 Mutualism and Symbiosis 3** Critical evaluation of the ecology, evolution, and molecular biology of mutualism and symbiosis. Credit not granted for both BIOLOGY 446 and 546.
- 548 Evolutionary Ecology of Populations 3** Evolutionary dynamics of natural populations and the co-evolution of species. Cooperative: Open to UI degree-seeking students.
- 549 Behavioral Ecology 3** Examination of animal behavior from evolutionary and ecological perspectives.
- 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** Diagnosis of endangered species, population viability analysis, invasive species ecology, landscape ecology and ecosystem management.
- 569 [M] 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. Credit not granted for both BIOLOGY 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.
- 571 Quantitative Toolkit for Biologists 3** Course Prerequisite: STAT 512. Hands-on experience in the exploration, analysis, and interpretation of patterns in modern biological datasets.
- 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). Cooperative: Open to UI degree-seeking students.
- 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.
- 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. Course Prerequisite: Admitted to the Biology, Plant Biology, Botany, or Zoology PhD program. 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. Cooperative: Open to UI degree-seeking students.

587 Special Topics in Electron Microscopy 1 May be repeated for credit; cumulative maximum 4 hours. Cooperative: Open to UI degree-seeking students. S, F grading.

SCIENCE

SCIENCE

101 [PSCI] Integrated Science: Origins in the Natural World 4 (3-3) Interdisciplinary approach to science in the modern world for non-science majors. Field trip(s) may be required.

102 [BSCI] Integrated Science: Dynamic Systems in the Natural World 4 (3-3) Interdisciplinary approach to science in the modern world for non-science majors.

103 Science and Scientific Thinking 1 (0-3) Exploring science as a tool for understanding nature using case studies, experimentation, and data analysis. Topics range from atoms to ecosystems including physiology, inheritance, and the carbon cycle. Credit not granted towards elective requirements for majors in the School of Biological Sciences. Recommended for students with an ALEKS math placement score of less than 45%. (Crosslisted course offered as BIOLOGY 103, SCIENCE 103).

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).

Department of Biological Systems Engineering

bsyse.wsu.edu

L. J. Smith Hall 213

509-335-1578

Department Chair *M. García-Pérez*; Professors, *B. K. Ahring, G. V. Barbosa-Cánovas, S. Chen, H. Lei, J. Tang, P. Ndegwa, R. Peters, S. Sablani, J. Wu, B. Yang, Q. Zhang*; Associate Professors, *M. Karkee, L. Khot S. Sankaran*; Assistant Professors, *K. Rajagopalan, X. Xiong, L. Yu*; Affiliate Faculty, *E. Beers, M. Flury, G. Ganjyal, A. Jayakaran, H. Lin, D. McCool, J. S. McEwen, J. McIntyre, P. Pfromm, M. Wolcott, V. Yadama*; Adjunct Faculty, *P. Bohutskiy, D. J. Brown, J. Casanova, F. Chejne, W. Elliott, D. I. Gustafson, G. Hoogenboom, J. Liu, J. Male, M. V. Olarte, N Pickering, W-J Qian, P. R. Robichaud, M. R. Salazar-Gutierrez, M. Tucker, S. Wang, M. Wigmosta, A. Wright, V. Wu*; Faculty Emeritus, *R. Cavalieri, C. O. Stöckle*.

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 bioproducts engineering, c) land, air, water resources and environmental engineering, and d) agricultural automation engineering.

Applicants to the graduate program should have a B.S. or M.S. in engineering or a closely related degree, with a cumulative Grade Point Average (GPA) 3.0/4.0 or above. Applications must include: official transcripts for all college level work, contact information for three references, statement of intent, and resume. International applicants must include official transcripts and their English translations. Also, English proficiency test scores must be sent from the testing agency directly to Washington State University (University Code#4705).

Student Learning Outcomes

During their training in our graduate program, we expect students to grow professionally and acquire skills for successful careers. Alumni who are successful in their careers will exhibit most, if not all of these features.

Academia

- Possess a national and international reputation for excellence in their area
- Value the significance of quality scholarly work
- Are creative and innovative
- Contribute to the knowledge base within their discipline
- Attract funding for their research
- Provide leadership to professional organizations
- Enable undergraduate and graduate engineering students to be successful in their careers

Industry

- Effectively manage engineering research and/or development research teams

- Provide leadership in developing industry standards of practice
- Are creative and innovative
- Develop profitable products or revenue saving manufacturing procedures
- Provide vision for future direction of their companies and for the industry

Government service

- Provide expert technical knowledge in decision making processes
- Provide leadership within their technical and professional societies
- Contribute to the development of public policies
- Provides global perspective in the use of technical knowledge

Description of Courses

BIOLOGICAL SYSTEMS ENGINEERING

BSYSE

491 Advanced Topics V 1-4 May be repeated for credit; cumulative maximum 8 hours. Directed group study of selected advanced topics in biological systems engineering.

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.

541 Instrumentation and Measurements 3 (2-3) Basic engineering concepts involving instrumentation including measurement systems, sensors, data acquisition, signal processing, and analysis.

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 and BSYSE 554). Required preparation must include CHEM 345; MBIOS 101. Cooperative: Open to UI degree-seeking students.

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). Cooperative: Open to UI degree-seeking students.

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. Cooperative: Open to UI degree-seeking students.

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.

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. Course Prerequisite: Admitted to the Biological and Agricultural Engineering or Engineering Science PhD program. 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.

Carson College of Business

business.wsu.edu

Todd Hall 570

509-335-3596

CARSON COLLEGE OF BUSINESS *Dean and Professor, L. Hunter; Senior Associate Dean for Faculty and Research and Professor, D. Compeau; Senior Associate Dean for Academic Affairs and Professor, T. Tripp; Associate Dean for Graduate and Online Programs, C. Oliver; Associate Dean for International Programs, S. Ahn.*

The Carson College of Business (CCB) prepares students for innovative and impactful careers in business by effectively applying core business competencies, encouraging ethical and professional behavior, employing a global perspective, enhancing abilities to make data-driven decisions, leading teams, and communicating persuasively. The Carson College of Business reaches students across the state of Washington (and beyond) by offering its programs at the Everett, Global, Pullman, Tri-Cities, and Vancouver campuses.

The Carson 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. The Carson College of Business's undergraduate and graduate business programs are consistently ranked among the top business programs in the country by *U.S. News & World Report*. For current rankings of Carson College programs, visit our website: <https://business.wsu.edu/about-carson/rankings-facts/>.

Faculty across disciplines produce scholarly and applied research at the main campus in Pullman as well as campuses in Everett, Vancouver, and the Tri-Cities. In addition to these campus and a thriving Global campus, international activities include partnerships and/or programs in Chile, China, France, Greece, Ireland, Italy, Korea, Spain, Switzerland, Tanzania, and Thailand. For more information and news about the college, its students, and programs, visit business.wsu.edu.

Bachelor of Arts in Business Administration

The Carson College of Business offers eight majors under this degree: Accounting, Business Administration (Vancouver and Tri-Cities campuses only), Entrepreneurship, Finance, International Business, Management, Management Information Systems, and Marketing.

Bachelor of Arts in Hospitality Business Management

The Carson College of Business offers three majors under this degree: Hospitality Business Management, Senior Living Management, and Wine and Beverage Business Management.

Student Learning Outcomes

Upon completion of the Bachelor of Arts in Business Administration and the Bachelor of Arts in Hospitality Business Management, graduates will have the knowledge to be able to:

- Act ethically and professionally.
- Make theory-based and data-driven decisions.

- Identify, assess, and initiate opportunities to create value.
- Gain a global business perspective and be sensitive to and respectful of cultural differences.
- Communicate clearly and persuasively, both orally and in writing.
- Lead a team and act as an effective team member

Admission to the Major and Minor

Given high demand for business courses and strict accreditation requirements, acceptance into the Business Administration (BA) and Hospitality Business Management (HBM) degree majors is competitive and course enrollments are limited. A student must meet the following minimum requirements to be eligible to apply for a CCB major:

Complete the following courses with a grade of C or higher: B A 100 Introduction to Business; HBM 101 Professional Development; B A 102 Exploring Careers in Business; MATH 201 Mathematics for Business & Economics (MATH 202 or ALEKS score of 80% or higher is an acceptable substitute. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.); ECONS 101 Microeconomics, OR ECONS 102 Macroeconomics.

- Complete the Carson Career Amplifier Program Year 1
- Have a WSU cumulative GPA of at least 2.50 and not be on academic probation
- Complete at least 27 credit hours

Students will be placed in rank order based on GPA and other performance criteria. The top students then are admitted to the major based on the number of spots available that semester.

To be eligible for admission to a CCB minor, a student must meet the following minimum requirements:

- Be admitted to a major
- Have a cumulative GPA of at least 2.50 and not be on academic probation

Students will be placed in rank order based on cumulative GPA and other performance criteria. The top students then are admitted based on the number of spots available that semester.

Students must apply to be admitted to the major/minor during the term they anticipate completing the above requirements. On the Pullman campus, early application during the first half of the semester is encouraged to avoid delays in course enrollment. See <https://business.wsu.edu/undergraduate/certify/majors-requirements>

In order to remain a major in the Carson College of Business, students must maintain a minimum of 2.50 business GPA. Students who do not meet this requirements are subject to Academic Rule 53.

Carson College Core Business Requirements

The following Core Business classes are designed to provide business majors with a solid foundation in business, strengthen their professional skills, and meet the learning outcomes listed above.

- B A 100 Intro to Business
- HBM 101 Professional Development
- B A 102 Exploring Careers in Business
- B A 201 Ethics, B A 202 Teams, B A 203 Innovation; or B A 211 Ethics, Teams, Innovation
- B A 204 Decision Analysis, B A 205 Spreadsheets, B A 206 Data Visualization; or B A 212 Decision Analysis, Spreadsheets, Data Visualization
- ACCTG 230 Intro to Financial Accounting

- ACCTG 231 Intro to Managerial Accounting
- B LAW 210 Law & the Legal Environment of Business
- MGTOP 215 Business Statistics
- MIS 250 Managing Information Technology
- I BUS 380 International Business
- MGTOP 340 Operations Management; or HBM 494 Service Operations Management (HBM/WBBM majors only)
- FIN 325 Intro to Financial Management
- MKTG 360 Marketing

International Experience Requirement (IER)

Learning Outcomes

Upon completing the IER, students should be able to:

- Appreciate differences in the external environmental factors that affect global business
- Identify the specific elements of the cultural environment that affect global business decisions
- Evaluate the implications of the external environmental factors on global business decisions
- Incorporate global economic, political and cultural factors when making global business recommendations

Students can satisfy the IER requirements by completing one of the following:

- Study abroad for 6 or more credit hours. Two smaller study abroad programs may be cumulated to meet the entire 6 credit-hour requirement. International students in the Carson College of Business (not including WSU Global students) will meet their study abroad requirement through their study in the United States.
- Complete a major or minor in a foreign language.
- Students that demonstrate proficiency in a foreign language (e.g., STAMP test) will be deemed to have met the Carson College of Business International Experience Requirement. [Honors College students that meet their demonstrated proficiency in a foreign language will also be deemed to have met the Carson College of Business IER.]
- Complete a minimum of one year of international experience in any of the following areas: military service, Peace Corps, Volunteer work with an organization, missionary work, or other. Documentation must be submitted to the student's academic advisor for approval.

Complete two of the following:

- The Global Leadership Certificate or other certificate with a major international component (e.g. The East Asia Program) as approved by the administrative head of the International Business Institute or Department of Marketing and International Business.
- A brief study abroad program of at least 3 credit hours.
- An "international non-business course". Approved courses include: AMDT 413; ANTH 301, 306, 307, 309, 312, 316, 317, 320, 330, 350, 370, 405, 417, 418, 450, 469; ARCH 428; ASIA 302, 315, 373, 374, 477, 479; BIOLOGY 401; CES 301, 325, 372, 377, 379, 380, 401, 405, 421, 426, 470; COMSOC 321; CRM J 405; CROP SCI 360; ECONS 427, 428, 430, 433, 453; ENGLISH 373, 410, 457; FINE ART 331; FOR LANG 410; H D 350, 403; HISTORY 331, 373, 374, 436, 464, 466, 473, 477, 479, 491, 492, 494, 495; HUMANITY 350; PHIL 314, 315; POL S 314, 424, 427, 435; RUSSIAN 410; SOC

331, 332, 375, 415; SOE 300, 312, 390, 412; SOIL SCI 360; TCH LRN 480, 487; WGSS 316, 332, 340, 406.

- An approved 300-400-level "international business or economics course". Approved courses include: ACCTG 420; ECONS 327; FIN 481; I BUS 415, 416, 435, 453, 470, 482, 496; MIS 441.

- At least 3 credits in a foreign language. Approved courses include: CHINESE 101, 102, 203; FRENCH 101, 102, 203; GERMAN 101, 102, 203; ITALIAN 101, 102; JAPANESE 101, 102, 203; LATIN 101, 102; RUSSIAN 101, 102, 203; SPANISH 101, 102, 203. Sign Language is not an approved foreign language to satisfy this requirement. Students who wish to request alternative foreign language courses to be used to satisfy this requirement must work through their academic advisor to prepare a formal request for approval to the International Business Institute.

- An international internship approved by the Department of Marketing and International Business (maximum of 3 credit hours).

- An accepted petition to the Department of Marketing and International Business to allow the use of extensive international travel experiences at the collegiate or corporate level for up to 3 credit hours towards the International Experience Requirement. Although petitions must be approved prior to the international travel, exceptional cases can be reviewed on a case-by-case basis. Normally such an experience will be at least three months in duration.

- A University course research project with an international business research focus that is a significant part of the course learning component, and that constitutes 40% or more of the class. The petition for allowing a project work to count towards the International Experience Requirement should be signed off by the course instructor, and the final approval will be made by the Department of Marketing and International Business for Pullman based students, and an IBUS Fellow or Area Director for urban campus students. *

- Participate as finalists in an international or global case competition (e.g., Global Case Competition conducted by WSU International Programs). The determination of whether a case competition can be counted towards the International Experience Requirement will be made through a petition to the Department of Marketing and International Business. Although only final round participants can be considered, exceptional cases that did not make it to the final round can also be considered on a case-by-case basis by the International Business Institute or Department of Marketing and International Business, which will make the final approval.

* Students also need to obtain pre-approval from course instructor prior to start of project work on the petition form that is available with advisors at the respective campus locations.

Carson Career Amplifier Program

The Carson Career Amplifier Program (CCAP) engages students in co-curricular activities and programs that provide students with the opportunity to develop professional skills and experiences that employers are seeking. In addition to required coursework, earning a degree in the Carson College of Business requires students to complete several categories of co-curricular requirements each year. Categories are based on a subset of the National Association of College and Employers (NACE)

Career Readiness Competencies and include:

- Communication
- Leadership
- Professionalism
- Career Management

The CCAP program helps students to develop the professional skills needed to become business leaders of tomorrow. With a focus on professionalism, networking, and engagement, students will select from a menu of online and in-person activities that satisfy each requirement. Each year, CCAP requirements become progressively more involved; from learning about student success strategies in the first year, to participating in an internship or study abroad as a junior or senior. Details about requirements for satisfying annual milestones can be found on the Carson College website.

Students can expect to spend a minimum of 7-10 co-curricular hours each year, depending on how students choose to satisfy each requirement. However, as students become involved in leadership activities and high impact learning experiences, the amount of co-curricular hours will increase. For example, over the course of one academic year, a student attending weekly club meetings could spend about 26 hours in club meetings, a summer internship could total 300-400 hours, and a 6-week faculty led study abroad program averages about 250 hours.

Examples of activities that could be used to satisfy competencies:

Communication: • Networking events • Professional development seminars on resume/cover letter development and interview preparation • Mock interviews • Jobs or volunteer work that involve public speaking;

Leadership: • Increasing commitment/involvement in clubs and organizations resulting in the opportunity to take on leadership roles. Includes business clubs, student government, current work, Greek & Residence Hall leadership, community organizations, roles such as Resident Assistant (RA) and Research Assistant. • Structured leadership programs/trainings • Increasing leadership responsibilities within current employment;

Professionalism: • Activities that increase student understanding of professional standards expected in higher education (in and outside the classroom) • Activities that increase student understanding of professional standards expected by employers (internships, relevant work experiences, business consulting projects) • Opportunities that allow students to strengthen and demonstrate their professionalism and work ethic;

Career Management: • Assessing oneself (strengths/weaknesses, interests/dislikes, abilities, values) • Learning about majors, internships, careers/employers, professional development opportunities in order to make informed decisions • Setting major/career goals based on analyzing oneself and career opportunities • Identifying areas within one's skillset that need to be developed/strengthened • Pursuing activities that strengthen areas needing growth & development.

Options used to satisfy competency will be based on the availability of events/activities at each campus and Global Campus students will have the ability to satisfy requirements through events/activities in their surrounding community and current employment site. If an activity/event is not on the list, students, advisors, and faculty

will have the ability to propose additional events/activities that align with the goals for a competency. Each year (based on credit hours) will be tracked as milestones in the myWSU system. Completion of the first year of the CCAP is required for admission into the College. Subsequent years will be tracked annually. Completion of the CCAP for all 4 years is required for graduation.

Graduation Requirements

In addition to fulfilling the University requirements for graduation listed in the Summary of Academic Policies section of the WSU Catalog, to graduate with a CCB degree, students must also meet the Carson College of Business requirements listed below, and the major requirements (described in the departmental section of this catalog).

Carson College of Business Requirements:

- Completion of admission to the major requirements listed above.
- Completion of requirements listed in the Schedule of Studies.
- Completion of the International Experience Requirement (listed above).
- Completion of the Carson Career Amplifier Program (requirements for each of the 4 years) (see above).
- Completion of at least two 'Writing in the Major' [M] courses for each major.
- A minimum cumulative GPA of 2.50 in all CCB courses (counting only WSU business courses taught by CCB including HBM courses). Economic Sciences courses or other courses outside the college are not included (with the exception of ECONS 327 which is cross-listed with a CCB course).
- At least nine 300-400-level business courses must be WSU courses*.

* A WSU course is a course that does not require evaluation for transfer credit.

Additional Information and Requirements

Enrollment in most 300-400-level business courses is restricted to students who have met these requirements and have been admitted to the BA or HBM degree major. Students admitted to non-business majors may enroll in restricted 300-400-level business courses with permission of the department chair as space is available.

The chair of the department and/or the senior 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 CCB may be taken pass, fail.

An honors senior project is required for Honors students.

Double Majors in Business

Students may pursue two business majors (double major) by completing at least 15 additional credits (18 credits for accounting) from courses specifically required by the second major and distinct from those used to satisfy the first major, including

two Writing in the Major [M] courses per major. Courses used to fulfill the primary major cannot be used to fulfill the requirements of the second major. A double major with Hospitality Business Management and Wine Business Management is not permitted.

Second Bachelor's Degree

Students who are pursuing a bachelor's degree outside of the College of Business may obtain a second degree of Bachelor of Arts in Business Administration or Bachelor of Arts in Hospitality Business Management by completing the following additional requirements:

- Complete the admission to the major requirements listed above and apply to be admitted.
- Complete all college and major requirements, including two Writing in the Major [M] courses per major, and the International Experience Requirements listed above.
- Complete a minimum of 150 credit hours.

Students seeking a second degree with a business major must apply to be admitted to the Carson College before they can enroll in 300-400-level business courses (see Admission to the Major and Minor requirements above). Students should consult the Carson Center for Student Success for specific degree requirements.

Transfer Students

Students planning to transfer to Washington State University should follow, as closely as possible, the University and College requirements listed above. It should also be noted that courses taken at community colleges are not accepted as transferable equivalents to 300-400-level courses at WSU. Transfer students are strongly advised to use the WSU Transfer Clearinghouse website to see how credits will transfer to WSU and to refer to the Carson Center for Student Success website for additional transfer information specific to Business.

Master of Business Administration

<https://onlinemba.wsu.edu/mba>

Commons Hall 101

509-335-7617 Pullman Campus

877-960-2029 Online Enrollment Advising

Faculty: B. Amer, S. Bergstedt, L. Broady, J. Bravo, M. Chen, S. Fotopoulos, R. Hernandez, A. Howard, J. Hu, D. Jha, J. Johnson, J. Joireman, M. Jordan, J. Kallberg, H. Kim, T. Kotta, V. Kolde, R. Liu, K. Marvel, D. Miller, R. Moser, D. Mundell, M. Petersen, K. Philander, A. Prera, M. Reyes, R. Sanchez, S. Silverman, P. Skilton, J. Taylor, B. Wong-On-Wing.

The MBA program in the Carson College of Business features nationally prominent faculty with additional layers of faculty support that encourage frequent and personal interaction among faculty and students. The MBA program focuses on student mastery of knowledge and application in today's business environment. The CCB offers two MBA programs within the MBA degree: the online MBA (OMBA) and the online executive MBA (EMBA).

Information about application deadlines is available on our website.

ONLINE MBA PROGRAM

The Online MBA curriculum is divided into three sections: Foundation, Core, and Electives.

ONLINE MBA Foundation Courses:

Online MBA candidates begin with a foundation in business before taking core coursework. The foundation coursework includes the courses listed below. Previous coursework in business may permit the waiving of some or all of these foundation courses based on course equivalency evaluations.

- ACCTG 550
- B A 500
- B A 501
- B A 502
- B A 503
- B A 504
- ECONS 555

(Note that for any course with a non-B A prefix, its course description is listed under the department that offers the course.) Students who complete the foundation curriculum at WSU with the required GPA are eligible to receive a certificate in General Business Administration. See the certificate requirements for specific information.

ONLINE MBA Core Courses (36 Credits)

A minimum cumulative GPA of 3.0 is required for the MBA degree.

Core Curriculum (27 credits)

- ACCTG 533
- B A 514
- FIN 526
- MIS 580
- MKTG 506
- MGMT 590
- MGMT 593
- B A 579 (4 credits)
- B A 599 (1 credit)
- B A 600 (1 credit)
- Electives (9 credits): Students may choose to take an array of electives or to concentrate in a specific area. Approved courses include BA 595, 597, FIN 521, 527, 528, 581, HBM 535, 581, 582, I BUS 580, 582, 600, MKTG 507, 561, 565, 577. Not all courses or concentrations are available at all times.

EXECUTIVE MBA ONLINE PROGRAM (42 credits)

A minimum cumulative GPA of 3.0 is required for the Executive MBA degree. Foundation courses are not required for the Executive MBA.

- ACCTG 533
- B A 514
- FIN 526
- I BUS 580
- I BUS 600, MGTOP 587, or B A 597
- MIS 572
- MIS 580
- MKTG 506
- MGMT 588
- MGMT 590
- MGMT 593
- MGTOP 581
- B A 579 (4 credits)
- B A 599 (1 credit)
- B A 600 (1 credit)

CERTIFICATES

The Carson College of Business offers certificates for graduate, professional, and MBA students

concentrating in specific areas. Admissions to the elective certificates is the same as admission to the MBA program. Students must complete a minimum of 9 credits (except for the General Business certificate which requires seven courses) and earn a cumulative 3.0 GPA with no grades below B- in the concentration to earn a certificate. The elective series in the OMBA may be used to earn a certificate.

Certificate in Finance:

FIN 521, FIN 527, FIN 528, FIN 581

Certificate in Hospitality and Tourism:

HBM 535, HBM 581, HBM 582

Certificate in International Business:

FIN 581, HBM 535, I BUS 580, I BUS 582

Certificate in Marketing:

I BUS 582, MKTG 507, MKTG 561, MKTG 565, MKTG 577

Certificate in General Business Administration:

ACCTG 550, B A 500, 501, 502, 503, 504, ECONS 555 (Students with previous coursework in statistics and/or economics may not be required to complete B A 500 and/or ECONS 555.)

Schedules of Studies

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

BUSINESS ADMINISTRATION, VANCOUVER AND TRI-CITIES CAMPUSES ONLY (120 CREDITS)

The following major is available only to students on the Vancouver and Tri-Cities campuses. The Pullman, Everett, and Global campuses do not offer this major.

Graduation Requirements

To graduate with a Bachelor of Arts in Business Administration with a major in Business Administration, students are required to complete all admission and graduation requirements listed in the Carson College of Business (CCB) section of the catalog and the coursework included in the sample 4-year plan listed below.

First Year

<i>First Term</i>	<i>Credits</i>
B A 100	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WRTG] or 105 [WRTG]	3
MATH 201 ²	3

<i>Second Term</i>	<i>Credits</i>
B A 102	1
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
ECONS 101 or 102	3
HBM 101	1
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ³	3

Complete Carson Career Amplifier Program -- Tier 1
Apply for Admission into the Major

Second Year

<i>First Term</i>	<i>Credits</i>
ACCTG 230	3
B A 201, 202, and 203, or B A 211	3
Humanities [HUM]	3
MIS 250	3
Social Science or Humanities Elective ⁴	3
Consider studying abroad this summer ⁵	

<i>Second Term</i>	<i>Credits</i>
ACCTG 231	3
B A 204, 205, and 206, or B A 212	3
B LAW 210	3
COM 102 [COMM], H D 205 [COMM], or MKTG 279 [COMM]	3 or 4
MGTOP 215 ⁶	4
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
ENGLISH 402 or 403	3
I BUS 380	3
MKTG 360	3
300-400-level Business or ECONS Elective ⁷	3

<i>Second Term</i>	<i>Credits</i>
ACCTG 338	3
Arts [ARTS]	3
FIN 325	3
MGMT 401	3
MGTOP 340	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

<i>First Term</i>	<i>Credits</i>
FIN 425 [M]	3
400-level Business Electives ⁷	6
International Experience Requirement or Electives ⁵	3
Social Science or Humanities Elective ⁴	3

<i>Second Term</i>	<i>Credits</i>
MGMT 491 [CAPS] or ENTRP 492 [CAPS]	3
MKTG 495 [M]	3
300-400-level Business or ECONS Elective ⁷	3
International Experience Requirement or Electives ⁵	5
Complete Carson Career Amplifier Program -- Tier 4	

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² MATH 201 will be waived with an Aleks score of 80% or higher or the completion of MATH 202 or equivalent. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.

³ Alternative to MATH 202 is MATH 140 or 171.

⁴ Social Science or Humanities Electives (6 credits): Any courses with the [SSCI] or [HUM] designation, or courses in ANTH, ASIA, CES, CRM J, DTC,

ECONS, ENGLISH (excluding ENGLISH 402 or 403), FINE ART, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS not used to fulfill other (including UCORE) requirements.

⁵ All students must complete the International Experience Requirement. Options for completing the requirement can be found in the Carson College of Business Academic Unit section of the catalog under Business (Pullman, Tri-Cities) or Business Administration (Vancouver). Students should consult with their advisor to determine the best option.

⁶ MATH/STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁷ 300-400-level Business or ECONS elective (11 credits). Must include at least 6 credits of 400-level business courses. May not include courses from the CCB core, the set of required business administration courses, or any 498 Internship or 499 Special Topics courses.

Minors

Business Administration

Please see the Carson College of Business section of this Catalog for additional instructions. To be admitted into the Business Administration minor, students must meet the following minimum requirements:

- Complete 27 credits.
- WSU cumulative GPA of at least 2.50 and not on academic probation
- The minor in business administration requires a minimum of 18 credits of coursework, including:
 - B A 100
 - ACCTG 220 or 230
 - MGMT 301 or HBM 381
 - Any two upper-division Carson College of Business courses (excluding 498 and 499 courses).
 - Any one Carson College of Business course at any level.
 - Students must maintain an overall GPA of at least a 2.50 in the business administration minor courses.
 - A minimum of 9 credits of upper-division coursework must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.
 - Up to 6 credits may be transferred from another institution.
- To be admitted into this minor, students must meet with a business advisor and declare their interest. Students must ensure that they meet all course prerequisites before enrolling in any College of Business courses.

Certificates

Certificate of Behavioral Business Research

The certificate of Behavioral Business Research is open to all Carson College of Business majors. This program prepares students for new and emerging research techniques in business behavior research. To complete the certificate, students must complete 15 credits consisting of three core courses and two additional electives with a GPA of 2.5 or better.

Required core courses include MKTG 360, 368, and 487. Fulfillment of elective emphasis courses requires completion of MKTG 407 and 467; or 6 credits from MIS 374, 400, 420, 426; or as approved by advisor.

Professional Sales Certificate (Vancouver and Pullman Campuses 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 15 credits consisting of three required courses and two additional electives with a 2.5 GPA or better. Required core courses include MKTG 360, 379, and 478. Two additional electives should be drawn from MKTG 450, 479, 480, ENTRP 490, HBM 480, and MGMT 485.

Description of Courses

BUSINESS ADMINISTRATION

No letter-graded course offered by the Carson College of Business may be taken for a Pass, Fail (P, F) grade.

B A

100 Introduction to Business 3 Course Prerequisite: MATH 103, 106, 140, 171, 172, 182, 201, 202, or concurrent enrollment allowed, or ALEKS score of 40% or higher. Overview of business activities and disciplinary functions found in modern for-profit organizations; introduction to each of Carson College of Business learning goals.

102 Exploring Careers in Business 1 Course Prerequisite: B A 100 with a C or better; MATH 106, 140, 171, 172, 182, 201, 202, or concurrent enrollment allowed, or ALEKS score of 80% or higher. Conduct research to better understand business expectations; use career assessments to clarify major and career goals; develop action plan; write application for admission into a Carson College of Business major.

201 Ethics for Business 1 Course Prerequisite: B A 100; B A 102; HBM 101 or HONORS 198 for students in the HABLE program; or admitted to a major or minor in Carson College of Business. Enrollment not allowed if credit already earned for B A 211. Introduction to business ethics; overview of ethics value foundations; focus on preparing students to make business decisions ethically. Credit not granted for both B A 201 and 211.

202 Teams 1 Course Prerequisite: B A 100; B A 102; HBM 101 or HONORS 198 for students in the HABLE program; or admitted to a major or minor in Carson College of Business. Enrollment not allowed if credit already earned for B A 211. Team and group dynamics, including factors and behaviors that impede or increase team performance; leadership roles in teams. Credit not granted for both B A 202 and 211.

203 Innovation 1 Course Prerequisite: B A 100; B A 102; HBM 101 or HONORS 198 for students in the HABLE program; or admitted to a major or minor in Carson College of Business. Enrollment not allowed if credit already earned for B A 211. Process of innovation inside organizations; factors and behaviors that promote innovation creation and implementation. Credit not granted for both B A 203 and 211.

204 Spreadsheets 1 Course Prerequisite: Completed 27 semester credits. Enrollment not allowed if credit already earned for B A 212. Introduction to spreadsheets; basics for using spreadsheets for data analysis and to support decision-making. Credit not granted for both B A 204 and 212.

205 Data Visualization 1 Course Prerequisite: Course Prerequisite: B A 204 or concurrent enrollment. Enrollment not allowed if credit already earned for B A 212. Principles and techniques of representing data visually in graphs, charts, and diagrams; communicating data-based results effectively; skeptical interpretation of visually represented findings when making decisions. Credit not granted for both B A 205 and 212.

206 Decision Analysis 1 Course Prerequisite: B A 204 or concurrent enrollment. Enrollment not allowed if credit already earned for B A 212. Introduction to techniques for making informed and logical decisions in a business context. Credit not granted for both B A 206 and 212.

211 Ethics, Teams, and Innovation 3 Course Prerequisite: B A 100; B A 102; HBM 101 or HONORS 198 for students in the HABLE program; or admitted to a major or minor in Carson College of Business. Enrollment not allowed if credit already earned for B A 201, 202, or 203. Introduction to business ethics; overview of ethics value foundations; focus on preparing students to make business decisions ethically; team and group dynamics, including factors and behaviors that impede or increase team performance; leadership roles in teams; process of innovation inside organizations; factors and behaviors that promote innovation creation and implementation. Credit not granted for B A 211 if credit is already earned in either B A 201, 202, or 203.

212 Spreadsheets, Data Visualization, and Decision Analysis 3 Course Prerequisite: Completed 27 semester credits. Enrollment not allowed if credit already earned for B A 204, 205, or 206. Introduction to basics for using spreadsheets for data analysis and to support decision-making; principles and techniques of representing data visually in graphs, charts, and diagrams; communicating data-based results effectively; skeptical interpretation of visually represented findings when making decisions; techniques for making informed and logical decisions in a business context; introduction to spreadsheets. Credit not granted for B A 212 if credit is already earned in either B A 204, 205, or 206.

496 Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission; admitted to a major or minor in the College of Business.

498 Business Internship V 1-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission; admitted to a 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: 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 Data Analysis for Managers V 1-3 Course Prerequisite: Admission to the MBA program or Carson College of Business Graduate Certificate. Descriptive statistics, probability, common, discrete, and continuous distribution functions, sampling and estimation, and statistical inference.

501 Foundations in Marketing V 2-3 Foundation topics in marketing for MBA students.

502 Foundations in Operations Management V 2-3 Foundation topics in operations management for MBA students.

503 Foundations in Business Law V 2-3 Foundation topics in business law for MBA students.

504 Foundations in Finance V 2-3 Foundation topics in finance for MBA students.

514 Business Analytics: Transforming Data into Decisions 3 Course Prerequisite: Admission to the MBA program and completion of MBA Prerequisites, including: B A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. 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 V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Admission to the MBA program. Analyze, evaluate, and recommend management actions for a specific strategic business project (for an existing organization or new venture).

590 Seminar in Management Teaching 3 Course Prerequisite: Admission to PhD programs in business. Conceptual and skills-based knowledge for teaching including designing curriculum, developing and delivering course materials, evaluations, and teaching practice.

595 Applying Design Thinking to Career and Life 3 Course Prerequisite: Admission to the Online MBA program. Applying the principles of design thinking to life and career decisions; will reflect on the meaning of work and life and how to build (one of the many options that lead to) one's best life.

596 Doctoral Topics 3 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: Admission to PhD programs in business. Advanced topics in business research and theory.

597 Emerging Trends in Business 3 Course Prerequisite: Admission to the Online MBA program. Evaluation of the emerging trends and forces that continually shape and reshape the business environment; topics will focus on emerging issues pertinent to technology, market dynamics (preferences, behaviors, ethnographics and demographics), business practices, and the legislative/regulatory environment among other topics.

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.

599 Strategic Planning for Personal and Program Success 1 Course Prerequisite: Admission to the MBA program. Background and framework for successfully transitioning into the role of a working professional MBA student, including personal assessments and planning, case methods, and ethics training; designed to ensure successful outcomes of MBA students and leaders.

600 Beyond the MBA: Applications of Principles, Theory, and Practice 1 Course Prerequisite: OMB program and B A 599; B A 514; MKTG 506; FIN 526; MIS 580; ACCTG 533; MGMT 590; MGMT 593; OR EMBA program and B A 599; B A 514; MKTG 506; FIN 526; MIS 580; ACCTG 533; MGMT 590; MGMT 593; MIS 572; MGMT 588; MGTOP 581; I BUS 580. Leveraging the MBA for lifetime success; framework and tools for successfully synthesizing and applying the MBA in the global workplace, as a manager and a leader. S, F grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: Admitted to a College of Business graduate 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: Admitted to the Business Administration PhD program. 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 Accounting

business.wsu.edu/accounting/
Todd 242
509-335-8541

Chair and Professor, B. Wong-on-Wing; Professors, J. Gramlich, R. Toolson; Associate Professors, B. Barnes, S. Gill, C. Latham, L. Xu; Assistant Professors, X. Gao, K. Harris, J. Jaggi, C. Potter, R. Sommerfeldt; Clinical Faculty, J. Porter; Instructors, K. Jones, S. Bergstedt, J. Griffeath, N. Pearson; Professor Emeritus, D. Sanders.

Schedules of Studies

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

ACCOUNTING (120 CREDITS)

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, financial reporting and taxation, auditing, 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.

Graduation Requirements

To graduate with a Bachelor of Arts in Business Administration with a major in Accounting, students are required to complete all admission and graduation requirements listed in the Carson College of Business (CCB) section of this catalog and the coursework included in the sample 4-year plan listed below.

First Year

First Term	Credits
B A 100	3
Diversity [DIVR]	3
ECONS 101 [SSCI] or 102 [SSCI] ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3
MATH 201 ²	3

Second Term	Credits
B A 102	1
COM 102 [COMM], H D 205 [COMM], or MKTG 279 [COMM] ¹	3 or 4

ECONS 101 or 102 ¹	3
HBM 101 ¹	1
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ³	3
Complete Carson Career Amplifier Program -- Tier 1	
Apply for Admission into the Major	

Second Year

First Term	Credits
ACCTG 230	3
B A 204, 205, and 206, or B A 212	3
B LAW 210	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ⁴	4
Humanities [HUM]	3
Consider studying abroad this summer ⁵	

Second Term	Credits
ACCTG 231	3
B A 201, 202, and 203, or B A 211	3
MGTOP 215 ⁶	4
MIS 250	3
Social Science or Humanities Elective ⁷	3
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

First Term	Credits
ACCTG 330	3
ACCTG 335 or 338	3
Arts [ARTS]	3
FIN 325	3
MKTG 360	3

Second Term	Credits
ACCTG 331	3
ACCTG 335 or 338	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ⁴	3
ENGLISH 402 or 403	3
MGTOP 340	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

First Term	Credits
ACCTG 433 [M]	3
I BUS 380	3
300-400-level Accounting or Business Elective ⁸	3
International Experience Requirement or Electives	3
Social Science or Humanities Elective ⁷	3

Second Term	Credits
ACCTG 438 [M] or ACCTG 439 [M]	3
MGMT 491 [CAPS] or ENTRP 492 [CAPS]	3
300-400-level Accounting or Business Elective	3
International Experience Requirement or Electives	5
Complete Carson Career Amplifier Program -- Tier 4	

¹ For Students in the Honors Program: ECONS 198 is an approved substitute for ECONS 101 and 102; COM 102/H D 205/MKTG 279 requirement is

waived; HONORS 198 is an approved substitute for HBM 101; ENGLISH 198 is an approved substitute for ENGLISH 101; ACCTG 298 is an approved substitute for ACCTG 230 and 231. Honors students may need to enroll in elective coursework to meet University requirement of 120 credits.

² MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.

³ Alternative to MATH 202 is MATH 140 or 171.

⁴ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

⁵ All students must complete the International Experience Requirement. Options for completing the requirement can be found in the Carson College of Business Academic Unit section of the catalog under Business or Business Administration (Vancouver). Students should consult with their advisor to determine the best option.

⁶ MATH/STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁷ Social Science or Humanities Electives (6 credits): Any courses with the [SSCI] or [HUM] designation, or courses in ANTH, ASIA, CES, CRM J, DTC, ECONS, ENGLISH (excluding ENGLISH 402 or 403), FINE ART, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS not used to fulfill other (including UCORE) requirements.

⁸ 300-400-level Accounting (3 credits) and Business Electives (3 credits): Students must take one 300-400-level three-credit ACCTG course, and an additional 300-400-level three-credit course offered by the Carson College of Business with the exception of courses from the CCB core, the set of required accounting courses, or any 498 Internships or 499 Special Problems courses.

Description of Courses

ACCOUNTING

No letter-graded course offered by the Carson College of Business may be taken for a Pass, Fail (P, F) grade.

ACCTG

220 Introductory Accounting for Non-Business Majors 3 Course Prerequisite: Enrollment not allowed if credit already earned for ACCTG 230 or 231. Survey of selected introductory financial and managerial accounting topics. Credit not granted if credit has been earned in ACCTG 230 and/or 231. Does not substitute for either ACCTG 230 or ACCTG 231 for Business majors.

230 Introduction to Financial Accounting 3 Course Prerequisite: Completed 27 semester credits. 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.

298 Introduction to Financial and Managerial Accounting - Honors 4 Course Prerequisite: Must be an Honors student. Enrollment not allowed if credit already earned for ACCTG 230 and/or ACCTG 231. Introduction to the preparation and interpretation of financial statements and to the use of accounting data for planning and controlling business operations. Credit not granted for both ACCTG 298 and 230 and/or 231.

330 Intermediate Accounting I 3 Course Prerequisite: ACCTG 230 and 231, or ACCTG 298; admitted to a major or minor in the College of Business or Data Analytics. Conceptual and technical issues of financial reporting and ethical, political, and economic consequences related to accounting choice.

331 Intermediate Accounting II 3 Course Prerequisite: ACCTG 330 with a C or better; admitted to a major or minor in the College of Business. Continuation of ACCTG 330.

335 Taxation of Business Entities and Individuals 3 Course Prerequisite: ACCTG 230 and 231, or ACCTG 298; admitted to a major or minor in the College of Business. Fundamentals of tax information used in making sound business and financial decisions.

338 Cost Accounting 3 Course Prerequisite: ACCTG 231 or 298 with a C or better; admitted to a 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: ACCTG 230; admitted to a major or minor in the College of Business; junior standing. 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 331 with a C or better; admitted to a major or minor in the College of Business. Partnership equities and extended forms of corporate ownerships and government entities.

433 [M] Accounting Systems and Auditing 3 Course Prerequisite: ACCTG 330 with a C or better; admitted to a major or minor in the College of Business or Data Analytics. Accounting systems design; internal control and computerization.

435 Individual Income Taxes 3 Course Prerequisite: ACCTG 335 with a C or better; admitted to a 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.

437 Professional Research 3 Course Prerequisite: ACCTG 331 with a C or better; ACCTG 335 with a C or better; admitted to a major or minor in College of Business. Methodology used by accounting professionals to research applied problems and communicate results.

438 [M] Advanced Cost Accounting and Management 3 Course Prerequisite: ACCTG 338 with a C or better; admitted to a 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 433 with a C or better; admitted to a 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.

440 Advanced Auditing 3 Course Prerequisite: ACCTG 439. Auditing theory application and data analysis.

443 Business Processes and Controls 3 Course Prerequisite: ACCTG 433 with a C or better; admitted to a major or minor in the College of Business. Introduction to business processes and internal controls, including risk assessment and detection of fraud.

496 Special Topics 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. 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. 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.

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 program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. 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 and shareholders; 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 pass through 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 Course Prerequisite: Admission to the Master of Accounting program. Comprehensive coverage of accounting income taxes.
- 550 Introduction to Financial and Managerial Accounting** V 2-3 Course Prerequisite: Admission to the MBA program or Carson College of Business Graduate Certificate. 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: Admitted to the Business Administration - Accounting PhD program. 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

No letter-graded course offered by the Carson College of Business may be taken for a Pass, Fail (P, F) grade.

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 Legal Environment of Business II 3 Course Prerequisite: B LAW 210; admitted to a major or minor in the College of Business; junior standing. 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

business.wsu.edu/finance/
Todd Hall Add 470
509-335-8727

Department Chair, Omer L. Carey Chair in Financial Education, and Professor, D. Whidbee; Mutual of Enumclaw/Field Distinguished Professor of Insurance and Professor, M. McNamara; Brinson Chair in Investment Management and Professor, G. Jiang; Professors, S. Ahn, S. Fotopoulos, C. Munson; Associate Professors, T. Baker (Tri-Cities), D. Fairhurst, S. Liu, D. Paul (Vancouver), H. Zhang; Assistant Professors, X. Ma, K. Mayo, X. Wang, K. Yang, Y. Xiao; Career Track Professor, M. Reyes; Career Track Assistant Professors, A. Boskabadi, K. Haque, Y. He (Vancouver); Instructors, A. Sorensen, C. Williamson; Adjunct Professors, F. Benjamin, R. Hernandez (Tri-Cities), S. Koopman (Tri-Cities).

Schedules of Studies

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

FINANCE (120 CREDITS)

Preparation for careers in financial management, investment analysis, financial institutions management, financial services, real estate, or risk management and insurance.

Graduation Requirements

To graduate with a Bachelor of Arts in Business Administration with a major in Finance, students are required to complete all admission and graduation requirements listed in the Carson College of Business (CCB) section of this catalog

and the coursework included in the sample 4-year plan listed below.

First Year

First Term	Credits
B A 100	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
ECONS 101 [SSCI] or 102 [SSCI] ²	3
ENGLISH 101 [WRTG] or 105 [WRTG] ²	3
MATH 201 ³	3

Second Term	Credits
B A 102	1
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
ECONS 101 or 102 ²	3
HBM 101 ²	1
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ⁴	3
Complete Carson Career Amplifier Program -- Tier 1	

Apply for Admission into the Major

Second Year

First Term	Credits
ACCTG 230	3
B A 204, 205, and 206, or B A 212	3
Humanities [HUM]	3
MGTOP 215 ⁵	4
MIS 250	3
Consider studying abroad this summer ⁶	

Second Term	Credits
ACCTG 231	3
Arts [ARTS]	3
B A 201, 202, and 203, or B A 211	3
B LAW 210	3
COM 102 [COMM], H D 205 [COMM], or MKTG 279 [COMM] ²	3 or 4
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

First Term	Credits
ENGLISH 402 or 403	3
FIN 325	3
MGTOP 340	3
International Experience Requirement or Electives ⁶	3
Social Science or Humanities Elective ⁷	3

Second Term	Credits
ACCTG 330	3
Diversity [DIVR]	3
FIN 421	3
FIN 425 [M]	3
MKTG 360	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

First Term	Credits
FIN 427 [M] or FIN 437 [M]	3
300-400-level Business Elective ⁸	3
300-400-level Finance Elective ⁹	3
International Experience Requirement or Electives ⁶	3
Social Science or Humanities Elective ⁷	3

Second Term	Credits
I BUS 380	3
MGMT 491 [CAPS] or ENTRP 492 [CAPS]	3
300-400-level Finance Elective ⁹	3
Electives ¹⁰	5
Complete Carson Career Amplifier Program -- Tier 4	

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² For students in the Honors Program: ECONS 198 is an approved substitute for ECONS 101 and 102; COM 102/H D 205/MKTG 279 requirement is waived; HONORS 198 is an approved substitute for HBM 101; ENGLISH 198 is an approved substitute for ENGLISH 101; ACCTG 298 is an approved substitute for ACCTG 230 and 231. Honors students may need to enroll in elective coursework to meet University requirement of 120 credits.

³ MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.

⁴ Alternative to MATH 202 is MATH 140 or 171.

⁵ MATH/STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁶ All students must complete the International Experience Requirement. Options for completing the requirement can be found in the Carson College of Business Academic Unit section of the catalog under Business or Business Administration (Vancouver). Students should consult with their advisor to determine the best option.

⁷ Social Science or Humanities Electives (6 credits): Any courses with the [SSCI] or [HUM] designation, or courses in ANTH, ASIA, CES, CRM J, DTC, ECONS, ENGLISH (excluding ENGLISH 402 or 403), FINE ART, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS not used to fulfill other (including UCORE) requirements.

⁸ 300-400-level Business Elective (3 credits): ECONS 301 or 305, or any 300-400-level course taught by CCB, which cannot be from the CCB core, the set of required Finance courses, or any 498 Internships or 499 Special Topics courses.

⁹ 300-400-level Finance Electives (6 credits): Any 300-400-level FIN course. May not include courses from the CCB Core, the set of required Finance courses, or any 498 Internships or 499 Special Topics courses.

¹⁰ Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

Description of Courses

FINANCE

No letter-graded course offered by the Carson College of Business may be taken for a Pass, Fail (P, F) grade.

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 230 or 298; ECONS 101 or 198; MGTOP 215, STAT 212, STAT 360, or STAT 370; MATH 140, 171, 172, 182, 202, or 220; junior standing. Time value of money, financial securities and markets, financial decision making, valuation techniques, and cost of capital.

330 Introduction to Financial Wellbeing 3

Course Prerequisite: ACCTG 230 or 298; ECONS 101 or 198; FIN 325 or concurrent enrollment. Introduction to financial planning including budgeting, credit, investing, retirement and estate planning, and tax considerations.

345 Real Estate 3

Course Prerequisite: FIN 325 or concurrent enrollment; admitted to a 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: FIN 325 or concurrent enrollment. 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 with a C or better; admitted to a 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 with a C or better; FIN 421 or concurrent enrollment; admitted to a 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 with a C or better; admitted to a 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.

426 Short-Term Financial Management 3

Course Prerequisite: FIN 325 with a C or better; admitted to a major or minor in the College of Business, or a major in Economic Sciences. Short-term financial management, working capital components, cash management, short-term investing and borrowing.

- 427 [M] Investment Analysis 3** Course Prerequisite: FIN 325 with a C or better; admitted to a major or minor in the College of Business. Enrollment not allowed if credit already earned for FIN 437. Investment objectives, modern portfolio theory, valuation, equilibrium, market efficiency and asset classes. Credit not granted for more than one of FIN 427 and 437.
- 428 Portfolio Theory and Financial Engineering 3** Course Prerequisite: FIN 427 or 437 with a C or better; admitted to a major or minor in the College of Business. Pricing of forwards, futures, options, and swaps, financial derivatives markets, and managing portfolio risk.
- 429 Financial Modeling 3** Course Prerequisite: FIN 325 with a C or better; FIN 421, 425, 427, or 437, or concurrent enrollment; admitted to a major or minor in the College of Business. Corporate finance, portfolio, option pricing, risk management and fixed income modeling.
- 430 Financial Plan Development 3** Course Prerequisite: FIN 325; FIN 330. Comprehensive financial plan development including data gathering and analysis, using financial planning software, client interactions, ethics and practice standards.
- 437 [M] Cougar Investment Fund I 3** Course Prerequisite: FIN 325 with a C or better; admitted to a major or minor in the College of Business. Enrollment not allowed if credit already earned for FIN 427. Students manage a portion of the university's endowment; including security analysis, valuation, equilibrium, market efficiency, and modern portfolio theory. Credit not granted for more than one of FIN 427 and 437.
- 438 Cougar Investment Fund II 3** Course Prerequisite: FIN 427 or 437 with a C or better; admitted to a 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 with a C or better; FIN 345 with a C or better; admitted to a 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 with a C or better; admitted to a 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 with a C or better; admitted to a 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 325 with a C or better; admitted to a 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 with a C or better. 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 with a C or better; I BUS 380 with a C or better; admitted to a 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. Course Prerequisite: Admitted to a major or minor in the College of Business; junior standing. 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** General equilibrium, welfare economics and social choice, market failure, game theory, economics of information. (Crosslisted course offered as ECONS 503, FIN 503).
- 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 program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. 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 program. 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 program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. 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 program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. 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 program. 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 program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. Principles of international finance; financial management of multinational corporations; international investments.

- 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. Topics may include resource scarcity, decision making under risk, bioeconomics, production applications, welfare analysis.
- 596 Advanced Topics in Financial Economics 3** 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: Admitted to the Business Administration - Finance PhD program. 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**
- No letter-graded course offered by the Carson College of Business may be taken for a Pass, Fail (P, F) grade.*
- MGTOP**
- 215 Business Statistics 4 (3-2)** Course Prerequisite: MATH 201, 202, 106, 140, 171, 172, 220, or ALEKS score of 80%; B A 204 or 212, 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, STAT 212, STAT 360, or STAT 370; MATH 202, 140, 171, 172, 182, or 220; B A 204, 205, and 206, or B A 212; junior standing. 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: MGTOP 215, STAT 212, STAT 360, or STAT 370; junior standing. Regression models, inference, residual analysis, time series modeling and forecasting as applied to business.
- 418 Quality Improvement for Management 3** Course Prerequisite: MGTOP 215, STAT 212, STAT 360, or STAT 370; junior standing. 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. 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, 140, 171, 172, 182, or 220; junior standing. 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: By department permission.
- 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. Cooperative: Open to UI degree-seeking students.
- 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.
- 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 program. 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 program. Analytical approach to solving problems in production and operations management.
- 591 Statistical Analysis for Business Decisions 3** Course Prerequisite: Admission to the MBA program. Analytical skills for decision-making; data collection and analysis, sampling, inferential, regression methodologies, experimental design, time series, forecasting analysis.
- 596 Doctoral Topics 3** May be repeated for credit; cumulative maximum 34 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: Admitted to the Business Administration - Operations and Management Science PhD program. 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 Hospitality Business Management

business.wsu.edu/Hospitality/
Todd Hall 342
509-335-5766

Director and Ivar B. Haglund Chair, and Professor, R. Harrington; Taco Bell Distinguished Professor, D. Gursoy; Craig Schafer Fellow and Professor, H. J. Kim; Professors, M. Chen, C. Chi; Founding Director for the Granger Cobb Institute for Senior Living and Associate Professor, N. Swanger; Associate Professor, S. Seo; Assistant Professors, B. Chen, R. Hammond, K. Philander; Associate Career Track Professor, J. Harbour; Assistant Career Track Professor, M. Beattie; Culver Hospitality Relations Manager, A. Alonzo; Executive Chef and Catering Services Manager, J. Callison; Professor Emeritus, W. Terry Umbreit.

An integral part of the Carson College of Business, the School of Hospitality Business Management provides specialized instruction dealing with the major organizational, managerial, financial, and technical issues relative to operation of hospitality businesses. The school prepares graduates for managerial responsibilities both here and abroad. The curriculum provides a sound business education on the fundamental features 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, with majors in hospitality business management, senior living management, or wine and beverage 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.
- Gain deeper understanding of different cultures and business operations from these cultures, preferably through studying abroad.

Granger Cobb Institute for Senior Living

Senior Living is a growing, dynamic industry where residents age 55+ make their homes in independent, assisted living, or memory care communities. This model promotes active, social interaction among residents and their families, while providing a safe and caring environment. Managers and professional staff make a positive difference for residents and enhance the quality of their lives on a daily basis. This degree will prepare you for managerial and leadership positions in an industry that is nearly recession-proof. It will position you in a growing industry, provide you with sound business fundamentals with a focus on hospitality operations, and provide you with a very rewarding work-life balance.

Schedules of Studies

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

HOSPITALITY BUSINESS MANAGEMENT (120 CREDITS)

HBM Requirements

In addition to the admission and graduation requirements listed in the Carson College of Business (CCB) section of this catalog, all students majoring in Hospitality Business Management must complete 1,000 hours of work experience in the hospitality industry. In order for hours to count for the requirement, they must meet the following criteria:

- Hours must be worked after high-school graduation.
- All hours must be documented as paid.
- Hours must be worked at a company whose primary source of revenue is derived from hospitality services.
- The employer evaluation for the hours must reflect an average of 80% across the ratings criteria on the form.

First Year

First Term	Credits
B A 100	3
COM 102 [COMM], H D 205 [COMM], or MKTG 279 [COMM] ¹	3 or 4
ECONS 101 [SSCI] or 102 [SSCI] ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3
MATH 201 ²	3

Second Term

Second Term	Credits
B A 102	1
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ³	4
ECONS 101 or 102 ¹	3
HBM 101 ¹	1
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ⁴	3

Complete Carson Career Amplifier Program -- Tier 1

Apply for Admission into the Major

Second Year

First Term	Credits
ACCTG 230	3

B A 201, 202, and 203, or B A 211	3
Diversity [DIVR]	3
HBM 280	3
MIS 250	3
Consider studying abroad this summer ⁵	

Second Term Credits

ACCTG 231	3
Arts [ARTS]	3
B A 204, 205, and 206, or B A 212	3
Humanities [HUM]	3
MGTOP 215 ⁶	4
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

First Term Credits

B LAW 210	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ³	3
FIN 325	3
HBM 358	3
MKTG 360	3

Second Term

Second Term	Credits
HBM 381 [M]	3
HBM 494 [M]	3
I BUS 380	3
Social Science or Humanities Elective ⁷	3
300-400-level Business Elective ⁸	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

First Term Credits

ENGLISH 402 or 403	3
HBM 401	1
HBM 490 or 491 ⁹	3
International Experience Requirement or Electives ⁵	3
MGMT 450	3

Second Term

Second Term	Credits
ECONS 305 or 323	3
HBM 493 [CAPS] or 495 [CAPS] ⁹	3
International Experience Requirement or Electives ⁵	3
Social Science or Humanities Elective ⁷	3
300-400-level Business Elective ⁸	3
Electives	1
Complete 1000-hour work experience	
Complete Carson Career Amplifier Program -- Tier 4	

¹ For Students in the Honors Program: ECONS 198 is an approved substitute for ECONS 101 and 102; COM 102/H D 205/MKTG 279 requirement is waived; HONORS 198 is an approved substitute for HBM 101; ENGLISH 198 is an approved substitute for ENGLISH 101; ACCTG 298 is an approved substitute for ACCTG 230 and 231. Honors students may need to enroll in elective coursework to meet University requirement of 120 credits.

² MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.

³ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

⁴ Alternative to MATH 202 is MATH 140 or 171.

⁵ All students must complete the International Experience Requirement. Options for completing the requirement can be found in the Carson College of Business Academic Unit section of the catalog under Business (Pullman, Tri-Cities) or Business Administration (Vancouver). Students should consult with their advisor to determine the best option.

⁶ MATH/STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁷ Social Science or Humanities Electives (6 credits): Any courses with the [SSCI] or [HUM] designation, or courses in ANTH, ASIA, CES, CRM J, DTC, ECONS, ENGLISH (excluding ENGLISH 402 or 403), FINE ART, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS not used to fulfill other (including UCORE) requirements.

⁸ 300-400-level Business Electives (6 credits): Any 300-400-level course taught by CCB. May not include courses from the CCB core, the set of required HBM courses, or any 498 Internships or 499 Special Topics courses.

⁹ Two-course sequence - Food and beverage, or hotel and lodging. Food and beverage must take HBM 490 and HBM 493 [CAPS]. Hotel and lodging must take HBM 491 and HBM 495 [CAPS].

SENIOR LIVING MANAGEMENT (120 CREDITS)

HBM Requirements

In addition to the admission and graduation requirements listed in the Carson College of Business (CCB) section of this catalog, all students majoring in Senior Living Management must complete 1,000 hours of work experience in the hospitality industry. In order for hours to count for the requirement, they must meet the following criteria:

- Hours must be worked after high-school graduation.
- All hours must be documented as paid.
- Hours must be worked at a company whose primary source of revenue is derived from hospitality services.
- The employer evaluation for the hours must reflect an average of 80% across the ratings criteria on the form.

First Year

First Term	Credits
B A 100	3
BIOLOGY 140 [BSCI]	3
ECONS 101 [SSCI] or 102 [SSCI] ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3
MATH 201 ²	3

Second Term	Credits
B A 102	1
HBM 101 ¹	1
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ³	3
PSYCH 105	3
SOE 101 [PSCI] or AMDT 210 [PSCI]	4
Complete Carson Career Amplifier Program -- Tier 1	

Apply for Admission into the Major

Second Year

First Term	Credits
ACCTG 230 ¹	3
B A 201, 202, and 203, or B A 211	3
HBM 280	3
MIS 250	3
PHIL 365 [HUM] or KINES 201 [HUM]	3
Consider studying abroad this summer ⁴	

Second Term	Credits
ACCTG 231 ¹	3
B A 204, 205, and 206, or B A 212	3
B LAW 210	3
H D 205 [COMM] ¹	4
MGTOP 215 ⁵	4
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

First Term	Credits
Diversity [DIVR]	3
ECONS 101 or 102 ¹	3
FIN 325	3
HBM 358	3
HBM 375	3

Second Term	Credits
H D 405 or PSYCH 363	3
HBM 381 [M]	3
HBM 494 [M]	3
I BUS 380	3
MKTG 360	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

First Term	Credits
Arts [ARTS]	3
ENGLISH 402 or 403	3
HBM 401	1
HBM 470	3
International Experience Requirement or Electives ⁴	3
Management or Programming Elective ⁶	3

Second Term	Credits
300-400-level HBM Elective ⁷	3
HBM 475 [CAPS]	3
International Experience Requirement or Electives ⁴	3
Management or Programming Elective ⁶	3
Complete Carson Career Amplifier Program -- Tier 4	
Complete 1000-hour work experience	

¹ For Students in the Honors Program: ECONS 198 is an approved substitute for ECONS 101 and 102; COM 102/H D 205/MKTG 279 requirement is waived; HONORS 198 is an approved substitute for HBM 101; ENGLISH 198 is an approved substitute for ENGLISH 101; ACCTG 298 is an approved substitute for ACCTG 230 and 231. Honors students may need to enroll in elective coursework to meet University requirement of 120 credits.

² MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.

³ Alternative to MATH 202 is MATH 140 or 171.

⁴ All students must complete the International Experience Requirement. Options for completing the requirement can be found in the Carson College of Business Academic Unit section of the catalog under Business (Pullman, Tri-Cities) or Business Administration (Vancouver). Students should consult with their advisor to determine the best option.

⁵ MATH/STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁶ Management or Programming Electives (6 credits): Two courses from a single track. Management and Leadership Track: H D 360; PSYCH 320, 485, 490. Programming Track: PSYCH 485, 486, 490.

⁷ 300-400-level HBM Electives: Any 300-400-level HBM course. May not include the set of required HBM courses, or any 498 Internships or 499 Special Topics courses.

WINE AND BEVERAGE BUSINESS MANAGEMENT (124 CREDITS)

WBBM Requirements

In addition to the admission and graduation requirements listed in the Carson College of Business (CCB) section of this catalog, all students majoring in Wine and Beverage Business Management (WBBM) must complete 1,000 hours of work experience in the hospitality industry. In order for the 1,000 hours of work experience to count for the requirement, they must meet the following criteria:

- Hours must be worked after high-school graduation.
- All hours must be documented as paid.
- Hours must be worked at a company whose primary source of revenue is derived from hospitality services.
- The employer evaluation for the hours must reflect an average of 80% across the ratings criteria on the form.

First Year

First Term	Credits
B A 100	3
BIOLOGY 120 [BSCI]	4
ECONS 101 [SSCI] or 102 [SSCI] ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3
MATH 201 ²	3

Second Term	Credits
B A 102	1
CHEM 101 [PSCI]	4
HBM 101	1
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ³	3
VIT ENOL 113	3

Complete Carson Career Amplifier Program
-- Tier 1
Apply for Admission into the Major

Second Year

First Term	Credits
ACCTG 230	3
B A 201, 202, and 203, or B A 211	3
ECONS 101 or 102 ¹	3
FRENCH 120 [HUM]	3
HBM 231	1
HBM 280	3

Consider studying abroad this summer⁴

<i>Second Term</i>	<i>Credits</i>
ACCTG 231	3
B A 204, 205, and 206, or B A 212	3
B LAW 210	3
COM 102 [COMM], H D 205 [COMM], or MKTG 279 [COMM] ¹	3 or 4
MGTOP 215 ⁵	4
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
FIN 325	3
HBM 358	3
MIS 250	3
VIT ENOL 313	3
<i>Second Term</i>	<i>Credits</i>
HBM 381 [M]	3
HBM 494 [M]	3
International Experience Requirement or Elective ⁴	3
MKTG 360	3
Social Science or Humanities Elective ⁶	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

<i>First Term</i>	<i>Credits</i>
COMSTRAT 312, 380, ENTRP 490 [M], MKTG 368, 407, or MKTG 477	3
ENGLISH 402 or 403	3
HBM 350	3
HBM 401	1
HBM 490	3
I BUS 380	3
<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
FS/VIT ENOL 422	3
HBM 493 [CAPS]	3
International Experience Requirement or Electives ⁴	3
Social Science or Humanities Elective ⁶	3
Complete Carson Career Amplifier Program -- Tier 4	
Complete 1000-hour work experience	

¹ For Students in the Honors Program: ECONS 198 is an approved substitute for ECONS 101 and 102; COM 102/H D 205/MKTG 279 requirement is waived; HONORS 198 is an approved substitute for HBM 101; ENGLISH 198 is an approved substitute for ENGLISH 101; ACCTG 298 is an approved substitute for ACCTG 230 and 231. Honors students may need to enroll in elective coursework to meet University requirement of 120 credits.

² MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.

³ Alternative to MATH 202 is MATH 140 or 171.

⁴ All students must complete the International Experience Requirement. Options for completing the requirement can be found in the Carson College of Business Academic Unit section of the catalog under Business. Students should consult with their advisor to determine the best option.

⁵ MATH/STAT 212 will be accepted as alternative to

MGTOP 215 for transfer students.

⁶ Social Science or Humanities Electives (6 credits): Any courses with the [SSCI] or [HUM] designation, or courses in ANTH, ASIA, CES, CRM J, DTC, ECONS, ENGLISH (excluding ENGLISH 402 or 403), FINE ART, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS not used to fulfill other (including UCORE) requirements.

Minors

Event Management

Please see the Carson College of Business section of this Catalog for additional instructions. To be admitted into the Event Management minor, students must meet the following minimum requirements:

- Complete 27 credits
- WSU cumulative GPA of at least 2.50 and not on academic probation

The minor in event management requires a minimum of 19 credits of coursework, including:

- HBM 301
- HBM 383
- HBM 384
- HBM 401
- 9 credits from the following: HBM 235, 358, 381, 480, 494, 498, IBUS 435.

- Students must maintain an overall GPA of at least 2.50 in courses required for the HBM major.

• A minimum of 9 credits of upper-division coursework must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

- Up to 6 credits may be transferred from another institution.

To be admitted into this minor, students must meet with a business advisor and declare their interest. Students must ensure that they meet all course prerequisites before enrolling in any College of Business courses.

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:

- Hours must be worked after high-school graduation;
- All hours must be documented as paid;
- Hours must be worked at a company whose primary source of revenue is derived from hospitality services; and
- The employer evaluation for the hours must reflect an average of 80% across the ratings criteria on the form.

Hospitality Business Management

Please see the Carson College of Business section of this Catalog for additional instructions. To be admitted into the Hospitality Business Management (HBM) minor, students must meet the following minimum requirements:

- Complete 27 credits.
- WSU cumulative GPA of at least 2.50 and not on academic probation.

The minor in hospitality business management requires a minimum of 19 credits of coursework, including:

- ACCTG 220 or 230

- HBM 101 or 401
- 9 credits of upper-division HBM courses (excluding 498 and 499 courses)
- 6 credits of College of Business courses at any level
- Students must maintain an overall GPA of at least 2.50 in courses required for the HBM major.
- A minimum of 9 credits of upper-division coursework must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.
- Up to 6 credits may be transferred from another institution.

To be admitted into this minor, students must meet with a business advisor and declare their interest. Students must ensure that they meet all course prerequisites before enrolling in any College of Business courses.

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:

- Hours must be worked after high-school graduation;
- All hours must be documented as paid;
- Hours must be worked at a company whose primary source of revenue is derived from hospitality services; and
- The employer evaluation for the hours must reflect an average of 80% across the ratings criteria on the form.

Senior Living Management

Please see the Carson College of Business section of this Catalog for additional instructions. To be admitted into the Senior Living Management (SLM) minor, students must meet the following minimum requirements:

- Complete 27 credits.
- WSU cumulative GPA of at least 2.50 and not on academic probation.

The minor in senior living management requires a minimum of 19 credits of coursework including:

- ACCTG 220 or 230
- HBM 101 or 401
- HBM 375
- H D 308, 350, 360, or 405, or PSYCH 363
- HBM 494
- HBM 470
- Any CCB course – 3 credits (HBM 280 or MKTG 360 or MGMT 450 are recommended)
- Students must maintain an overall GPA of at least 2.50 in SLM minor courses.
- A minimum of 9 credits of upper-division coursework must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.
- Up to 6 credits may be transferred from another institution.

To be admitted into this minor, students must meet with a business advisor and declare their interest. Students must ensure that they meet all course prerequisites before enrolling in any College of Business courses.

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:

- Hours must be worked after high-school graduation;
- All hours must be documented as paid;

- Hours must be worked at a company whose primary source of revenue is derived from hospitality services; and
- The employer evaluation for the hours must reflect an average of 80% across the ratings criteria on the form.

Wine and Beverage Business Management

Please see the Carson College of Business section of this Catalog for additional instructions. To be admitted into the Wine and Beverage Business Management (WBBM) minor, students must meet the following minimum requirements:

- Complete 27 credits.
- WSU cumulative GPA of at least 2.50 and not on academic probation.

The minor in wine and business management requires a minimum of 19 credits of coursework including:

- ACCTG 220 or 230
- B A 212; or B A 204, 205, and 206
- HBM 231, 350, 358, and 490
- MKTG 360
- Students must maintain an overall GPA of at least 2.50 in WBBM minor courses.
- A minimum of 9 credits of upper-division coursework must be 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.

To be admitted into this minor, students must meet with a business advisor and declare their interest. Students must ensure that they meet all course prerequisites before enrolling in any College of Business courses.

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:

- Hours must be worked after high-school graduation;
- All hours must be documented as paid;
- Hours must be worked at a company whose primary source of revenue is derived from hospitality services; and
- The employer evaluation for the hours must reflect an average of 80% across the ratings criteria on the form.

Description of Courses

HOSPITALITY BUSINESS MANAGEMENT

No letter-graded course offered by the Carson College of Business may be taken for a Pass, Fail (P, F) grade.

HBM

101 Professional and Career Development for the Business World 1 Preparation for employment in today's business environment; focus on career/professional development (resume and cover letter development, interview skills, career services, professional expectations, networking, and etiquette).

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.

231 Introduction to Beverage Management 1 Overview of the beverage industry including history, trends, opportunities, logistics, legal/regulatory for non-alcoholic beverages and alcoholic beverages.

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 operation of various lodging, food, and beverage businesses.

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: Admitted to a major in the College of Business or minor in Hospitality Business Management; junior standing. Overview of event planning industry, including components, interrelationships, economics, and theory.

350 Beverage Management 3 Course Prerequisite: Must be at least 21 years old. 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 or 298; B A 204, 205, and 206 or concurrent enrollment, or B A 212 or concurrent enrollment; admitted to a major in the College of Business or minor in Hospitality Business Management. Operational control processes, control systems, and cost analysis procedures in food and beverage management.

375 Introduction to Senior Living Management 3 Introduction to the unique aspects of managing senior housing communities.

381 [M] Hospitality Leadership and Organizational Behavior 3 Course Prerequisite: B A 203, 211, or MGMT 301; admitted to a major in the College of Business or 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; admitted to a major in the College of Business or 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 220, 230, or 298; admitted to a major in the College of Business or 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.

401 Career Management 1 Course Prerequisite: HBM 101; senior standing. Career management preparation including mock/traditional/panel interviews, resume/cover letter critiques, offer evaluations, negotiation and networking.

458 Advanced Culinary Management and Catering 3 Course Prerequisite: HBM 258; admitted to a major in the College of Business or minor in Hospitality Business Management; junior standing. Advanced kitchen/dining room management with emphasis on culinary skill development and the planning and administration of catering events.

470 Senior Living Management Operations Analysis 3 Course Prerequisite: HBM 375. Analysis and practice of assessing senior living operational concerns, financial and budget, workforce and labor, sales and marketing efforts, as well as culture and customer experience concerns and decisions for the operation of a senior housing community.

475 [CAPS] Senior Living Management Capstone 3 Course Prerequisite: HBM 470; HBM 494; senior standing. Use of the case method in the operations and analysis of senior living organizations.

480 [M] Marketing Strategy and Development 3 Course Prerequisite: MKTG 360; admitted to a major in the College of Business, minor in Hospitality Business Management, or Professional Sales certificate. Theory and practice; problems in guest relations, special sales efforts, intramural promotion, research.

- 490 Food and Beverage Operational Analysis** 3 Course Prerequisite: FIN 325; HBM 358; MKTG 360; admitted to a major in College of Business or minor in Hospitality Business Management or Wine and Beverage Business Management; junior standing. Theory and practice of new product/service innovation and process, beverage/brand marketing, logistics/distribution concerns, sales and marketing efforts, and legal and regulatory concerns for development of innovative beverage or food and beverage concepts.
- 491 Operational Analysis** 3 Course Prerequisite: ACCTG 220, 231, or 298; MGTOP 215, STAT 212, STAT 360, or STAT 370; FIN 325; HBM 280; admitted to a major in the College of Business or minor in Hospitality Business Management; junior standing. Using management tools in analyzing operational effectiveness of hotel and restaurant organizations.
- 493 [CAPS] Food and Beverage Strategies** 3 Course Prerequisite: FIN 325; HBM 358; HBM 490; I BUS 380; MKTG 360; admitted to a major in Carson College of Business or minor in Hospitality Business Management; senior standing. Use of the case method and integrative projects, with a focus on food and beverage new product development and new service development practices in hospitality, wine and beverage organizations.
- 494 [M] Service Operations Management** 3 Course Prerequisite: Admitted to a major in the College of Business or minor in Hospitality Business Management; junior standing. Design and management of service delivery systems through operations management topics from a service perspective.
- 495 [CAPS] Case Studies and Research** 3 Course Prerequisite: FIN 325; HBM 358; HBM 491; I BUS 380; MKTG 360; completion of Carson Career Amplifier Tier II or Crimson Pathway I; admitted to a major in the College of Business or minor in Hospitality Business Management; senior standing. Use of the case method and computerized statistical programs in the analysis of administrative practices of organizations.
- 496 Special Topics** V 1-3 May be repeated for credit; cumulative maximum 6 hours.
- 497 Special Topics** V 1-3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: ACCTG 220, 230, or 298; admitted to a major in the College of Business or 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 program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. Tourism components; social, economic, and cultural effects on societies; the management of tourism businesses.
- 581 Services Management** 3 Course Prerequisite: Admission to the MBA program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. Design and management of service systems in hospitality operations; control of customer interaction, personnel activities and inventory.
- 582 Hospitality Operations Analysis** 3 Complete MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. 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: Admitted to the Business Administration - Hospitality and Tourism PhD program. 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/research-faculty/institutes/international-business-institute
Todd Hall Addition 380
509-335-1246

Director and International Business Fellow, S. Ahn; International Business Fellows, M. Beattie, A. Boskabadi, J. Callison, M. Cicek, M. Featherman, S. Fotopoulos, J. Gramlich, D. Gursoy, J. Harbour, D. Jha, G. Jiang, J. Joireman, J. Kim, M. Mayes, N. Pearson, M. Reyes, J. Rose, J. Sandstrom, U. Umesh, B. Wong-on-Wing.

The International Business Institute (IBI) was established to coordinate international activities in the Carson 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 experience requirement for the Carson College of Business and advises all business majors on international experiences and global engagements. 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 and Associate Professor, R. Crossler; Senior Associate Dean and Professor, D. Compeau; Senior Associate Dean and Professor, T. Tripp (Vancouver); Director of the Center for Entrepreneurial Studies and Clinical Associate Professor, M. Mayes; Professors, L. Hunter, A. Sahaym, R. Suddaby; Associate Professors, J. Beus, K. Butterfield; M. Carter, R. Johnson, A. Kier (Vancouver), K. Kuhn, L. Sheppard, P. Skilton (Tri-Cities), B. Warnick (Vancouver); Assistant Professors, H. Johnson, A. Lahiri, R. Saylor (Vancouver), L. Zhu; Career Track Professor, J. Compeau; Career Track Associate Professors, J. Bravo (Tri-Cities), C. Cooney, M. Featherman, R. Moser; Career Track Assistant Professors, V. Kolde, G. Mader, A. Smith (Vancouver); Professors Emeriti, V. Miskin, C. Morgan.

Schedules of Studies

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

ENTREPRENEURSHIP (120 CREDITS)

Entrepreneurship is the recognition, creation, evaluation, and pursuit of opportunities for individual and social gains through the application

of creativity and the securing of resources. The entrepreneurship major at WSU is not just for students who want to start a business. The major will help develop a broader mindset about innovation, risk-taking, and action that is valuable to students who work in large companies, non-profits, and new commercial or social ventures.

Graduation Requirements

To graduate with a Bachelor of Arts in Business Administration with a major in Entrepreneurship students are required to complete all admission and graduation requirements listed in the Carson College of Business (CCB) section of this catalog and the coursework included in the sample 4-year plan listed below.

First Year

<i>First Term</i>	<i>Credits</i>
B A 100	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
ECONS 101 [SSCI] or 102 [SSCI] ²	3
ENGLISH 101 [WRTG] or 105 [WRTG] ²	3
MATH 201 ³	3

<i>Second Term</i>	<i>Credits</i>
B A 102	1
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
ECONS 101 or 102 ²	3
HBM 101 ²	1
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ⁴	3
Complete Carson Career Amplifier Program -- Tier 1	
Apply for Admission into the Major	

Second Year

<i>First Term</i>	<i>Credits</i>
ACCTG 230 ²	3
Arts [ARTS]	3
B A 204, 205, and 206, or B A 212	3
B LAW 210	3
COM 102 [COMM], H D 205 [COMM], or MKTG 279 [COMM] ²	3 or 4
Consider studying abroad this summer ⁵	

<i>Second Term</i>	<i>Credits</i>
ACCTG 231 ²	3
B A 201, 202, and 203, or B A 211	3
Humanities [HUM]	3
MGTOP 215 ⁶	4
MIS 250	3
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
ENTRP 489	3
I BUS 380	3
MGTOP 340	3
MKTG 360	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 402 or 403	3
ENTRP 490 [M]	3
FIN 325	3

International Experience Requirement or Electives ^{5,7}	3
Social Science or Humanities Elective ⁸	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

<i>First Term</i>	<i>Credits</i>
ENTRP 426	3
ENTRP 485 [M] or 496 [M] ⁹	3
300-400-level Business Elective ¹⁰	3
International Experience Requirement or Electives ^{5,7}	3
Social Science or Humanities Elective ⁸	3
<i>Second Term</i>	<i>Credits</i>
ENTRP 486 [M] or 496 [M] ⁹	3
ENTRP 492 [CAPS]	3
300-400-level Business Elective (MIS 441 recommended) ¹⁰	3
International Experience Requirement or Electives ^{5,7}	5
Complete Carson Career Amplifier Program -- Tier 4	

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² For students in the Honors Program: ECONS 198 is an approved substitute for ECONS 101 and 102; COM 102/H D 205/MKTG 279 requirement is waived; HONORS 198 is an approved substitute for HBM 101; ENGLISH 198 is an approved substitute for ENGLISH 101; ACCTG 298 is an approved substitute for ACCTG 230 and 231. Honors students may need to enroll in elective coursework to meet University requirement of 120 credits.

³ MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.

⁴ Alternative to MATH 202 is MATH 140 or 171.

⁵ All students must complete the International Experience Requirement. Options for completing the requirement can be found in the Carson College of Business Academic Unit section of the catalog under Business or Business Administration (Vancouver). Students should consult with their advisor to determine the best option.

⁶ MATH/STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁷ Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

⁸ Social Science or Humanities Electives (6 credits): Any courses with the [SSCI] or [HUM] designation, or courses in ANTH, ASIA, CES, CRM J, DTC, ECONS, ENGLISH (excluding ENGLISH 402 or 403), FINE ART, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS not used to fulfill other (including UCORE) requirements.

⁹ ENTRP 496 is a year-long course that must be taken both fall and spring semesters.

¹⁰ 300-400-level Business Electives (6 credits): Any 300-400-level course taught by CCB. May not include courses from the CCB core, the set of required ENTRP courses, or any 498 Internships or 499 Special Topics courses.

MANAGEMENT (120 CREDITS)

The Management major has been developed for students interested in pursuing a career as a professional manager. In addition to learning vital management skills such as planning, organizing, leadership, and controlling, students will gain marketable skills by choosing one of two tracks. The Human Resource Management (HRM) track provides skills in areas such as selection, training, motivating, evaluating, and compensating employees. The Innovation and Change (I&C) track provides skills in areas such as managing innovation in networks and teams and managing organizational change processes.

Graduation Requirements

To graduate with a Bachelor of Arts in Business Administration with a major in Management, students are required to complete all admission and graduation requirements listed in the Carson College of Business (CCB) section of this catalog and the coursework included in the sample 4-year plan listed below.

First Year

<i>First Term</i>	<i>Credits</i>
B A 100	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
ECONS 101 [SSCI] or 102 [SSCI] ²	3
HISTORY 105 [ROOT]	3
MATH 201 ³	3

<i>Second Term</i>	<i>Credits</i>
B A 102	1
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
ECONS 101 or 102 ²	3
ENGLISH 101 [WRTG] or 105 [WRTG] ²	3
HBM 101 ²	1
MATH 202 [QUAN] ⁴	3
Complete Carson Career Amplifier Program -- Tier 1	
Apply for Admission into the Major	

Second Year

<i>First Term</i>	<i>Credits</i>
ACCTG 230 ²	3
B A 201, 202, and 203, or B A 211	3
B LAW 210	3
COM 102 [COMM], H D 205 [COMM], or MKTG 279 [COMM] ²	3 or 4
MIS 250	3
Consider studying abroad this summer ⁵	

<i>Second Term</i>	<i>Credits</i>
ACCTG 231 ²	3
Arts [ARTS]	3
B A 204, 205, and 206, or B A 212	3
Humanities [HUM]	3
MGTOP 215 ⁶	4
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3

FIN 325	3
I BUS 380	3
MGMT 401	3
Social Science or Humanities Elective ⁷	3

<i>Second Term</i>	
ENGLISH 402 or 403	Credits 3
MGMT 485 [M]	3
MGTOP 340	3
MKTG 360	3
Track Electives ⁸	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

<i>First Term</i>	
MGTOP 470	Credits 3
International Experience Requirement or Electives ⁵	3
Social Science or Humanities Elective ⁷	3
Track Electives [M] ⁸	6

<i>Second Term</i>	
MGMT 491 [CAPS] or ENTRP 492 [CAPS]	Credits 3
International Experience Requirement or Electives	3
Track Electives ⁸	3
Electives ⁹	5
Complete Carson Career Amplifier Program -- Tier 4	

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² For students in the Honors Program: ECONS 198 is an approved substitute for ECONS 101 and 102; COM 102/H D 205/MKTG 279 requirement is waived; HONORS 198 is an approved substitute for HBM 101; ENGLISH 198 is an approved substitute for ENGLISH 101; ACCTG 298 is an approved substitute for ACCTG 230 and 231. Honors students may need to enroll in elective coursework to meet University requirement of 120 credits.

³ MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.

⁴ Alternative to MATH 202 is MATH 140 or 171.

⁵ All students must complete the International Experience Requirement. Options for completing the requirement can be found in the Carson College of Business Academic Unit section of the catalog under Business or Business Administration (Vancouver). Students should consult with their advisor to determine the best option.

⁶ MATH/STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁷ Social Science or Humanities Electives (6 credits): Any courses with the [SSCI] or [HUM] designation, or courses in ANTH, ASIA, CES, CRM J, DTC, ECONS, ENGLISH (excluding ENGLISH 402 or 403), FINE ART, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS not used to fulfill other (including UCORE) requirements.

⁸ Track Electives: Students must complete one of two tracks for the management major. A total of 12 credits are required for each track. The requirements for each track are as follows. Innovation & Change Track: required MGMT 483 [M]; 3 credits from MIS 441, MIS 420, ENTRP 489, MGMT 496; 6 credits

from any 300-400-level course taught by CCB. May not include courses from the CCB core, the set of required MGMT/MGTOP courses, or any 498 Internships or 499 Special Topics courses. Human Resource Management Track: required MGMT 450, 455, 456 [M]; 3 credits from any 300-400-level course taught by CCB. May not include courses from the CCB core, the set of required MGMT/MGTOP courses, or any 498 Internships or 499 Special Topics courses.

⁹ Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

MANAGEMENT INFORMATION SYSTEMS (120 CREDITS)

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.

Graduation Requirements

To graduate with a Bachelor of Arts in Business Administration with a major in Management Information System students are required to complete all admission and graduation requirements listed in the Carson College of Business (CCB) section of this catalog and the coursework included in the sample 4-year plan listed below.

First Year

<i>First Term</i>	
B A 100	Credits 3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
ECONS 101 [SSCI] or 102 [SSCI] ²	3
ENGLISH 101 [WRWG] or 105 [WRWG] ²	3
MATH 201 ³	3

<i>Second Term</i>	
B A 102	Credits 1
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
ECONS 101 or 102 ²	3
HBM 101 ²	1
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ⁴	3

Complete Carson Career Amplifier Program

-- Tier 1

Apply for Admission into the Major

Second Year

<i>First Term</i>	
ACCTG 230 ²	Credits 3
B A 204, 205, and 206, or B A 212	3
B LAW 210	3
COM 102 [COMM], H D 205 [COMM], or MKTG 279 [COMM] ²	3 or 4
MIS 250	3
Consider studying abroad this summer ⁵	

<i>Second Term</i>	
ACCTG 231 ²	Credits 3
Arts [ARTS]	3
B A 201, 202, and 203, or B A 211	3
Humanities [HUM]	3
MGTOP 215 ⁶	4

Complete Carson Career Amplifier Program

-- Tier 2

Complete Writing Portfolio

Third Year

<i>First Term</i>	
ENGLISH 402 or 403	Credits 3
FIN 325	3
MIS 325	3
MIS 372 [M]	3
Electives ⁷	3

<i>Second Term</i>	
I BUS 380	Credits 3
MGTOP 340	3
MIS 322 [M]	3
MKTG 360	3
Social Science or Humanities Elective ⁸	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

<i>First Term</i>	
Diversity [DIVR]	Credits 3
300-400-level Business Electives ⁹	3
300-400-level MIS Electives ¹⁰	3
International Experience Requirement or Electives ⁵	3
Social Science or Humanities Elective ⁸	3

<i>Second Term</i>	
MGMT 491 [CAPS] or ENTRP 492 [CAPS]	Credits 3
300-400-level Business Electives ⁹	3
300-400-level MIS Elective ¹⁰	3
International Experience Requirement and/or Electives ^{5,7}	5
Complete Carson Career Amplifier Program -- Tier 4	

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² For students in the Honors Program: ECONS 198 is an approved substitute for ECONS 101 and 102; COM 102/H D 205/MKTG 279 requirement is waived; HONORS 198 is an approved substitute for HBM 101; ENGLISH 198 is an approved substitute for ENGLISH 101; ACCTG 298 is an approved substitute for ACCTG 230 and 231. Honors students may need to enroll in elective coursework to meet University requirement of 120 credits.

³ MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.

⁴ Alternative to MATH 202 is MATH 140 or 171.

⁵ All students must complete the International Experience Requirement. Options for completing the requirement can be found in the Carson College of Business Academic Unit section of the catalog under Business or Business Administration (Vancouver). Students should consult with their advisor to determine the best option.

⁶ MATH/STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁷ Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

⁸ Social Science or Humanities Electives (6 credits): Any courses with the [SSCI] or [HUM] designation,

or courses in ANTH, ASIA, CES, CRM J, DTC, ECONS, ENGLISH (excluding ENGLISH 402 or 403), FINE ART, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS not used to fulfill other (including UCORE) requirements.

⁹ 300-400-level Business Electives (6 credits): Any 300-400-level courses taught by CCB. May not include courses from the business administration CCB core, the set of required MIS courses, or any 498 Internships or 499 Special Topics courses.

¹⁰ 300-400-level MIS Electives (6 credits): Any 300-400-level MIS course. May not include courses from the CCB Core, the set of required MIS courses, or any except 498 Internship or 499 Special Topics courses not used to fulfill major requirements.

Minors

Entrepreneurship

Please see the Carson College of Business section of this Catalog for additional instructions. To be admitted into the Entrepreneurship minor, students must meet the following minimum requirements:

- Complete 27 credits.
- WSU cumulative GPA of at least 2.50 and not on academic probation

The entrepreneurship minor requires 18 credits of coursework including:

- ACCTG 220 or 230
- ENTRP 426
- One management course: ENTRP 489, ENGR 401, or an approved substitute
- One marketing/communication course: ENTRP 490, COMSTRAT 380, or an approved substitute
- Two semesters of business plan courses (minimum 6 credits): ENTRP 485 and 486; ENTRP 496 (6 credits of Special Topics); BIO ENG 410 and 411; or approved substitutes

Students must maintain an overall GPA of 2.50 in the entrepreneurship minor courses.

A minimum of 9 credits of upper-division coursework must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

To be admitted into this minor, students must meet with a business advisor and declare their interest. Students must ensure that they meet all course prerequisites before enrolling in any College of Business courses.

Human Resource Management

Please see the Carson College of Business section of this Catalog for additional instructions. To be admitted into the Human Resource Management (HRM) minor, students must meet the following minimum requirements:

- Complete 27 credits.
- WSU cumulative GPA of at least 2.50 and not on academic probation

The minor in human resource management requires 19 credits of coursework, including:

- MGTOP 215 or PSYCH 311
- MGMT 301
- MGMT 450
- H D 205 or MIS 250
- And two of the following: MGMT 455; MGMT 456; or MGMT 496

Students must maintain an overall GPA of at least 2.50 in the HRM minor courses.

A minimum of 9 credits of upper-division coursework must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

To be admitted into this minor, students must meet with a business advisor and declare their interest. Students must ensure that they meet all course prerequisites before enrolling in any College of Business courses.

Certificates

CySER Basics

Students participating in the CySER Basics Certificate will receive wide-ranging training that integrates cybersecurity research and education with professional skills in teamwork, communication, leadership, and lifelong learning. A core principle in this certificate is training that organically merges theoretical knowledge with experiential learning. This certificate is targeted for undergraduate students from any major. One course may be completed at the University of Idaho. The certificate requires:

- CPT S 111 or CPT S 121.
- MIS 372 or CYB 110 (a cooperative course offered at University of Idaho).
- MIS 374 or CYB 310 (a cooperative course offered at University of Idaho).
- MIS 499 (with a cybersecurity project) or CPT S 421 and CPT S 423.

Additionally, students will:

- Participate in three internship credits (MIS 498; or CPT S 488 and ENGR 489) with a cybersecurity-related experience; or complete at least four credits of foreign language or demonstrate equivalent proficiency in Russian, Chinese, Korean, Arabic, or Persian.
- Demonstrate involvement in CySER research (realized via class projects, senior design projects, independent study).
- Attend the CySER summer workshop.
- Attend CySER seminars (at least 40% of the bi-weekly seminars in a semester).

Description of Courses

ENTREPRENEURSHIP

No letter-graded course offered by the Carson College of Business may be taken for a Pass, Fail (P, F) grade.

ENTR P

426 Entrepreneurial Finance 3 Raising capital for new enterprises; venture capital, IPOs, debt financing, leasing and valuing start-up ventures.

485 [M] New Venture Planning 3 Course Prerequisite: Junior standing. Skills, behaviors, and knowledge necessary for creating and growing new ventures; evaluating opportunities, developing growth strategies, obtaining venture financing, intellectual property, and building a management team.

486 Launching New Ventures 3 Course Prerequisite: ENTRP 485 with a C or better; junior standing. Focus on turning an idea into a serious business venture; research new business opportunities and become skilled in developing business tools and processes to carry out venture-launch strategies; compete in the WSU Business Plan Competition.

489 Entrepreneurial Management 3 Philosophy and nature of entrepreneurship for all business organizations; analytical, financial and interpersonal entrepreneurial skills.

490 [M] Entrepreneurial Marketing 3 Concepts, issues, and techniques of marketing in entrepreneurial ventures and the role of entrepreneurship in marketing efforts of all firms.

492 [CAPS] Small Business Strategy and Planning 3 Course Prerequisite: FIN 325; I BUS 380; MGTOP 340; MKTG 360; completion of Carson Career Amplifier Tier II or Crimson Pathway I; admitted to a major or minor in the College of Business; senior standing. Application of management theory and principles to small firms; applied consulting experience with operating businesses.

496 Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to a 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 program. Basic business concepts and processes applied to technology commercialization and venture creation.

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.

MANAGEMENT

No letter-graded course offered by the Carson College of Business may be taken for a Pass, Fail (P, F) grade.

MGMT

101 Fundamentals of Business 3 Enrollment not allowed if credit for B A 100 already earned. 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 B A 100.

301 Principles of Management and Organization 3 Course Prerequisite: Junior standing. 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.

401 Leading People and Organizations 3 Course Prerequisite: B A 201, 202, and 203, or B A 211, or MGMT 301; admitted to a major or minor in the College of Business, Personnel Psychology & Human Resource Management option, or Biomedical Business option; junior standing. Leadership, motivation, team building, group dynamics, interpersonal and group conflict, and job design.

430 Interdisciplinary Corporate Scholars 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Selection into a WSU Corporate Scholars Program or by department permission; senior standing. Formulation, management, implementation, and completion of an interdisciplinary project.

450 Personnel and Human Resources Management 3 Course Prerequisite: B A 201, 202, and 203, or B A 211, or MGMT 301; MGTOP 215, PSYCH 311, STAT 212, STAT 360, or STAT 370; admitted to a major or minor in the College of Business, major in Economic Sci, or option of Personnel Psych & Human Resource Mgt. Policy and practice in human resource utilization, selecting, training, motivating, evaluating, and compensating employees; labor relations; EEO legislation.

455 Recruiting and Hiring Human Capital 3 Course Prerequisite: MGMT 450 with a C or better; admitted to a major or minor in the College of Business, or major in Economic Sciences, 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 [M] Evaluating and Rewarding Employees 3 Course Prerequisite: MGMT 450 with a C or better; admitted to a major or minor in the College of Business, or major in Economic Sciences, or option of Personnel Psychology & Human Resource Management. Theoretical, research, and applied issues related to the compensation of employees.

483 [M] Management of Innovation and Change 3 Course Prerequisite: Admitted to a major or minor in the College of Business, major in Economic Sciences, Personnel Psychology & Human Resource Management option, or Biomedical Business option; junior standing. Analysis of innovation and change theories in organizations; managing innovation in networks and teams; technology, structure, culture, and environment.

485 [M] Negotiation Skills 3 Course Prerequisite: Admitted to a major or minor in the College of Business, or major in Economic Sciences, or option of Personnel Psychology & Human Resource Management, or to the Professional Sales Certificate Program; junior standing. Bargaining skills across a broad range of business settings; experiential work.

487 Business Ethics and Corporate Responsibility 3 Course Prerequisite: Admitted to a major or minor in the College of Business, major in Economic Sciences, or option of Personnel Psychology & Human Resource Management; junior standing. The nature and sources of individual and corporate ethical responsibilities in the business context and ways of addressing conflicting responsibilities.

491 [CAPS] Strategic Management 3 Course Prerequisite: FIN 325; I BUS 380; MGTOP 340; MIS 250; MKTG 360; completion of Carson Career Amplifier Tier II or Crimson Pathway I; admitted to a major or minor in the College of Business; senior standing. Capstone course integrating diverse functional knowledge for strategy formulation, implementation and competitive advantage from the perspective of top management.

496 Special Topics 3 May be repeated for credit. Course Prerequisite: Admitted to a 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. 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.

582 Personnel and Human Resource Management 3 Course Prerequisite: Admission to the MBA program. Human resources and personnel administration; selection, training, compensation, performance appraisal, labor relations, health and safety, EEO legislation.

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.

587 Professional Ethics and Practice in Business 3 Course Prerequisite: Admission to the MBA program. 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 program. Technological transitions and technology strategy; knowledge and creativity in organizations; managing innovation processes, technical employees, and cross-functional cooperation.

589 Seminar in Management 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to the MBA program. 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 MBA program and completion of MBA Prerequisites, including: B A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. Relationship between the formulation of strategy and the selection of effective organizational structures and systems.

593 Managerial Leadership and Productivity 3 Course Prerequisite: Admission to the MBA program or Carson College of Business Graduate Certificate and completion of MBA Prerequisites, including: B A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. Organizational behavior and human motivation in the workplace; organization and leadership theories, studies, projects and models leading to improved productivity.

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.
- 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: Admitted to the Business Administration - Management PhD program. 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 Course Prerequisite: Sophomore standing. Comprehensive overview of the role of management information systems in business, including principles and application of MIS, key issues in developing and implementing information systems, and strategic value of IT to organizations.
- 271 Business Systems Development** 3 Course Prerequisite: MIS 250. Top-down program design, structured development techniques, and system testing.
- 322 [M] Enterprise Business Process Analysis** 3 Course Prerequisite: MIS 250; admitted to a major or minor in the College of Business, or major in Data Analytics. 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; admitted to a major or minor in the College of Business, or major in Data Analytics. Basic principles of designing and developing enterprise-level business applications.
- 372 [M] Data Management** 3 Course Prerequisite: MIS 250; admitted to a major or minor in the College of Business, or major in Data Analytics. The management of data in business environments.
- 374 Information Technology Infrastructure and Security** 3 Course Prerequisite: MIS 250; admitted to a major or minor in the College of Business, or major in Data Analytics. Designing, managing, and securing corporate information technology infrastructures.
- 400 Strategic Information Systems Leadership** 3 Course Prerequisite: MIS 250; admitted to a major or minor in the College of Business; senior standing. Exploration of issues and approaches in managing the information systems function in organizations and how the IS function integrates/ supports/ enables various types of organizational capabilities utilizing a senior management perspective.
- 420 Business Intelligence** 3 Course Prerequisite: MIS 250; MIS 325 with a C or better; MIS 372 with a C or better; admitted to a major or minor in the College of Business, or major in Data Analytics. Fundamentals of using information systems for business intelligence and decision support.
- 421 Business Intelligence Strategy** 3 Course Prerequisite: MIS 250 with C or better; admitted to a major or minor in the College of Business; junior standing. The process of making strategic business decisions through the use of business intelligence, including defining business problems, managing of business intelligence assets, identifying the necessary data to answer identified problems, and interpreting business intelligence output to strategically inform decision making.
- 426 Emerging Topics** 3 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MIS 250; admitted to a major or minor in the College of Business; senior standing. Special and advanced topics in MIS.
- 441 Global E-Commerce** 3 Course Prerequisite: I BUS 380; MIS 250; admitted to a 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: MIS 250; admitted to a major or minor in the College of Business; senior standing. 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 program. 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 program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. 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: Admitted to the Business Administration - Information Systems PhD program. 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

business.wsu.edu/departments/marketing-international-business/

Todd 367
509-335-0924

Professor and Department Chair, J. Joireman; Professors, B. Howlett, U. Umesh (Vancouver); Associate Professors, C. Miller, A. Perkins, A. SaVinhas (Vancouver); Assistant Professors, B. Balducci, K. Chase, K. Gunasti, A. Pappas; Career Track Professors, M. Cicek, J. Giese (Tri-Cities), R. Pimentel (Vancouver); Professors Emeriti, J. Cassleman, J. Johnson, D. Muehling, D. Stem, P. Tansuhaj.

Schedules of Studies

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

INTERNATIONAL BUSINESS (120 CREDITS)

Preparation for careers with multinational corporations, governmental and intergovernmental agencies both domestic and international. Students must complete a minimum of one semester of at least 11 weeks in length and 12 transferable credits from a pre-approved partnership program.

The International Business major requires its students to demonstrate competency in a foreign language. With sufficient high school preparation, students can elect to take an online examination upon entrance to WSU (fee based tests such as STAMP or LTI). If additional preparation in a foreign language is necessary, students will work with a CCB advisor to develop an appropriate course of study.

Assessed proficiency in a second language will be at the intermediate level or completion of a foreign language course through the 204 level. This may be completed at any time before graduation. Check with an advisor for specifics. Education Abroad is strongly recommended for language acquisition. The following courses in any foreign language (or any course for which one of these is a prerequisite) will be accepted as meeting the foreign language competency standard set by International Business in the Carson College of Business: 204, 261, 306, 307, 308, 406, 407, or 408.

This requirement is for all students except international students whose primary language is not English. A third language is strongly encouraged for students who have achieved competency in two languages by the time they enter the university or are admitted to the major.

In addition to completing international business courses, students will gain marketable skills by choosing a concentration area or a double major within the Carson College of Business (CCB). Students choosing to complete a concentration area must take 3 classes (9 credits) in one of the following areas: Global Trade, Sustainable Development, Entrepreneurship, Finance, Hospitality Business Management, Management Information Systems, Management, or Marketing (see course options for each concentration area in footnotes below). Students interested in pursuing a double-major can do so in the following business majors: Accounting, Entrepreneurship, Finance, Human Resources Management, or Marketing. Students pursuing double majors must complete at least 15 additional credits (18 credits for accounting) from courses specifically required by the second major and distinct from those used to satisfy the International Business major.

Students majoring in International Business are also encouraged to pursue areas of expertise, such as in Business Economics, a double major in foreign language for the professions such as Chinese, French, German, or Spanish for the Professions, in Political Sciences, or pursue the Certificate in East Asian Studies for Business majors.

Graduation Requirements

To graduate with a Bachelor of Arts in Business Administration with a major in International Business, students are required to complete a minimum of one semester of at least 11 weeks in length and 12 transferable credits from a pre-approved study abroad program; a concentration or double major as listed above; and all admission and graduation requirements listed in the Carson College of Business section of this catalog and the coursework included in the sample 4-year plan listed below.

First Year

First Term	Credits
B A 100	3
ECONS 101 [SSCI] or 102 [SSCI] ¹	3

Foreign Language Requirement ²	4
HISTORY 105 [ROOT]	3
MATH 201 ³	3

Second Term	Credits
B A 102	1
ECONS 101 or 102 ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3
Foreign Language Requirement ²	4
HBM 101 ¹	1
MATH 202 [QUAN] ⁴	3
Complete Carson Career Amplifier Program -- Tier 1	
Apply for Admission into the Major	

Second Year

First Term	Credits
ACCTG 230 ¹	3
B A 204, 205, and 206, or B A 212	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ⁵	3
Diversity [DIVR]	3
POL S 102 or 103	3

Second Term	Credits
ACCTG 231 ¹	3
B A 201, 202, and 203, or B A 211	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ⁵	4
I BUS 280	3
MIS 250	3
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

First Term	Credits
Study Abroad recommended this term ⁶	
B LAW 210	3
COM 102 [COMM], H D 205 [COMM], or MKTG 279 [COMM] ¹	3 or 4
I BUS 380	3
MGTOP 215 ⁷	4
SOC 101, 102, or PSYCH 105	3

Second Term	Credits
FIN 325	3
I BUS 453 [M]	3
MGTOP 340	3
MKTG 360	3
300-400-level International Business Concentration ⁸	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

First Term	Credits
ENGLISH 402 or 403	3
Humanities [HUM] ⁹	3
I BUS 480	3
300-400-level International Business Concentration ⁸	3

Second Term	Credits
Arts [ARTS]	3
ECONS 327 or I BUS 470	3
MGMT 491 [CAPS] or ENTRP 492 [CAPS]	3
300-400-level International Business Concentration [M] ⁸	3
Electives ⁹	3
Complete Carson Career Amplifier Program -- Tier 4	

¹ For students in the Honors Program: ECONS 198 is an approved substitute for ECONS 101 and 102; COM 102/H D 205/MKTG 279 requirement is waived; HONORS 198 is an approved substitute for HBM 101; ENGLISH 198 is an approved substitute for ENGLISH 101; ACCTG 298 is an approved substitute for ACCTG 230 and 231. Honors students may need to enroll in elective coursework to meet University requirement of 120 credits.

² Foreign Language Requirement: Approved courses include ARABIC 203-204; CHINESE 203-204; FRENCH 203-204; GERMAN 203-204; ITALIAN 203-204; JAPANESE 203-204; KOREAN 203-204; RUSSIAN 203-204; or SPANISH 203-204. Foreign language competency can also be determined by testing out at the intermediate level (tests such as STAMP or LTI) or certification by a WSU faculty member who is a native speaker of the target language. May be taken as part of study abroad. Non-native English speakers and bilingual students should check with department regarding this requirement.

³ MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.

⁴ Alternative to MATH 202 is MATH 140 or 171.

⁵ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

⁶ Study Abroad Requirement: Students must complete a minimum of one semester of at least 11 weeks in length and 12 transferable credits from a pre-approved study abroad program.

⁷ MATH/STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁸ 300-400-level International Business Concentration or Double Major (9 credits): Students choosing a concentration must complete 9 credits in one of the International Business concentrations: a) Global Trade: ECONS 320, 428, 430, I BUS 415 [M]; b) Sustainable Development: ECONS 320, 326, 427, 428; c) Entrepreneurship: ENTRP 426, 485 [M], 486 [M], 490 [M]; d) Finance: FIN 421, 427 [M], 481 [M]; e) Hospitality Business Management: HBM 381 [M], 490 or 491, 494 [M], I BUS 435; f) Management: MGMT 401 [M], 483 [M], 487; g) Management Information Systems: MIS 372 [M], 374, 420, 441; h) Marketing: I BUS 482 [M], MKTG 407, 468. Students choosing to double major in another business discipline should take required courses for their second major during this semester.

⁹ Humanities or Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

MARKETING (120 CREDITS)

Preparation for careers in marketing management, sales, retail management, marketing research, brand management, and promotion.

Graduation Requirements

To graduate with a Bachelor of Arts in Business Administration with a major in Marketing, students are required to complete all admission and graduation requirements listed in the Carson College of Business (CCB) section of this catalog and the coursework included in the sample 4-year plan listed below.

First Year

	Credits
<i>First Term</i>	
Arts [ARTS]	3
B A 100	3
ECONS 101 [SSCI] or 102 [SSCI] ¹	3
HISTORY 105 [ROOT]	3
MATH 201 ²	3

	Credits
<i>Second Term</i>	
B A 102	1
COM 102 [COMM], H D 205 [COMM], or MKTG 279 [COMM] ¹	3 or 4
ECONS 101 or 102 ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3
HBM 101 ¹	1
MATH 202 [QUAN] ³	3

Complete Carson Career Amplifier Program
-- Tier 1

Apply for Admission into the Major

Second Year

	Credits
<i>First Term</i>	
ACCTG 230 ¹	3
B A 201, 202, and 203, or B A 211	3
Humanities [HUM]	3
MIS 250	3
Social Science or Humanities Elective ⁴	3
Consider studying abroad this summer ⁵	

	Credits
<i>Second Term</i>	
ACCTG 231 ¹	3
B A 204, 205, and 206, or B A 212	3
B LAW 210	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ⁶	4
Diversity [DIVR]	3
Complete Carson Career Amplifier Program -- Tier 2	

Complete Writing Portfolio

Third Year

	Credits
<i>First Term</i>	
ENGLISH 402 or 403	3
I BUS 380	3
MGTOP 215 ⁷	4
MKTG 360	3
300-400-level Business Electives ⁸	3

	Credits
<i>Second Term</i>	
Biological Sciences [BSCI] or Physical Sciences [PSCI] ⁶	3
FIN 325	3
MGTOP 340	3
MKTG 407	3
300-400-level Marketing Elective ⁹	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

	Credits
<i>First Term</i>	
MKTG 368	3
MKTG 461 [M], ENTRP 490 [M], or I BUS 482 [M]	3
300-400-level Business Electives ⁸	3
International Experience Requirement or Elective ⁵	3
Social Science or Humanities Elective ⁴	3
<i>Second Term</i>	
MGMT 491 [CAPS] or ENTRP 492 [CAPS]	3
MKTG 495 [M]	3

International Experience Requirement or Elective ⁵	3
Electives ¹⁰	5
Complete Carson Career Amplifier Program -- Tier 4	

¹ For students in the Honors Program: ECONS 198 is an approved substitute for ECONS 101 and 102; COM 102/H D 205/MKTG 279 requirement is waived; HONORS 198 is an approved substitute for HBM 101; ENGLISH 198 is an approved substitute for ENGLISH 101; ACCTG 298 is an approved substitute for ACCTG 230 and 231. Honors students may need to enroll in elective coursework to meet University requirement of 120 credits.

² MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. MATH 106 will be accepted as an alternative to MATH 201 for transfer students.

³ Alternative to MATH 202 is MATH 140 or 171.

⁴ Social Science or Humanities Electives (6 credits): Any courses with the [SSCI] or [HUM] designation, or courses in ANTH, ASIA, CES, CRM J, DTC, ECONS, ENGLISH (excluding ENGLISH 402 or 403), FINE ART, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS not used to fulfill other (including UCORE) requirements.

⁵ All students must complete the International Experience Requirement. Options for completing the requirement can be found in the Carson College of Business Academic Unit section of the catalog under Business (Pullman) or Business Administration (Vancouver). Students should consult with their advisor to determine the best option.

⁶ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

⁷ MATH/STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁸ 300-400-level Business Electives (6 credits): Any 300-400-level courses taught by CCB. May not include courses from the CCB core, the set of required MKTG courses, or any 498 Internships or 499 Special Topics courses.

⁹ 300-400-level Marketing Electives (3 credits): Any 300-400-level MKTG course not used to fulfill major requirements.

¹⁰ Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

Description of Courses

INTERNATIONAL BUSINESS

No letter-graded course offered by the Carson College of Business may be taken for a Pass, Fail (P, F) grade.

I BUS

280 International Relations and Global Leadership 3 Introduction to the study of global business concentrating on international relations and leadership.

- 380 International Business** 3 Course Prerequisite: B A 201, 202, and 203, or B A 211; admitted to a major or minor in the College of Business; junior standing. 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 department permission. 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; admitted to a 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; admitted to a 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: Admitted to a 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: B A 201, 202, and 203, or B A 211, or MGMT 301; admitted to a major or minor in the College of Business or option of Personnel Psychology & Human Resource Management. 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).
- 480 Advanced International Business and Leadership** 3 Course Prerequisite: I BUS 280; I BUS 380. Fundamentals of international business, corporate strategy, and leadership in the global context.
- 482 [M] International Marketing** 3 Course Prerequisite: MKTG 360; admitted to a 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: By department permission.
- 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 program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. Decision making in the international environment; political, cultural, and economic risk management.
- 582 International Marketing Management** 3 Course Prerequisite: Admission to the MBA program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. 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 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.

MARKETING

No letter-graded course offered by the Carson College of Business may be taken for a Pass, Fail (P, F) grade.

MKTG

279 [COMM] Professional Persuasive Communications 3 Basic psychological principles of influence and the development of persuasive professional communication skills for career advancement and as life skills.

360 Marketing 3 Course Prerequisite: Admitted to a major or minor in the College of Business, or junior standing. An introduction to the marketing process and the strategic managerial decisions that are made with regard to product, price, promotion, and distribution.

368 Marketing Research 3 Course Prerequisite: MKTG 360; admitted to a 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 Theory, principles, and practices of professional sales with special attention to the business-to-business market.

407 Consumer Behavior 3 Course Prerequisite: MKTG 360; admitted to a major or minor in the College of Business, or major in Economic Sciences. 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 Digital Marketing 3 Course Prerequisite: MKTG 360; admitted to a major or minor in the College of Business, or Professional Sales certificate. Understanding and implementing marketing theory and analytics on social media and in online environments.

461 [M] Product Management 3 Course Prerequisite: MKTG 360; admitted to a 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.

467 Consumer Judgment and Decision-Making 3 Course Prerequisite: MKTG 360; admitted to a major or minor in the College of Business, or major in Economic Sciences. Examination of how consumers search and process information (e.g. prices, brand names, advertising), form judgments, make decisions (e.g. choice, purchase, invest, sell), and feel about their decisions afterwards (e.g. post-decision regret, satisfaction); perceptual, cognitive and emotional biases in decision-making and their implications for marketers, consumers, and policy makers.

468 Public Policy and Marketing 3 Course Prerequisite: MKTG 360; admitted to a major or minor in the College of Business, or major in Economic Sciences. 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; admitted to a major or minor in the College of Business, or major in Economic Sciences. Retailing system; organization, merchandising models, pricing, promotion, location, and control procedures; management decision processes.

477 Integrated Marketing Communications 3 Course Prerequisite: MKTG 360; admitted to a major or minor in the College of Business, or major in Economic Sciences. 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. 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.

- 479 Advanced Professional Sales** 3 Course Prerequisite: MKTG 379. Advanced theory and principles of professional sales with special attention to the business-to-business market and an emphasis on the application of theory and principles to selling skills.
- 480 Business to Business Marketing** 3 Course Prerequisite: MKTG 360; admitted to a major or minor in the College of Business, or Professional Sales certificate. Marketing strategies for creating customer and firm value in business-to-business markets.
- 487 Research Practicum** 3 Course Prerequisite: By department permission. Independent research project with faculty member including problem statement, literature review, hypotheses, data collection, and reporting of results.
- 495 [M] Marketing Management** 3 Course Prerequisite: MKTG 360; admitted to a major or minor in the College of Business; senior standing. 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. Recommended preparation: MKTG 368 and 407.
- 496 Special Topics** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: MKTG 360; by department permission.
- 498 Marketing Internship** V 2-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: MKTG 360; 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: MKTG 360; 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.
- 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 program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. 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.
- 507 Consumer Behavior** 3 Course Prerequisite: Admission to the MBA program. Marketing structure and behavior from economic and behavioral perspectives; social evaluation and behavioral implications of marketing strategy.
- 555 Marketing Analytics** 3 Course Prerequisite: Admission to the MBA program. 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 program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. 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 program. Marketing structure and behavior from economic and behavioral perspectives; social evaluation and behavioral implications of marketing strategy.
- 577 Promotional Management** 3 Course Prerequisite: Admission to the MBA program and completion of MBA Prerequisites, including: B_A 500, 501, 502, 503, 504, ACCTG 550 and ECONS 555. Integrated promotion into the marketing plan; methods, organization, communications, media selection, and campaigns.
- 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: Admitted to the Business Administration - Marketing PhD program. 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, S. Ha; Regents Professor and Voiland Distinguished Professor, Y. Wang; Professor and Paul Hohenschuh Distinguished Professor, A. Kostyukova; Professors, B. Ahring, H. Beyenal, P. Fromm, M. Rezac, K. Schulz, B. J. Van Wie, X. Zhang; Associate Professors, W. Dong, D. Lin, H. Lin, J-S. McEwen, S. Saunders, A. Vasavada; Assistant Professors, D. Scalise, D. Tolkatheev, D. Wu; Professors Emeriti, D. C. Davis, H. Davis, C. F. Ivory, N. Kruse, K. C. Liddell, R. Mahalingam, R. C. Miller, J. N. Petersen, W. J. Thomson, R. Zollars.

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 these graduates are capable. As appropriate for their chosen career paths, within five to ten years of graduation, program graduates will be able to:

- Engage successfully in graduate or professional education or entry-level employment.
- Perform responsibly and professionally in their chosen career paths.

- Exhibit continued growth of effective communication and collaboration skills.
- Demonstrate ongoing development of competent and 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 our 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 chemical engineering program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Student Learning Outcomes

To guide our student activities in developing the skills to meet the School's objectives we will monitor their attainment of the Student Outcomes as set forth by ABET. These are: 1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics, 2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors, 3) an ability to communicate effectively with a range of audiences, 4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts, 5) an ability to function effectively on a team whose members together provide leadership,

create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives, 6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions, and 7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

In addition to these Outcomes we will also monitor the program criteria for chemical, biochemical, biomolecular or similarly named engineering programs, as set forth by the American Institute of Chemical Engineers (AIChE). These criteria are, respectively: "The curriculum must provide (1) 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. The curriculum must include (2) 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." (Numerals added to original AIChE statement).

Online at: <https://voiland.wsu.edu/undergraduate/che/>

Bioengineering

Bioengineering is an engineering discipline that integrates engineering and life sciences to address issues important to human and animal well-being and to society at large. As such, the educational objective of the BS Bioengineering degree is to prepare graduates for productive employment, advanced study, or professional programs where they apply principles and methods of both engineering and life sciences to solve problems affecting human and animal health and well-being. Graduates may apply their expertise in human and animal medicine, biotechnology, or related biology-based engineering fields.

With these integrated science and engineering skills, bioengineering graduates are able to make valuable contributions to human and animal health care and environments, bio-based product development, and biotechnology. At Washington State University, bioengineering cooperates with and finds applications in numerous disciplines of engineering, veterinary medicine, and medical sciences. The bioengineering curriculum easily accommodates pre-medical, pre-dental, and pre-veterinary requirements for those students wishing to apply to professional schools in health care fields. The bioengineering program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org.

Student Learning Outcomes

Bioengineering graduates are able to demonstrate the following Student Outcomes:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and

make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Online at <https://voiland.wsu.edu/undergraduate/be/>

Computer Requirement

All Chemical Engineering and Bioengineering students are required to purchase laptop computers. Computer requirements are described at <https://voiland.wsu.edu/undergraduate/computer-requirement/>.

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.

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 with an ABET accredited program 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 (120 CREDITS)

Students who plan to pursue pre-med studies should consult their advisor for further information about appropriate courses.

Admission to the Major Criteria – Bioengineering Program

Incoming first-year students, transfer students, and students changing from a different major may be admitted to the Bioengineering degree program upon completion of MATH 171 with a C or better or concurrent enrollment, and CHEM 105 with a C or better or concurrent enrollment. To remain in the major the student must earn a grade of C or better in all courses and maintain good academic standing (i.e. a 2.0 or higher GPA each term and an overall cumulative GPA of 2.0 at WSU).

Students who are deficient under the University's Academic Regulations 38 and 39 or whose GPA in Bioengineering courses falls below 2.0 are subject to loss of eligibility of the major. The Bioengineering undergraduate studies committee will determine the eligibility for readmission and probation conditions for students who are deficient and apply for re-entry into the major.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
ENGR 120 ¹	2
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
BIO ENG 140	1
BIOLOGY 107 [BSCI]	4
CHEM 106 or 116	4
HISTORY 105 [ROOT] or 305 [ROOT]	3
MATH 172 or 182	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 205	1
CHE 201	3
Humanities [HUM]	3
MATH 220 or 230	2 or 3
MATH 273 or 283	2
PHYSICS 201 and 211, or 205	4 or 5

<i>Second Term</i>	<i>Credits</i>
BIO ENG 210	2
CE 211	3
MATH 315	3
PHYSICS 202 and 212, or 206	4 or 5
STAT 370 or 423	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 310	3
BIO ENG 321	3
BIO ENG 322 [M]	1
BIO ENG 350	3
E E 261	3

<i>Second Term</i>	<i>Credits</i>
BIO ENG 330	3
BIO ENG 340	4
Bioengineering Elective ²	3
Diversity [DIVR]	3
ECONS 101 [SSCI], 102 [SSCI], or 198	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 410 [M]	3
BIO ENG 440	4
Communication [COMM] or Written Communication [WRTG]	3
Technical Electives ³	6

<i>Second Term</i>	<i>Credits</i>
BIO ENG 411 [CAPS]	3
Bioengineering Electives ²	3
Technical Electives ³	6
Elective	1
Complete BIO ENG Exit Interview	

¹ 3 credit 300-400-level engineering course may be substituted for ENGR 120 by approval of advisor.

² Bioengineering Electives (6 credits): Must have a BIO ENG subject, selected from the following: BIO ENG 425, 435, 455, 476, or 481.

³ Technical Electives (12 credits): Approved courses include BIOLOGY 106, 251, CPT S 121, E E 214, 262, ME 116, 212, 216, MSE 201, PHIL 365, any 300-400 level BIO ENG, BIOLOGY, CE, CHE, CHEM, CPT S, E E, MATH, MBIOS, ME, MSE, NEUROSCI, PHYSICS, or STAT course as approved, or other courses as approved by advisor. Must include sufficient 300-400-level courses to meet University requirement of 40 credits upper-division coursework.

BIOENGINEERING - PRE-MED OPTION (127 CREDITS)

Students who plan to pursue pre-med studies should consult their advisor for further information about appropriate courses.

Admission to the Major Criteria – Bioengineering Program

Incoming first-year students, transfer students, and students changing from a different major may be admitted to the Bioengineering degree program upon completion of MATH 171 with a C or better or concurrent enrollment, and CHEM 105 with a C or better or concurrent enrollment. To remain in the major the student must earn a grade of C or better in all courses and maintain good academic standing (i.e. a 2.0 or higher GPA each term and an overall cumulative GPA of 2.0 at WSU).

Students who are deficient under the University's Academic Regulations 38 and 39 or whose GPA in Bioengineering courses falls below 2.0 are subject to loss of eligibility of the major. The Bioengineering undergraduate studies committee will determine the eligibility for readmission and probation conditions for students who are deficient and apply for re-entry into the major.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
ENGR 120 ¹	2
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
BIO ENG 140	1
BIOLOGY 107 [BSCI]	4
CHEM 106 or 116	4
HISTORY 105 [ROOT] or 305 [ROOT]	3
MATH 172 or 182	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 205	1
BIOLOGY 106	4
CHE 201	3
MATH 220 or 230	2 or 3
MATH 273 or 283	2
PHYSICS 201 and 211, or 205	4 or 5

<i>Second Term</i>	<i>Credits</i>
BIO ENG 210	2
CE 211	3
MATH 315	3
PHYSICS 202 and 212, or 206	4 or 5
STAT 370 or 423	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 310	3
BIO ENG 321	3
BIO ENG 322 [M]	1
CHEM 345	4
E E 261	3
MBIOS 301	4

<i>Second Term</i>	<i>Credits</i>
BIO ENG 330	3
BIO ENG 340	4
CHEM 348	4
MBIOS 303 or CHEM 370	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 350	3
BIO ENG 410 [M]	3
BIO ENG 440	4
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3

<i>Second Term</i>	<i>Credits</i>
BIO ENG 411 [CAPS]	3
Bioengineering Electives ²	6
ECONS 101 [SSCI] or 102 [SSCI] or 198	3
Humanities [HUM]	3
Complete BIO ENG Exit Interview	

¹ 3 credit 300-400 level engineering course may be substituted for ENGR 120 by approval of advisor.

² Bioengineering Electives (6 credits): Must have a BIO ENG subject, selected from the following: BIO ENG 425, 435, 455, 476, or 481.

CHEMICAL ENGINEERING - GENERAL (121 CREDITS)

At least 59 of the total hours required for this degree must be in 300-400-level courses.

Admission to the Major Criteria – Chemical Engineering Program

Incoming first-year students, transfer students, and students changing from a different major may be admitted to the Chemical Engineering degree program upon completion of MATH 171 with a C or better or concurrent enrollment, and CHEM 105 with a C or better or concurrent enrollment. To remain in the major the student must earn a grade of C or better in all CHE courses, earn a grade of C or better in all required electives, and maintain good academic standing (i.e. a 2.0 or higher GPA each term and an overall cumulative GPA of 2.0 at WSU).

Students who are deficient under the University's Academic Regulations 38 and 39 or whose GPA in CHE courses falls below 2.0 are subject to loss of eligibility of the major. The Chemical Engineering undergraduate studies committee will determine the eligibility for readmission and probation conditions for students who are deficient and apply for re-entry into the major.

Graduation Requirements

No Washington State University courses listed in this schedule of study may be taken on a pass/fail basis. With the exception of CHE 488, 495, 498, 499 and ENGR 489, all listed CHE courses, required electives, and the prerequisites to these courses must be completed with a grade of C or better.

First Year

First Term	Credits
CHE 101	1
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
HISTORY 105 [ROOT] or 305 [ROOT]	3
MATH 171 [QUAN]	4

Second Term	Credits
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHE 110 ¹	2
CHEM 106 or 116	4
ENGLISH 101 [WRTG]	3
MATH 172 or 182	4

Second Year

First Term	Credits
CHE 201	3
CHEM 345	4
Humanities [HUM]	3
MATH 273 or 283	2
PHYSICS 201 and 211, or 205	4 or 5

Second Term	Credits
CHE 211	3
CHEM 348 or MBIOS 303	4
MATH 220 or 230	2 or 3
MATH 315	3
PHYSICS 202 and 212, or 206	4 or 5
Complete Writing Portfolio	

Third Year

First Term	Credits
Arts [ARTS]	3
CHE 301	3
CHE 310	3
CHE 498	1
ENGLISH 402 [WRTG] [M] or 403 [WRTG] [M]	3
Technical Elective ²¹	3

Second Term	Credits
CHE 302	3
CHE 321	3
CHE 332	3
CHE 334	3

Fourth Year

First Term	Credits
CHE 352	3
CHE 432 [M]	3
CHE 441	3
CHE 450	3
ECONS 101 [SSCI] or 102 [SSCI] or 198	3

Second Term	Credits
CHE 433 [M]	2
CHE 451 [M] [CAPS]	3
CHE Elective ²¹	6
Technical Elective ²¹	3
Exit Interview	

¹ Three credit 300-400-level CHE course may be substituted for CHE 110 by approval of advisor. The CHE course can be included as three credits of the CHE or Technical Electives.

² Technical Electives (6 credits): MSE 201 or any 300-400-level BIO ENG, CHEM, CHE, CE, E E, ENGR, MATH, ME, MSE, PHYSICS, or STAT course as approved by advisor.

³ CHE Electives (6 credits): Any 400-level CHE course not used to fulfill major requirements. A maximum of 3 credits is allowed in CHE 488, 495, and 499 combined.

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: CHE 201 with a C or better; MATH 220 or concurrent enrollment. Analytical problem solving, modeling and computer methods for bioengineering applications.

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; BIO ENG 205 or both CHE 101 and CHE 211 with a C or better or concurrent enrollment; admitted to the major in Chem Engr or Bioengr. Fundamentals of the phenomena governing the transport of momentum, energy, and mass. (Crosslisted course offered as CHE 310, BIO ENG 310).

321 Mechanics of Biological Materials

3 Course Prerequisite: CE 211 with a C or better; admitted to the 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

3 Lab 1 (0-3) Course Prerequisite: BIO ENG 321 or concurrent enrollment; and STAT 370 or concurrent enrollment or STAT 423 or concurrent enrollment; admitted to the 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; admitted to the 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; admitted to the 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; admitted to the 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 [CAPS] Bioengineering Capstone Project

II 3 (2-2) Course Prerequisite: BIO ENG 410 with a C or better; senior standing. Detailed design and business case for a biological engineering-related process, machine, structure, or system. Recommended preparation: ECONS 101 or 102.

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. (Crosslisted course offered as BIO ENG 425/525, ME 525). Credit not granted for more than one of BIO ENG 425, BIO ENG 525, or ME 525.

- 435 Bioelectric Phenomena and Devices** 3 Course Prerequisite: E E 261 or 304; junior standing. The electrophysiology of excitable tissues (neurons and muscle) and human health applications involving recording activity or stimulating these tissues. Engineering principles are integrated with neural physiology for design and analysis of biomedical devices.
- 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.
- 455 Metabolic Engineering** 3 Course Prerequisite: CHE 201 with a C or better; MATH 220 and MATH 315 with a C or better; BIO ENG 210 or CHE 211 with a C or better. Understanding metabolic properties of organisms such that cells can be modified for use as biochemical plants to produce desired bioproducts. (Crosslisted course offered as BIO ENG 455, CHE 474).
- 456 Protein Bioengineering** 3 Course Prerequisite: Senior standing. Integrating molecular biology and engineering sciences to analyze, change, and design proteins' structure and function. Credit not granted for both BIO ENG 456 and 556. Recommended preparation: Organic chemistry and/or biochemistry.
- 475 Introduction to Biochemical Engineering** 3 Course Prerequisite: CHE 321 and 332 each with a C or better, OR BIO ENG 310, and 340, and 350 each with a C or better. Application of chemical engineering principles to the processing of biological and biochemical materials. (Crosslisted course offered as CHE 475, BIO ENG 475.)
- 476 Biomedical Engineering Principles** 3 Course Prerequisite: CHE 310 with a C or better. The application of chemical engineering principles to biomedical processes. (Crosslisted course offered as CHE 476, BIO ENG 476.)
- 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.
- 488 Professional Practice Coop/Internship I** V 1-2 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. Practicum for students admitted to the VCEA Professional Practice and Experiential Learning Program; integration of coursework with on-the-job professional experience. (Crosslisted course offered as ENGR 488, BIO ENG 488, CHE 488, CE 488, CPT S 488, E E 488, ME 488, MSE 488, SDC 488). S, F grading.
- 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. (Crosslisted course offered as BIO ENG 425/525, ME 525). Credit not granted for more than one of BIO ENG 425, BIO ENG 525, or ME 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.
- 556 Protein Bioengineering** 3 Integrating molecular biology and engineering sciences to analyze, change, and design proteins' structure and function. Credit not granted for both BIO ENG 456 and 556. Recommended preparation: Organic chemistry and/or biochemistry.
- CHEMICAL ENGINEERING**
- CHE**
- 101 Overview of Chemical Engineering** 1 Current topics, issues, and career options in Chemical Engineering.
- 110 Introduction to Chemical Engineering** 2 Course Prerequisite: CHE 101 with a C or better; CHEM 105 with a C or better or concurrent enrollment in CHEM 106, 345, or 348; MATH 171 with a C or better or concurrent enrollment in MATH 172, 182, 273, or 315. Introduction to chemical engineering; development of problem solving skills.
- 201 Chemical Process Principles and Calculations** 3 Course Prerequisite: CHE 110 with a C or better, or BIO ENG 140 with an S, or junior standing; CHEM 106 with a C or better or concurrent enrollment in CHEM 345 or 348; MATH 172 or 182 with a C or better, or concurrent enrollment in MATH 273 or 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: CHE 201 with a C or better; 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 101, CHE 211, and CHEM 345 each with a C or better or concurrent enrollment; PHYSICS 202 and 212 with a C or better; admitted to the major in Chemical Engineering. Basic concepts and laws; property relationships; compression and liquefaction; phase equilibria; reaction equilibria; applications in stagewise processing.
- 302 Chemical Engineering Thermodynamics II** 3 Course Prerequisite: CHE 301 with a C or better; admitted to the major in Chemical Engineering. Intermediate topics in chemical engineering thermodynamics; advanced phase and chemical reaction equilibrium (including the design of relevant chemical processes), non-ideal thermodynamics, and a microscopic description of thermodynamics.
- 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; BIO ENG 205 or both CHE 101 and CHE 211 with a C or better or concurrent enrollment; admitted to the major in Chem Engr or Bioenr. Fundamentals of the phenomena governing the transport of momentum, energy, and mass. (Crosslisted course offered as CHE 310, BIO ENG 310).
- 321 Kinetics and Reactor Design** 3 Course Prerequisite: CHE 302 with a C or better or concurrent enrollment; CHE 310 with a C or better; admitted to the major in Chemical Engineering. Chemical reaction kinetics applied to the design of reactors, non-ideal flow, mixing, catalysis.
- 332 Fluid Mechanics and Heat Transfer** 3 Course Prerequisite: CHE 302 with a C or better or concurrent enrollment; CHE 211 and 310 with a C or better; admitted to the major in Chemical Engineering. Design calculations, operations, and evaluation of equipment used in fluid flow, heat transfer, and evaporation.
- 334 Chemical Engineering Separations** 3 Course Prerequisite: CHE 302 with a C or better or concurrent enrollment; CHE 211 and 310 with a C or better; CHEM 345 with a C or better; admitted to the major in Chemical Engineering. Design and evaluation of equipment used in continuous contacting.
- 352 Chemical Process Safety** 3 Course Prerequisite: CHE 321 with a C or better; CHE 332 with a C or better; admitted to the major in Chemical Engineering. Introduction to technical fundamentals of chemical process safety.
- 422 Catalysis: From Fundamentals to Industrial Applications** 3 Course Prerequisite: CHE 302 and 321 with a C or better. An introduction to modern catalysis systems for chemical engineers, with an emphasis on heterogeneous catalysis.

- 432 [M] Chemical Engineering Lab I 3** (1-6) Course Prerequisite: CHE 302, 321, 332 and 334 with a C or better; CHE 352 with a C or better or concurrent enrollment; ENGLISH 402 or 403 with a C or better or concurrent enrollment; admitted to the major in Chemical Engr. 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 302, 321, 332, and 334 with a C or better; admitted to the major in Chemical Engineering. 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 302, 321, 332, and 334 with a C or better; CHE 352 with a C or better or concurrent; ENGLISH 402 or 403 with a C or better or concurrent; admitted to the major in Chemical Engineering. Chemical engineering design; computer tools; safety and environmental constraints; cost and equipment optimization.
- 451 [CAPS] [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: MATH 315; admitted to a major in engineering or physical sciences; senior standing. 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).
- 462 Applied Electrochemistry 3** Course Prerequisite: CHE 302 and 321 with a C or better; admitted to the major in Chemical Engineering. Thermodynamics, kinetics, and transport processes that occur in a simple model electrochemical system and how to apply them into more complicated real systems.
- 463 Introduction to Upstream/Midstream Technology 3** Course Prerequisite: CHE 301 with a C or better. An introduction for chemical engineers to oil and gas exploration, production, transportation, and storage.
- 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.
- 470 Biofilm Engineering 3** Medical and environmental biofilms; biofilm processes and biofilm control.
- 474 Metabolic Engineering 3** Course Prerequisite: CHE 201 with a C or better; MATH 220 and MATH 315 with a C or better; BIO ENG 210 or CHE 211 with a C or better. Understanding metabolic properties of organisms such that cells can be modified for use as biochemical plants to produce desired bioproducts. (Crosslisted course offered as BIO ENG 455, CHE 474).
- 475 Introduction to Biochemical Engineering 3** Course Prerequisite: CHE 321 and 332 each with a C or better, OR BIO ENG 310, and 340, and 350 each with a C or better. Application of chemical engineering principles to the processing of biological and biochemical materials. (Crosslisted course offered as CHE 475, BIO ENG 475.)
- 476 Biomedical Engineering Principles 3** Course Prerequisite: CHE 310 with a C or better. The application of chemical engineering principles to biomedical processes. (Crosslisted course offered as CHE 476, BIO ENG 476.)
- 480 Pulp and Paper Manufacturing Process Engineering 3** Course Prerequisite: CHE 110 or 201, with a C or better; junior standing. Study of pulping and papermaking process chemistry and reaction engineering principles.
- 481 Special Topics in Chemical Engineering V 1-3** May be repeated for credit; cumulative maximum 9 hours. Pulp and paper processing, advanced separations, and atomistic methods in chemical engineering.
- 485 Interfacial Phenomena 3** Chemical and physical nature of the interface including the molecular basis for interfacial forces and resulting macroscopic phenomena. Credit not granted for both CHE 485 and 585.
- 488 Professional Practice Coop/Internship I V 1-2** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. Practicum for students admitted to the VCEA Professional Practice and Experiential Learning Program; integration of coursework with on-the-job professional experience. (Crosslisted course offered as ENGR 488, BIO ENG 488, CHE 488, CE 488, CPT S 488, E E 488, ME 488, MSE 488, SDC 488). S, F grading.
- 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: Admitted to the major in Chemical Engineering. S, F grading.
- 499 Special Problems V 1-4** May be repeated for credit. 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.
- 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 MPS 574, CHE 574, MBIOS 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. Credit not granted for both CHE 485 and 585.

596 Research Methods and Presentation

3 Establish sound practices for responsible conduct of graduate research and ethics; techniques used for performing thorough literature searches, establishing and testing research hypotheses, and successful presentation of research results.

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. Course Prerequisite: Admitted to the Chemical Engineering or Engineering Science PhD program. 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

chemistry.wsu.edu

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509-335-5585

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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. For example, the department is an integral partner in The PNNL-WSU Nuclear Science and Technology Institute, with participating faculty from nearly all research areas noted below. Students in chemistry at WSU are encouraged to take advantage of its excellent facilities and faculty by beginning research projects as early as possible. Research expands experience beyond the classroom into the realm of new knowledge.

Typical areas for research include:

- Analytical chemistry research spans fundamental developments in instrumentation, synthetic methodologies, molecular recognition and other strategies used in separations science. These methodologies are frequently used by our faculty to understand the migration of species through biological and environmental systems.
- Inorganic chemistry has as its center the study of the vast majority of the known elements and especially the transition metals; it includes development of catalysts for organic and inorganic transformations and investigation of the properties of organometallic compounds, investigation of the bioinorganic of metal containing proteins and radiopharmaceuticals, as well as inorganic radiochemical research on separation methods for lanthanides and actinides.
- 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 and physical processes occurring at surfaces and in solids by both experimental and theoretical means. It includes important phenomena such as energy transfer in light absorbing and emitting materials, electrical and heat transport in solids, and extends to the synthesis of new and improved materials, including nanomaterials.
- 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, biological, and nanoscale 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. It also expands our understanding of molecular scale mechanisms

for kinetically and thermodynamically driven processes.

Degrees and Options

The Department of Chemistry is on the approved list of the American Chemical Society and offers courses of study leading to the degree of Bachelor of Science in Chemistry, with options in professional chemistry or materials chemistry. Both of these options lead to a degree for which students will be well prepared for entry into the workforce or to pursue a graduate degree. The department also offers a Bachelor of Arts in Chemistry with a standard option and a teacher preparation option. In addition, graduate study programs leading to the Master of Science in Chemistry and Doctor of Philosophy (Chemistry) are also offered.

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. Regardless of which degree or option is chosen, a grade of C or better is required in all chemistry courses to fulfill requirements for the chemistry degree.

A student beginning undergraduate work will begin with CHEM 105. Students without high school chemistry will begin their study with CHEM 103 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 School of Molecular Biosciences. Students whose interests span chemistry and biology or chemistry and physics should see the section on the appropriate program in this catalog.

Lab Fees

Charges for expendable laboratory supplies and computing are made in each laboratory course.

Student Learning Outcomes

Students graduating from the Chemistry Department will be able to demonstrate:

- A thorough knowledge of the basic principles of chemistry, including atomic and molecular structure, chemical dynamics and the chemical and physical properties of substances.
- A thorough knowledge of the subfields of chemistry, including analytical, inorganic, organic, biochemistry, and physical chemistry.
- The ability to read, critically evaluate and interpret numerical, chemical and general scientific information.
- The ability to communicate effectively about chemistry both verbally and in writing.
- The ability to design experiments and to use appropriate experimental apparatus effectively.

Schedules of Studies

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

**BACHELOR OF ARTS IN CHEMISTRY -
SECONDARY EDUCATION OPTION
(131 CREDITS)**

Admission to the Major Requirements

A student may be admitted as a Chemistry major upon declaring their intent to the department.

To maintain good standing in the major, students must complete CHEM 105 and 106 (or 116) and MATH 171, each with a grade of C or better, by the time they earn 30 credits. Students must also have a grade of C or better in all Chemistry courses. Failure to do so may result in the student being released from the major.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
MATH 106 ¹	0 or 3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI]	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 108 ¹	0 or 2
Social Sciences [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 220	3
CHEM 222	1
Diversity [DIVR]	3
MATH 140 [QUAN] ¹	4
PHYSICS 101 ²	3
PHYSICS 111 ²	1

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106	4
CHEM 301	3
ENGR 120	2
PHYSICS 102 ²	3
PHYSICS 112 ²	1
TCH LRN 301	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 430	3
CHEM 338 ³	3
CHEM 345	4
CHEM 398	1
STAT 212	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
CHEM 348	4
CHEM 370 ⁴	3
Communication [COMM] or Written Communication [WRTG] ⁵	3
Foreign Language, if needed ⁶	0 or 4

Apply to College of Education Teaching Certificate Program

<i>Third Term</i>	<i>Credits</i>
Summer - TCH LRN 317	2

Fourth Year

<i>First Term</i>	<i>Credits</i>
SOE 101 or 102	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	3
Foreign Language, if needed ⁶	0 or 4

<i>Second Term</i>	<i>Credits</i>
CHEM 485 [CAPS][M]	3
ED PSYCH 468	3
TCH LRN 467 [M]	3
TCH LRN 469	3
TCH LRN 470	3
Exit Interview	

Fifth Year

<i>First Term</i>	<i>Credits</i>
TCH LRN 415	16

¹ The minimum math requirement is MATH 140. Students who place into MATH 140 or higher are not required to take MATH 106 or 108 but must take an additional 5 credits of electives. MATH 171 may be substituted for MATH 140. Students who place into MATH 140 should take it during their first year, and may delay one of the UCORE courses [ARTS], [HUM], or [SSCI].

² PHYSICS 201/211 and 202/212 may be substituted for PHYSICS 101/111 and 102/112.

³ CHEM 331 or 332 may replace CHEM 338.

⁴ MBIOS 303 may replace CHEM 370.

⁵ One from ENGLISH 201, 301, 302, or 402 is required for admission to the Teacher Education Program. Students who take ENGLISH 302 will need to take an additional [WRTG] or [COMM] course.

⁶ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

**BACHELOR OF ARTS IN CHEMISTRY -
STANDARD OPTION
(120 CREDITS)**

Admission to the Major Requirements

A student may be admitted as a Chemistry major upon declaring their intent to the department.

To maintain good standing in the major, students must complete CHEM 105 and 106 (or 116) and MATH 171, each with a grade of C or better, by the time they earn 30 credits. Students must also have a grade of C or better in all Chemistry courses. Failure to do so may result in the student being released from the major.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
MATH 106 ¹	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 108 ¹	2
Social Sciences [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 220	3
CHEM 222	1
Diversity [DIVR]	3
MATH 140 [QUAN] ¹	4
PHYSICS 101 ²	3
PHYSICS 111 ²	1

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107	4
CHEM 301	3
PHYSICS 102 ²	3
PHYSICS 112 ²	1
Electives ³	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CHEM 338 or 331 ⁴	3
CHEM 345	4
CHEM 398	1
STAT 212	4
Electives ³	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
CHEM 348	4
CHEM 370 or MBIOS 303	3 or 4
ENGLISH 402 [WRTG] [M]	3
Electives ³	2

Fourth Year

<i>First Term</i>	<i>Credits</i>
Advanced Chemistry Electives ⁵	2
Foreign Language, if needed, and/or Electives ^{3,6}	12

<i>Second Term</i>	<i>Credits</i>
Advanced Chemistry Electives ⁵	3
CHEM 485 [CAPS] [M]	3
Foreign Language, if needed, and/or Electives ^{3,6}	9
Exit Interview	

¹ The minimum math requirement is MATH 140. Students who place into MATH 140 or higher are not required to take MATH 106 or 108 but must take an additional 5 credits of electives. MATH 171 may be substituted for MATH 140. Students who place into MATH 140 should take it during their first year, and may delay one of the UCORE courses [ARTS], [HUM], or [SSCI].

² PHYSICS 201/211 and 202/212 may be substituted for PHYSICS 101/111 and 102/112.

³ At least 11 credits in addition to those specified must be at the 300-400-level, for a total of at least 40 upper division credits.

⁴ CHEM 331 has prerequisites of PHYSICS 202 or 206, and MATH 273, each with a C or better.

⁵ Advanced Chemistry Electives (minimum 5

credits): Approved courses include CHEM 347, 425, 426, 490, 499 (maximum 2 credits), any 500-level CHEM course, or STAT 412. Other electives may be used with permission.

⁶ The Foreign Language requirement is that of the College of Arts and Sciences and may be fulfilled with two years of a foreign language in high school. Students are encouraged to pursue a minor while fulfilling the electives requirement.

BACHELOR OF SCIENCE IN CHEMISTRY - MATERIALS OPTION (120 CREDITS)

The requirements for all bachelor of science chemistry options are the same through the first semester of the junior year.

Admission to the Major Requirements

A student may be admitted as a chemistry major upon declaring their intent to the department.

To maintain good standing in the major, students must complete CHEM 105 and 106 (or 116) and MATH 171, each with a grade of C or better, by the time they earn 30 credits. Students must also have a grade of C or better in all CHEM and MSE courses. Failure to do so may result in the student being released from the major.

First Year

First Term	Credits
Arts [ARTS]	3
CHEM 105 [PSCI] ¹	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

Second Term	Credits
BIOLOGY 102 [BSCI], 106 [BSCI], or 107 [BSCI]	4
CHEM 106 ¹	4
HISTORY 105 [ROOT]	3
MATH 172	4

Second Year

First Term	Credits
CHEM 345	4
Humanities [HUM]	3
MATH 220	2
MATH 273	2
PHYSICS 201	3
PHYSICS 211	1

Second Term	Credits
CHEM 220	3
CHEM 347	3
CHEM 348	4
PHYSICS 202	3
PHYSICS 212	1
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

First Term	Credits
CHEM 222	1
CHEM 330	1
CHEM 331	3
CHEM 370 or MBIOS 303	3 or 4
CHEM 398	1
Diversity [DIVR]	3
Foreign Language (if needed)	0 or 4

Second Term	Credits
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
CHEM 332	3
CHEM 333	1
Computational Elective: CPT S 121 or course approved by advisor	3 or 4
MSE 201	3
Foreign Language, if necessary, or Elective	3 or 4

Fourth Year

First Term	Credits
CHEM 334 [M]	2
CHEM 401	3
CHEM 480	3
CHEM 499	2
COM 400 [COMM], ENGLISH 301 [WRTG], or 402 [WRTG] [M]	3
MSE 302	3

Second Term	Credits
CHEM 410	3
CHEM 485 [CAPS] [M]	3
MSE 321	3
MSE 323	3
Electives ²	3
Exit Interview	

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 CHEM 503 or any 300-400-level MSE course not used to satisfy major requirements.

BACHELOR OF SCIENCE IN CHEMISTRY - PROFESSIONAL OPTION (120 CREDITS)

The requirements for all bachelor of science chemistry options are the same through the first semester of the junior year.

Admission to the Major Requirements

A student may be admitted as a Chemistry major upon declaring their intent to the department.

To maintain good standing in the major, students must complete CHEM 105 and 106 (or 116) and MATH 171, each with a grade of C or better, by the time they earn 30 credits. Students must also have a grade of C or better in all Chemistry courses. Failure to do so may result in the student being released from the major.

First Year

First Term	Credits
Arts [ARTS]	3
CHEM 105 [PSCI] ¹	4
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

Second Term	Credits
BIOLOGY 102 [BSCI], 106 [BSCI], or 107 [BSCI]	4
CHEM 106 ¹	4
ENGLISH 101 [WRTG]	3
MATH 172	4

Second Year

First Term	Credits
CHEM 345	4
Humanities [HUM]	3
MATH 220	2
MATH 273	2
PHYSICS 201	3
PHYSICS 211	1

Second Term	Credits
CHEM 220	3
CHEM 347	3
CHEM 348	4
PHYSICS 202	3
PHYSICS 212	1
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

First Term	Credits
CHEM 222	1
CHEM 330	1
CHEM 331	3
CHEM 370 or MBIOS 303	3 or 4
CHEM 398	1
Diversity [DIVR]	3
Electives	2

Second Term	Credits
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
CHEM 332	3
CHEM 333	1
CHEM 425	2
Electives	6

Fourth Year

First Term	Credits
CHEM 334 [M]	2
CHEM 401	3
CHEM 426 [M]	2
CHEM 499	2
Foreign Language and/or Electives	6

Second Term	Credits
Advanced CHEM Electives ²	3
CHEM 410	3
CHEM 485 [CAPS] [M]	3
ENGLISH 301 [WRTG], 402 [WRTG] [M], or COM 400 [COMM]	3
Foreign Language or Electives	3 or 4
Exit Interview	

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 Advanced CHEM Electives include: CHEM 490, MATH 315, or any 500-level CHEM course.

Minors

Chemistry

The minor in chemistry requires at least 16 credits selected from the courses below. All courses used for the minor must be completed with a grade of C or better. At least 9 credits must be upper-

division taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Courses must be selected from at least two of the following areas (note that some courses have prerequisites): Organic: CHEM 345, 347, 348, 370, 540. Analytical: CHEM 220, 222, 425, 426, 520. Physical/Inorganic: CHEM 301, 330, 331, 332, 333, 334, 338, 401, 480, 501, 531. CHEM 499/495 – may be used for up to 4 hours. MBIOS 303 may be substituted for CHEM 370. Other 500-level Chemistry courses and courses outside of Chemistry may be used with the department's permission.

Description of Courses

CHEMISTRY

CHEM

- 101 [PSCI] Introduction to Chemistry 4** (3-3) Course Prerequisite: MATH 103 or a minimum ALEKS math placement score of 45%, or credit for or concurrent enrollment in MATH 105, 106, 107, 108, 140, 171, 172, 182, 201, 202, ENGR 107, STAT 205, or 212. Atomic and molecular structure, elementary organic nomenclature and reactions, quantitative relationships, periodicity, states of matter, solutions, acids, bases, pH, equilibrium, applications to life sciences. Not recommended as preparation for CHEM 105.
- 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; thermodynamics, kinetics, and redox reactions, polymers, macro-molecules; carbohydrates, lipids, proteins, enzymes, nucleic acids, hormones, applications to life sciences.
- 103 Concepts in Chemistry 4** (3-2) Course Prerequisite: A minimum ALEKS math placement score of 45%, or concurrent enrollment in or credit for MATH 103, 105, 106, 108, 140, 171, 172, 182, 201, 202, ENGR 107, STAT 205 or 212. Chemistry preparatory course for students who have not had high school chemistry or do not meet the prerequisites for CHEM 105.
- 104 Problem Solving in General Chemistry 1** (0-2) Course Prerequisite: Concurrent enrollment in CHEM 105. A guided inquiry approach for development of problem solving skills necessary for success in CHEM 105.
- 105 [PSCI] Principles of Chemistry I 4** (3-3) Course Prerequisite: Credit for or concurrent enrollment in one of the following courses: MATH 106, 108, 140, 171, 172, 182, 202, or ENGR 107, or a minimum ALEKS math placement score of 80%. Atomic and molecular structure, states of matter, quantitative relationships, thermodynamics, quantum mechanics, periodicity, bonding. Recommended preparation: One year rigorous high school chemistry or CHEM 103.
- 106 Principles of Chemistry II 4** (3-3) Course Prerequisite: CHEM 105 with a grade of C or better; one of MATH 106, 107, or 108 with a grade of C or better, or MATH 108 or concurrent enrollment, or a minimum ALEKS math placement score of 80%. Intermolecular forces, solutions, kinetics, equilibrium, acids and bases, thermodynamics, electrochemistry, radiochemistry. Credit not granted for both CHEM 106 and 116.
- 116 Chemical Principles Honors II 4** (3-3) Course Prerequisite: By department permission. Honors-level second semester general chemistry; topics generally identical to CHEM 106, with additional advanced topics at discretion of instructor. 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 3** 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 1** (0-3) 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.
- 301 Descriptive Inorganic Chemistry 3** Course Prerequisite: CHEM 106 with a C or better. A survey of the chemistry of the elements using basic principles of bonding, acid-base and oxidation-reduction chemistry, and thermodynamics.
- 330 Problem Solving in Physical Chemistry 1** Course Prerequisite: CHEM 106 or 116 with a C or better; MATH 273 or 283 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; 4 credits of PHYSICS 202 with a C or better, or PHYSICS 202 and 212, each with a C or better, or PHYSICS 206 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 or 283 with a C or better; MATH 220 with a C or better; 4 credits of PHYSICS 202 with a C or better, or PHYSICS 202 and 212, each with a C or better, or PHYSICS 206 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, chemical 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.
- 338 Physical Chemistry for Chemical Biology 3** Course Prerequisite: CHEM 345 with a C or better; MATH 140 or 171 with a C or better; 4 credits of PHYSICS 101 or 102 with a C or better, or PHYSICS 101 and 111, each with a C or better, or PHYSICS 102 and 112, each with a C or better. The modern tools and insights of physical chemistry are covered by interconnecting these fundamental concepts with key biological phenomena.
- 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.
- 347 Organic Qualitative Analysis Laboratory 3** (1-6) Course Prerequisite: CHEM 348 with a C or better or concurrent enrollment. 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.
- 370 Chemical Biology 3** Course Prerequisite: CHEM 102 or 345 with a C or better. Exploration of the chemistry of biological systems with regards to structure and function relations, as well as metabolism and energy production.
- 398 Undergraduate Seminar 1** S, F grading.
- 401 Modern Inorganic Chemistry 3** Course Prerequisite: CHEM 345. Properties of substances; periodic trends; catalysis; structure and reactivity; acid-base; oxidation-reduction; and spectroscopy. Credit not granted for both CHEM 401 and 501.
- 410 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 220 with a C or better. Computer interfacing applicable to chemical instrumentation; principles and applications of modern chromatography, spectrophotometry and electrochemical techniques.
- 426 [M] 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.
- 485 [CAPS] [M] Senior Thesis in Chemistry 3** Course Prerequisite: Admitted to the major in Chemistry (BA or BS); senior standing. Required capstone course for chemistry majors culminating in the development of a written research thesis.
- 490 Current Topics in Chemistry V 1-3** May be repeated for credit; cumulative maximum 6 hours. 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 Modern Inorganic Chemistry 3** Properties of substances; periodic trends; catalysis; structure and reactivity; acid-base; oxidation-reduction; and spectroscopy. Credit not granted for both CHEM 401 and 501.
- 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.
- 514 Mass Spectrometry 2** Current methods, techniques and interpretation of mass spectrometric analysis. Recommended preparation: CHEM 425 or equivalent.
- 517 Chromatography 2** Survey of major forms of chromatography, operating principles of common chromatographic detectors, and current case studies. Recommended preparation: CHEM 425 or equivalent.
- 518 Electrochemistry 2** Execution and interpretation of a variety of interfacial electroanalytical techniques. 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** Nuclear stability, and decay modes, interactions of radiation with matter, radioanalytical instrumentation, health physics, neutron activation, and tracer level chemistry. Recommended preparation: CHEM 425 or equivalent.
- 522 Radiochemistry Laboratory 1 (0-3)** Theory and application of basic radiochemistry instrumentation. 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.
- 528 Data Analysis for Chemistry 3** Data analysis methods for large data sets encountered in chemistry, programming using a scripting language, graphical and statistical analyses, chemometric methods.
- 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.
- 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** Course Prerequisite: CHEM 531 with a C or better or concurrent enrollment; CHEM 532 with a C or better or concurrent enrollment. Statistical theory of thermodynamic variables and chemical equilibrium; calculation of equilibrium properties from spectral data; fluctuations about equilibrium; quantum statistics.
- 535 Applied Spectroscopy 3** Application of optical (UV-visible, Fourier transform infrared, Raman, and fluorescence) and NMR spectroscopies to problem solving in chemical research. Recommended preparation: CHEM 331, 332, 345, and 425.
- 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. Cooperative: Open to UI degree-seeking students.
- 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** 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. 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 co-factors 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.
- 591 Seminar in Inorganic Chemistry 1** May be repeated for credit; cumulative maximum 6 hours. Presentation and discussion of topics in inorganic chemistry taken from research in progress or current literature.

592 Seminar in Analytical Chemistry 1 May be repeated for credit; cumulative maximum 6 hours. Presentation and discussion of topics in analytical chemistry taken from research in progress or current literature.

593 Seminar in Physical Chemistry 1 May be repeated for credit; cumulative maximum 6 hours. Presentation and discussion of topics in physical chemistry taken from research in progress or current literature.

594 Seminar in Organic Chemistry 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. Course Prerequisite: Admitted to the Chemistry PhD program. 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 Civil and Environmental Engineering

ce.wsu.edu
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509-335-2576

Professor and Interim Department Chair, X. Shi; Professor and Interim Associate Chair, T. Ginn; Scholarly Professor and Interim Associate Chair, D. Pollock; Professors, J. C. Adam, D. A. Bender, J. Boll, J. D. Dolan, M. A. Hossain, B. T. Jobson, H. Liu, V. P. Walden, M. P. Wolcott, V. Yadama; Associate Professors,

Y. Demissie, N. Engdahl, H. Wen; Assistant Professors, I. Akin, I. Chowdhury, C. Gardner, A. Hohner, J. Lee, C. Motter, A. Phillips, A. Richey; Scholarly Associate Professor, K. Olsen; Research Professor, K. Englund; Associate Research Professor, S. N. Pressley; Scholarly Assistant Professors, S. Amarasiri, J. Cheng; Assistant Research Professor, M. L. Liu; Professors Emeriti, C. S. Claiborn, W. F. Cofer, R. Itani, B. K. Lamb, G. Mount, R. J. Watts, D. R. Yonge.

CIVIL ENGINEERING

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 (BSCE) is accredited by the Engineering Accreditation Commission of ABET, www.abet.org, which is the nonprofit, non-governmental organization that accredits college and university programs in the disciplines of applied science, computing, engineering, and engineering technology.

The mission of the BSCE 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.

Student Learning Outcomes

The learning outcomes of the civil engineering undergraduate program are the following:

- An ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

The objectives for graduates of our BSCE program are as follows: 1) that they engage in entry-level engineering or related employment or advanced education; 2) that they demonstrate competence and ongoing development in their technical and professional skills; 3) that they demonstrate continued growth in effective communication; 4) that they pursue their careers with integrity, service, and professionalism; and 5) that they continue learning and they grow into positions of responsibility.

Courses can be selected to provide in-depth studies in environmental, infrastructure, water resource, and structural 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.

All seniors are encouraged 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 licensed 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 also participates in interdepartmental programs leading to the degrees of Master of Science in Environmental Science, and Master of Regional Planning.

CONSTRUCTION ENGINEERING

Construction engineering focuses on the design and construction processes required to produce facilities and systems that are essential to modern life and infrastructure. The program leading to the Bachelor of Science degree in Construction Engineering (BSConE) gives its graduates thorough training in fundamental engineering principles along with the practical business and management concepts necessary for construction professionals. The program covers many aspects of the built environment such as bridges, roads, harbors, airports, industrial facilities, and many others.

The mission of the BSConE program of the Department of Civil and Environmental Engineering is to provide a premier undergraduate education in construction 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.

Student Learning Outcomes

The learning outcomes of the construction engineering undergraduate program are the following:

- An ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

The objectives for graduates of our BSConE program are as follows: 1) that they engage in entry-level construction, engineering, or related employment or advanced education; 2) that they demonstrate competence and ongoing development in their technical and professional skills; 3) that they demonstrate continued growth in effective communication; 4) that they pursue their careers with integrity, service, and professionalism; and 5) that they continue learning as they grow into positional of managerial responsibility.

Courses can be selected to provide specialization tracks in environmental facilities, foundations/heavy civil, general civil, infrastructure/pavement, and structures. All students complete a senior capstone design class in which much of earlier course work is applied. All seniors are encouraged to take the Fundamentals of Engineering (FE) exam prior to graduation since this a required step in becoming a licensed professional engineer.

The department offers a course of study leading to the degree of Bachelor of Science in Construction Engineering (BSConE).

Computer Requirement

All incoming Civil and Environmental Engineering and Construction 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 or construction 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 admission to the major under the Degree Programs. The Admissions Office will handle admissions applications from transfer students and the Department of Civil and Environmental Engineering will handle admission to the major 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 (128 CREDITS)

Admission to the Major Criteria

Students may be admitted to the Civil Engineering degree program either in the Department of Civil and Environmental Engineering, on the Pullman campus, or in the School of Engineering and Applied Sciences, on the Tri-Cities campus.

To be admitted to the Civil Engineering major, students must have one of the following:

- An 83% or higher ALEKS math placement score
- WSU enrollment in MATH 171 or equivalent credit earned with a 'C' or higher grade
- An AP Calculus score of '2' or higher (AB or BC exam)

To remain in the Civil Engineering major, students must complete the following benchmarks:

- A grade of 'C' or better in the following courses: MATH 171, MATH 172, CE 211, PHYSICS 201, and PHYSICS 211.

- A cumulative GPA of 2.5 or higher (or transfer GPA if no WSU GPA exists upon completion of the above courses)

The admission to major benchmarks are the same on all campuses, but the application process may vary. Students should consult with their advisor about their readiness for admission to the major and apply during the semester in which admission requirements will be met.

The admission to the major is only valid for the current campus of residence. Should a student decide to change campus after admission to the major, they will need to reapply for admission to the major for the campus to which they transfer.

Students who are deficient under the University's Academic Regulations or whose GPA in CE courses falls below 2.0 are subject to loss of eligibility of major. The undergraduate studies committee on each campus will determine the probation conditions for academically deficient students. Students must meet the conditions of their

probation during the following semester to remain admitted to the major. Students failing to meet their probationary conditions during the following semester are released from the major.

Experiential Requirement

To earn a B.S. degree in Civil Engineering, students must complete one of the following experiential requirements:

An internship of at least eight weeks duration, with at least one credit of CE 495. 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. Study abroad for six or more credit hours. International students in the School of Engineering and Applied Sciences will meet this requirement through their study in the United States. Participation in a recognized ROTC program. Veterans in the Department of Civil Environmental Engineering or in the School of Engineering and Applied Sciences will have met this requirement through their prior service in the armed forces. A leadership or service experience of at least one semester, subject to departmental approval, with at least one credit of CE 499.

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. A grade of C or higher in all CE courses used to fulfill major requirements is required for graduation.

Students should consult with their advisor at their campus of residence for approved alternative course sequences and choices as well as allowed substitutions to the schedule of studies listed below. At the time of admission to the CE program, all pre-existing upper-division CE coursework from previous institutions can be evaluated by the department for compliance with degree requirements on a case-by-case basis. Following admission to the CE program, all subsequent upper-division CE courses must be taken at WSU. However, an exception may be made if a student receives less than a C grade in one CE course during their last semester at WSU. With approval of the department chair, a student can make up that one course only at a different institution.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI]	4
ENGLISH 101 [WRITG]	3
ENGR 120	2
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI]	3
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 172	4
MATH 220	2

Second Year

<i>First Term</i>	<i>Credits</i>
CE 211	3
COM 102 [COMM] or H D 205 [COMM] or Humanities [HUM] ¹	3
CST M 254	2
Diversity [DIVR]	3
MATH 273	2

PHYSICS 201	3
PHYSICS 211	1
<i>Second Term</i>	
CE 203	2
CE 215	3
CHEM 106, PHYSICS 202/212, or SOE 102 ²	4
ME 212	3
ME 220	1
STAT 360 or 370	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	
CE 302	2
CE 315	3
CE 317 [M]	4
CE 330	3
CE 341	3

<i>Second Term</i>	
CE 320, MSE 201, or ME 301	3
CE 321	2
CE 322	3
CE 351	3
ENGLISH 402 [WRTG] or COM 400 [COMM] ¹	3
MATH 315	3

Fourth Year

<i>First Term</i>	
CE 463	3
CE 480 [M]	1
CE Electives ³	9
CE Laboratory Elective ⁴	3

<i>Second Term</i>	
CE 465 [CAPS] [M] ⁵	4
CE Electives ³	9
Humanities [HUM] or upper-division CE Elective ⁶	3
Complete Experiential Requirement ⁷	0 - 1
Exit Interview	

¹ To fulfill their upper-division CE elective and technical writing requirements, students can choose one of the following course combinations: COM 400 and a 300-400-level CE elective; COM 400 and COM 102; COM 400 and H D 205; ENGLISH 402 and COM 102; ENGLISH 402 and H D 205. A Humanities [HUM] course is required to fulfill UCORE requirements.

² CHEM 106 strongly recommended for students emphasizing environmental engineering; SOE 102 strongly recommended for students emphasizing structural, geotechnical, or infrastructure engineering.

³ CE Elective courses: The 18 credits for elective courses must be distributed such that at least one course, not including the lab, is chosen from two different areas of study, which include Environmental (CE 401, 402, 403, 415, 418, 419, and 442); Geotechnical (CE 400, 425, and 435); Hydraulics (CE 416, 450, 451, 456, 460, and 475); Structural (CE 414, 430, 431, 433, 434, and 436); Sustainability (CE 405, 456, and 472); and Transportation/Pavement (CE 400, 472, 473, and 476); Other approved courses include: 4 credits of CE 488, 3 credits of 498, CST M 462, 466, or as approved by advisor. Of the 18 credits for elective courses, at least three courses designated as having

a design emphasis, not including the lab, must be chosen. Eligible design courses include: CE 400, 403, 419, 425, 431, 433, 434, 435, 436, 442, 450, 451, 456, 460, 473, 474, or 476.

⁴ CE Laboratory Elective: Choose one from CE 400, 415, or 416.

⁵ Course to be taken in final semester. With permission of advisor, student may substitute ENGR 421 or 431 for CE 465.

⁶ Upper-division CE Elective – any CE Elective not used to fulfill major requirements, or as approved by advisor. In addition, CE 495 and 499 cannot be used to fulfill this requirement.

⁷ Experiential Requirement: Requires completion of one of the following: 1) one credit of CE 495 or 499; 2) six or more credits of study abroad; 3) military service or participation in recognized ROTC program.

CONSTRUCTION ENGINEERING (127 CREDITS)

Admission to the Major Criteria

Admission into the Bachelor of Science in Construction Engineering requires meeting certain admission benchmarks. There are different admission benchmarks for incoming students based on their academic standing.

To be admitted to the Construction Engineering major, students must have one of the following:

- An 83% or higher ALEKS math placement score
- WSU enrollment in MATH 171 or equivalent credit earned with a ‘C’ or higher grade
- An AP Calculus score of ‘2’ or higher (AB or BC exam)

To maintain a Construction Engineering major, students must complete the following benchmarks:

- Grade of ‘C’ or better in the following courses: MATH 171, MATH 172, CE 211, PHYSICS 201, and PHYSICS 211.
- A cumulative WSU GPA of 2.50 or higher (or transfer GPA if no WSU GPA exists) upon completion of the above courses.

Admission to the major is only valid for the current campus of residence. Students who decide to change campus after admission to the major will need to re-qualify for admission to the major for the campus to which they transfer.

Students who are deficient under the University’s Academic Regulations or whose GPA in CE courses falls below 2.0 are subject to loss of eligibility of major. The undergraduate studies committee on each campus will determine the eligibility and probation conditions for students who will be permitted to apply for re-entry to the major.

Students who are deficient under the University’s Academic Regulations or whose GPA in CE courses falls below 2.0 are subject to loss of eligibility of major. The undergraduate studies committee on each campus will determine the eligibility and probation conditions for students who will be permitted to apply for re-entry to the major.

Experiential Requirement

Students within the Department of Civil and Environmental Engineering must complete one of the following experiential requirements: An internship of at least eight weeks duration, with at least one credit of CE 495. 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. Study abroad for six or more credits. International students in the Department of Civil and Environmental Engineering will meet this requirement through their study in the United States. 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. A leadership or service experience of at least one semester, subject to departmental approval, with at least one credit of CE 499.

None of the courses listed below may be taken on a pass/fail basis. A grade of C or better is required in all CE and CON E courses required for the degree.

Students should consult with their advisor at their campus of residence for approved alternative course sequences and choices as well as allowed substitutions to the schedule of studies listed below. At the time of admittance to the CON E program, all pre-existing upper-division CE, CON E, and CST M coursework from previous institutions can be evaluated by the department for compliance with degree requirements on a case-by-case basis. Following admittance to the CON E program, all subsequent upper-division CE, CON E, and CST M courses must be taken at WSU. However, an exception may be made if a student receives less than a C grade in one CE, CON E, or CST M course during their last semester at WSU. With approval of the department chair, a student can make up that one course only at a different institution.

First Year

<i>First Term</i>		<i>Credits</i>
CHEM 105 [PSCI]		4
ECONS 101 [SSCI] or 102 [SSCI]		3
HISTORY 105 [ROOT]		3
Humanities [HUM]		3
MATH 171 [QUAN]		4

<i>Second Term</i>		<i>Credits</i>
Arts [ARTS]		3
Biological Sciences [BSCI]		3
CST M 102		2
ENGLISH 101 [WRTG]		3
MATH 172		4

Second Year

<i>First Term</i>		<i>Credits</i>
CE 211		3
CST M 254		2
Diversity [DIVR]		3
PHYSICS 201		3
PHYSICS 211		1
SOE 101 or 102		4

<i>Second Term</i>		<i>Credits</i>
CE 203		2
CE 215		3
ME 212		3
ME 220		1
STAT 360 or 370		3
Math/Science Electives ¹		4
Complete Writing Portfolio		

Third Year

<i>First Term</i>		<i>Credits</i>
CE 302		2
CE 315		3
CE 330		3
COM 400 [COMM]		3
CON E 252		2
CON E 360		3

<i>Second Term</i>		<i>Credits</i>
CE 317 [M]		4
CON E 351		2

CON E 361	3
CST M 356	3
Professional Electives ²	3

Fourth Year

First Term	Credits
CE 400	3
CE 463	3
CE 480	1
CST M 460	3
CST M 462	3
Professional Electives ³	3
Complete Experiential Requirement ⁴	0 - 1
Second Term	Credits
CE 465 [M] [CAPS] ⁵	4
CST M 368	3
CST M 473	3
CST M 484	3
Professional Electives ³	3
Con E Exit Survey	

¹ Math/Science Electives (4 credits required): Students may select from CHEM 106, MATH 220 and 273, PHYSICS 202 and 212, SOE 110, 210.

² Professional Electives (9 credits required): Students must choose an area of emphasis and complete the required courses and additional professional electives: 1) Structures/Buildings: CE 414 and two from CE 431, 433, or 436; 2) Infrastructure/Pavement: CE 322, 473; and one from CE 425, 472, 474, or 476; 3) Foundations/Heavy Civil: CE 414, 433, 435; 4) Environmental Facilities: CE 341, 442; and one from CE 351, 407, 415, 416, or 418; 5) General Civil: At least 9 credits of 300-400 level CE courses not used to fulfill major requirements. 3 credits must be one of the following 400-level CE design courses: CE 403, 419, 425, 431, 433, 434, 435, 436, 442, 451, 460, 473, 474, or 476.

³ Professional Electives (6 credits required): Students must choose an area of emphasis and complete the required courses and additional professional electives: 1) Structures/Buildings: CE 431, 436; 2) Infrastructure/Pavement: CE 322, 473; 3) Foundations/Heavy Civil: CE 435; 4) Environmental Facilities: CE 341, 442; 5) General Civil: Any two 300-400 level CE courses not used to fulfill major requirements. Additional professional electives included any 300-400-level CE, CST M or CON E course not used to fulfill major requirements.

⁴ Experiential Requirement: Requires completion of one of the following: 1) one credit of CE 495 or 499; 2) six or more credits of study abroad; 3) military service or participation in recognized ROTC program.

⁵ CE 465 [M] [CAPS] must be taken in the final semester.

Description of Courses

CIVIL ENGINEERING

CE

203 Civil Engineering Computer Applications 2 (1-3) Course Prerequisite: Admitted to the major in Civil Engineering or Construction Engineering; sophomore standing. Advanced civil engineering computer applications including Geographical Information Systems, Revit, and Excel.

211 Statics 3 Course Prerequisite: MATH 172, 182, or concurrent enrollment; 4 credits of PHYSICS 201, or PHYSICS 201 and 211 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; admitted to the major in Civil Engineering, Construction Engineering, or Construction Management; junior standing. Surveying data collection, analysis and application; measuring distances and angles using total stations and global positioning systems; analysis of errors in measurements.

315 Fluid Mechanics 3 Course Prerequisite: ME 212; admitted to the major in Civil Engineering or Construction Engineering. Fluid statics, laminar and turbulent flow, similitude, pipe flow, boundary layer, lift and drag and measurement techniques.

317 [M] Geotechnical Engineering I 4 (3-3) Course Prerequisite: CE 215 with a C or better; CE 315 or concurrent enrollment; admitted to the major in Civil Engineering or Construction Engineering. Structure, index properties, and classification of soils; compaction; effective stress; seepage; consolidation and shear strength.

320 Construction Materials 3 (2-3) Course Prerequisite: CE 211 with a C or better; CE 215 with a C or better; COM 400 or concurrent enrollment, or ENGLISH 402 or concurrent enrollment; admitted to the major in Civil Engineering or Construction Engineering. Introduction to construction materials and their behaviors; characteristics of the primary materials used in civil engineering; steel, aluminum, Portland cement, admixtures, aggregates, Portland cement concrete, masonry, and wood; laboratory tests to evaluate the physical and mechanical properties of commonly used construction materials.

321 Numerical Methods for Civil and Environmental Engineers 2 (1-2) Course Prerequisite: MATH 220; MATH 273. Computer assisted (numerical) solution of engineering problems; algorithmic thinking skills; programming fundamentals. Recommended preparation: CE 203, STAT 360 or 370.

322 Transportation Engineering 3 Course Prerequisite: STAT 360 or concurrent enrollment or STAT 370 or concurrent enrollment; admitted to the major in Civil Engineering or Construction Engineering. Road-vehicle interaction, geometric design, traffic flow and queuing theory, highway capacity and level of service, and introduction to pavement design and materials. Cooperative: Open to UI degree-seeking students.

330 Introduction to Structural Engineering 3 Course Prerequisite: CE 215 with a C or better; admitted to the major in Civil Engineering or Construction Engineering. 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; admitted to the major in Civil Engineering or Construction Engineering. Application of fluid mechanics to hydraulic infrastructure, principles of open channel flow, and introduction to surface and ground water hydrology. Cooperative: Open to UI degree-seeking students.

400 Highway Materials Engineering 3 (2-3) Course Prerequisite: STAT 360 or concurrent enrollment or STAT 370 or concurrent enrollment; ME 220; admitted to the major in Civil Engineering or Construction Engineering; senior standing. Basic properties and mix designs of aggregates, asphalt, concrete and recycled materials; quality assurance, quality control. Cooperative: Open to UI degree-seeking students.

401 Climate Change Science and Engineering 3 Course Prerequisite: CHEM 105; MATH 172; 4 credits of PHYSICS 201, or PHYSICS 201 and 211, or PHYSICS 205; admitted to any major. Engineering solutions for climate change problems; basic science of climate change, engineering for mitigation and adaptation, and climate change policy. Cooperative: Open to UI degree-seeking students.

402 Applied Meteorology 3 Course Prerequisite: MATH 172 or 182; 4 credits of PHYSICS 201, or PHYSICS 201 and 211, or PHYSICS 205; admitted to any major. 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. Cooperative: Open to UI degree-seeking students.

403 Air Quality Management 3 Course Prerequisite: CE 341 or CHE 201; admitted to the major in Bioengineering, Chemical Engr, Civil Engr, Computer Engr or Sci, Construction Engr, Electrical Engr, Materials Science & Engr, Mechanical Engr, or Software Engr. Air pollution from the perspective of an environmental manager; regulatory framework, management strategies, monitoring, modeling tools, and control technologies. Credit not granted for both CE 403 and CE 503. Cooperative: Open to UI degree-seeking students.

- 405 Decision-Making for Sustainable and Resilient Civil Infrastructure** 3 Course Prerequisite: Admitted to the major in Architecture, Construction Engr, Construction Mgt, Civil Engr, Electrical Engr, Bioengineering, Chemical Engr, Mechanical Engr, Computer Science, Materials Science Engr, or Computer Engr; senior standing. Decision analysis framework within the context of civil engineering; mathematical (probabilistic) formulations for decision-making; life-cycle assessment; life-cycle cost analysis; theory of sustainability and resilience. Credit not granted for both CE 405 and CE 505. Cooperative: Open to UI degree-seeking students.
- 407 Stormwater** 3 Course Prerequisite: CE 341 or CE 351. Overview of stormwater and best management practices including both traditional (sewers, drainage channels, detention facilities) and innovative (low-impact design) approaches.
- 414 Structural Design Loads and Load Paths** 3 Course Prerequisite: CE 330 with a C or better; STAT 360 or concurrent enrollment, or STAT 370 or concurrent enrollment; admitted to the major in Civil Engineering or Construction Engineering. Understanding of load, load path determination techniques, performance of various materials, and the interface between material design standards and building codes. Cooperative: Open to UI degree-seeking students.
- 415 Environmental Measurements** 3 (1-6) Course Prerequisite: CE 341; STAT 360 or concurrent enrollment or STAT 370 or concurrent enrollment; admitted to the major in Civil Engineering or Construction 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. Cooperative: Open to UI degree-seeking students.
- 416 Hydraulic Engineering Laboratory** 3 (1-6) Course Prerequisite: CE 315; STAT 360 or concurrent enrollment or STAT 370 or concurrent enrollment; admitted to the major in Civil Engineering or Construction Engineering. Experiments related to fluid flow principles and their application to hydraulic engineering. Cooperative: Open to UI degree-seeking students.
- 418 Hazardous Contaminant Pathway Analysis** V 3-4 Course Prerequisite: CE 341 with a C or better; admitted to the major in Civil Engineering or Construction 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; admitted to the major in Civil Engineering or Construction 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. Cooperative: Open to UI degree-seeking students.
- 425 Soil and Site Improvement** 3 Course Prerequisite: CE 317 with a C or better; admitted to the major in Civil Engineering or Construction 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 or CE 321; admitted to the major in Civil Engineering. Stiffness methods for the analysis of trusses, beams, and frames; matrix models; and computer applications. Cooperative: Open to UI degree-seeking students.
- 431 Structural Steel Design** 3 Course Prerequisite: CE 330 with a C or better; CE 414 or concurrent enrollment; admitted to the major in Civil Engineering or Construction Engineering. Design of steel structures by load and resistance factor design (LRFD); behavior and design of beams, columns, tension members and connections. Cooperative: Open to UI degree-seeking students.
- 433 Reinforced Concrete Design** 3 Course Prerequisite: CE 330 with a C or better; CE 414 or concurrent enrollment; admitted to the major in Civil Engineering or Construction Engineering. Behavior, analysis, and design of reinforced concrete structures; flexure; shear; bond; serviceability requirements; design of beams, columns, and slabs. Cooperative: Open to UI degree-seeking students.
- 434 Masonry Design** 3 Course Prerequisite: CE 330 with a C or better; CE 414 or concurrent enrollment; admitted to the major in Civil Engineering or Construction Engineering. Behavior and design of masonry structures. Cooperative: Open to UI degree-seeking students.
- 435 Foundations** 3 Course Prerequisite: CE 317 with a C or better; admitted to the major in Civil Engineering or Construction Engineering. Site investigation; bearing capacity, settlement and design of shallow foundations, piles and piers; design of retaining walls. Cooperative: Open to UI degree-seeking students.
- 436 Design of Timber Structures** 3 Course Prerequisite: CE 330 with a C or better; CE 414 or concurrent enrollment; admitted to the major in Civil Engineering or Construction 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; admitted to the major in Civil Engineering, Construction Engineering, or Environmental Science. Water and wastewater treatment processes and design. Cooperative: Open to UI degree-seeking students.
- 450 Designing Water Resource Systems** 3 Course Prerequisite: CE 351 with a C or better; E E 221 or CE 321; admitted to the major in Civil Engineering. Design and implementation of engineered hydraulic and hydrologic systems; site assessment; distribution networks; remediation systems; sustainable use; restoration; project based. Cooperative: Open to UI degree-seeking students.
- 451 Open Channel Flow** 3 Course Prerequisite: CE 351 with a C or better; admitted to the major in Civil Engineering or Construction Engineering. Steady, non-uniform flow; controls and transitions in fixed-bed channels. Credit not granted for both CE 451 and CE 551. Cooperative: Open to UI degree-seeking students.
- 456 Sustainable Development in Water Resources** 3 Course Prerequisite: CE 351 with a C or better; E E 221 or CE 321; admitted to the 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 Engineering Hydrology** 3 Course Prerequisite: CE 351 with a C or better; admitted to the major in Civil Engineering or Construction Engineering. Components of the hydrologic cycle; conceptual models; watershed characteristics; probability/statistics in data analysis; hydrographs; computer models; design applications. Cooperative: Open to UI degree-seeking students.
- 463 Engineering Administration** 3 Course Prerequisite: Admitted major in Architectural St, Bioengineering, Chem Engr, Civil Engr, Computer Engr or Sci, Construct Engr or Mgt, Electrical Engr, Interior Des, Land Arch, Materials Sci & Engr, Mech Engr, or Software Engr; sophomore standing. Engineering economy; annual cost, present worth, rate of return, and benefit-cost ratio in engineering decision making; basic contract law.

- 465 [CAPS] [M] Integrated Civil Engineering Design 4** (1-6) Course Prerequisite: CE 203; admitted to the major in Civil Engineering or Construction Engineering; senior standing. 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 Civil Engineering Examination Review 1** Course Prerequisite: Admitted to the major in Civil Engr, Construction Engr, Electrical Engr, Bioengineering, Chemical Engr, Mechanical Engr, Computer Science, Materials Science Engr, or Computer Engr; senior standing. Review of topics to prepare for the Civil Engineering Fundamentals of Engineering Examination. S, F grading.
- 472 Durable and Sustainable Pavements and Bridges 3** Course Prerequisite: CE 215 with a C or better; admitted to the major in Civil Engineering or Construction Engineering. Introduction to durability and sustainability concepts and practices related to pavements and bridges; deterioration mechanisms of Portland cement concrete and asphalt concrete; holistic perspectives for infrastructure management; effective materials and techniques for pavement and bridge preservation. Cooperative: Open to UI degree-seeking students.
- 473 Pavement Design 3** Course Prerequisite: CE 317; ECONS 101 or 102; CE 322 or concurrent enrollment; admitted to the major in Civil Engineering or Construction Engineering. Pavement performance evaluation, material characterization, traffic analysis, pavement structural response analysis, transfer function application, and pavement design procedures for both flexible and rigid pavements. Cooperative: Open to UI degree-seeking students.
- 475 Groundwater 3** (2-3) Course Prerequisite: CE 317 or SOE 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 SOE 475, CE 475). Cooperative: Open to UI degree-seeking students.
- 476 Pavement Evaluation and Rehabilitation 3** Course Prerequisite: CE 317; admitted to the major in Civil Engineering or Construction Engineering. Engineering concept and information needed to maintain, evaluate, repair and rehabilitate pavements and design of flexible and rigid overlays. Cooperative: Open to UI degree-seeking students.
- 480 [M] Ethics and Professionalism 1** Course Prerequisite: Admitted to the major in Civil Engineering or Construction Engineering; senior standing. Professional aspects of civil engineering.
- 488 Professional Practice Coop/Internship I V 1-2** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. Practicum for students admitted to the VCEA Professional Practice and Experiential Learning Program; integration of coursework with on-the-job professional experience. (Crosslisted course offered as ENGR 488, BIO ENG 488, CHE 488, CE 488, CPT S 488, E E 488, ME 488, MSE 488, SDC 488). S, F grading.
- 495 Engineering Experience V 1-4** May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By interview only. Leadership, service, or professional experience commensurate with departmental requirements. S, F grading.
- 498 Special Topics in Civil Engineering V 1-4** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to the major in Civil Engineering or Construction Engineering. 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. Cooperative: Open to UI degree-seeking students.
- 503 Air Quality Management 3** Air pollution from the perspective of an environmental manager; regulatory framework, management strategies, monitoring, modeling tools, and control technologies. Credit not granted for both CE 403 and CE 503. Cooperative: Open to UI degree-seeking students.
- 504 Sustainability Engineering I 3** Green building and sustainable development topics including low impact development (LID) stormwater design and environmental life cycle assessment (LCA). Cooperative: Open to UI degree-seeking students.
- 505 Decision-Making for Sustainable and Resilient Civil Infrastructure 3** Decision analysis framework within the context of civil engineering; mathematical (probabilistic) formulations for decision-making; life-cycle assessment; life-cycle cost analysis; theory of sustainability and resilience. Credit not granted for both CE 405 and CE 505. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 507 Sustainability: Life Cycle Assessment 3** Principles of life cycle assessment (LCA), environmental impacts categories, LCA system models, and methods for life cycle inventory. Cooperative: Open to UI degree-seeking students.
- 508 Concrete Durability 3** Introduction to concrete durability, serviceability, and life cycle assessment; physical and chemical mechanisms of concrete degradation; corrosion of steel reinforcement in concrete; materials selection, specification, proportioning, and construction for durable concrete; testing and appraisal for durable concrete; and repair and rehabilitation of concrete structures. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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 geoenvironment. 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. Cooperative: Open to UI degree-seeking students.

- 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 Contaminant Pathway Analysis** 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. Cooperative: Open to UI degree-seeking students.
- 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 Bridge Design** 3 Behavior and design of prestressed concrete and bridges. 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. Cooperative: Open to UI degree-seeking students.
- 536 Nondestructive Testing of Structural Materials** 3 Principles of nondestructive testing applied to wood-based materials, steel, concrete, and masonry. Cooperative: Open to UI degree-seeking students.
- 537 Advanced Topics in Structural Engineering** 3 May be repeated for credit; cumulative maximum 9 hours. Elastic stability, plates and shells, other relevant topics. Cooperative: Open to UI degree-seeking students.
- 538 Earthquake Engineering** 3 Course Prerequisite: CE 512. 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. Recommended preparation: CE 512. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 540 Instrumental Analysis of Environmental Contaminants** 3 Course Prerequisite: CE 515. Theory and methods of analysis of water and water suspensions for contaminants using electrometric, spectrophotometric, and chromatographic techniques. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 550 Hydroclimatology** 3 Water and energy budgets as they relate to climate, dynamics; and remote sensing, statistical, and modeling techniques for hydroclimatology. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 552 Special Topics in Water Resources 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. Cooperative: Open to UI degree-seeking students.
- 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). Cooperative: Open to UI degree-seeking students.
- 560 Advanced Hydrology** 3 Principles of the hydrologic cycle including precipitation, lower atmosphere, evaporation, fluid mechanics of free surface flow, overland flow, flow routing, infiltration, baseflow. Recommended preparation: Introductory hydrology and differential equations. Cooperative: Open to UI degree-seeking students.
- 562 Environmental Flow and Transport Processes** 3 Environmental flow mechanisms and contaminant transport behaviors; applications to open-channel flows and groundwater systems. Cooperative: Open to UI degree-seeking students.
- 564 Numerical Methods** 3 Numerically assisted solution of linear and nonlinear systems of equations with an emphasis on environmental applications. Eulerian and Lagrangian solutions of systems of steady-state and transient partial differential equations including various flow, transport, and geochemical problems; fundamentals of parallel solution techniques. Recommended preparation: fluid mechanics, differential equations, and basic knowledge of computer programming. Cooperative: Open to UI degree-seeking students.

- 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 4 hours. Lectures and reports on current developments in research and practice.
- 582 Environmental Organic Chemistry** 3 Pathways and mechanisms of organic contaminant transformations in natural and engineered systems including hydrolysis, elimination, oxidation, reduction, and photochemical reactions. Recommended preparation: CE 418 or course in organic chemistry.
- 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. 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 and BSYSE 554). Required preparation must include CHEM 345; MBIOS 101. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 589 Atmospheric Chemical and Physical Processes** 3 Processes of removal of pollutants from the atmosphere; radical chain reactions, particle formation, model calculations. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 591 Aerosol Dynamics and Chemistry** 3 Chemical and physical properties of atmospheric aerosols; sources, sinks, and transformation processes. Cooperative: Open to UI degree-seeking students.
- 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 MSE 543, CE 593). Required preparation must include MSE 402. Cooperative: Open to UI degree-seeking students.
- 594 Natural Fibers** 3 Structural aspects and properties of natural fibers including anatomy, ultrastructure, and chemistry. (Crosslisted course offered as CE 594, MSE 544). Cooperative: Open to UI degree-seeking students.
- 595 Polymer and Composite Processing** 3 Polymer and composite processing from fundamental principles to practical applications. (Crosslisted course offered as MSE 545, CE 595). Cooperative: Open to UI degree-seeking students.
- 596 Engineered Wood Composites** 3 Theory and practice of wood composite materials, manufacture and development. (Crosslisted course offered as CE 596, MSE 546). Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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). 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.
- 701 Master's Independent Capstone Project and /or Examination** V 1-6 May be repeated for credit. Capstone project or final examination for professional master's degree under the Graduate School. The credits will include a balloted evaluation of the student's completion of the program's capstone/examination requirements by the program's graduate faculty. Students must have graduate degree-seeking status and obtain approval from their major advisor/committee chair before enrolling for 701 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: Admitted to the Civil Engineering or Engineering Science PhD program. 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.

CONSTRUCTION ENGINEERING

CON E

- 252 Construction Administration and Documentation** 2 Course Prerequisite: CST M 254; admitted to the major in Construction Engineering; junior standing. Administrative procedures found within a heavy/civil construction project and respective documentation.
- 351 Delivery Systems** 2 Course Prerequisite: CON E 252; admitted to the major in Construction Engineering. Exploration of the different project delivery systems used by contracting parties in heavy civil construction and their impact on the design and construction/management process.
- 360 Heavy Construction Estimating I** 3 (2-3) Course Prerequisite: CON E 252 or concurrent enrollment; admitted to the major in Construction Engineering. Fundamentals of heavy civil estimating with emphasis on plan reading, specification reading, and quantity takeoff.

361 Heavy Construction Estimating II 3 (2-3) Course Prerequisite: CON E 360; admitted to the major in Construction Engineering. Basics of scoping, takeoff, costing, pricing, and bidding actual projects live alongside real contractors.

The Edward R Murrow College of Communication

murrow.wsu.edu
Student Services, Murrow 226
509-335-7333

Dean and Professor, B. Pinkleton; Associate Dean for Research and Graduate Studies, P. Bolls; Associate Dean of Faculty Affairs and College Operations, S. Hust; Assistant Dean for Student Affairs, S. Stout.

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 Journalism and Media Production, Bachelor of Arts in Strategic Communication, Master of Arts in Communication, Master of Arts in Strategic Communication, and Doctor of Philosophy (Communication).

Study in the College's facilities provides exposure to and mastery of new digital production and content creation technologies. The Edward R. Murrow College of Communication has three computer labs, including a writing lab, an advanced graphics and data analysis lab, and a broadcast news lab; television production studios and TV editing suites; a radio station and radio/audio labs; and a state-of-the-art news production/broadcast lab. In addition, the College houses three nationally acclaimed media outlets, including Northwest Public Radio, Northwest Public Television and the Murrow News Service.

Student Learning Outcomes

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, national and international job markets.

Undergraduate Minors

The Edward R. Murrow College of Communication offers a minor in general Communication as well as minors in Health Communication and Promotion (See Dept. of Strategic Communication); and Sports Communication (See Dept. of Journalism and Media Production). Students may apply to add one of these minors after they have completed 60 credits and are admitted to a major. Check with The Murrow Center for Student Success, for additional information.

Graduate Certificate

The Edward R. Murrow College of Communication offers a graduate certificate in Health Communication and Promotion within the Strategic Communication Department. Please contact the recruitment coordinator in the Murrow Center for Student Success for more information.

Minors

Communication

The minor in Communication requires a minimum of 18 credits from any COM, COMJOUR, or COMSTRAT courses. Nine credits of COM, COMJOUR, or COMSTRAT 300-400-level coursework must be taken in residence at WSU. COM 138, 199, and 399 are excluded from applying toward the minor requirements. Students may seek approval for one course to count toward the minor through WSU-approved education abroad or educational exchange. Students may be admitted to the minor after they have completed 60 total credits with a 2.7 or higher WSU cumulative GPA and have been admitted to a major outside the Murrow College of Communication. Students must adhere to the prerequisites for courses as listed in the catalog. Transfer students can be admitted to this minor after completing 60 total credits and one semester at WSU with a 2.7 or higher WSU cumulative GPA. Students must maintain a cumulative GPA of 2.0 or higher to remain in the minor. Check with the Murrow College Student Services Office for additional information.

Description of Courses

COMMUNICATION

COM

100 Grammar and Editing for Communication 2 (1-2) For Communication majors to ensure sufficient skills in grammar, punctuation, and AP style of writing. S, F grading.

101 [SSCI] Media and Society 3 Mass media's influence in contemporary society.

102 [COMM] Public Speaking in the Digital Age 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 Introduction to Communication 3

Course Prerequisite: Admitted to a major or minor in the College of Communication; or for non-majors with an academic interest in communication. Introduction to training and discipline necessary to succeed in the field of communication; familiarization with media, news, news values, and the ability to critique news stories. S, F grading.

199 Murrow Student Ambassador Training

1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: By interview only. General elective training course for newly-accepted Murrow Ambassadors. 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.

225 Sports and the Media 3

Survey of the relationship between media and sports, including sports journalism, sports promotion, sports and Hollywood, sports and social change.

230 Principles of Group Communication

3 Theoretical and practical aspects of communication in groups; classroom exercises and films demonstrate principles and develop skills. (Formerly COMSOC 230.)

275 Communication Seminar V 1-3

May be repeated for credit; cumulative maximum 9 hours. Various specialty topics in communication studies.

300 [M] Writing in Communication 3 (0-6)

Course Prerequisite: COM 101; COM 102; COM 105; COM 138; admitted to a major or minor in the College of Communication; sophomore standing; cumulative GPA of a 2.70 or higher. Writing for a variety of communication professions, including advertising, broadcasting, print journalism, public relations, and science communication.

309 Quantitative Research Methods

3 Course Prerequisite: MATH [QUAN]; admitted to a major or minor in the College of Communication; sophomore standing. Measurement, questionnaire construction, sampling, data collection techniques, analysis and hypothesis testing in communication research.

320 Visual Communication 3

Course Prerequisite: COM 210 with a C or better; COM 300 with a C or better; admitted to a major or minor in the College of Communication; sophomore standing. Visual communication in today's print, electronic, and broadcast media to inform, educate, and persuade.

321 [DIVR] Intercultural Communication

3 Course Prerequisite: Admitted to any major. Culture and cultural differences, race and ethnicity, stereotypes, and intercultural communication in contexts. (Formerly COMSOC 321.)

- 325 Environmental Communication 3**
Course Prerequisite: COM 101 or 105; COM 210 with a C or better; admitted to a major or minor in the College of Communication; junior standing. How communication shapes human understanding and decision making concerning the natural environment in local, national, and global contexts. (Formerly COMSOC 325.)
- 395 Science Writing 3** Course Prerequisite: COM 300 with a C or better; admitted to a major or minor in the College of Communication. Writing about science and technology for print, online, public relations, and broadcast formats.
- 399 Murrow Student Ambassador Training II V 1-3** May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By interview only; COM 199. General elective training course for Murrow Ambassadors.
- 400 [COMM] Communicating Science and Technology 3** Course Prerequisite: Admitted to any major; junior standing. Communicating science and technological issues to professional and lay audiences.
- 410 History of Mass Communications 3** Course Prerequisite: Admitted to a major or minor in the College of Communication; junior standing.
- 415 Media Law 3** Course Prerequisite: COM 300 with a C or better; admitted to a major or minor in the College of Communication; junior standing. Basic concepts and theories of the First Amendment's protection of speech and press.
- 420 New Communication Technologies 3** Course Prerequisite: Admitted to a major or minor in the College of Communication; junior standing. New communication technologies, their impact on communication processes, access, regulation, and communication in organization/professional contexts.
- 421 [CAPS] Intercultural Communication and Globalization 3** Course Prerequisite: Admitted to any major; junior standing. How global processes shape intercultural communication and how globalization is understood, advanced, and opposed by different groups. (Formerly COMSOC 421.)
- 440 Media Ethics 3** Course Prerequisite: COM 300 with a C or better; admitted to a major or minor in the College of Communication; junior standing. Foundations and frameworks of media ethics; case studies in assessing media performance.
- 460 Mass Media Criticism 3** Course Prerequisite: Admitted to a major or minor in the College of Communication; junior standing. Theoretical and philosophical basis for critical analysis of mass communication.
- 464 Gender and the Media 3** Course Prerequisite: Admitted to any major; sophomore standing. 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, WGSS 464.)
- 470 Mass Communications Theories and Theory Construction 3** Course Prerequisite: Admitted to a major or minor in the College of Communication; senior standing. Theories of mass communication and the process of theory construction.
- 471 [CAPS] Stereotypes in Communication 3** Course Prerequisite: Admitted to any major; junior standing. 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.
- 475 Communication Seminar 3** May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Admitted to any major; junior standing. Topics with a broad array of interdisciplinary expertise including elements of communication, public policy, sociology, the humanities, and psychology.
- 479 Youth and the Media 3** Course Prerequisite: Admitted to any major; junior standing. Effects of media messages on children and adolescents, and developing responsible and effective programming for youth.
- 480 Science Communication Campaigns 3** Course Prerequisite: COM 309; COM 325; admitted to a major or minor in the College of Communication; senior standing. Develop an effective communication campaign to address a science communication challenge. (Formerly COMSOC 480.)
- 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: Admitted to a major or minor in the College of Communication; junior standing. Social and psychological implications of computer mediated communication and differences from face-to-face communication.
- 484 Backpack Journalism 3** May be repeated for credit; cumulative maximum 6 hours. Students travel abroad and report on stories that enhance global awareness and cultural understanding.
- 486 Crisis Communication 3** Course Prerequisite: COMSTRAT 310; admitted to a major in the College of 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.
- 490 Web Design and Usability 3** Course Prerequisite: COMSTRAT 310 or COM 320; admitted to a major or minor in the College of Communication; junior standing. 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: COM 300 with a C or better; admitted to a major in the College of Communication. S, F grading.
- 497 Practicum in Communication V 1-3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to a major or minor in the College of Communication; by permission only. Practicum experience for students in Communication. Faculty directed. 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 Youth and the Media 3** Explores how children, adolescents, and emerging adults use media in decision making and identity formation, health, and civic affairs.
- 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.
- 541 Science Communication** 3 Introduction to the role of communication in the formation of attitudes, opinions, and knowledge about important science issues.
- 550 Micro Media/Communication Theories** 3 Introduction to basic concepts and theories at the intra-individual level of analysis in communication and media psychology.
- 552 Theories and Methods of Emerging Communication Technology** 3 Theories and study methods for emerging technologies; emerging communication technology in the context of politics, health and science.
- 561 Multimedia Content Creation** 3 Course Prerequisite: Admitted to an online degree program or graduate certificate in communication. Exploration and application of strategies to communicate ideas clearly, concisely, and effectively through multimedia content.
- 562 Crisis Communication in Global Contexts** 3 Course Prerequisite: Admitted to an online degree program or graduate certificate in communication. Prepare, plan, and execute crisis communication and management to protect the continuity of an organization's image and mission.
- 563 Ethics for Professionals** 3 Course Prerequisite: Admitted to an online degree program or graduate certificate in communication. 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 Course Prerequisite: Admitted to an online degree program or graduate certificate in communication. 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.
- 574 Survey of Political Communication** 3 Introduction to the field of political communication including agenda-setting, framing, political advertising, entertainment media and politics, political discussion, and selective exposure.
- 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: Admitted to the Communication PhD program. 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 Journalism and Media Production

murrow.wsu.edu
Student Services, Murrow 226
509-335-7333

Associate Professor (Career track/Scholar) and Chair, B. Shors; Professors, L. Pintak, A. Tan; Associate Professor, E. Hindman; Assistant Professors, J. Foley, J. Henrichsen, B. Irom; Associate Professors (Career track/ Scholar), M. Marcelo, L. Waananen-Jones; Assistant Professors (Career track/Scholar), A. Boggs, M. Loveless, S. Pande, W. Raney, K. Rhoden, R. Taflinger; Assistant Professors (Career track/Teaching), G. Bedoyan, W. Loftus.

Students earning a degree in Journalism and Media Production will be prepared to join the many exciting and rapidly evolving careers in traditional and new media. Our courses balance conceptual understanding, critical thinking, ethical principles, and hands-on skill development. Our labs and studios include industry-standard equipment and software. Students with a passion for writing, reporting, creating, producing, learning, and presenting will have ample opportunities to develop their natural talents.

Broadcast News: Learn to film, write, report, anchor, and edit news content for television, radio, and online platforms. Career Options: television anchor; sports or entertainment broadcast reporter; digital content producer; radio reporter.

Broadcast Production: Learn to produce, direct, and operate complex video equipment for multi-camera sports, news, music performances, and other reality-based programs in the studio or at large outdoor venues. Career options: Television or film producer; director; production management; film and video editor.

Multimedia Journalism: Learn about the news writing from features to sports and investigations, as well as how to produce online video and audio stories. Career options: Reporter; editor; magazine writer; photojournalist; digital content producer; podcaster.

Media and Technology: Learn to communicate effectively through speaking, writing, and the use of media technology to create effective messages for organizations and audiences. Career options: Media Researcher, Media technician, Media specialist, Manager of Technology.

Minor in Sport Communication: Learn how to communicate sports to mass media audiences with hands-on skills and a theoretical foundation.

Schedules of Studies

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

BROADCAST NEWS (120 CREDITS)

Admission Requirements

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Additional majors within the Strategic Communications Degree

Students with a primary major in Journalism and Media Production, can elect to earn an additional major within the degree or within the college, with the exception of Integrated Strategic Communication, by completing the second set of major requirements and two additional upper-division courses in COM, COMJOUR, and COMSTRAT. These courses cannot be used elsewhere in the degree. If interested in this option, please consult with a Murrow Professional Academic Advisor.

Double Degree

Students with a primary major/degree in Journalism and Media Production can earn a second degree in the department of Strategic Communication. To be admitted into a second Murrow degree option, please consult with a

Murrow Professional Academic Advisor. *Note: to earn a second degree, you must complete 150 credits.

Academic Requirements

Below is a detailed schedule of studies in a 4-year format. However, students will develop their own academic plan in consultation with their professional academic advisor through the Murrow Center for Student Success. The BA in Journalism and Media Production is broken down into four main categories as found in myWSU under your Academic Requirements:

1. College Core Requirements: COM 101; 102; 105; 138; 210; and 300 (18 credits).

2. Journalism and Media Production Degree Requirements: COM 320; 415; 440; COMJOUR 350; COM 321; and one Advanced Media and Society course from approved list (in footnotes) (18 credits).

3. Major Requirements for Broadcast News: COMJOUR 333; 335; 465; 466; and one Specialization Course 475-490 not used elsewhere in the degree (16 credits).

4. Major Upper-Division Electives: (in footnotes) (9 credits).

First Year

<i>First Term</i>	<i>Credits</i>
COM 101	3
COM 138	3
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
COM 210	3
COM 300 [M]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
COMJOUR 350	3
Electives	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COM 320	3
COM 321	3
COMJOUR 333 [M]	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
COM 415	3
COMJOUR 335	3
Advanced Media and Society Course ³	3
Major Electives ⁴	3
Electives ²	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
COM 440	3
COMJOUR 466 or 486	3
Integrative Capstone [CAPS]	3
Major Specialization Course ⁵	3
Electives ²	3

<i>Second Term</i>	<i>Credits</i>
COMJOUR 465 [M]	4
Major Electives ⁴	6
Electives ²	4

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² A maximum of 12 credits of COM/COMJOUR/COMSTRAT 495/497/499 allowed towards 120 credits required for graduation. Consult with a Murrow advisor.

³ Advanced Media and Society Course (3 credits): Select from COM 421, 464, 471, or 479.

⁴ Major Electives (9 credits): Select 300-400-level courses from COM, COMJOUR, COMSTRAT not used to meet other requirements, COM 495 internship credits, COM 497 or 499 Special Projects credits in consultation with advisor. A maximum of 6 credits of 495/497/499 may apply towards major electives.

⁵ Specialization Course (3 credits): Any COM, COMJOUR, or COMSTRAT 475-490 not used to meet other requirements.

BROADCAST PRODUCTION (120 CREDITS)

Admission Requirements

Students are admitted directly into their desired major in the College of Communication upon admission and enrollment at Washington State University.

To remain admitted in any major in the College of Communication, a student must complete all required courses and have a minimum cumulative 2.0 GPA. COM 300 must be completed with a C or better, and only two attempts are allowed and a "W" is counted as an attempt. With an appeal to the department chair, a student may request to take COM 300 for a 3rd attempt during a summer session. All pre-requisites must be met in order to move through the Murrow curriculum. If a student fails to complete the required curriculum, they will not be able to remain admitted in the Murrow College. If a student is failing to complete academic requirements in a reasonable timeline, an advisor will work with the student to identify another academic path. Students must remain in good academic standing in order to graduate with a degree from the Murrow College.

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institution, will be allowed to take COM 300 in their first semester at WSU with all remaining 100 level required communication courses. All transfer students are required to consult with a Murrow Professional Academic Advisor prior to enrollment at WSU.

Additional majors within the Strategic Communication Degree

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Double Degree

Students with a primary major/degree in Journalism and Media Production can earn a second degree in the department of Strategic Communication. To be admitted into a second Murrow degree option, please consult with a Murrow Professional Academic Advisor. *Note: to earn a second degree, you must complete 150 credits.

Academic Requirements

Below is a detailed schedule of studies in a 4-year format. However, students will develop their own academic plan in consultation with their professional academic advisor through the Murrow Center for Student Success. The BA in Journalism and Media Production is broken down into four main categories as found in myWSU under your Academic Requirements:

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2. Journalism and Media Production Degree Requirements: COM 320; 415; 440; COMJOUR 350; COM 321; and one Advanced Media and Society course from approved list (in footnotes) (18 credits).
3. Major Requirements for Broadcast Production: COMJOUR 333; 355; 455; 466; and one Specialization Course 475-490 not used elsewhere in the degree (16 credits).
4. Major Upper-Division Electives: (in footnotes) (9 credits).

First Year

<i>First Term</i>	<i>Credits</i>
COM 101	3
COM 138	3
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3

Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
COM 210	3
COM 300 [M]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
COMJOUR 350	3
Electives	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COM 320	3
COM 321	3
COMJOUR 333 [M]	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
COM 415	3
COMJOUR 355	3
Advanced Media and Society Course ³	3
Major Electives ⁴	3
Electives ²	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
COM 440	3
COMJOUR 466	3
Integrative Capstone [CAPS]	3
Major Specialization Course ⁵	3
Electives ²	3

<i>Second Term</i>	<i>Credits</i>
COMJOUR 455	4
Major Electives ⁴	6
Electives ²	4

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² A maximum of 12 credits of COM/COMJOUR/COMSTRAT 495/497/499 allowed towards 120 credits required for graduation. Consult with a Murrow advisor.

³ Advanced Media and Society Course (3 credits): Select from COM 464, 471, or 479.

⁴ Major Electives (9 credits): Select 300-400-level courses from COM, COMJOUR, COMSTRAT not used to meet other requirements, COM 495 internship credits, COM 497 or 499 Special Projects credits in consultation with advisor. A maximum of 6 credits of 495/497/499 may apply towards major electives.

⁵ Specialization Course (3 credits): Any COM, COMJOUR, or COMSTRAT 475-490 not used to meet other requirements.

MEDIA AND TECHNOLOGY (120 CREDITS)

Media and Technology focuses on emerging media platforms, management of digital media to enhance user engagements, online communities, and the role of media and technology on social landscapes.

Admission Requirements

Students are admitted directly into their desired major in the College of Communication upon

admission and enrollment at Washington State University.

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Additional majors within the Strategic Communication Degree

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Double Degree

Students with a primary major/degree in Journalism and Media Production can earn a second degree in the department of Strategic Communication. To be admitted into a second Murrow degree option, please consult with a Murrow Professional Academic Advisor. *Note: to earn a second degree, you must complete 150 credits.

Academic Requirements

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2. Journalism and Media Production Degree Requirements: COM 320; 415; 440; COMJOUR 350; COM 321; and one Advanced Media and Society course from approved list (in footnotes) (18 credits).

3. Media and Technology Major Requirements: COM 420; 481; and 490; COMSTRAT 310; COMSTRAT 324 (15 credits).

4. Major Upper-Division Electives: (in footnotes) (9 credits).

First Year

<i>First Term</i>	<i>Credits</i>
COM 101	3
COM 138	3
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
Elective	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
COM 210	3
COM 300 [M]	3
Elective	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Science [PSCI] (with lab) ¹	4
COMJOUR 350	3
Electives	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COM 320	3
COM 321	3
COMSTRAT 324 [M]	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
COM 415	3
COM 420	3
COMSTRAT 310 or COMJOUR 390	3
Electives ²	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
COM 440	3
COM 481	3
Integrative Capstone [CAPS]	3
Advanced Media and Society Course ³	3
Major Elective ⁴	3

<i>Second Term</i>	<i>Credits</i>
COM 490	3
Major Electives ⁴	6
Electives ²	5

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³ Advanced Media and Society Course (3 credits): Select from COM 421, 464, 471, or 479.

⁴ Major Electives (9 credits): Select 300-400-level courses from COM, COMJOUR, COMSTRAT not used to meet other requirements, COM 495 internship credits, COM 497 or 499 Special Projects credits in consultation with advisor. A maximum of 6 credits of 495/497/499 may apply towards major electives.

MULTIMEDIA JOURNALISM (120 CREDITS)

Admission Requirements

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Double Degree

Students with a primary major/degree in Journalism and Media Production can earn a second degree in the department of Strategic Communication. To be admitted into a second Murrow degree option, please consult with a Murrow Professional Academic Advisor. *Note: To earn a second degree, you must complete 150 credits.

Academic Requirements

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3. Major Requirements for Multimedia Journalism: COMJOUR 333; 390; 425; 486; and one Specialization Course 475-490 not used elsewhere in the degree (16 credits).

4. Major Upper-Division Electives: (in footnotes) (9 credits).

First Year

<i>First Term</i>	<i>Credits</i>
COM 101	3
COM 138	3
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
COM 210	3
COM 300 [M]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
COMJOUR 350	3
Electives	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COM 320	3
COM 321	3
COMJOUR 333 [M]	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
COM 415	3
COMJOUR 390	3
Advanced Media and Society Course ³	3
Major Electives ⁴	3
Electives ²	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
COM 440	3
COMJOUR 425	3
Integrative Capstone [CAPS]	3
Major Electives ⁴	3
Electives ²	3

<i>Second Term</i>	<i>Credits</i>
COMJOUR 486	3
Major Specialization Course ⁵	3
Major Electives ⁴	3
Electives ²	5

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² A maximum of 12 credits of COM/COMJOUR/COMSTRAT 495/497/499 allowed towards 120 credits required for graduation. Consult with a Murrow advisor.

³ Advanced Media and Society Course (3 credits): Select from COM 421, 464, 471, or 479.

⁴ Major Electives (9 credits): Select 300-400-level courses from COM, COMJOUR, COMSTRAT not used to meet other requirements, COM 495 internship credits, COM 497 or 499 Special Projects credits in consultation with advisor. A maximum of 6 credits of 495/497/499 may apply towards major electives.

⁵ Specialization Course (3 credits): Any COM, COMJOUR, or COMSTRAT 475-490 not used to meet other requirements.

Minors

Sports Communication

The minor in Sports Communication requires a minimum of 18 credits. Four of the six courses required for the minor must be from the College of Communication. Required courses include COM 105 and COM 225. Additional requirements include one survey course from COM 101, SPMGT 101, 276; one promotional course from COMSTRAT 312, 380, SPMGT 379, 464; one conceptual course from COM 320, 440, 471, SPMGT 365, 367; and one portfolio course from COM 475 (departmental approval required), 486, COMJOUR 486. Nine credits of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Student may be admitted in the minor after they have earned a minimum of 60 credits with a cumulative WSU GPA of 2.7 or higher. Transfer students can be admitted to this minor after completing 60 total credits and one semester at WSU with a 2.7 or higher WSU GPA. Students must maintain a GPA of 2.0 or higher to remain in the minor. Check with the Murrow College Student Services Office for additional information.

Description of Courses

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.

275 Communication Seminar V 1-3 May be repeated for credit; cumulative maximum 9 hours. Varying specialty topics in journalism, mass media, and broadcast production.

333 [M] Reporting Across Platforms 3 Course Prerequisite: COM 210 with a C or better; COM 300 with a C or better; admitted to a major or minor in the College of Communication. Instruction in reporting, writing and editing news stories suitable for publication and on-air presentation.

335 Broadcast News Reporting 3 (2-3) Course Prerequisite: COMJOUR 333; admitted to a major in the College of 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 Course Prerequisite: COM 101; COM 102; COM 105; COM 138; admitted to a major in the College of Communication; sophomore standing. Fundamentals of historic, contemporary, and emerging models of news production; social contexts and effects, alternative sources, and critiques of news.

355 Beginning Television Production 3 (1-6) Course Prerequisite: COMJOUR 333; admitted to a major in the College of Communication. Beginning television studio production, directing, lighting, graphic design, editing, video/audio compression.

360 Writing for Television 3 (2-3) Course Prerequisite: Admitted to a major in the College of Communication. Theory and practice of writing scripts: analysis of dramatic, comedic, commercial, documentary scripts; writing scripts for each genre.

390 Video for the Web 3 (2-3) Course Prerequisite: COM 210 with a C or better; admitted to a major or minor in the College of Communication; sophomore standing. Capture, design, edit, and compress quality video and audio; basic lighting techniques.

425 [M] Reporting of Public Affairs 3 Course Prerequisite: COMJOUR 333; admitted to a major in the College of Communication; junior standing. Research covering public and private sectors.

433 Audio Journalism 3 (2-3) Course Prerequisite: COMJOUR 333; admitted to a major in the College of Communication. Audio journalism designed to refine a range of skills including reporting; on-air presentation; podcasting; writing for audio; and sportscasting.

455 Advanced Television Production 4 (3-3) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: COMJOUR 355; admitted to a major in the College of Communication. Field production; editing; advanced studio production.

465 [M] Advanced Television News 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: COMJOUR 335; admitted to a major in the College of Communication; junior standing. Writing, reporting, and editing broadcast news; development and production of broadcast quality news.

466 Documentary Video 3 (2-3) Course Prerequisite: Admitted to a major or minor in the College of Communication. Video editing for news reporting; feature-length editing for news and public affairs topics; documentaries; visual storytelling.

481 Broadcast Management 3 Course Prerequisite: Admitted to a major or minor in the College of Communication; junior standing. The role of innovation and entrepreneurship for the future of media.

486 Murrow News Service 3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: COMJOUR 335, 355, or 425; admitted to a major in the College of Communication; senior standing. Advanced journalism and media production to produce investigative, watchdog news reports for media outlets and public.

487 Sports Journalism 3 Course Prerequisite: COM 300 with a C or better; admitted to a major or minor in the College of Communication; junior standing. Writing-intensive course with a focus on writing, reporting, and coverage of sports; students cover sporting events, conduct interviews, and attend news conferences outside of class.

495 Broadcasting Professional Internship V 2-12 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: COM 300 with a C or better; admitted to a major in the College of Communication. 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 Strategic Communication

murrow.wsu.edu

Murrow 226

509-335-7333

Associate Dean, Professor, and Chair, S. Hust; Associate Dean and Professor, P. Bolls; Director of Integrated Strategic Communication (Everett) and Scholarly Associate Professor, B. Atwood; Director of Integrated Strategic Communication (Global) and Scholarly Associate Professor, R. Cooney; Director

of *Integrated Strategic Communication* (Vancouver) and *Scholarly Associate Professor*, N. Iyer; *Dean and Professor*, B. Pinkleton; *Professor*, E. Austin; *Associate Professors*, P. Borah, A. Boyd, Y. Lee, J. Willoughby; *Assistant Professors*, T. Gillig, Y. I. Lee, W. Peng; *Scholarly Associate Professor*, L. Paxson (Everett); *Scholarly Assistant Professors*, J. Barnes, E. Candello (Vancouver), C. Hawkins-Jedlicka, C. Newman, D. Petek, B. Pingel, R. Richardson (Everett), M. Ritsch, E. Tomson, C. Wilder (Everett); *Teaching Assistant Professors*, C. Curtis, M. Kistler, L. Tsui. *Lecturers*, T. Edwards, I. Haider.

Students pursuing a Bachelor of Arts in Strategic Communication learn to communicate creatively and persuasively to build mutually beneficial, long term relationships between organizations and their target populations. Majors leading to the degree are Advertising, Public Relations, Risk and Crisis Communication, and Integrated Strategic Communication. At the Everett, Global, and Vancouver campuses, only the Integrated Strategic Communication major is available.

- **Advertising:** Learn how to effectively appeal to consumers by designing and evaluating advertising initiatives using a variety of media platforms. Career Options: Advertising Coordinator; Digital Media Planner; Marketing; Ad Sales; Social Media Strategist; and Creative Director.
- **Public Relations:** Learn how to foster beneficial relationships with key stakeholders and build and maintain a positive public image for a company or person. Career Options: Public Relations Specialist; Event Planner; Media Relations; Lobbyist; Development Officer; Campaign Manager; and Social Engagement Manager.
- **Risk and Crisis Communication:** Learn how to design and implement crisis campaigns at the individual and societal levels, and well as steer industry through time of risk and crisis via effective communication strategies. Career options: Crisis Communicator; Crisis Interventionist; Health Communication Coordinator; Risk Communication Specialist; and Public Information Officer.
- **Integrated Strategic Communication:** Learn to acquire and analyze information to create communication products (writing, visual, and speaking) that address communication objectives via multiple media platforms. Career options: Digital Advertising Coordinator; Social Media Strategist; Brand Strategist; and Consumer Analyst.
- **Health Communication and Promotion:** The minor in Health Communication and Promotion requires a minimum of 18 credits. Students pursuing a degree in the Murrow College may only apply two courses from their major coursework to this minor. For all other areas of study, check with your primary advisor.

Schedules of Studies

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

ADVERTISING (120 CREDITS)

Admission Requirements

Students are admitted directly into their desired major in the College of Communication upon

admission and enrollment at Washington State University.

To remain admitted in any major in the College of Communication, a student must complete all required courses and have a minimum cumulative 2.0 GPA. COM 300 must be completed with a C or better, and only two attempts are allowed and a "W" is counted as an attempt. With an appeal to the department chair, a student may request to take COM 300 for a 3rd attempt during a summer session. All pre-requisites must be met in order to move through the Murrow curriculum. If a student fails to complete the required curriculum, they will not be able to remain admitted in the Murrow College. If a student is failing to complete academic requirements in a reasonable timeline, an advisor will work with the student to identify another academic path. Students must remain in good academic standing in order to graduate with a degree from the Murrow College.

Direct to Degree for Transfer Students

Transfer students bringing in 30 or more semester credits from an outside institution, and a 3.0 or higher transfer GPA will be directly admitted into the Murrow College. After consulting with a Murrow Professional Academic Advisor, a student transferring with junior status (60 or more semester credits), with a 3.0 or higher transfer GPA, and who has completed COM 101 or COM 105 from another institution, will be allowed to take COM 300 in their first semester at WSU with all remaining 100 level required communication courses. All transfer students are required to consult with a Murrow Professional Academic Advisor prior to enrollment at WSU.

Additional majors within the Strategic Communications Degree

Students on the Pullman campus, with a primary major in Strategic Communication, can elect to earn an additional major within the degree, with the exception of Integrated Strategic Communication, by completing the second set of major requirements and two additional upper-division courses in COM, COMJOUR, and COMSTRAT. These courses cannot be used elsewhere in the degree. If interested in this option, please consult with a Murrow Academic Advisor.

Double Degree

Students with a primary major/degree in Strategic Communication can earn a double degree in the department of Journalism and Media Production. To be admitted into a second Murrow degree option, please consult with a Murrow Professional Academic Advisor. *Note: to earn a second degree, you must complete 150 credits.

Academic Requirements

Below is a detailed schedule of studies in a 4-year format. However, students will develop their own academic plan in consultation with their professional academic advisor through the Murrow Center for Student Success. The BA in Strategic Communication is broken down into four main categories as found in myWSU under your Academic Requirements:

1. College Core Requirements: COM 101; 102; 105; 138; 210; and 300 (18 credits).

2. Strategic Communication Degree Requirements: COM 309; COMSTRAT 310; COMSTRAT 395 or

MKTG 360; COMSTRAT 301; one Advanced Media and Society course from approved list (in footnotes); and one Specialization Elective course (in footnotes) (18 credits).

3. Major Requirements: Advertising: COMSTRAT 380; 381; 382; 476; and 480 (15 credits).

4. Major Upper-Division Electives: (in footnotes) (9 credits).

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
COM 101	3
COM 138	3
Diversity [DIVR]	3
ENGLISH 101 [WRWG]	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
COM 210	3
COM 300 [M]	3
Social Sciences [SSCI]	3
Elective	3

<i>Second Term</i>	<i>Credits</i>
COMSTRAT 301	3
COMSTRAT 310	3
COMSTRAT 380	3
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COM 309	3
COMSTRAT 381	3
COMSTRAT 395 or MKTG 360	3
Major Electives ²	3
Elective ³	3

<i>Second Term</i>	<i>Credits</i>
COMSTRAT 382	3
Major Electives ²	3
Electives ³	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
COMSTRAT 480	3
Integrative Capstone [CAPS]	3
Advanced Media and Society Course ⁴	3
Electives ³	6

<i>Second Term</i>	<i>Credits</i>
COMSTRAT 476	3
Specialization Course ⁵	3
Major Electives ²	3
Electives ³	5

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Major Electives (9 credits): Select 300-400-level courses from COM, COMJOUR, COMSTRAT not used to meet other requirements, COM 495 internship credits, COM 497 or COMSTRAT 499 Special Projects credits in consultation with advisor. A maximum of 6 credits of 495/497/499 may apply towards major electives.

³ A maximum of 12 credits of COM/COMJOUR/COMSTRAT 495/497/499 allowed towards 120 credits required for graduation. Consult with a Murrow advisor.

⁴ Advanced Media and Society Course (3 credits): Select from COM 421, 440, 464, 471, or 479.

⁵ Specialization Course (3 credits): Any COM, COMJOUR, or COMSTRAT 475-490 not used to meet other requirements.

INTEGRATED STRATEGIC COMMUNICATION (120 CREDITS)

Admission Requirements

Students are admitted directly into their desired major in the College of Communication upon admission and enrollment at Washington State University.

To remain admitted in any major in the College of Communication, a student must complete all required courses and have a minimum cumulative 2.0 GPA. COM 300 must be completed with a C or better, and only two attempts are allowed and a “W” is counted as an attempt. With an appeal to the department chair, a student may request to take COM 300 for a 3rd attempt during a summer session. All pre-requisites must be met in order to move through the Murrow curriculum. If a student fails to complete the required curriculum, they will not be able to remain admitted in the Murrow College. If a student is failing to complete academic requirements in a reasonable timeline, an advisor will work with the student to identify another academic path. Students must remain in good academic standing in order to graduate with a degree from the Murrow College.

Direct to Degree for Transfer Students

Transfer students bringing in 30 or more semester credits from an outside institution, and a 3.0 or higher transfer GPA will be directly admitted into the Murrow College. After consulting with a Murrow Professional Academic Advisor, a student transferring with junior status (60 or more semester credits), with a 3.0 or higher transfer GPA, and who has completed COM 101 or COM 105 from another institution, will be allowed to take COM 300 in their first semester at WSU with all remaining 100 level required communication courses. All transfer students are required to consult with a Murrow Professional Academic Advisor prior to enrollment at WSU.

Below is a detailed schedule of studies in a 4-year format. However, students will develop their own academic plan in consultation with their professional academic advisor through the Murrow Center for Student Success. The BA in Strategic Communication is broken down into four main categories as found in myWSU under your Academic Requirements:

1. College Core Requirements: COM 101; 102; 105; 138; 210; and 300 (18 credits).

2. Strategic Communication Degree Requirements: COM 309; COMSTRAT 310; COMSTRAT 395 or MKTG 360; COMSTRAT 301; one Advanced Media and Society course from approved list (in footnotes) (15 credits).

3. Major Requirements: ISC: COMJOUR 333; COMSTRAT 312; 380; 383; 476; and 485. (18 credits).

4. Major Upper-Division Electives and Internship: (in footnotes) (9 credits).

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
COM 101	3
COM 138	3
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
COM 210	3
COM 300 [M]	3
COMSTRAT 301	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
COM 309	3
COMJOUR 333	3
COMSTRAT 312	3
Electives ²	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COMSTRAT 310	3
COMSTRAT 380	3
COMSTRAT 395 or MKTG 360	3
Major Electives or COMSTRAT 495 Internship ³	3
Electives ²	3

<i>Second Term</i>	<i>Credits</i>
COMSTRAT 383 [M]	3
Major Electives or COMSTRAT 495 Internship ³	3
Electives ²	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
COMSTRAT 485	3
Integrative Capstone [CAPS]	3
Major Elective or COMSTRAT 495 Internship ³	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
COMSTRAT 476	3
Advanced Media and Society Course ⁴	3
Electives ²	8

¹ For a total of 7 credits—one Biological Sciences

[BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² A maximum of 12 credits of COM/COMJOUR/COMSTRAT 495/497/499 allowed towards 120 credits required for graduation. Consult with a Murrow advisor.

³ Major Electives (9 credits): Select 300-400-level courses from COM, COMJOUR, COMSTRAT not used to meet other requirements, 3 credits of COMSTRAT 495 internship are required. A maximum of 3 credits of 497/499 may apply towards major electives.

⁴ Advanced Media and Society Course (3 credits): Select from COM 421, 440, 464, 471, or 479.

PUBLIC RELATIONS (120 CREDITS)

Admission Requirements

Students are admitted directly into their desired major in the College of Communication upon admission and enrollment at Washington State University.

To remain admitted in any major in the College of Communication, a student must complete all required courses and have a minimum cumulative 2.0 GPA. COM 300 must be completed with a C or better, and only two attempts are allowed and a “W” is counted as an attempt. With an appeal to the department chair, a student may request to take COM 300 for a 3rd attempt during a summer session. All pre-requisites must be met in order to move through the Murrow curriculum. If a student fails to complete the required curriculum, they will not be able to remain admitted in the Murrow College. If a student is failing to complete academic requirements in a reasonable timeline, an advisor will work with the student to identify another academic path. Students must remain in good academic standing in order to graduate with a degree from the Murrow College.

Direct to Degree for Transfer Students

Transfer students bringing in 30 or more semester credits from an outside institution, and a 3.0 or higher transfer GPA will be directly admitted into the Murrow College. After consulting with a Murrow Professional Academic Advisor, a student transferring with junior status (60 or more semester credits), with a 3.0 or higher transfer GPA, and who has completed COM 101 or COM 105 from another institution, will be allowed to take COM 300 in their first semester at WSU with all remaining 100 level required communication courses. All transfer students are required to consult with a Murrow Professional Academic Advisor prior to enrollment at WSU.

Below is a detailed schedule of studies in a 4-year format. However, students will develop their own academic plan in consultation with their professional academic advisor through the Murrow Center for Student Success. The BA in Strategic Communication is broken down into four main categories as found in myWSU under your Academic Requirements:

1. College Core Requirements: COM 101; 102; 105; 138; 210; and 300 (18 credits).

2. Strategic Communication Degree Requirements: COM 309; COMSTRAT 310; COMSTRAT 395 or MKTG 360; COMSTRAT 301; one Advanced Media

and Society course from approved list (in footnotes); and one Specialization Elective course (in footnotes) (18 credits).

3. Major Requirements: Public Relations: COMJOUR 333; COMSTRAT 312; 383; 477; and 485. (15 credits).

4. Major Upper-Division Electives and Internship: (in footnotes) (9 credits).

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
COM 101	3
COM 138	3
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
COM 210	3
COM 300 [M]	3
COMSTRAT 301	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
COMJOUR 333	3
COMSTRAT 310	3
COMSTRAT 312	3
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COM 309	3
COMSTRAT 383 [M]	3
COMSTRAT 395 or MKTG 360	3
Major Electives ²	3
Elective ³	3

<i>Second Term</i>	<i>Credits</i>
COMSTRAT 477	3
Advanced Media and Society Course ⁴	3
Major Electives ²	3
Electives ³	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
COMSTRAT 485 [M]	3
Integrative Capstone [CAPS]	3
Electives ³	9

<i>Second Term</i>	<i>Credits</i>
Specialization Course ⁵	3
Major Electives ²	3
Electives ³	8

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Major Electives (9 credits): Select 300-400-level courses from COM, COMJOUR, COMSTRAT

not used to meet other requirements, 3 credits of COMSTRAT 495 internship are required. A maximum of 3 credits of 497/499 may apply towards major electives.

³ A maximum of 12 credits of COM/COMJOUR/COMSTRAT 495/497/499 allowed towards 120 credits required for graduation. Consult with a Murrow advisor.

⁴ Advanced Media and Society Course (3 credits): Select from COM 421, 440, 464, 471, or 479.

⁵ Specialization Course (3 credits): Any COM, COMJOUR, or COMSTRAT 475-490 not used to meet other requirements.

RISK AND CRISIS COMMUNICATION (120 CREDITS)

Admission Requirements

Students are admitted directly into their desired major in the College of Communication upon admission and enrollment at Washington State University.

To remain admitted in any major in the College of Communication, a student must complete all required courses and have a minimum cumulative 2.0 GPA. COM 300 must be completed with a C or better, and only two attempts are allowed and a "W" is counted as an attempt. With an appeal to the department chair, a student may request to take COM 300 for a 3rd attempt during a summer session. All pre-requisites must be met in order to move through the Murrow curriculum. If a student fails to complete the required curriculum, they will not be able to remain admitted in the Murrow College. If a student is failing to complete academic requirements in a reasonable timeline, an advisor will work with the student to identify another academic path. Students must remain in good academic standing in order to graduate with a degree from the Murrow College.

Direct to Degree for Transfer Students

Transfer students bringing in 30 or more semester credits from an outside institution, and a 3.0 or higher transfer GPA will be directly admitted into the Murrow College. After consulting with a Murrow Professional Academic Advisor, a student transferring with junior status (60 or more semester credits), with a 3.0 or higher transfer GPA, and who has completed COM 101 or COM 105 from another institution, will be allowed to take COM 300 in their first semester at WSU with all remaining 100-level required communication courses. All transfer students are required to consult with a Murrow Professional Academic Advisor prior to enrollment at WSU.

Below is a detailed schedule of studies in a 4-year format. However, students will develop their own academic plan in consultation with their professional academic advisor through the Murrow Center for Student Success. The BA in Strategic Communication is broken down into four main categories as found in myWSU under your Academic Requirements:

1. College Core Requirements: COM 101; 102; 105; 138; 210; and 300 (18 credits).

2. Strategic Communication Degree Requirements: COM 309; COMSTRAT 310; COMSTRAT 395 or MKTG 360; COMSTRAT 301; one Advanced Media and Society course from approved list (in footnotes);

and one Specialization Elective course (in footnotes) (18 credits).

3. Major Requirements: Risk and Crisis Communication: COMSTRAT 324; COMSTRAR 326; COMSTRAT 483 or 478; COMSTRAT 477 or COM 490; COM 486 (15 credits).

4. Major Upper-Division Electives: (in footnotes) (9 credits).

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
COM 101	3
COM 138	3
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
COM 210	3
COM 300 [M]	3
COMSTRAT 301	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
COMSTRAT 310	3
Major Elective ²	3
Specialization Course ³	3
Electives ⁴	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COM 309	3
COMSTRAT 324 [M]	3
COMSTRAT 326	3
Electives ⁴	6

<i>Second Term</i>	<i>Credits</i>
COMSTRAT 395 or MKTG 360	3
COMSTRAT 477 or COM 490	3
Major Elective ²	3
Electives ⁴	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
COMSTRAT 483 or 478	3
Integrative Capstone [CAPS]	3
Electives ⁴	9

<i>Second Term</i>	<i>Credits</i>
Advanced Media and Society Course ⁵	3
COMSTRAT 485	3
Major Elective ²	3
Electives ⁴	5

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Major Electives (9 credits): Select 300-400-level

courses from COM, COMJOUR, COMSTRAT not used to meet other requirements, COM 495 internship credits, COM 497 or COMSTRAT 499 Special Projects credits in consultation with advisor. A maximum of 6 credits of 495/497/499 may apply towards major electives.

³ Specialization Course (3 credits): Any COM, COMJOUR, or COMSTRAT 475-490 not used to meet other requirements.

⁴ A maximum of 12 credits of COM/COMJOUR/COMSTRAT 495/497/499 allowed towards 120 credits required for graduation. Consult with a Murrow advisor.

⁵ Advanced Media and Society Course (3 credits): Select from COM 421, 440, 464, 471, or 479.

Minors

Health Communication and Promotion Minor

The Health Communication and Promotion Minor requires a minimum of 18 credits. Required courses included COM 101 or 105, COM 210, and COM 478. Additional requirements include one content creation course from COMSTRAT 310, 383, 477, and COM 395; and two courses in specialized message creation and evaluation from COM 309, 486, COMSTRAT 483, and COMSTRAT 485. Nine credits of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Students may be admitted to the minor once they have completed 60 credits, have a WSU cumulative GPA of 2.7 or better, and are admitted to a major. Transfer students can be admitted to this minor after completing 60 total credits and one semester at WSU with a 2.7 or higher WSU GPA. Students must maintain a 2.0 cumulative GPA to remain in the minor. Students pursuing a degree in the Murrow College may apply only two courses from their major coursework to this minor. Check with the Murrow College Student Services Office for additional information.

Description of Courses

HEALTH COMMUNICATION AND PROMOTION

COMHLTH

570 Health Communication and Behavior Change 3 Application of behavior change theories to construction and evaluation of health communication campaigns.

571 Communicating Health in Practice 3 Health communication and promotion across a variety of settings and mediums, from interpersonal to promotional campaigns.

572 Communicating Health to Specialized Populations 3 Literature and theory of cross-cultural communication and cultural aspects of health.

573 Communicating Health in a Digital Landscape 3 Development and implementation of health-related content through a variety of digital platforms.

574 Health Message Design and Effectiveness 3 Behavior change theories as they relate to health communication message design and evaluation.

STRATEGIC COMMUNICATION

COMSTRAT

275 Strategic Communication Seminar V 1-3 May be repeated for credit; cumulative maximum 9 hours. Various specialty topics in strategic communication.

301 Foundations of Persuasion 3 Course Prerequisite: Admitted to a major or minor in the College of Communication. Theories of persuasion and social action; study of strategies and techniques for the persuasive use of language and other symbols. (Formerly COMSOC 301.)

310 Digital Content Promotion 3 Course Prerequisite: COM 210 with a C or better; admitted to a major or minor in the College of Communication; sophomore standing. Practice and promotion of public relations and advertising through digital and social media.

312 Principles of Public Relations 3 Principles, theories, methods and objectives of public relations; public relations problems and practices.

324 [M] Reasoning and Writing 3 Course Prerequisite: COM 300 with a C or better; admitted to any major or minor in the College of Communication; sophomore standing. Theories of persuasion and social action; study of strategies and techniques for the persuasive use of language and other symbols. (Formerly COMSOC 324.)

326 Organizing for Social Change 3 Course Prerequisite: Admitted to any major; junior standing. Models of social change campaigns, social movements, and organizing grassroots organizations. (Formerly COMSOC 326.)

380 Advertising Principles and Practices 3 Advertising history, theory and practice by advertising agencies and organizations.

381 [M] Creative Media Strategies and Techniques for Advertising 3 Course Prerequisite: COM 210 with a C or better; COM 300 with a C or better; admitted to a major in the College of Communication; junior standing. Development of creative content for persuasive campaigns through different media.

382 Media Planning 3 Course Prerequisite: COMSTRAT 380; admitted to a major in the College of Communication; junior standing. Media planning theories, strategies, and practices.

383 [M] Media Strategies and Techniques for Public Relations 3 Course Prerequisite: COM 210 with a C or better; COM 300 with a C or better; admitted to a major in the College of Communication. Development of creative content for persuasive public relations campaigns through different media.

395 Introduction to Integrated Strategic Communication and Management 3 Course Prerequisite: COMSTRAT 312 or 380; sophomore standing. Analysis and application of strategic communication theory and concepts to influence attitudes and purchasing behavior.

475 Strategic Communication Seminar in Public Relations 3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Admitted to any major; 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 Course Prerequisite: COM 309; admitted to a major in the College of Communication. 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: COMSTRAT 310; admitted to a major in the College of Communication; junior standing. Theory-based design, market testing, and evaluation of messages for positive social outcomes.

478 Health Communication 3 Course Prerequisite: Admitted to any major; junior standing. Mediated communication in disease prevention and health intervention.

480 [M] Advertising Agency Operation and Campaigns 3 Course Prerequisite: COMSTRAT 380; COMSTRAT 381; COMSTRAT 382; admitted to a major in the College of Communication; senior standing. Principles and functions of advertising management: campaign planning, execution, presentation and evaluation.

483 Risk Communication 3 Course Prerequisite: Admitted to any major; junior standing. Research on perceptions of risk among stakeholders about complex environmental and natural resource issues.

485 [M] Public Relations Management and Campaigns 3 Course Prerequisite: COM 309; COMSTRAT 312; COMSTRAT 383; admitted to a major in the College of Communication; senior standing. Application of public relations principles, management, persuasion theory and research methods to public relations issues.

495 Strategic Communication Professional Internship V 2-12 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: COM 300 with a C or better; admitted to a major in the College of Communication. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Course Prerequisite: Admitted to a major in the College of 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 Course Prerequisite: Admitted to an online degree program or graduate certificate in communication. Introduction to theories, concepts, strategies, and processes of persuasion and social influence.

562 Creative Media Strategies and Techniques 3 Course Prerequisite: Admitted to an online degree program or graduate certificate in communication. The strategies, processes, procedures and steps involved in creating marketing communications materials for a variety of different media.

563 Professional Digital Content Promotion 3 Course Prerequisite: Admitted to an online degree program or graduate certificate in communication. 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 Course Prerequisite: Admitted to an online degree program or graduate certificate in communication. 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 Course Prerequisite: Admitted to an online degree program or graduate certificate in communication. 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.

701 Master's Independent Capstone Project and/or Examination V 1-6 May be repeated for credit. Course Prerequisite: Admitted to an online degree program or graduate certificate in communication. Capstone project or final examination for professional master's degree under the Graduate School. The credits will include a balloted evaluation of the student's completion of the program's capstone/examination requirements by the program's graduate faculty. Students must have graduate degree-seeking status and obtain approval from their major advisor/committee chair before enrolling for 701 credit. S, U grading.

702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: Admitted to the online master's program in strategic communication. 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 Creative Media and Digital Culture - Vancouver

cas.vancouver.wsu.edu/creative-media-digital-culture
Science & Engineering Building (VSCI), Room 130
360-546-9620

Program Director and Professor, D. Grigar; Instructors, J. Barber, B. Grell, W. Luers, M. Rabby, W. Luers; Academic Director, TBD; Academic Coordinator, T. Fordyce

The Creative Media and Digital Culture (CMDC) is an academic program, unique to Washington State University Vancouver, which houses the B.A. in Digital Technology and Culture, the Game Studies and Design certificate, and the Social Media certificate. 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 various colleges in the WSU system, 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 a program of study in Media Authoring and certificates in Game Studies and Design as well as Social Media. In addition to foundational course work in DTC, students also take classes in Anthropology, English, Fine Arts, History, Political Science, Psychology, Sociology and other disciplines. 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.

Options 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 credit 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 credit hours of approved DTC course work, including at least six upper-division semester credits.

Certificates

The Game Studies and Design Certificate requires 15 semester credit hours of DTC course work, including two foundational courses and three courses that focus in either design or development. The Social Media Certificate, a collaboration between the program and the Edward R. Murrow College of Communication, requires 15 semester credit hours, including four foundational courses and one additional course in media authoring.

Student Learning Outcomes

- Demonstrate competency with computers for designing, distributing, researching, retrieving, and preserving digital works in various mediums for humane and effective human-computer interactions
- Synthesize media forms for multimedia contexts
- Employ the principles for sophisticated manipulation of various forms of digital media
- Understand the production and assessment of media objects
- Know the basics of information architecture and knowledge management along with ways digital information can be structured for retrieval and archival purposes for different audiences
- Question the way digital media functions in multiple cultural contexts
- Recognize various forms of language processing and their implications for media authoring
- Appreciate the history of technological development, from local to global perspectives, and its implications for a variety of mediums
- Utilize an interdisciplinary perspective in order to understand the basics of social, economic, and education changes brought about by digital media
- Be practiced and capable communicators in all mediums

Schedules of Studies

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

DIGITAL TECHNOLOGY AND CULTURE - CREATIVE MEDIA AND DIGITAL CULTURE OPTION (VANCOUVER ONLY) (120 CREDITS)

A student may be admitted to the Creative Media and Digital Culture option of the DTC major upon making their intention known to the department.

First Year

First Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3

Quantitative Reasoning [QUAN] 3
Foreign Language, if necessary, or Elective 3 or 4

Second Term Credits
DTC 101 [ARTS] 3
ENGLISH 101 [WRWG] 3
Foreign Language, if needed, and/or Electives 9

Second Year

First Term Credits
Biological Sciences [BSCI] with lab¹ 4
Diversity [DIVR] 3
DTC 201 3
Social Sciences [SSCI] 3
Electives 3

Second Term Credits
Arts [ARTS], Humanities [HUM], or
Social Sciences [SSCI] 3
DTC 336 3
Physical Sciences [PSCI] with lab¹ 4
Electives 4
Complete Writing Portfolio

Third Year

First Term Credits
DTC 355 [M] 3
DTC 356 3
DTC Concentration² 6
Electives 3

Second Term Credits
DTC 375 [M] 3
DTC Concentration² 3
DTC Core Option³ 6
Electives 3

Fourth Year

First Term Credits
Integrated Capstone [CAPS] 3
DTC Concentration² 3
DTC Core Option³ 1-3
Electives 6

Second Term Credits
DTC 497 3
Electives or Internship⁴ 14

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² DTC Concentration, Media Authoring (12 credits): Approved courses include DTC 335, 338, 354, 435, 476, 477, 478, 498, 499 (DTC 498 and 499 require departmental approval).

³ DTC Core Options (9 credits): AMER ST/DTC/ENGLISH 475, ANTH 301, 330, 350, ENGLISH 339, 342, 402 [M], 405, FINE ART 331, 332, 380, 385. FOR LANG 410, HISTORY 400, 427, 438, 483, HUM 304, POL S 317, PSYCH 384, 490, SOC 373, 430.

⁴ Electives should include 300-400-level coursework as needed to meet the University requirement of 120 credits including 40 credits of upper division coursework.

Minors

Digital Technology and Culture

A minor in DTC requires 18 hours including DTC

101, 201, DTC/ENGLISH 336, 355, and 375, plus one more 3-hour course from the following: DTC 335, 356, 435, 477, 478, FINE ART 331, 332, 333, 363, 434, or 435. 9 hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Certificates

Game Studies and Design Certificate

The Game Studies and Design Certificate prepares students for conceptualizing and producing video games and gameful environments with a special focus on genres such as educational, serious, and games for change. Completion of the Game Studies and Design Certificate requires a total of 15 credits. Students are required to complete DTC 392 or 476 and 492 plus 9 credits chosen from one of two options. Students who select the Design Option select three courses (9 credits) from DTC 335, 336, 354, and 435. Students who select the Development Option select three courses (9 credits) from DTC 338, 355, 477, and 478.

Social Media

The Social Media Certificate prepares students for working in the emerging field of digital communication and product promotion. It covers social media in a variety of aspects, including its role in advertising and public relations, how campaigns work, and the relational nature of online engagement. Completion of the Social Media Certificate requires a total of 15 credits. Required courses: COMSTRAT 312, 380; DTC 330, 331; and a minimum of one course from DTC 336, 354, 355.

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.

104 Digital Foundations 1 Foundational computing skills: hardware, file management, common operating systems and applications, library resources, and professionalization.

201 [ARTS] Tools and Methods for Digital Technology 3 An introduction to the tools and methods of production for multimedia authoring in digital contexts.

204 Introduction to Text Analysis 3 Introduction to computational and statistical text analysis using the open source programming language R; designed for students with no prior experience with programming but who wish to extend their methodological tool kit to include quantitative and computational approaches to the study of text. (Crosslisted course offered as DTC 204, DATA 204.)

206 [DIVR] Digital Inclusion 3 Examination of global reach of digital environments, structures, and tools with focus on inclusion in terms of access, availability, affordability, adoption, and application across cultures.

208 [ARTS] Introduction to Digital Cinema 3 A practical introduction to the technological and cultural transformations driving the evolution of cinematic techniques from the birth of motion pictures to emerging technology.

209 Introduction to Data Visualization 3 An introduction to the tools and methods of data visualization in multiple contexts. (Crosslisted course offered as DTC 209, DATA 209.)

330 Social Media Case Studies 3 Inquiry into ways businesses and individuals use social media as a marketing tool with special emphasis on media impact.

331 Social Media Practices 3 Inquiry into social media practices from a ground-up approach, focusing on social media message creation and consumption; online self-presentation; online relationships; reputation management; social media data analysis.

335 3D Digital Animation 3 (2-2) 3-D digital animation for creative and professional productions, art skills, story-telling and team problem-solving techniques.

336 Multimedia Design 3 Course Prerequisite: DTC 201. Design practices and process for composing for a multimedia environment including color, pattern, and shape.

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 [ARTS] [M] 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 3 Development for new computer-based media; multimedia authoring projects; examination of information technology.

356 [M] Information Structures 3 Course Prerequisite: DTC 101. Social and cultural role of information; research with electronic sources; production, validation, storage, retrieval, evaluation, use, impact of electronic information.

375 [M] Language, Texts and Technology 3 Course Prerequisite: DTC 101. Relationship between technology and communication; writing practices from a historical point of view.

392 Video Games Theories and History 3 History and theory of video games with a focus on innovation and cultural impact.

435 Advanced Animation 3 (2-2) Course Prerequisite: DTC 335. Advanced investigation of tools and methods for 2D and 3D digital animation.

475 [DIVR] Digital Diversity 3 Course
Prerequisite: Junior standing. Cultural impact of digital media in cultural contexts; issues of race, class, gender, sexuality online.

476 Digital Strategies 3 Examines multiple digital strategies for engagement with immersive and emerging technologies.

477 Advanced Multimedia Authoring 3 Course
Prerequisite: DTC 355. Advanced writing, imaging and teamwork skills for authoring in new computer-based media; website project in client-oriented context.

478 Usability and Interface Design 3 (0-6) Course
Prerequisite: DTC 355. Design of websites using best practices of visual literacy, interface architecture, and usability.

491 Advanced Digital Cinema 3 Course
Prerequisite: DTC 201 or 208. Exploration of advanced techniques, theories, and aesthetic strategies of cinema in the age of digital media, including video remix, mobile cinema, webisodes, cinematic games, hyperlinked video, and database cinema.

492 Engines and Platforms 3 Course
Prerequisite: DTC 355. A study of software platforms and engines used for media design, with special focus on intuitive tools, rapid work flow, multimedia platform environments, and asset management.

497 [CAPS] Senior Seminar 3 Course
Prerequisite: Completion of Junior Writing Portfolio; admitted to the major in Digital Technology and Culture; senior standing. Major multimedia project for nonprofit organization or small business with special focus on project management, planning, and execution.

498 Internship V 1-6 May be repeated for credit; cumulative maximum 6 hours. Course
Prerequisite: Admitted to the major in Digital Technology and Culture; junior standing; department permission. Direct professional learning experiences in the area of digital media, technology, and culture. S, F grading.

499 Special Problems V 1-4 May be repeated for credit; cumulative maximum 12 hours. Course
Prerequisite: Admitted to the major in Digital Technology and Culture; junior 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.

560 Critical Theories, Methods, and Practice in Digital Humanities 3 History, theory, and practice of digital humanities, with attention paid to how digital humanities are transforming disciplinary knowledge. (Crosslisted course offered as DTC 560, ENGLISH 560).

561 Studies in Technology and Culture 3 Foundation examination of key concepts, tools, and possibilities afforded by engaging with technology through a critical cultural lens. (Crosslisted course offered as DTC 561, ENGLISH 561).

Department of Criminal Justice and Criminology

crmj.wsu.edu
Wilson-Short 111
509-335-8611

Chair and Associate Professor, M.-A. Neuilly (Wolf); Professors, D. Brody, C. Hemmens, F. Lutze, M. Stohr; Associate Professors, L. Drapela, K. DuBois, D. Makin, D. Willits; Assistant Professors, H. Mellinger, A. Pedneault, A. Raza; Teaching Assistant Professor, J. Snyder.

The Department of Criminal Justice and Criminology offers substantive studies in criminal justice and criminology 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 and Criminology 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 justice), issues relevant to groups in American society (gender, minorities), research and evaluation skills, theories of crime and delinquency, ethics, and the evaluation of management, programs, and policies conducted by justice system institutions.

Students are also required to complete related 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, and gender and politics. 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 Criminology, and the Master's Degree and Ph.D. Degree in Criminal Justice and Criminology.

Transfer Students

Students planning to transfer to Washington State University at the end of the first year or sophomore

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.

Student Learning Outcomes

The B.A. in Criminal Justice and Criminology is designed to empower students as critical thinkers, creative evaluators, ethical actors, and effective communicators concerning matters of crime and administration of justice at the local, state, national, and international levels.

Schedules of Studies

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

CRIMINAL JUSTICE AND CRIMINOLOGY (120 CREDITS)

A student may be admitted to the Criminal Justice and Criminology major upon completing CRM J 101 and earning a minimum WSU cumulative GPA of 2.0 or better.

Students who major in criminal justice and criminology must complete the 18 credits criminal justice core (CRM J 101, 201, 311, 320, 321, and 480) and 12 credits in criminal justice electives of which 2 courses must be an [M].

First Year

First Term	Credits
CRM J 101 [SSCI]	3
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN]	3
Electives	6

Second Term	Credits
Arts [ARTS]	3
Communication [COMM] or Written Communication [WRTG]	3
CRM J 201	3
Diversity [DIVR] or CRM J 205 [DIVR]	3
HISTORY 105 [ROOT]	3

Second Year

First Term	Credits
Biological Sciences [BSCI] with lab ¹	4
CRM J 311	3
Humanities [HUM]	3
Electives	6

Second Term	Credits
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
CRM J 321	3
Electives	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CRM J 320	3
CRM J Electives ²	3
Electives ³	9

<i>Second Term</i>	<i>Credits</i>
CRM J Electives ²	3
Physical Sciences [PSCI] with lab ¹	4
Electives ³	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
CRM J Electives ²	6
Foreign Language, if needed, and/or Electives ³	9

<i>Second Term</i>	<i>Credits</i>
CRM J 480 [CAPS] [M]	3
Foreign Language, if needed, and/or Electives ³	10

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² CRM J Electives (12 credits): Any CRM J course not used to fulfill the CRM J core requirements. Must include 1 [M] course.

³ Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

Minors**Criminal Justice and Criminology**

The student who minors in Criminal Justice will learn about the various components and activities of our system of justice, such as the police, courts, corrections, and juvenile justice. A minor in Criminal Justice will be useful to any student desiring knowledge of how our American system of justice works.

The minor in Criminal Justice and Criminology requires 18 credits of coursework in criminal justice (CRM J), including CRM J 101. 9 credits must be taken at the 300-400 level and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. All coursework with the exception of CRM J 490 and 499 must be graded. CRM J 499 may not be applied toward the minor unless approved in advance by department. Interested students should contact the Department of Criminal Justice and Criminology for details.

Description of Courses**CRIMINAL JUSTICE****CRM J**

101 [SSCI] 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 [DIVR] Realizing Justice in a Multicultural Society 3 The pursuit of justice and the historical, contemporary, and future issues and challenges facing society and the criminal justice system.

270 Introduction to Policing 3 Historical development and contemporary challenges associated with policing with special emphasis on the conflicting role expectations facing police officers. Cooperative: Open to UI degree-seeking students.

280 Introduction to American Criminal Courts 3 History, purpose, structure, and process associated with criminal courts; emphasizes the roles of attorneys and judges and court processes from initial appearance to appeal. Cooperative: Open to UI degree-seeking students.

311 Research Methods for Criminal Justice 3 Course Prerequisite: CRM J 101. Discussion of research methods appropriate for the study of crime and criminal justice policies and institutions.

320 Criminal Law 3 Course Prerequisite: CRM J 101. 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 Course Prerequisite: CRM J 101. Critical discussion of skills and methods needed for the analysis of implementation and impact of criminal justice policies.

330 Crime Control Policies 3 Course Prerequisite: CRM J 101. Analysis of ideologies, assumptions, and performance of crime control policies. Cooperative: Open to UI degree-seeking students.

365 Juvenile Justice and Corrections 3 Course Prerequisite: CRM J 101. 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 Policing and Society 3 Course Prerequisite: CRM J 101. Development, organization, policies, and performance of the police. Cooperative: Open to UI degree-seeking students.

380 Criminal Courts in America 3 Course Prerequisite: CRM J 101. 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) Course Prerequisite: CRM J 101. 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 Course Prerequisite: CRM J 101. Ideologies of punishment and correction, intermediary sanctioning and reintegration policies in the criminal justice system.

390 Criminal Justice Management 3 Course Prerequisite: CRM J 101. Predominate and progressive thought and theory of criminal justice administration in the U.S.; exploring important and troubling issues faced by those involved in managing criminal justice agencies.

400 [M] Special Topics in Criminal Justice and Criminology 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: CRM J 101. Selected topics in criminal justice and criminology. Cooperative: Open to UI degree-seeking students.

403 [CAPS] 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, WGSS 403.)

405 [M] Comparative Criminal Justice Systems 3 Course Prerequisite: CRM J 101. 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 Course Prerequisite: CRM J 101. Principal court decisions concerning standards of conduct and rights in the criminal process. Cooperative: Open to UI degree-seeking students.

424 Community Corrections 3 Course Prerequisite: CRM J 101. 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 Course Prerequisite: CRM J 101. Drug use, impact on behavior and drug control policies.

450 [M] Senior Seminar: Ethical Issues in Criminal Justice 3 Course Prerequisite: CRM J 101; senior standing. Examination of ethical issues in decision making in criminal justice.

468 Addictive Behavior Among Diverse Populations 3 Course Prerequisite: Junior standing. Overview of social, cultural, and historical perspectives on dealing with addictive behavior. (Crosslisted course offered as PSYCH 468, CRM J 468, SOC 468). Recommended preparation: SOC 101, PSYCH 105, or CRM J 101.

- 480 [CAPS] [M] Senior Capstone in Criminal Justice and Criminology** 3 Course Prerequisite: CRM J 101; CRM J 311; CRM J 321; senior standing. Experiential learning emphasizing refining skills and preparing students for the myriad of challenges awaiting them in public safety.
- 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.
- 491 Special Topics: Study Abroad** 3 May be repeated for credit; cumulative maximum 12 hours. Criminal Justice Study Abroad. Cooperative: Open to UI degree-seeking students.
- 499 Special Problems** V 1-4 May be repeated for credit. Course Prerequisite: CRM J 101. 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. 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** 4 Application of foundational quantitative methods utilized in the field of Criminal Justice and Criminology.
- 523 Intermediate Quantitative Methods** 4 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 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 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 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.
- 591 Topics in the Administration of 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.
- 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. Course Prerequisite: Admitted to the Criminal Justice and Criminology PhD program. 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 Crop and Soil Sciences

css.wsu.edu

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509-335-3475

Professor and Department Chair, R. T. Koenig. CROP SCIENCE: Professors, I. C. Burke, A. H. Carter, K. S. Gill, S. Hulbert, P. W. Jacoby, S. S. Jones, D. Lyon, M. M. Neff, M. O. Pumphrey; Associate Professors, M. L. Friesen, K. M. Murphy, C. Neely, K. Sanguinet, Z. Zhang. SOIL SCIENCE: Regents Professor, J. Reganold; Professors, L. Carpenter-Boggs, M. Flury; Associate Professor, T. S. Sullivan; Assistant Professors, D. Griffin, G. LaHue, H. Neely; Teaching Associate Professor, C. Perillo; Teaching Assistant Professor, L. Brueggeman. AGRICULTURE AND FOOD SYSTEMS: Professor, J. Goldberger; Assistant Professor, A. Warner; Teaching Associate Professor, J. D. Baser; Teaching Assistant Professors, H. Henning, T. Wheeler. ADJUNCT and AFFILIATE FACULTY: R. Abi-Ghanem, K. Altendorf, H. Bolton, S. Bramwell, D. Brown, C. Campbell, P. Castiglione, W. Chen, D. Cobos, D. Collins, H. Collins, C. Coyne, N. Embertson, K. Garland-Campbell, G. Heineck, D. Huggins, M. Islam, D. Jarvis, R. C. Johnson, T. Kisha, J. Lafferty, M. LeTourneau, X. Li, R. McGee, P. N. Miklas, F. Muehlbauer, S. Norberg, J. Payumo, C. Pearce, M. Perrigue, N. Qafoku, C. Qualset, C. Reardon, S. Rustgi, G. K. Stahnke, C. Steber, J. D. Streubel, H. Tao, L. Yu. PROFESSORS EMERITI: D. Bezdicek, J. Burns, C. G. Cogger, J. R. Davenport, J. Durfy, B. E. Frazier, S. O. Guy, J. B. Harsh, A. Kleinhofs, S. Kuo, T. Lumpkin, W. Pan, F. Pierce, W. Schillinger, R. G. Stevens, M. K. Swan.

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 experiential 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 clubs and other activities. Students planning to transfer to Washington State University should take courses that meet general university and Integrated Plant Sciences or Agricultural and Food Systems core requirements.

Undergraduate minors in Agriculture Technology & Production Management, Precision Agriculture, Crop Science, Soil Science, Geospatial Analysis, and Agricultural and Food Systems, as well as an undergraduate Certificate in Organic Agriculture, are also available.

We 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, entomology, and plant pathology. Students pursuing a Bachelor of Science degree in Integrated Plant Sciences may choose among five majors. Information regarding the IPS majors, including student learning outcomes, is available under the Integrated Plant Sciences catalog section and <http://ips.wsu.edu>.

Agricultural Biotechnology

The Agricultural Biotechnology major in IPS is a designed for students interested in careers that include laboratory or research technicians in plant biotechnology, breeding, genetics, entomology, plant pathology, molecular biology, and 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 laboratories.

Field Crop Management

The Field Crop Management major in IPS 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 Turfgrass Management major in IPS 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, an 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. Information regarding the AFS majors, including student learning outcomes, is available in the Agricultural and Food Systems catalog section and <http://afs.wsu.edu>.

Agricultural Education

Combining the best of both agriculture and teaching, the Agricultural Education major in AFS 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, and agricultural industry representatives.

Agricultural Technology and Production Management

Students in the Agricultural Technology and Production Management hands-on major in AFS 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 and Sustainable Agriculture

Significantly different than conventional agriculture, organic food production is one of the fastest growing segments of agriculture, with retail sales generally increasing by 10 to 20 percent annually since 1991. 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 Organic and Sustainable Agriculture major in AFS 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, biochemistry, computer science, genetics, and statistics. Preparation for an advanced degree in soil science includes course work in chemistry, physical sciences, 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 credits including the following core: SOIL SCI 368, 374, and SOIL SCI 468/568; and 6 credits from the following: AGTM 305, 405, CPT S 111, MIS 250, SOE 446, 464, 486, with a minimum GPA of at least 2.0 in the required courses. 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 soil science. At least 9 credits 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 credits in soil science are 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. SOIL SCI 201 is required. One credit of Soil Science-related experiential learning (SOIL SCI 495, 498, or 499) is required. See soil science advisor for other soil science options.

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).
- 202 Crop Growth and Development 4 (3-3) Course**
Prerequisite: HORT/ CROP SCI 102. Morphology, anatomy, growth and development of agronomic and horticultural crops. (Crosslisted course offered as HORT 202, CROP SCI 202).
- 301 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
- 350 International Agricultural Extension 3 Course**
Prerequisite: AFS 101; sophomore standing. Understanding of agricultural extension systems globally through online international collaborative project.
- 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 [M] Turfgrass Science 3 Course**
Prerequisite: CROP SCI 301. Integration of the principles of turfgrass science into turf management for environmental stewardship of turfgrass systems. Cooperative: Open to UI degree-seeking students.
- 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, CROP SCI 503, PL P 403, PL P 503.) Credit not granted for both CROP SCI 403 and 503, or PL P 403 and 503. 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).
- 425 [CAPS] [M] Trends in Integrated Plant Sciences 3 Course**
Prerequisite: Junior standing. Critical examination of current impacts and future trends in plant sciences. (Crosslisted course offered as HORT 425, CROP SCI 425.)
- 435 [CAPS] Interdisciplinary Solutions to the Plant Sciences 3 Course**
Prerequisite: Junior standing. Investigation of current agricultural problems and development of proposed solutions through interdisciplinary teams using advanced technology and production management.
- 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.
- 445 [M] Plant Breeding 4** 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). Cooperative: Open to UI degree-seeking students.
- 480 Plant Genomics and Biotechnology 3 Course**
Prerequisite: MBIOS/BIOLOGY 301. Advanced concepts in plant genomics and biotechnology with emphasis on approaches, techniques, and application. (Crosslisted course offered as HORT 480, CROP SCI 480). Recommended preparation: BIOLOGY 420 or HORT 416.
- 495 Research Experience V 1-4** May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Not open to graduate students. 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, CROP SCI 503, PL P 403, PL P 503.) Credit not granted for both CROP SCI 403 and 503, or PL P 403 and 503. 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.
- 506 Research Presentations 2 Course**
Prerequisite: Admission to the Crop Science or Soil Science graduate degree program. Learn and practice skills needed to prepare and effectively present scientific information orally to a range of audiences in a variety of formats and technologies. (Crosslisted course offered as CROP SCI 506; SOIL SCI 506).
- 510 Seminar 1** May be repeated for credit. Literature review; preparation and presentation of reports in crop science.
- 511 Science Writing Workshop 2** Instruction, tools, and peer review support to write graduate research proposal or journal article. (Crosslisted course offered as CROP SCI 511, ENTOM 511, SOIL SCI 511).
- 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 Statistical Genomics 3 (2-3)** Develop concepts and analytical skills for modern breeding by using Genome-Wide Association Study and genomic prediction in framework of mixed linear models and Bayesian approaches. (Crosslisted course offered as CROP SCI 545, ANIM SCI 545, BIOLOGY 545, HORT 545, PL P 545.) Recommended preparation: BIOLOGY 474; MBIOS 478. Cooperative: Open to UI degree-seeking students.

- 555 Epigenetics in Plants** 2 Understanding principles of epigenetics in plants with a focus on its role in understanding and improving plant genomes and their adaptation to the changing environment. Recommended preparation: General genetics. 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. Course Prerequisite: Admitted to the Crop Science PhD program. 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.
- 202 [BSCI] Introductory Soil Science Laboratory** 1 (0-3) Course Prerequisite: SOIL SCI 201 or concurrent enrollment. Hands-on experience with biological, chemical, and physical properties/processes of soils including: sampling and evaluating, working with data, and exploring methodology.
- 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.
- 303 Organic and Sustainable Agricultural Certifications: From Principles to Practice** 2 Principles and practical requirements for certification under the USDA National Organic Program and other certifications focused on sustainable agricultural practices.
- 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 of [BSCI] or [PSCI] UCORE. Introduction to geographic information systems applied to landscape data; geographic coordinate systems and projections, make maps and use geodatabases.
- 374 Introduction to Remote Sensing** 3 (2-3) Course Prerequisite: 3 credits of [BSCI] or [PSCI] UCORE. 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.
- 416 Soil Processes in the Earth's Critical Zone** 3 Soil geochemistry and processes; theory and applications with a focus on reactions at the solid, liquid, and gaseous interface between the lithosphere, atmosphere, hydrosphere, and biosphere. (Crosslisted course offered as SOE 416/516, SOIL SCI 416/516). Credit not granted for both SOE/SOIL SCI 416 and SOE/SOIL SCI 516. Recommended preparation: Basic knowledge of soils (e.g. SOIL SCI 201 or equivalent; CHEM 106; PHYSICS 102).
- 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** 1 (0-3) 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.
- 443 [M] Soil Management for Sustainable and Organic Farming Systems** 3 Course Prerequisite: SOIL SCI 201. Principles and practices of agricultural soil management to support soil health; sustainable methods for organic and non-organic production.
- 452 The Landscape of Soil** 3 (2-3) Course Prerequisite: SOIL SCI 201. The study of soils as natural bodies, including morphology, formation, and classification. A five-day field trip is required.
- 468 GIS Spatial Analysis** 4 (2-6) Course Prerequisite: SOIL SCI 368. Geographic information systems applied to analysis of landscape data; maps, geographic coordinate systems and projections, geodatabases. Credit not granted for both SOIL SCI 468 and 568.
- 478 Advanced Organic Farming and Gardening** 2 Course Prerequisite: SOIL SCI 101. Advanced training in organic certification and planning for organic farming.
- 479 Organic Farm and Garden Field Management** 2 Course Prerequisite: SOIL SCI 478. Advanced training in production management for organic farms and gardens.
- 480 Practicum in Organic Agriculture** V 1-6 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: SOIL SCI 478 or concurrent enrollment. 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. Course Prerequisite: Not open to graduate students. 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 Topics in 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.
- 506 Research Presentations 2** Course Prerequisite: Admission to the Crop Science or Soil Science graduate degree program. Learn and practice skills needed to prepare and effectively present scientific information orally to a range of audiences in a variety of formats and technologies. (Crosslisted course offered as CROP SCI 506; SOIL SCI 506).
- 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 Science Writing Workshop 2** Instruction, tools, and peer review support to write graduate research proposal or journal article. (Crosslisted course offered as CROP SCI 511, ENTOM 511, SOIL SCI 511).
- 513 Environmental Soil Physics 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. Cooperative: Open to UI degree-seeking students.
- 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.
- 516 Soil Processes in the Earth's Critical Zone 3** Soil geochemistry and processes; theory and applications with a focus on reactions at the solid, liquid, and gaseous interface between the lithosphere, atmosphere, hydrosphere, and biosphere. (Crosslisted course offered as SOE 416/516, SOIL SCI 416/516). Credit not granted for both SOE/SOIL SCI 416 and SOE/SOIL SCI 516. Recommended preparation: Basic knowledge of soils (e.g. SOIL SCI 201 or equivalent; CHEM 106; PHYSICS 102).
- 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. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 568 GIS Spatial Analysis 4 (2-6)** Geographic information systems applied to analysis of landscape data; maps, geographic coordinate systems and projections, geodatabases. Credit not granted for both SOIL SCI 468 and 568.
- 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. Course Prerequisite: Admitted to the Soil Science PhD program. 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 Data Analytics

data-analytics.wsu.edu

Neil 103
509-335-3736

Director and Professor, N. Dasgupta (Pullman)

Data analytics is the application of powerful new methods—drawn from computer science, mathematics and statistics, and domain sciences—to collect, curate, analyze, discover and communicate knowledge from “big data.”

There has been an explosion of demand for skilled data analysts who can communicate, solve problems, and work effectively in teams. Data analytics tools and techniques are used by many different industries to create, manage, explore, and analyze large, complex datasets in order to evaluate past performance, predict future trends, and make better decisions.

Our students are trained in advanced statistical, data, and computer science skills as well as concentrated domain knowledge. This combination enables WSU graduates to effectively work in teams and easily communicate with colleagues and managers to solve problems.

The nine specialization tracks are curricular partnerships between the College of Arts and Sciences and the Voliland College of Engineering and Architecture, Carson College of Business, College of Education, and the College of Agriculture, Human, and Natural Resource Sciences.

Student Learning Outcomes

- Demonstrate competency in data literacy—dynamic, structured, unstructured, numerical, and text data.
- Demonstrate competency with quantitative

reasoning to make decisions in a logical, mathematical manner.

- Demonstrate competency with data wrangling and exploratory data analysis.
- Demonstrate and articulate an understanding of domain literacy and nuances of data.
- Utilize an interdisciplinary perspective in order to understand the elements of data analytics.
- Effectively communicate through writing and speech the story of the data from start to finish.

Schedules of Studies

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

ACTUARIAL SCIENCE OPTION (120 CREDITS)

Students are admitted to the Data Analytics major upon completion of 24 semester credits with a 2.0 cumulative GPA.

First Year

<i>First Term</i>	<i>Credits</i>
CPT S 121 or 131, or CS 121	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
CPT S 122 or 132, or CS 122	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 172	4

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
CPT S / CS 215	3
ECONS 102	3
MATH 220	2
STAT 360	3

<i>Second Term</i>	<i>Credits</i>
ACCTG 230	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
CPT S / CS 315	3
FIN 325	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CPT S / CS 415	3
MATH 405	3
STAT 435 [M]	3
Electives or MATH 300 ²	3

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
CPT S 451 or CS 351	3
FIN 350	3
Humanities [HUM]	3
STAT 437	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
DATA 498 Internship	3
Diversity [DIVR]	3
STAT 419	3
STAT 443	3
Electives or B LAW 210 ²	3

<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450	3
STAT 446	3
Electives	8

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² B LAW 210 and MATH 300 are recommended electives.

AGRICULTURAL AND ENVIRONMENTAL SYSTEMS OPTION (120 CREDITS)

Students are admitted to the Data Analytics major upon completion of 24 semester credits with a 2.0 cumulative GPA.

First Year

<i>First Term</i>	<i>Credits</i>
CPT S 121 or 131, or CS 121	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
CPT S 122 or 132, or CS 122	4
Foreign Language, if needed, or Electives	3
Social Sciences [SSCI]	3
Electives	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI]	4
CPT S / CS 215	3
MATH 220	2
SOIL SCI 201	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
CPT S / CS 315	3
Physical Sciences [PSCI] or SOE 101 [PSCI]	3 or 4
SOE 204	4
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CPT S / CS 415	3
STAT 435 [M]	3
Option Course or Elective ¹	3 or 4
Electives	3

<i>Second Term</i>	<i>Credits</i>
CPT S 451 or CS 351	3

Humanities [HUM]	3
STAT 437	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
DATA 498 Internship	3
Diversity [DIVR]	3
SOIL SCI 368	3
STAT 419	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450	3
SOIL SCI 468	4
Electives	6

¹ Option Course (3 or 4 credits): Choose one from BIOLOGY 372, SOE 110, or SOIL SCI 374. BIOLOGY 372 requires prerequisite CHEM 102 or CHEM 105.

BUSINESS OPTION (120 CREDITS)

Students are admitted to the Data Analytics major upon completion of 24 semester credits with a 2.0 cumulative GPA.

First Year

<i>First Term</i>	<i>Credits</i>
CPT S 121 or 131, or CS 121	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
Electives	1

<i>Second Term</i>	<i>Credits</i>
CPT S 122 or 132, or CS 122	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
Electives	5

Second Year

<i>First Term</i>	<i>Credits</i>
ACCTG 230	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
CPT S / CS 215	3
MATH 220	2
STAT 360	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
Communication [COMM] or Written Communication [WRTG]	3
CPT S / CS 315	3
MIS 250	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CPT S / CS 415	3
ECONS 311	3
STAT 435 [M]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
CPT S 451 or CS 351	3
Humanities [HUM]	3
MIS 372	3
STAT 437	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
DATA 498 Internship	3
Diversity [DIVR]	3
STAT 419	3
Choice Pair Course ²	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450	3
Choice Pair Course ²	3
Electives	6

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Choice Pair Courses (6 credits): Choose 1 pair from FIN 325 and FIN 421; FIN 325 and FIN 425; FIN 325 and FIN 427; MIS 325 and MIS 420; or MKTG 360 and MKTG 368.

**COMPUTATION OPTION
(120 CREDITS)**

Students are admitted to the Data Analytics major upon completion of 24 semester credits with a 2.0 cumulative GPA. Not available on the WSU-Vancouver campus.

First Year

<i>First Term</i>	<i>Credits</i>
CPT S 121 or 131	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
Electives	1

<i>Second Term</i>	<i>Credits</i>
CPT S 122 or 132	4
HISTORY 105 [ROOT]	3
Social Sciences [SSCI]	3
Electives	5

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
CPT S 215	3
MATH 216	3
MATH 220	2
STAT 360	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
Communication [COMM] or Written Communication [WRTG]	3
CPT S 315	3
CPT S 317	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CPT S 322	3
CPT S 415	3
MATH 301	3
STAT 435 [M]	3

<i>Second Term</i>	<i>Credits</i>
CPT S 350	3
CPT S 451	3
Humanities [HUM]	3
MATH 364	3
STAT 437	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
CPT S 434, 437, or 440	3
DATA 498 Internship	3
Diversity [DIVR]	3
MATH 420	3
STAT 419	3

<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450	3
Option Courses ²	9

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Option Courses (9 credits): Choose three from CPT S /CS 411, CPT S /CS 471, MATH 448 (prerequisite of MATH 315), or MATH 466.

**DATA VISUALIZATION OPTION
(120 CREDITS)**

Students are admitted to the Data Analytics major upon completion of 24 semester credits with a 2.0 cumulative GPA.

First Year

<i>First Term</i>	<i>Credits</i>
CPT S 121 or 131, or CS 121	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
ECONS 101 [SSCI] or 102 [SSCI]	1

<i>Second Term</i>	<i>Credits</i>
CPT S 122 or 132, or CS 122	4
HISTORY 105 [ROOT]	3
Social Sciences [SSCI]	3
Electives	5

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
CPT S / CS 215	3
DTC 201 [ARTS]	3
MATH 220	2
STAT 360	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
Communication [COMM] or Written Communication [WRTG]	3

CPT S / CS 315	3
DTC 101 or 209	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CPT S / CS 415	3
STAT 435 [M]	3
Option Courses ²	6
Electives	3

<i>Second Term</i>	<i>Credits</i>
CPT S 451 or CS 351	3
Humanities [HUM]	3
STAT 437	3
Option Courses ²	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
DATA 498 Internship	3
Diversity [DIVR]	3
STAT 419	3
ECONS 101 [SSCI] or 102 [SSCI]	6

<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450	3
Electives	9

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Option Courses (12 credits): Choose four from: DTC 335, 336, 354, 355, 435, 477, 478.

**ECONOMICS OPTION
(120 CREDITS)**

Students are admitted to the Data Analytics major upon completion of 24 semester credits with a 2.0 cumulative GPA.

First Year

<i>First Term</i>	<i>Credits</i>
CPT S 121 or 131, or CS 121	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
CPT S 122 or 132, or CS 122	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
Electives	4

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
CPT S / CS 215	3
ECONS 102	3
ECONS 301	4
MATH 220	2
STAT 360	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3

Communication [COMM] or Written Communication [WRTG]	3
CPT S / CS 315	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CPT S / CS 415	3
ECON 302	3
STAT 435 [M]	3
Option Course ²	3

<i>Second Term</i>	<i>Credits</i>
CPT S 451 or CS 351	3
Humanities [HUM]	3
STAT 437	3
Option Courses ²	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
DATA 498 Internship	3
Diversity [DIVR]	3
STAT 419	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450	3
Electives	10

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Option Courses (9 credits): Choose three from ECON 311, 321, 323, 324, 327, 424, 425, 426, 451, 452, 490, STAT 443.

GENERAL OPTION (120 CREDITS)

Students are admitted to the Data Analytics major upon completion of 24 semester credits with a 2.0 cumulative GPA.

First Year

<i>First Term</i>	<i>Credits</i>
CPT S 121 or 131, or CS 121	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
CPT S 122 or 132, or CS 122	4
HISTORY 105 [ROOT]	3
Social Sciences [SSCI]	3
Electives	4

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
CPT S / CS 215	3
MATH 220	2
STAT 360	3
Minor Course ²	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
Communication [COMM] or Written Communication [WRTG]	3
CPT S / CS 315	3
Minor Courses ²	7
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CPT S / CS 415	3
STAT 435 [M]	3
Minor Courses or Electives ²	6

<i>Second Term</i>	<i>Credits</i>
CPT S 451 or CS 351	3
Humanities [HUM]	3
STAT 437	3
Minor Courses or Electives ²	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
DATA 498 Internship	3
Diversity [DIVR]	3
STAT 419	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450	3
Electives	10

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Students are encouraged to pursue a minor, in consultation with their advisor, while completing this option. Coursework must include sufficient 300-400-level coursework to meet the University requirement of 40 upper-division credits.

LIFE SCIENCES OPTION (120 CREDITS)

Students are admitted to the Data Analytics major upon completion of 24 semester credits with a 2.0 cumulative GPA.

First Year

<i>First Term</i>	<i>Credits</i>
CPT S 121 or 131, or CS 121	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI]	4
CPT S 122 or 132, or CS 122	4
HISTORY 105 [ROOT]	3
Electives	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 101 [PSCI] or CHEM 105 [PSCI]	4
CPT S / CS 215	3

MATH 220	2
STAT 360	3

<i>Second Term</i>	<i>Credits</i>
CHEM 102 or CHEM 106	4
Communication [COMM] or Written Communication [WRTG]	3
CPT S / CS 315	3
Social Sciences [SSCI]	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 301 or MBIOS 301	4
CPT S / CS 415	3
STAT 435 [M]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
CPT S 451 or CS 351	3
Humanities [HUM]	3
STAT 437	3
Recommended Option Course or Electives ¹	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
DATA 498 Internship	3
Diversity [DIVR]	3
STAT 419	3
Recommended Option Course or Electives ¹	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450	3
Electives	7

¹ Recommended Option Courses: BIOLOGY 335, 474, MBIOS 478.

PHYSICAL SCIENCES OPTION (120 CREDITS)

Students are admitted to the Data Analytics major upon completion of 24 semester credits with a 2.0 cumulative GPA.

First Year

<i>First Term</i>	<i>Credits</i>
CPT S 121 or 131, or CS 121	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
Electives	1

<i>Second Term</i>	<i>Credits</i>
CHEM 105 [PSCI]	4
CPT S 122 or 132, or CS 122	4
HISTORY 105 [ROOT]	3
Electives	4

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI]	3
CHEM 106	4
CPT S / CS 215	3
MATH 220	2
STAT 360	3

<i>Second Term</i>	<i>Credits</i>	POL S 201 or SOC 317	3
Communication [COMM] or Written Communication [WRTG]	3	STAT 360	3
CPT S / CS 315	3	<i>Second Term</i>	<i>Credits</i>
MATH 273	3	Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
Social Sciences [SSCI]	3	Communication [COMM] or Written Communication [WRTG]	3
Electives	3	CPT S / CS 315	3
Complete Writing Portfolio		SOC 340 [DIVR]	3
Third Year		Electives	3
<i>First Term</i>	<i>Credits</i>	Complete Writing Portfolio	
Arts [ARTS]	3	Third Year	
CPT S / CS 415	3	<i>First Term</i>	<i>Credits</i>
PHYSICS 201	3	Arts [ARTS]	3
PHYSICS 211	1	CPT S / CS 415	3
PHYSICS 212	1	POL S 316	3
STAT 435 [M]	3	STAT 435 [M]	3
Electives	3	Option Course ²	3
<i>Second Term</i>	<i>Credits</i>	<i>Second Term</i>	<i>Credits</i>
CPT S 451 or CS 351	3	CPT S 451 or CS 351	3
Humanities [HUM]	3	Humanities [HUM]	3
PHYSICS 202	3	STAT 437	3
STAT 437	3	Option Courses ²	6
Option Course ¹	3	Fourth Year	
Fourth Year		<i>First Term</i>	<i>Credits</i>
<i>First Term</i>	<i>Credits</i>	DATA 498 Internship	3
DATA 498 Internship	3	STAT 419	3
Diversity [DIVR]	3	Electives	9
STAT 419	3	<i>Second Term</i>	<i>Credits</i>
Option Course ¹	1 or 2	DATA 424 [CAPS] [M]	3
Electives	3	PHIL 450	3
<i>Second Term</i>	<i>Credits</i>	Electives	9
DATA 424 [CAPS] [M]	3		
PHIL 450	3		
Electives	9		

¹ Option Course (4 or 5 credits): Choose one pair from CHEM 331 and 333 or CHEM 332 and 334.

SOCIAL SCIENCES OPTION (120 CREDITS)

Students are admitted to the Data Analytics major upon completion of 24 semester credits with a 2.0 cumulative GPA.

First Year

<i>First Term</i>	<i>Credits</i>	
CPT S 121 or 131, or CS 121	4	
DATA 115	3	
ENGLISH 101 [WRTG]	3	
MATH 171 [QUAN]	4	
Electives	1	

<i>Second Term</i>	<i>Credits</i>	
CPT S 122 or 132, or CS 122	4	
HISTORY 105 [ROOT]	3	
SOC 101 [SSCI]	3	
Electives	5	

Second Year

<i>First Term</i>	<i>Credits</i>	
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4	
CPT S / CS 215	3	
MATH 220	2	

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Option Courses (9 credits): Choose three from ED PSYCH 400, 404, PHIL 350, POL S 416, PSYCH 105, 333, SOC 230.

Description of Courses

Data Analytics

DATA

115 Introduction to Data Analytics 3 Basic concepts, principles, and tools used in data analytics.

204 Introduction to Text Analysis 3 Introduction to computational and statistical text analysis using the open source programming language R; designed for students with no prior experience with programming but who wish to extend their methodological tool kit to include quantitative and computational approaches to the study of text. (Crosslisted course offered as DTC 204, DATA 204.)

209 Introduction to Data Visualization 3 An introduction to the tools and methods of data visualization in multiple contexts. (Crosslisted course offered as DTC 209, DATA 209.)

225 Linear Algebra with Modern Applications

3 Course Prerequisite: MATH 106 or higher. Enrollment not allowed if credit already earned for MATH 220 or 230. Solving linear systems, matrices, determinants, subspaces, eigenvalues, orthogonality, machine learning, AI, computer graphics, and economic models. Credit not granted for more than one of MATH 220, 225, and 230. (Crosslisted course offered as MATH 225, DATA 225.)

390 Special Topics I V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course prerequisite: Admitted to the major in Data Analytics; junior standing. Skills and concepts for analyzing real data using coding software.

424 [CAPS] [M] Data Analytics Capstone

3 Course Prerequisite: CPT S/CS 315; STAT 360; STAT 435 or 437, either with concurrent enrollment; CPT S 451/CS 351 or concurrent enrollment; admitted to the major in Data Analytics; junior standing. Team-based project that integrates the main aspects of data analytics.

490 Special Topics II V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course prerequisite: Admitted to the major in Data Analytics; junior standing. Skills and concepts for analyzing real data using coding software.

498 Internship V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to the major in Data Analytics; junior standing; department permission. Experiential learning and career development through professional practice. S, F grading.

501 Data Science Primer 3 (2-2) Foundational methods, techniques, and knowledge in the field of Data Science, including an introduction to software, coding, and documentation habits.

520 Communication with Data 1 May be repeated for credit; cumulative maximum 3 hours. Aspects of communication in data science are addressed in successive enrollments: verbal communication in a meeting or to an audience; technical writing and the peer review process; and storytelling with data.

521 Responsible Data Science 3 (2-2) The intersection of quantitative analysis with ethical considerations; topics in the context of AI and machine learning.

School of Design and Construction

sdc.wsu.edu
Carpenter Hall 118
509-335-5539

Interim Director and Associate Professor, J. Peschel (CT); Professors, J. Kaytes, T. Miyasaka, A. Rahmani; Associate Professors, J. Abell, S. Austin (CT), R. Cherf (CT), J. Day, J. P. Gruen, R. Krikac, M. Melcher, J. Theodorson, C. Vielle (CT); Assistant Professors, S. Abdel Haleem, O. Al-Hassawi, K. Borrmann, S. Call, M. Cerruti, M. Cowan (CT), H. Dang, D. Drake (CT), D.

Edwards (CT), M. Ghandi, K. Kraszewska, M. Mansoori (CT), A. Pulay, M. Sánchez (CT), K. Shrestha, T. Tafazzoli, V. Vahdat.

The School of Design and Construction (SDC) offers collaborative learning experiences for students in architecture, interior design, landscape architecture, construction management, and construction engineering to design and construct places in our environment. The integrated model teaches students the skill sets required for their chosen design major while giving students a substantial advantage when entering the job market.

Programs of study in the SDC lead to the following degrees: a Bachelor of Science in Architectural Studies (a four-year pre-professional degree) followed by a one-, two-, or three-year professional Master of Architecture degree that is accredited by the National Architectural Accreditation Board (NAAB); a Bachelor of Arts in Interior Design accredited by the Council for Interior Design Accreditation (CIDA) and a Master of Arts in Interior Design; a Bachelor of Landscape Architecture accredited by the Landscape Architecture Accreditation Board (LAAB); and a Bachelor of Science in Construction Management (a four-year degree) that is accredited by the American Council for Construction Education (ACCE), and a Bachelor of Science in Construction Engineering in conjunction with Civil Engineering.

It is crucial that students in the design and construction professions learn about a range of built environments, places, ideas, cultures, and experiences that are not readily available in the Palouse—and difficult to teach in the classroom. When possible, travel experiences are incorporated through courses labeled as “study tours” where travel is integral to the course, woven throughout other courses in the curriculum, and included as professional development activities.

Study abroad may be incorporated into 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 Office of International Programs—Global Learning.

Students in the SDC also participate in a senior portfolio review and/or capstone project presentation prior to graduation. These experiences are unique networking opportunities for graduating students to interact with design and construction professionals, and to receive feedback on their existing portfolios or projects.

A variety of student clubs and organizations provide students with linkages to their professional counterparts. Student organizations with chapters at the SDC include the American Institute of Architecture Students (AIAS); Alpha Rho Chi; American Society of Interior Designers (ASID); American Society of Landscape Architects (ASLA); Associated Students of Construction Management (ASCM); Associated General Contractors of America (AGC); the Design Build Institute of America (DBIA); and Mechanical Contractors Association of America (MCAA).

ARCHITECTURE

The four-year, pre-professional Bachelor of Science in Architectural Studies degree at WSU provides a thorough foundation in the field of architecture as preparation for continued education in a professional degree program; employment in the

architecture profession with a licensed architect; and employment options in fields related to architecture.

The Master of Architecture (M.Arch.) degree is the professional degree accredited by the National Architectural Accrediting Board (NAAB). Completion of this degree 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 one- or two-year M.Arch. program. Students with baccalaureate degrees in disciplines other than architecture are eligible to apply for the three-year M.Arch. program. 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.

Student Learning Outcomes

Students graduating in architecture are able to: 1) understand the role of architecture within current cultural and global conditions, 2) understand the role of architecture 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. It is the intent of the program to graduate future professionals who are committed to excellence in the built environment through the incorporation of intellectual, analytical, and artful aspects of architecture. Within this context, students and faculty seek to investigate issues within diverse contexts in order to creatively advance the built environment.

Transfer Students

Students planning to transfer into the architecture program at Washington State University should contact an advisor for more information.

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 responsibilities 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 WSU Construction Management (CM) 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 to

understand 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).

Student Learning Outcomes

The mission of WSU-CM is to educate, prepare and provide opportunities for students to become valuable resources to our economy, the construction management profession, and the built environment. ACCE requirements establish twenty (20) pre-defined student learning outcomes that are comprehensive in nature. These measurable outcomes are introduced, reinforced, and assessed throughout the CM curriculum in an effort to ensure students are entering the construction industry with appropriate foundational knowledge and requisite skills to be work ready, day one. Upon graduating from an accredited ACCE bachelor's degree program, a graduate shall be able to:

- Create written communications appropriate to the construction discipline.
- Create oral presentations appropriate to the construction discipline.
- Create a construction project safety plan.
- Create construction project cost estimates.
- Create construction project schedules.
- Analyze professional decisions based on ethical principles.
- Analyze construction documents for planning and management of construction processes.
- Analyze methods, materials, and equipment used to construct projects.
- Apply construction management skills as a member of a multidisciplinary team.
- Apply electronic-based technology to manage the construction process.
- Apply basic surveying techniques for construction layout and control.
- Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
- Understand construction risk management.
- Understand construction accounting and cost control.
- Understand construction quality assurance and control.
- Understand construction project control processes.
- Understand the legal implications of contract, common, and regulatory law to manage a construction project.
- Understand the basic principles of sustainable construction.
- Understand the basic principles of structural behavior.
- Understand the basic principles of mechanical, electrical and piping systems.

Transfer Students

Students planning to transfer into the construction management program at Washington State University should contact an advisor for more information.

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. In addition to travel experiences throughout the curriculum, all fourth-year students must present their portfolio of creative work at an off-campus review to graduate.

In the fall semester of the fourth year, students will participate in a professional and/or global experience, choosing one of the following options:

- Option 1: Internship—students can choose to complete a 5-credit internship and are encouraged to seek opportunities beyond the region.
- 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.
- Option 3: Community Studio—students can work with faculty on community-based projects.

Student Learning 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 can 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.

Transfer Students

Students wishing to transfer from another institution into the interior design program should contact an advisor for more information.

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 degree is offered in three tracks depending on prior academic and professional background. 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.

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 Bachelor of Landscape Architecture (BLA) is a professional degree program that prepares students to enter and advance the diverse profession of landscape architecture, address complex societal issues, and envision solutions that optimize the physical environments where people work, live, and recreate.

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. 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 (LARE) are necessary for registration as a licensed landscape architect in most states.

The core component of the landscape architecture curriculum is the studio experience. The studios are structured to facilitate understanding of the web of relationships among physical, biological, and social systems. Through the studio curriculum students learn habits of linking ecological processes with space making and necessarily consider interdependence, reciprocity, and change.

First year projects focus on the basic elements and principles of design and design process. The second year emphasizes the concept of site and the methods for and consequences of manipulating the ground and vegetation. Coursework includes site design, site engineering, plant materials, and design history. The third year reinforces and extends students' understanding of the field of landscape architecture and emphasizes integration of theory, practice, and construction. Studios focus on design for communities in the broadest sense. In the fourth year, coursework emphasizes design in the context of landscape complexity, systems thinking, and the overlap of global and local issues. Students develop and execute independent projects. In the projects they are encouraged to think of design as an answer to a question and regard their work as an opportunity to develop, test, and challenge what they have learned in the first three years of their design education. Computer visualization and freehand drawing skills are threaded throughout the curriculum.

In addition to travel experiences throughout the curriculum, all fourth-year students must present

their capstone project and a portfolio of creative work at an off-campus review to graduate.

Student Learning Outcomes

The program has identified four themes that include 12 critical student learning outcomes (SLO) essential for students to achieve the LA program goals. The outcomes are multifaceted and interrelated.

Theme One: Define and refine design problems and questions

Upon successful completion of the BLA at WSU, students will be able to

- Identify and characterize the complex nature of problems and questions associated with human/landscape interactions across a broad range of scales
- Articulate an understanding of identified problems and questions within the theoretical and historical context of the profession of landscape architecture

Theme Two: Discover and determine appropriate design processes

Upon successful completion of the BLA at WSU, students will be able to

- Identify appropriate methods of design inquiry and problem solving processes to produce creative solutions to identified problems and questions
- Identify, collect, and analyze necessary information using appropriate technologies and analytical techniques as they relate to the identified problem or question.
- Explore and critically analyze alternative design or planning solutions to the identified problem or question
- Engage in assessment and evaluation practices throughout the entire design process

Theme Three: Explore and develop communication skills

Upon successful completion of the BLA at WSU, students will be able to

- Justify and defend the proposed design or planning solution within the context of aesthetic, social, political, economic, and environmental conditions.
- Communicate the entire problem solving process or method of inquiry in written, oral, and graphic ways using appropriate media

Theme Four: Cultivate awareness of professional practices

Upon successful completion of the BLA at WSU, students will be able to

- Understand multiple aspects of practice
- Show a capacity for collaboration
- Integrate and apply diverse perspectives to design solutions
- Possess knowledge and understanding about allied fields and the value of interdisciplinary design

Transfer Students

Transfer students who have completed the equivalent of the pre-LA curriculum may apply to the professional program by submitting a portfolio and academic transcripts. Contact the landscape architecture program for more information.

Schedules of Studies

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

BACHELOR OF SCIENCE IN ARCHITECTURAL STUDIES (120 CREDITS)

Architectural Studies (ARCH) is a four-year program structured into one year of pre-professional coursework and three years of major (professional) coursework. Professional program courses begin in second year fall. Due to the sequential nature of courses there are no spring admits.

To be considered for admission into the ARCH program, a student must have completed the following pre-professional coursework (or their approved equivalents): COM 102 [COMM], ENGLISH 101 [WRTG], FINE ART 101, 201, or 202 [ARTS], HIST 105 [ROOT], PSYCH 105 or SOC 101 [SSCI], and SDC 100, 120, 140, each with a grade of C or better and an overall GPA of 3.3 or higher.

Students not meeting the admission to major criteria above will be considered until enrollment limits are reached. Average enrollment limit into the second year of the architecture major are 45 students. Greater emphasis is given to performance in SDC 100, 120, and 140. Completion of all pre-professional coursework does not guarantee acceptance into the professional program. Students are encouraged to work with SDC advisors to identify an alternate major should they not be admitted to their primary choice of major.

Transfer Students

A limited number of transfer students are considered each year. Requirements include completion of the pre-professional courses (or approved equivalents). Emphasis is given to cumulative GPA. A design portfolio may be requested for additional evaluation.

Schedule of Studies

The plan below is a suggested path to completion of the architectural studies degree. Students will meet with an advisor each semester to confirm academic schedule and monitor progress towards graduation.

Students are required to earn a grade of C or better in all major courses required for the degree (ARCH 201, 203, 209, 210, 215, 301, 303, 309, 351, 352, 401, 403, 451; CST M 201, 202, 332, 333; SDC 100, 120, 140, 250, 300, 350).

First Year

First Term	Credits
COM 102 [COMM]	3
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN] ^{1,2}	3
SDC 100 [ARTS]	3
SDC 120	3

Second Term	Credits
FINE ART 101, 201, or 202	3
HISTORY 105 [ROOT]	3
PHYSICS 101 [PSCI] ²	3
PHYSICS 111 [PSCI]	1
PSYCH 105 [SSCI] or SOC 101[SSCI]	3
SDC 140	3

Second Year

First Term	Credits
ARCH 201	5
ARCH 210	3
CST M 201	3
SDC 250	3
SDC 300	1

Second Term	Credits
ARCH 203	5
ARCH 209	3
ARCH 215	3
CST M 202	3
SDC 350 [M]	3
Complete Writing Portfolio	

Third Year

First Term	Credits
ARCH 301	5
ARCH 309 [M]	3
ARCH 351	3
ARCH 451	3
CST M 332	3

Second Term	Credits
ARCH 303	5
ARCH 352	3
Biological Sciences [BSCI]	4
CST M 333	3

Fourth Year

First Term	Credits
ARCH 401	6
Diversity [DIVR]	3
Supportive Electives ³	4

Second Term	Credits
ARCH 403 [CAPS]	6
Humanities [HUM]	3
Supportive Electives ³	3

¹ All first-year students must take the math placement exam. Completion of MATH 108 with a grade of C or better, a minimum ALEKS math placement score of 75%, or passing MATH 140, 171, or 202 is required for PHYSICS 101 [PSCI]. MATH 108 does not fulfill the University [QUAN] requirement for graduation.

² Math and Physics are not required for admission to the major (professional program, beginning in second year); however, Math and Physics are course prerequisites for ARCH 351/352 and CST M 332/333 in the third year.

³ Supportive Electives: At least 7 credits of any 300-400-level courses from ARCH, CST M, DESIGN, I D, LND ARCH, SDC, or other courses approved in consultation with ARCH Program Head not used to fulfill major requirements.

CONSTRUCTION MANAGEMENT PROGRAM (120 CREDITS)

Construction Management (CM) is a four-year program structured into one year of pre-professional coursework and three years of major (professional) coursework. Professional program courses begin in second year fall. Due to the sequential nature of courses there are no spring admits.

To be considered for admission into the CM program, a student must have completed at least

31 semester hours of pre-professional coursework including the following courses (or their approved equivalents): CST M 102, Communication [COMM], ECONS 101 and 102 [SSCI], ENGLISH 101 [WRTG], SOE 101 [PSCI], HISTORY 105 [ROOT], Humanities [HUM] or Diversity [DIVR], MATH 171 [QUAN], and SDC 100 [ARTS], each with a grade of C or better and an overall GPA of 3.3 or higher.

Students not meeting the admission to major criteria above will be considered until enrollment limits are reached. Average enrollment limit into the second year of the construction management major is 50 students. Completion of all pre-professional coursework does not guarantee acceptance into the professional program. Students are encouraged to work with SDC advisors to identify an alternate major should they not be admitted to their primary choice of major.

Transfer Students

A limited number of transfer students are considered each year. Requirements include completion of the pre-professional courses (or approved equivalents). Emphasis is given to cumulative GPA.

Schedule of Studies

The plan below is a suggested path to completion of the construction management degree. Students will meet with an advisor each semester to confirm academic schedule and monitor progress towards graduation.

Students are required to earn a grade of C or better in all major courses required for the degree (CST M 102, 201, 202, 222, 252, 254, 332, 333, 356, 362, 368, 370, 371, 451, 460, 462, 473, 475, 483; ARCH 351, 352, 463)

First Year

First Term	Credits
Pre-Professional Program (1st Year)	
Communication [COMM]	3
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
SDC 100 [ARTS]	3
SOE 101 [PSCI]	4

Second Term	Credits
CST M 102 ¹	2
Diversity [DIVR] or Humanities [HUM] ²	3
ECONS 102	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

Second Year

First Term	Credits
Professional Program (2nd - 4th Years)	
ARCH 351	3
CST M 222	2
CST M 201	3
CST M 254	2
PHYSICS 101 OR 201	3
PHYSICS 111 OR 211	1

Second Term	Credits
ACCTG 230	3
ARCH 352	3
B LAW 210	3
CST M 202	3
CST M 252	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
C E 302	2
CST M 332	3
CST M 362 [M]	3
CST M 370	3
CST M 451	3

<i>Second Term</i>	<i>Credits</i>
CST M 333	3
CST M 356	3
CST M 368	3
CST M 371	3
CST M 483	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
ARCH 463	3
CST M 460	3
CST M 462	3
MGMT 301	3
300-400-level CST M Elective	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI]	3
CST M 473	3
CST M 475 [CAPS] [M]	3
Diversity [DIVR] or Humanities [HUM] ²	3
300-400-level Business Elective ³	3
Complete Senior Exit Survey	

¹ Transfer students from community colleges or institutions outside WSU may test out of CST M 102 via an application from the School of Design and Construction.

² University Requirements include 3 credits of [HUM] and 3 credits of [DIVR].

³ Business Elective: Any 300-400-level ACCTG, B LAW, ECONS, ENTRP, FIN, HBM, I BUS, MGMT, MGTOP, MIS, or MKTG course. Another course may be approved in consultation with Construction Management Program Head.

**INTERIOR DESIGN
(120 CREDITS)**

Interior Design (ID) is a four-year program structured into one year of pre-professional coursework and three years of major (professional) coursework. Professional program courses begin in second year fall. Due to the sequential nature of courses there are no spring admits. To be considered for admission into the ID program, a student must have completed the following pre-professional coursework (or their approved equivalents):

COM 102 [COMM], ENGLISH 101 [WRTG], FINE ART 101, 201, or 202 [ARTS], HISTORY 105 [ROOT], PSYCH 105 or SOC 101 [SSCI], and SDC 100, 120, 140, each with a grade of C or better and an overall GPA of 3.3 or higher.

Students not meeting the admission to major criteria above will be considered until enrollment limits are reached. Average enrollment limits into the second year of the interior design major are 25-30 students. Greater emphasis is given to performance in SDC 100, 120, and 140. Completion of all pre-professional coursework does not guarantee acceptance into the professional program. Students are encouraged to work with SDC advisors

to identify an alternate major should they not be admitted to their primary choice of major.

Transfer Students

A limited number of transfer students are considered each year. Requirements include completion of the pre-professional courses (or approved equivalents). Emphasis is given to cumulative GPA. A design portfolio may be requested for additional evaluation.

Schedule of Studies

The plan below is a suggested path to completion of the interior design degree. Students will meet with an advisor each semester to confirm academic schedule and monitor progress towards graduation.

Students are required to earn a grade of C or better in all major courses required for the degree (SDC 100, 120, 140, 250, 300, 350, 473; I D 197, 201, 203, 205, 215, 277, 297, 312, 321, 325, 326, 333, 350, 397, 415, 425, 426, 460).

First Year

<i>First Term</i>	<i>Credits</i>
COM 102 [COMM]	3
HISTORY 105 [ROOT]	3
SDC 100 [ARTS]	3
SDC 120	3
SOC 101 [SSCI] or PSYCH 105 [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
Biological [BSCI] ¹	3 or 4
ENGLISH 101 [WRTG]	3
FINE ART 101, 201, or 202	3
Quantitative Reasoning [QUAN] ²	3
SDC 140	3

Second Year

<i>First Term</i>	<i>Credits</i>
I D 197	3
I D 201	4
I D 205	3
I D 277	1
SDC 250	3
SDC 300 ³	1

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
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>Credits</i>
I D 312	2
I D 321	4
I D 325	3
I D 326	3
I D 397	3

<i>Second Term</i>	<i>Credits</i>
I D 333	4
I D 350	3
I D 415	3
I D 460	3
Supportive Electives ⁴	4 or 3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Humanities [HUM]	3
I D 425 or 490	5
Supportive Electives ⁴	7

<i>Second Term</i>	<i>Credits</i>
I D 426 [CAPS]	5
Physical Science [PSCI] ¹	4 or 3
SDC 473 [M]	3
Portfolio Review ⁵	
Complete Senior Exit Survey	

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² All first-year students must take the ALEKS math placement exam. Prerequisites may be required depending on the score.

³ Students must complete SDC 300 by the end of the second year.

⁴ Supportive Electives: At least 10 credits of any 300-400-level courses from ARCH, CST M, I D, DESIGN, LND ARCH, SDC, or other courses approved in consultation with I D Program Head not used to fulfill major requirements. Italian Language course is considered a supportive elective for students who study abroad. Total credits must meet the University requirement of 120 credits of coursework.

⁵ Portfolio Review required in the final semester of program.

**LANDSCAPE ARCHITECTURE
(120 CREDITS)**

Landscape Architecture (LA) is a four-year program structured into one year of pre-professional coursework and three years of major (professional) coursework. Professional program courses begin in second year fall. Due to the sequential nature of courses there are no spring admits.

To be considered for admission into the LA program, a student must have completed the following pre-professional coursework (or their approved equivalents): COM 102 [COMM], ENGLISH 101[WRTG], FINE ARTS 101, 201, or 202 [ARTS], HIST 105 [ROOT], PSYCH 105 or SOC 101 [SSCI], and SDC 100, 120, 140, each with a grade of C or better and a cumulative GPA of 3.3 or higher.

Students not meeting the admission to major criteria above will be considered until enrollment limits are reached. Average enrollment limits into the second year of the landscape architecture major are 25-30 students. Greater emphasis is given to performance in SDC 100, 120, and 140. Completion of all pre-professional coursework does not guarantee acceptance into the professional program. Students are encouraged to work with SDC advisors to identify an alternate major should they not be admitted to their primary choice of major.

Transfer Students

A limited number of transfer students are considered each year. Requirements include completion of the pre-professional courses (or approved equivalents). Emphasis is given to cumulative GPA. A design portfolio may be requested for additional evaluation.

Schedule of Studies

The plan below is a suggested path to completion of the landscape architecture degree. Students will meet with an advisor each semester to confirm academic schedule and monitor progress towards graduation.

Students are required to earn a grade of C or better in all major courses required for the degree (HORT 330, 331; LND ARCH 222, 262, 263, 297, 327, 362, 363, 365, 366, 367, 380, 450, 470, 485; SOIL SCI 201; SDC 100, 120, 140, 250, 300, 350, 473).

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 120 [BSCI] ¹	4
HISTORY 105 [ROOT]	3
PSYCH 105 [SSCI] or SOC 101 [SSCI]	3
SDC 100 [ARTS]	3
SDC 120	3
<i>Second Term</i>	<i>Credits</i>
COM 102 [COMM]	3
ENGLISH 101 [WRTG]	3
FINE ART 101, 201, or 202	3
SDC 140	3
SOE 101 [PSCI]	4

Second Year

<i>First Term</i>	<i>Credits</i>
Digital Tools Requirement I ²	3
LND ARCH 222	1
LND ARCH 262	4
Quantitative Reasoning [QUAN] ³	3
SDC 250	3
SDC 300 ⁴	1
<i>Second Term</i>	<i>Credits</i>
LND ARCH 263	4
LND ARCH 297	3
LND ARCH 365	4
SDC 350 [M]	3
SOIL SCI 201	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Digital Tools Requirement II ⁵	3
HORT 330	3
LND ARCH 327	3
LND ARCH 362	4
LND ARCH 366	4
<i>Second Term</i>	<i>Credits</i>
HORT 331	3
LND ARCH 363	4
LND ARCH 367	3
LND ARCH 380 ⁶	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
Humanities [HUM]	3
LND ARCH 470	4
Supportive Electives ⁷	3
<i>Second Term</i>	<i>Credits</i>
LND ARCH 450 [M]	3
LND ARCH 485 [CAPS] [M]	4
SDC 473 [M]	3

Supportive Electives⁷ 3
 Complete Digital Portfolio

¹ Students are encouraged to complete BIOLOGY 120 [BSCI] and SOE 101 [PSCI] during the first year; however, these are not a requirement for admission to the professional program. If BIOLOGY 120 is not taken in Fall, BIOLOGY 106 can be substituted in the Spring.

² Digital Tools Requirement I (3 credits): Select from I D 197, LND ARCH 210, or approved alternative.

³ All first-year students must take the ALEKS math placement exam. Prerequisites may be required depending on the score.

⁴ Students must complete SDC 300 by the end of the second year.

⁵ Digital Tools Requirement II (3 credits): Select from I D 397, LND ARCH 467, SOIL SCI 368, or approved alternative.

⁶ If LND ARCH 380 is not available, may use BIOLOGY 372, 462, SOE 300, 454, or 464.

⁷ Supportive electives: At least 6 credits of 300-400-level courses from ARCH, CST M, DESIGN, I D, LND ARCH, SDC, or other courses approved in consultation with LA Program Head not used to fulfill major requirements.

Minors

Architectural Studies

The minor in architectural studies requires a minimum of 18 credits 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 completed SDC 120 and have a minimum cumulative GPA of 3.00. Additional requirements include: ARCH 309, SDC 140, 250, 350; and 3 credits of 300-400-level ARCH coursework.

Construction Management

The minor in construction management requires a minimum of 17 credits, 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 be admitted to a major and have a minimum GPA of 2.70. The minor is limited to 10 students per year. The required courses are CST M 102, 252, 370, 462, 3 credits of business electives, and 3 credits of construction emphasis electives. Approved business electives include ECONS 327, WGSS 315, or any 300-400-level ACCTG, B LAW, ENTRP, FIN, HBM, I BUS, MGMT, MGTOP, MIS, or MKTG course. Approved construction emphasis electives include any 300-400-level CST M course.

Interior Design

The minor in Interior Design requires a minimum of 16 credits 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 completed either SDC 100 or SDC 120. Additional requirements include

I D 215, I D 350 and minimum of 6 credits of 300-400 level approved I D or SDC coursework. The I D minor advisor will approve course of study.

Description of Courses

ARCHITECTURE

ARCH

201 Architectural Design I 5 (0-10) Course Prerequisite: Admitted to the major in Architectural Studies. Introduction to architectural design focusing on composition, conceptual design and principles of organization, scale, proportion, rhythm and 3-D development.

203 Architectural Design II 5 (0-10) Course Prerequisite: ARCH 201 with a C or better. 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: Admitted to the major in Architectural Studies. Design theory relating to building technology, systems and crafts which influence design decisions.

210 Digital Analysis and Representation 3 (2-3) Course Prerequisite: Admitted to the major in Architectural Studies or Landscape Architecture. Introduction to analysis and representation with a focus on the use of digital tools. (Crosslisted course offered as ARCH 210, LND ARCH 210).

215 Issues in Sustainable Architecture 3 Course Prerequisite: Admitted to the major in Architectural Studies. Introduction to the framework, challenges, and solutions of sustainable design in the built environment.

220 Architectural History I 3 Course Prerequisite: Admitted to the major in Architectural Studies or 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: ARCH 203 with a C or better; admitted to the major in Architectural Studies. Introduction of architectural design focusing on environmental and social issues. Travel for site visit required.

303 Architectural Design IV 5 (0-10) Course Prerequisite: ARCH 301 with a C or better; admitted to the major in Architectural Studies. Continuation of study of architectural design/form as influenced by cultural, spiritual and symbolic issues. Travel for site visit required.

309 [M] Modern Architecture and Theory 3 Course Prerequisite: SDC 250 with a C or better; SDC 350 with a C or better; admitted to the major in Architectural Studies. Built and theoretical developments in architecture from the nineteenth century to present; content may be linked to study tour with associated travel required.

- 351 Architectural Structures I** 3 Course
Prerequisite: MATH 108 with a C or better, or 140, 171, 202, or 206, or a minimum ALEKS math placement score 75%; admitted major in Architectural Studies 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: ARCH 351 with a C or better; admitted to the major in Architectural Studies or Construction Management. Continuation of ARCH 351.
- 401 Architectural Design V** 6 (0-12) Course
Prerequisite: ARCH 303 with a C or better; admitted to the major in Architectural Studies. Advanced architectural design focusing on technology, systems and crafts of buildings. Travel for site visit required.
- 403 [CAPS] Comprehensive Design Studio I** 6 (0-12) Course
Prerequisite: ARCH 401 with a C or better; admitted to the major in Architectural Studies; senior standing. Integrated capstone studio focusing on design and construction documents, costs, and specifications. Travel to site may be required.
- 409 [M] Design Theory VI** 3 Course
Prerequisite: Admitted to the major in Architectural Studies. 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: Admitted to the major or minor in Architectural Studies; junior standing. A thematic course exploring the relationship between architecture and culture in the context of Islamic civilization.
- 436 Contemporary Furniture Design** 3 (1-4) Course
Prerequisite: Admitted major in Architectural Studies, Construction Management, Interior Design, or Landscape Architecture. 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 Course
Prerequisite: Admitted to the major in Architectural Studies or Construction Management. 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) Course
Prerequisite: Admitted major in Architectural Studies, Construction Management, Interior Design, or Landscape Architecture. Introduction to computer animation production and building simulation; applicable for all majors.
- 451 Computer-aided Design I** 3 (2-2) Course
Prerequisite: Admitted to the major in Architectural Studies. Computer-aided design related to 3D modeling and construction documents.
- 452 Computer-aided Design II** 2 (1-2) Course
Prerequisite: Admitted to the major in Architectural Studies 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: Admitted to the major in Architectural Studies, Construction Management, Interior Design, or Landscape Architecture. Field-sketching/journal-keeping strategies to facilitate investigation and comprehension of the built environment.
- 463 Architectural Structures III** 3 Course
Prerequisite: ARCH 352 with a C or better; admitted to the major in Architectural Studies or Construction Management. 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 Advanced Residential Construction** 3 Course
Prerequisite: Admitted to any major in the College of Engineering and Architecture; junior standing. Foundational knowledge in advanced residential construction; context, stakeholders, processes, materials, building systems, delivery models, and associative trade-offs and decision points.
- 472 Codes and Acoustics** 3 Course
Prerequisite: Admitted major in Architectural Studies, Construction Management, or Interior Design. 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: Admitted to the major in Architectural Studies 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: ARCH 203 with a C or better, I D 203 with a C or better, LND ARCH 263 with a C or better, or graduate student. 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: ARCH 203 with a C or better, I D 203 with a C or better, LND ARCH 263 with a C or better, or graduate student. Advanced study in graphic communication.
- 492 Seminar in Architectural History** V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course
Prerequisite: ARCH 203 with a C or better, I D 203 with a C or better, LND ARCH 263 with a C or better, or graduate student. Advanced study in architectural history.
- 493 Environmental Control Systems I** 3 Course
Prerequisite: Admitted to any major in the College of Engineering and Architecture; junior standing. Strategies of heating, cooling, and lighting which assist in minimizing the impact of the built environment on the natural environment.
- 494 Seminar in Urban and Regional Planning** V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course
Prerequisite: ARCH 203 with a C or better, I D 203 with a C or better, LND ARCH 263 with a C or better, or graduate student. Advanced study in urban and regional planning.
- 495 Modular Off-Site Construction** 3 Course
Prerequisite: Admitted to any major in the College of Engineering and Architecture; junior standing. Foundational knowledge in off-site and modular design and construction; concepts and principles, typologies and characteristics, project delivery, and case studies.
- 496 Seminar in Computer Applications** V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course
Prerequisite: ARCH 203 with a C or better, I D 203 with a C or better, LND ARCH 263 with a C or better, or graduate student. 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.
- 501 Graduate Design Studio I** 6 (0-12) Advanced study of design problems relating to culture, environment, technology, urban planning, or other topics. Travel for site visit required. (Formerly ARCH 570.)
- 510 Graduate Design Studio III** 6 (0-12) Intensive summer studio focusing on design projects that address significant issues in a particular context and locale (regional, national, or international city) outside of Pullman.
- 511 Graduate Design Studio IV** 6 (0-12) Graduate studio experience researching a single topic of material relevance to architecture. Travel for site visit required.
- 513 Graduate Design Studio V** 6 (0-12) Course
Prerequisite: ARCH 511 with a C or better. Graduate studio experience researching a single topic of material relevance to architecture. Travel for site visit required.
- 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** 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** 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.
- 571 Advanced Architectural Design Studio II 6 (0-12)** Course Prerequisite: ARCH 570. Advanced study of design problems relating to culture, environment, technology, urban planning, or other topics. Travel for site visit required.
- 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 Practicum V 1-4** May be repeated for credit. Course Prerequisite: Graduate student in M Architecture degree program. Internship, travel study, or independent study related to the field of architecture.
- 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.
- 701 Master's Independent Capstone Project and /or Examination V 1-6** May be repeated for credit. Capstone project or final examination for professional master's degree under the Graduate School. The credits will include a balloted evaluation of the student's completion of the program's capstone/examination requirements by the program's graduate faculty. Students must have graduate degree-seeking status and obtain approval from their major advisor/committee chair before enrolling for 701 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: Admitted to the major in Construction Management or Architectural Studies. 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 with a C or better; admitted to the major in Construction Management or Architectural Studies. Introduction to primary materials in construction of building envelopes, interiors, interior surfaces and finishes using Construction Specification Institute (CSI) format.
- 222 Culture of Construction Management 2** Course Prerequisite: Admitted to the major in Construction Management. Introduction to the CM culture with focus on preparation for internships, student competitions, engagement opportunities, and success as a student within the program.

- 252 Construction Administration and Documentation 4 (3-2)** Course Prerequisite: CST M 102 with a C or better; CST M 201 with a C or better; admitted to the 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: CST M 102 with a C or better or ENGR 120 with a C or better; admitted to the major in Construction Management, Construction Engineering, or Civil Engineering. Visual literacy and details in construction documents using drawing techniques.
- 301 Management and Organization 3** Course Prerequisite: Admitted to the major in Construction Management. Principles of management, administration, and organization with an emphasis on their relationship to the construction management profession.
- 332 Building Science I 3** Course Prerequisite: 4 credits of PHYSICS 101 with a C or better, or PHYSICS 101 and 111 with a C or better; admitted major in Architectural Studies or Construction Management. Mechanical systems for buildings; building heating, ventilating, and air conditioning systems, heat flow concepts.
- 333 Building Science II 3** Course Prerequisite: CST M 332 with a C or better; admitted to the major in Architectural Studies or Construction Management. Water supply, drainage, electrical and lighting systems for buildings.
- 356 Earthwork and Equipment 3** Course Prerequisite: Admitted to the major in Construction Management, Construction Engineering, 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 with a C or better; B LAW 210 with a C or better; admitted to the 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: CST M 356 with a C or better; admitted to the major in Construction Management or Construction Engineering; junior standing. Role and function of safety and health in the construction industry including OSHA compliance, requirements and regulations.
- 370 Estimating I 3 (2-2)** Course Prerequisite: CST M 252 with a C or better; admitted to the major in Construction Management. Admitted 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 with a C or better; admitted to the major in Construction Management. Bidding application, advance concepts in the creation of unit cost and computer software applications.
- 440 Architectural Acoustics for Construction Management 2** Course Prerequisite: Admitted to the major in Architectural Studies or Construction Management. 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 252; admitted to the major in Construction Management, or junior standing in Architectural Studies, Interior Design, Landscape Architecture, or Civil Engineering. 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: Admitted to the 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: CON E 361 with a C or better or CST M 371 with a C or better; admitted to the major in Construction Management or Construction Engineering. Examination of cost accounting utilized for specific project control as well as overall company control.
- 462 Planning and Scheduling 3** (2-3) Course Prerequisite: CE 317 with a C or better, CON E 361 with a C or better, or CST M 371 with a C or better; admitted to the major in Construction Management, Civil Engineering, or Construction Engineering. Methods, principles, and concepts required to plan and schedule construction projects; introduction to scheduling software.
- 466 Heavy/Civil Estimating 3** Course Prerequisite: Admitted to the major in Construction Management, or junior standing and admitted to the 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 with a C or better; CST M 370 with a C or better; admitted to the major in Construction Management; senior standing. Ethics and morality relating to the construction profession including common decisions.
- 469 Residential Green Building 3** Course Prerequisite: Admitted to the 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: CST M 460 with a C or better; admitted to the major in Construction Management or Construction Engineering. Leadership and management concepts and methods applied to human behavior to enhance motivation, productivity and safety in construction.
- 475 [CAPS] [M] Senior Capstone 3** (2-3) Course Prerequisite: CST M 451 with a C or better; CST M 462 with a C or better; admitted to the major in Construction Management. Simulation of real world competition for Design-Build and/or CM at Risk (CM/GC) projects.
- 482 Conceptual Estimating for Architects 3** Course Prerequisite: Admitted to the major in Architectural Studies or Construction Management; junior standing. Quantity survey, price extension and bidding as applied to architecture; concepts of pricing, value engineering, and ethics.
- 483 Building Information Modeling I 3** Course Prerequisite: Admitted to the major in Architectural Studies, Construction Management, Interior Design, or Landscape Architecture. Use of Building Information Modeling (BIM) for construction coordination via emerging technologies and/or BIM software to collaborate with multiple distributed stakeholders and students from other disciplines.
- 484 Temporary Structures 3** Course Prerequisite: ARCH 352 with a C or better or CE 330 with a C or better; admitted to the major in Civil Engineering, Construction Engineering, Construction Management, or Architectural Studies. Temporary structures including formwork, falsework, soldier pile and lagging, sheet pile, cofferdam, scaffolding, underpinning, bracing and guying, air domes, and others.
- 485 Mechanical, Electrical, and Plumbing I 3** Course Prerequisite: CST M 252 with a C or better, or admitted to the major in Architectural Studies, Mechanical Engineering, or Electrical Engineering. Mechanical, Electrical, and Plumbing (MEP) portion of the construction industry, focusing on preconstruction services, design, sales and estimating, system, project management, sustainability, and the use of BIM as they relate to MEP. Two field trips required.
- 495 Seminar in Construction Management V** 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Admitted to the 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: Admitted to the major in Interior Design, Landscape Architecture, Architectural Studies, or Construction Management. Computer-aided drafting (CAD) fundamentals and basic theoretical concepts related to its use in professional design practice.
- 497 3-D Digital Modeling and Project Information Management II 3** Course Prerequisite: Admitted to the major in Interior Design, Landscape Architecture, Architectural Studies, or Construction Management. 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** Course Prerequisite: Admitted to the major in Interior Design, Landscape Architecture, Architectural Studies, or Construction Management. 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.
- 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

I D

101 Design Issues 3 Sensory awareness as a design determinant; introduction to basic design elements in problem identification and solving processes. Credit not granted for both I D 101 and SDC 100.

102 Interior Design Studio I 3 (0-6) Course Prerequisite: I D 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) Course Prerequisite: Admitted to the major in Interior Design. Beginning design communication skills, including manual and digital methods. Recommended preparation: I D 101.

201 Interior Design Studio II 4 (1-9) Course Prerequisite: Admitted to the major in Interior Design. Interior design problem-solving grounded in theories of human behavior.

203 Interior Design Studio III 4 (1-9) Course Prerequisite: I D 201 with a C or better. Interior design problem-solving grounded in theories of spatial organization.

205 Visual Communication 3 (2-2) Course Prerequisite: Admitted to the major in Interior Design. 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 Course Prerequisite: Admitted to the major in Interior Design. 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 Study Tour I 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Concurrent enrollment in I D 201. 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: I D 197; I D 201; I D 205, each with a C or better. 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 Course Prerequisite: Admitted to the major in Interior Design. Theory, principles, and determinants of interior design applied to current practice.

321 Interior Design Studio IV 4 (1-9) Course Prerequisite: I D 203 with a C or better. Interior design problem-solving grounded in place theories.

325 Interior Building Systems 3 Course Prerequisite: Admitted to the 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: Admitted to the 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: I D 321 with a C or better; I D 397 with a C or better. Interior design problem-solving grounded in organizational theories.

350 [M] History of Interiors II 3 Course Prerequisite: Admitted to the major in Interior Design. 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: Admitted to the major in Interior Design. Business practices and procedures as related to interior design; contract documentation and specification writing.

397 Design Communication III 3 (2-2) Course Prerequisite: I D 203 with a C or better; I D 297 with a C or better. 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: I D 297 or graduate standing.

415 Advanced Interior Construction and Detailing 3 Course Prerequisite: Admitted to the 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: I D 333 with a C or better. Interior design problem-solving integrating multidisciplinary theories within a community and/or global context.

426 [CAPS] Interior Design Studio VII 5 (0-10) Course Prerequisite: I D 425 with a C or better; junior standing. Comprehensive studio project that integrates and extends interior design skills; entails research, interpretation, writing, graphic communication, design, and oral presentations.

460 Portfolio and Representation 3 Course Prerequisite: Admitted to the major in Interior Design, Landscape Architecture, Architectural Studies, or Construction Management. Develop communication skills and produce documents necessary to professionally present oneself to prospective employers within the fields of design.

477 Interior Design Study Tour II 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Admitted to the major in Interior Design, Landscape Architecture, Architectural Studies, or Construction Management. Selected issues in the field of interior design in connection with an organized field trip.

490 Cooperative Education Internship V 1 (0-3) 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.

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.

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**
- 150 [HUM] Landscapes of the Palouse 3** Explorations of relationships between people and place in the Palouse landscape and connections between local and global issues; includes community engagement component.
- 210 Digital Analysis and Representation 3 (2-3)** Course Prerequisite: Admitted to the major in Architectural Studies or Landscape Architecture. Introduction to analysis and representation with a focus on the use of digital tools. (Crosslisted course offered as ARCH 210, LND ARCH 210).
- 222 Landscape Architecture Field Experience I 1 (0-2)** May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Admitted to the major in Landscape Architecture and concurrent enrollment in LND ARCH 262. Field study of landscapes, designers and design firms through travel experiences. Recommended preparation: Sophomore standing and concurrent enrollment in LND ARCH 262.
- 262 Landscape Architectural Design I 4 (0-8)** Course Prerequisite: Admitted to the major in Landscape Architecture. 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 4 (0-8)** Course Prerequisite: LND ARCH 262 with a C or better. Basic design and graphic techniques related to solving of elementary design problems.
- 297 Digital Design Communication 3 (2-2)** Course Prerequisite: LND ARCH 262 with a C or better. Digital design communication skills for 2D/3D design problem solving; integration of current technology and software applications.
- 327 Theory in Landscape Architecture 3** Course Prerequisite: Admitted to the major in Landscape Architecture, Architectural Studies, Interior Design, or Construction Management; junior standing. 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: Admitted to the major in Landscape Architecture or junior standing. Field study of landscapes, designers and design firms through travel experiences.
- 362 Landscape Architectural Design III 4 (0-8)** Course Prerequisite: LND ARCH 263 with a C or better. 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)** Course Prerequisite: LND ARCH 362 with a C or better. 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)** Course Prerequisite: LND ARCH 262 with a C or better; sophomore standing. 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 with a C or better. Construction materials and methods, specifications, cost estimating, and construction document preparation.
- 367 Landscape Architectural Construction III 3 (2-3)** Course Prerequisite: LND ARCH 366 with a C or better. Supplemental projects in cost estimating, specifications, construction detailing, and landscape architectural design/build.
- 380 Ecological Applications in Design 3 (2-3)** Course Prerequisite: Admitted major in Landscape Architecture; junior standing. 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. Course Prerequisite: Admitted to the major in Landscape Architecture. 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 with a C or better; junior standing. History, theory, methods, and processes in regional planning; contemporary issues and professional practice.
- 467 Regional Landscape Inventory and Analysis 4 (2-6)** Course Prerequisite: SOE 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 with a C or better. Advanced group and individual landscape architectural design and planning projects; professional applications of site design theory and design processes.
- 477 Landscape Applications of Geographic Information Systems 3 (1-6)** Course Prerequisite: LND ARCH 467 with a C or better. GIS-based spatial data development and analysis skills in an applied, real-world context.
- 480 Professional Practice 2** Course Prerequisite: LND ARCH 363 with a C or better. 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 [CAPS] [M] Senior Comprehensive Project 4 (0-8)** Course Prerequisite: LND ARCH 470 or 490, with a C or better; senior standing. Individually developed studio project that integrates and extends landscape architectural skills; entails research, interpretation, writing, graphic communication, design, oral presentations.
- 490 Cooperative Education Internship 4** May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: LND ARCH 363 with a C or better. Off-campus cooperative education internship with a design firm/business, non-profit organization, industry, or government unit.

- 491 Topics in Design** 3 Course Prerequisite: Admitted to the major in Landscape Architecture, Architectural Studies, Interior Design, or Construction Management; junior standing.
- 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 [ARTS] 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.
- 101 New Student Seminar in the School of Design and Construction** 1 For majors, minors, or those with an academic interest: an introduction to planning and completion of undergraduate study in SDC programs including Architectural Studies, Interior Design, Landscape Architecture, or Construction Management.
- 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 with a C or better. 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: Admitted to the major in Architectural Studies, Interior Design, or Landscape Architecture. Global developments in design through the seventeenth century CE.
- 300 Fabrication Lab Practice** 1 Course Prerequisite: Admitted to the major in Architectural Studies, Interior Design, Landscape Architecture, or Construction Management. Hands-on exploration of School of Design and Construction shop facilities. Students complete a small project while learning safe and efficient use of woodshop machines and hand tools.
- 350 [M] Global History of Design II** 3 Course Prerequisite: SDC 250 with a C or better. Global developments in design from the seventeenth century CE to the present day.
- 444 Integrated Study Tour** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Admitted to the major in Architectural Studies, Interior Design, Landscape Architecture, or Construction Management. Selected issues in the field of design and construction in connection with an organized field trip.
- 473 [M] Professional Practice** 3 Course Prerequisite: Admitted to the major in Architectural Studies, Construction Management, Interior Design, or Landscape Architecture. Current professional practice issues related to the business and practice of design and construction.
- 488 Professional Practice Coop/Internship I** V 1-2 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. Practicum for students admitted to the VCEA Professional Practice and Experiential Learning Program; integration of coursework with on-the-job professional experience. (Crosslisted course offered as ENGR 488, BIO ENG 488, CHE 488, CE 488, CPT S 488, E E 488, ME 488, MSE 488, SDC 488). S, F grading.
- 489 Professional Practice Coop/Internship II** 1 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Sophomore standing; by department permission. Practicum for students admitted to the VCEA Professional Practice and Experiential Learning Program; continuation of ENGR 488. (Crosslisted course offered as ENGR 489, SDC 489). S, F grading.
- 495 Seminar in Design and Construction** 3 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: ARCH 203 with a C or better, I D 203 with a C or better, or LND ARCH 263 with a C or better; or graduate standing. Interdisciplinary exploration of issues, projects, and research relevant to the field of design and construction.
- 498 Special Topics in Design and Construction** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: ARCH 203 with a C or better, I D 203 with a C or better, or LND ARCH 263 with a C or better, or graduate standing. Advanced study in topics related to the design and construction disciplines.
- 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.
- 555 Global Engagement in Design and Construction** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Graduate student in Architecture, Interior Design, or Landscape Architecture. Engagement with contemporary and historical issues relevant to the built environment, landscape, climate, industry, and/or culture of the city, region, or country under consideration.

Program in Digital Technology and Culture

dtc.wsu.edu
Morrill Hall 108
509-335-0698

Director and Professor, K. Christen (Pullman); Associate Professors (CT), A. Plemons (Tri-Cities); Assistant Professors, A. Bacerra, M. Brown (Tri-Cities), J. Clapper; Assistant Professors (CT), A. Brave, P. DeVries, R. Gregory, P. Mudd (Tri-Cities), E. Ortiz, J. Riddle, J. Sanders; Instructors, J. Earle, L. Roper.

Digital Technology and Culture (DTC) is a multidisciplinary academic degree program that combines creative production and critical exploration of digital media and technologies across multiple contexts. DTC emphasizes a historical, social, political, and cultural understanding of technology, digital media and production to prepare students for communicating and engaging with diverse audiences and stakeholders locally and globally. The DTC program 1) prepares students for human-centered problem solving across technological formats, 2) supports open and ethical communication to understand local, regional, national, and global situations, 3) promotes diversity and equity through pedagogical, educational, and outreach models, and 4) encourages innovative and creative research, scholarship, and production that invites critical perspectives, integrates diverse knowledge systems, and encompasses progressive uses of technology.

The DTC core includes courses that introduce cultural critique and critical production, information structures, design principles, histories of technology and computing, and theories of inclusion, equity and diversity. The core also includes an internship and senior seminar to provide students with practical methods and applications of the skills acquired throughout their degree program. Students can choose from several tracks and electives to fulfill the degree program. These options are designed to meet individual interests and strengths while providing a holistic understanding of the production, creation, and application of digital media and technologies across social and cultural environments.

Student Learning Outcomes

- Demonstrate competency with technology for designing and distributing digital works in various mediums.
- Demonstrate competency with design principles through both the production and analysis of media objects.
- Demonstrate and articulate an understanding of the way digital media and information function and circulate in multiple cultural contexts.
- Demonstrate an understanding of the history of technological development, from local to global perspectives, and its implications for a variety of mediums.
- Utilize an interdisciplinary perspective in order to understand the global changes brought about by digital media.
- Effectively communicate through writing and speech why and how digital media productions make meaning.

Schedules of Studies

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

DIGITAL TECHNOLOGY AND CULTURE (120 CREDITS)

DTC Admission Requirements, Pullman and Tri-Cities Campuses

The DTC major requires 39 credits composed of a 15-credit required core that includes an internship, options of 21 credits, and 3 DTC-related elective credits. A student may be admitted to the DTC major at any point during a semester. To be admitted, a student must have completed DTC 101 with a C or better. To remain in good standing in the major, students must complete DTC 201 and DTC 206 with a C or better and maintain an overall GPA at WSU of 2.0 or higher.

No DTC course may be taken on a pass, fail basis.

First Year

<i>First Term</i>	<i>Credits</i>
DTC 101 [ARTS]	3
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
Foreign Language or Electives ¹	3 or 4

Second Term

<i>Communication [COMM] or Written Communication [WRTG]</i>	<i>Credits</i>
DTC 201 [ARTS]	3
HISTORY 105 [ROOT]	3
Social Sciences [SSCI]	3
Foreign Language or Electives ¹	3 or 4

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ²	4
DTC 206 [DIVR] or 475 [DIVR]	3
Electives	9

Second Term

<i>DTC Option Elective³</i>	<i>Credits</i>
DTC Track Course ⁴	3
Physical Sciences [PSCI] with lab ²	4
Electives	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
DTC Option Elective ³	3
DTC Track Courses ⁴	6
Electives ⁵	6

Second Term

<i>DTC Option Elective³</i>	<i>Credits</i>
DTC Track Course ⁴	3
Electives ⁵	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
DTC 498	3
DTC Option Elective ³	3
Integrated Capstone [CAPS]	3
Electives ⁵	6

Second Term

<i>DTC 497</i>	<i>Credits</i>
Electives ⁵	12
Senior Exit Survey	

¹ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

² To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

³ DTC Option Electives (12 credits): Students choose any four DTC classes not already completed for the major. May substitute one class (three credits) in the elective option with DTC 499. The degree must include two writing in the major [M] courses. These may be taken as a part of the option course work or as a DTC elective.

⁴ DTC Track Courses (12 credits): Students complete one of five tracks: Track One - Digital Cinema, and Animation (DTC 208, 335, 354, and 435 or 491), Track Two - Web Development (DTC 355 [M], 375 [M], 477 and 478), Track Three - Game Studies (DTC 354, 355 [M], 392 or 476, and 492), Track Four - Data Visualization and Curation (DTC 204 or 209, 331, 356 [M] and 476), or Track Five - Integrative Media and Design (DTC 336, 354, 355 [M], and 436).

⁵ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework.

Minors

Digital Technology and Culture

A minor in DTC requires 18 hours including DTC 101, 201, DTC/ENGLISH 336, 355, and 375, plus one more 3-hour course from the following: DTC 335, 356, 435, 477, 478, FINE ART 331, 332, 333, 363, 434, or 435. 9 hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Certificates

Game Studies and Design Certificate

The Game Studies and Design Certificate prepares students for conceptualizing and producing video games and gameful environments with a special focus on genres such as educational, serious, and games for change. Completion of the Game Studies and Design Certificate requires a total of 15 credits. Students are required to complete DTC 392 or 476 and 492 plus 9 credits chosen from one of two options. Students who select the Design Option select three courses (9 credits) from DTC 335, 336, 354, and 435. Students who select the Development Option select three courses (9 credits) from DTC 338, 355, 477, and 478.

Graphic Design Certificate

The Graphic Design Certificate prepares students to be premiere visual communicators working across digital and print mediums in a variety of contexts including industry, non-profit, and freelance areas. Completion of the Graphic Design Certificate requires a total of 15 credits. Students are required to complete DTC 201 and FINE ART 102 plus 9 credits chosen from the following options: DTC 336, 436; FINE ART 332, 433.

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.
- 104 Digital Foundations** 1 Foundational computing skills: hardware, file management, common operating systems and applications, library resources, and professionalization.
- 201 [ARTS] Tools and Methods for Digital Technology** 3 An introduction to the tools and methods of production for multimedia authoring in digital contexts.
- 202 [COMM] Internet Revolutions** 3 Introduction to the technologies and technical cultures that gave rise to the global information infrastructure supporting contemporary communication platforms.
- 204 Introduction to Text Analysis** 3 Introduction to computational and statistical text analysis using the open source programming language R; designed for students with no prior experience with programming but who wish to extend their methodological tool kit to include quantitative and computational approaches to the study of text. (Crosslisted course offered as DTC 204, DATA 204.)
- 206 [DIVR] Digital Inclusion** 3 Examination of global reach of digital environments, structures, and tools with focus on inclusion in terms of access, availability, affordability, adoption, and application across cultures.
- 208 [ARTS] Introduction to Digital Cinema** 3 A practical introduction to the technological and cultural transformations driving the evolution of cinematic techniques from the birth of motion pictures to emerging technology.
- 209 Introduction to Data Visualization** 3 An introduction to the tools and methods of data visualization in multiple contexts. (Crosslisted course offered as DTC 209, DATA 209.)
- 330 Social Media Case Studies** 3 Inquiry into ways businesses and individuals use social media as a marketing tool with special emphasis on media impact.
- 331 Social Media Practices** 3 Inquiry into social media practices from a ground-up approach, focusing on social media message creation and consumption; online self-presentation; online relationships; reputation management; social media data analysis.
- 335 3D Digital Animation** 3 (2-2) 3-D digital animation for creative and professional productions, art skills, story-telling and team problem-solving techniques.
- 336 Multimedia Design** 3 Course Prerequisite: DTC 201. Design practices and process for composing for a multimedia environment including color, pattern, and shape.
- 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 [ARTS] [M] 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** 3 Development for new computer-based media; multimedia authoring projects; examination of information technology.
- 356 [M] Information Structures** 3 Course Prerequisite: DTC 101. Social and cultural role of information; research with electronic sources; production, validation, storage, retrieval, evaluation, use, impact of electronic information.
- 375 [M] Language, Texts and Technology** 3 Course Prerequisite: DTC 101. Relationship between technology and communication; writing practices from a historical point of view.
- 392 Video Games Theories and History** 3 History and theory of video games with a focus on innovation and cultural impact.
- 435 Advanced Animation** 3 (2-2) Course Prerequisite: DTC 335. Advanced investigation of tools and methods for 2D and 3D digital animation.
- 436 Advanced Multimedia Design** 3 Course Prerequisite: DTC 336. Advanced design principles and projects in digital media; projects include visual, sound, haptic, and interactive experiences.
- 475 [DIVR] Digital Diversity** 3 Course Prerequisite: Junior standing. Cultural impact of digital media in cultural contexts; issues of race, class, gender, sexuality online.
- 476 Digital Strategies** 3 Examines multiple digital strategies for engagement with immersive and emerging technologies.
- 477 Advanced Multimedia Authoring** 3 Course Prerequisite: DTC 355. Advanced writing, imaging and teamwork skills for authoring in new computer-based media; website project in client-oriented context.
- 478 Usability and Interface Design** 3 (0-6) Course Prerequisite: DTC 355. Design of websites using best practices of visual literacy, interface architecture, and usability.
- 491 Advanced Digital Cinema** 3 Course Prerequisite: DTC 201 or 208. Exploration of advanced techniques, theories, and aesthetic strategies of cinema in the age of digital media, including video remix, mobile cinema, webisodes, cinematic games, hyperlinked video, and database cinema.
- 492 Engines and Platforms** 3 Course Prerequisite: DTC 355. A study of software platforms and engines used for media design, with special focus on intuitive tools, rapid work flow, multimedia platform environments, and asset management.
- 497 [CAPS] Senior Seminar** 3 Course Prerequisite: Completion of Junior Writing Portfolio; admitted to the major in Digital Technology and Culture; senior standing. Major multimedia project for nonprofit organization or small business with special focus on project management, planning, and execution.
- 498 Internship** V 1-6 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to the major in Digital Technology and Culture; junior standing; department permission. Direct professional learning experiences in the area of digital media, technology, and culture. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Admitted to the major in Digital Technology and Culture; junior 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.
- 560 Critical Theories, Methods, and Practice in Digital Humanities** 3 History, theory, and practice of digital humanities, with attention paid to how digital humanities are transforming disciplinary knowledge. (Crosslisted course offered as DTC 560, ENGLISH 560).
- 561 Studies in Technology and Culture** 3 Foundation examination of key concepts, tools, and possibilities afforded by engaging with technology through a critical cultural lens. (Crosslisted course offered as DTC 561, ENGLISH 561).

School of Economic Sciences

ses.wsu.edu
Hulbert 101
509-335-5555

Director and Regents Professor, J. J. McCluskey; Associate Director and Professor, A. Espinola-Arredondo; Regents Professor, R. C. Mittelhammer; Professors, R. G. Batina, D. Bernardo, T. R. Fortenbery, G. I. Galinato, R. K. Gallardo, H. A. Love, B. Mandal, T. L. Marsh, V. A. McCracken, F. Munoz-Garcia, S. Ortiueira, J. Yan, J. K. Yoder; Associate Professors, J. Bai, M. P. Brady, J. H. Cook, B. W. Cowan, J. Luckstead; Assistant Professors, W. Blundell, X. Liu, S. Manian, S. Park; Research Professor, E. L. Jessup; Associate Research Professor, D. Moore; Assistant Research Professors, T. P. Nadreau, J. Wagner; Associate Professors (Career Track), M. J. Gibson, A. J. Prera; Assistant Professors (Career Track), C. Clark, E. R. Gurocak; WSU Extension Professor, J. S. Neibergs; Professors Emeriti, K. Casavant, R. E. Rosenman, C. R. Shumway, P. R. Wandschneider.

The School of Economic Sciences offers programs leading to the degree of Bachelor of Science in Economic Sciences with options in Agricultural Economics; Business Economics; International Economics and Development; Economics, Policy and Law; Environmental and Resource Economics;

Financial Markets; and Quantitative Economics. Graduate degrees offered include the Master of Science in Economics, Master of Applied Economics, Doctor of Philosophy in Economics, and Doctor of Philosophy in Agricultural Economics.

The School also advises the Bachelor of Science in Agricultural and Food Systems, the Agricultural and Food Business Economics major.

All School of Economic Sciences degree programs classify as STEM (CIP Code 45.0603: Econometrics and Quantitative Economics) for international student VISA purposes.

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 economic development. The program also gives students the preparation needed for graduate study in business, law, agricultural economics, finance, 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, math, 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 *business economics* option trains students to use economic concepts and data analysis skills to analyze management, marketing, and finance problems faced by businesses operating in a market system.
- The *international economics and 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 policymaking including those relevant in tax, law, regulation, program, and policy arenas.
- The *environmental and resource economics* option trains students to make decisions while weighing the trade-offs between protecting, restoring, developing, and allocating natural resources.
- The *financial markets* option provides students with analytical and quantitative training in the substantial overlap between economics and finance. The option requires coursework that focuses on the analysis of financial markets.
- 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 analytics or for advanced degrees -- such as a Master of Science or Ph.D. in economics, agricultural 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 many areas including agricultural sciences, business, computer science, engineering, environmental science, history, mathematics, philosophy, political science, and statistics.

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.

Student Learning Outcomes

Graduates from the School of Economic Sciences will evaluate and apply economic concepts and quantitative methods; will think critically, integrate concepts, and evaluate results in performing economic analyses; and will communicate effectively. Students will be able to apply economic concepts, together with quantitative methods and technical information relating to the decision environment, to assist policy makers and target groups in evaluating economic trade-offs and in making rational economic decisions. Graduates will also be capable of analyzing and evaluating broad economic and social problems concerning the allocation of individual, firm and social resources within their specific degree interest area. Students will be capable of communicating the results of economic analyses in a clear, compelling, and informative manner.

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 Anthropology, Architecture, Economics, International Business, Political Science, 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, communication, and University Common Requirements (UCORE). Students planning to transfer into economic sciences by the end of their sophomore year should have

satisfactorily completed the required introductory economics, statistics, and 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. Coursework recommendations for specific graduate areas include:

- Law School: ACCTG 230; B LAW 210; PHIL 103, 201; POL S 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. MATH 172, 273, STAT 360 are also useful. A good grade in courses such as ECONS 301, 302, 311 (B+ or higher) and in electives such as ECONS 424 or 425 is also expected for students seeking to be admitted to MS and PhD programs in Economics and Agricultural Economics.
- 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. Some students take graduate work to broaden their career opportunities. School of Economic Sciences graduates compete favorably for jobs in government, business, and non-governmental organizations, using their strong analytical skills to offer a different perspective for problem-solving and decision-making. Recent graduates have been employed in finance, banking, agribusiness, industry, internet-based companies, non-profit organizations, government agencies, and at universities. Many are working in foreign countries.

Graduate Programs

The Master of Applied Economics degree program trains students to be industry leaders in quantitative economic analysis. Students will graduate with strong knowledge and skills in economic analysis, applied econometrics, and data analytics. The degree includes courses that teach machine learning and data science. Students will enhance their skills in communicating economic findings based on investigations of data to industry-type audiences. Students in this program should expect to find employment in private corporations, government, consulting, banks, non-governmental organizations (NGOs), and related entities.

The Master of Science in 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 may also use this degree to prepare for doctoral studies in economics or related fields. 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 CREDITS)

Students are admitted to the Agricultural Economics option upon making their intention known to the department. Admitted students must meet the following two benchmarks to remain in good standing:

- Minimum WSU Cumulative GPA of 2.0.
- Cumulative GPA of 2.0 or higher in ECONS 301, 302, and 311.

First Year

First Term	Credits
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 201 ¹	3
Electives	3

Second Term	Credits
Biological Sciences [BSCI]	3
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 202 [QUAN] ²	3
Concentrated Area Course ³	3

Second Year

First Term	Credits
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 302	3
Concentrated Area Course ³	3

Second Term	Credits
ACCTG 230	3
Arts [ARTS]	3
BLAW 210	3

ECONS 301	3	ECONS 101 [SSCI] or 102 [SSCI]	3
STAT 212 or MGTOP 215	4	HISTORY 105 [ROOT]	3
Complete Writing Portfolio		Humanities [HUM]	3
		MATH 201 ²	3

Third Year

First Term	Credits	Second Term	Credits
ACCTG 231	3	Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
Concentrated Area Course ³	3	ECONS 101 or 102	3
ECONS 311 [M]	3	ENGLISH 101 [WRTG]	3
Sequence Course ⁴	3	MATH 202 [QUAN] ³	3
Electives	1	Electives	2

Second Term	Credits	Second Year	Credits
Concentrated Area Course ³	3	First Term	Credits
ECONS 335 OR FIN 325	3	COM 102 [COMM], COM 210 [COMM], or H D 205 [COMM]	3 or 4
Sequence Course ⁴	3	Diversity [DIVR]	3
Electives	6	ECONS 301 or 305	3 or 4
		Electives	6

Fourth Year

First Term	Credits	Second Term	Credits
ECONS 431	3	300-400-level ECONS Elective ⁴	3
ECONS 483, 495, 497, 499, or HONORS 450	3	Arts [ARTS]	3
ECONS 490 [CAPS] [M]	3	ECONS 302	3
ENGLISH 301, 402 [M], or 403 [M]	3	STAT 212 or MGTOP 215	4
Sequence Course ⁴	3	Electives	2

Second Term	Credits	Third Year	Credits
Sequence Course ⁴	3	First Term	Credits
400-level ECONS Elective ⁵	3	300-400-level ECONS Elective ⁴	3
Electives	9	ACCTG 220 or 230	3
		ECONS 311 [M]	3
		ECONS 323	3
		Electives	3

¹ MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. Alternative to MATH 201 is MATH 106, 172, or 220.

² Alternative to MATH 202 is MATH 171.

³ Concentrated Area Courses: Four courses from any one of the following concentration areas: (1) Agricultural Production: ANIM SCI 101, HORT/CROP SCI 102 or ENTOM 150, CROP SCI 360, MGTOP 340; (2) Real Estate & Land Management: FIN 325, 345, 445 [M], MIS 250; (3) Food Safety & Policy: FS 110, 201, 220, 303; (4) Globalization: two semesters foreign language, ECONS 327/I BUS 470, ECONS 428, 430, SOC 415; (5) Sustainability: CROP SCI 360, ECONS 326/SOC 375, SOE 110, 285; (6) Independent Concentration - upon approval of advisor.

⁴ Pick two sequences (4 courses): ECONS 350 + 450 [M]; or ECONS 351 + 451; or ECONS 352 + 452 [M].

⁵ Any 400-level ECONS course not used to fulfill major requirements.

BUSINESS ECONOMICS (120 CREDITS)

Students are admitted to the Business Economics option upon making their intention known to the department. Admitted students must meet the following two benchmarks to remain in good standing:

- Minimum WSU Cumulative GPA of 2.0.
- Cumulative GPA of 2.0 or higher in ECONS 301 or 305, 302, and 311.

First Year

First Term	Credits
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. Alternative to MATH 201 is MATH 106, 172, or 220.

³ Alternative to MATH 202 is MATH 171.

⁴ ECONS courses not used to fulfill major requirement.

⁵ Concentrated Area Courses - Completion of three courses from one of the following concentration

areas: (1) Agribusiness: ECONS 351, 426, 451; (2) Marketing and Analytics: MKTG 360, two 300-400-level MKTG courses (6 credits); (3) Management: MGMT 301, two 300-400-level MGMT courses (6 credits); (4) Supply Chain Management: ECONS 426, MGTOP 340, one 300-400-level MGTOP or MGMT course.

⁶ Minimum 3 credits required.

ECONOMICS, POLICY AND LAW OPTION (120 CREDITS)

Students are admitted to the Economics, Policy and Law option upon making their intention known to the department. Admitted students must meet the following two benchmarks to remain in good standing:

- Minimum WSU cumulative GPA of 2.0.
- Cumulative GPA of 2.0 or higher in ECONS 301, 302, and 311.

First Year

	<i>Credits</i>
<i>First Term</i>	
Arts [ARTS]	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 201 ²	3

	<i>Credits</i>
<i>Second Term</i>	
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 202 [QUAN] ³	3
PHIL 103 [HUM]	3

Second Year

	<i>Credits</i>
<i>First Term</i>	
COM 102 [COMM], 210 [COMM], or H D 205	3 or 4
ECONS 301	4
Policy or Law Emphasis Course ⁴	3
Electives	5
<i>Second Term</i>	
300-400-level ECONS Electives ⁵	6
ECONS 302	3
STAT 212 or MGTOP 215	4
Electives	1
Complete Writing Portfolio	

Third Year

	<i>Credits</i>
<i>First Term</i>	
ECONS 311 [M]	3
ECONS 320	3
ECONS 322 [M]	3
ECONS 323, 324, or 330	3
Electives	3
<i>Second Term</i>	
Diversity [DIVR]	3
Policy or Law Emphasis Courses ⁴	6
Electives	6

Fourth Year

	<i>Credits</i>
<i>First Term</i>	
ECONS 431	3
ECONS 483, 495, 497, 499, or HONORS 450	3
ECONS Option Course ⁶	3

ENGLISH 301, 402 [M], or 403 [M] 3
Policy or Law Emphasis Course⁴ 3

	<i>Credits</i>
<i>Second Term</i>	
ECONS 400-level Elective	3
ECONS 420	3
ECONS 490 [CAPS] [M]	3
ECONS Option Course ⁶	3
Electives	3

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. Alternative to MATH 201 is MATH 106, 172, or 220.

³ Alternative to MATH 202 is MATH 171.

⁴ Policy or Law Emphasis course selection: (1) Policy: ECONS 430, POL S 316, 416, and PHIL 472 [M]; (2) Law: POL S 300; one of PHIL 360, 365, or 370; and two of PHIL 201, POL S 101, 206, 402, 404 [M], or CRM J 320.

⁵ ECONS courses not used to fulfill major requirement.

⁶ ECONS Option Courses: ECONS 424, 425, 427, or 451.

ENVIRONMENTAL AND RESOURCE ECONOMICS (120 CREDITS)

Students are admitted to the Environmental and Resource Economics option upon making their intention known to the department. Admitted students must meet the following two benchmarks to remain in good standing:

- Minimum WSU cumulative GPA of 2.0.
- Cumulative GPA of 2.0 or higher in ECONS 301, 302, and 311.

First Year

	<i>Credits</i>
<i>First Term</i>	
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 201 ¹	3
Electives	3

	<i>Credits</i>
<i>Second Term</i>	
Biological Sciences [BSCI] or Physical Sciences [PSCI] ²	3
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 202 [QUAN] ³	3
Electives	3

Second Year

	<i>Credits</i>
<i>First Term</i>	
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ²	4
COM 102 [COMM], COM 210 [COMM], or H D 205 [COMM]	3 or 4
Diversity [DIVR]	3
ECONS 302	3
ECONS 322 [M]	3

	<i>Credits</i>
<i>Second Term</i>	
Arts [ARTS]	3
ECONS 301	4
STAT 212 or MGTOP 215	4

Concentrated Area Course⁴ 3
Complete Writing Portfolio

Third Year

	<i>Credits</i>
<i>First Term</i>	
ECONS 300-400-level Elective	3
ECONS 311 [M]	3
ECONS 330	3
Concentrated Area Course ⁴	3
Electives	3

	<i>Credits</i>
<i>Second Term</i>	
ECONS 300-400-level Elective	3
ECONS 326	3
Concentrated Area Course ⁴	3
Electives	6

Fourth Year

	<i>Credits</i>
<i>First Term</i>	
ECONS 427	3
ECONS 430	3
ECONS 431	3
ECONS 483, 495, 497, 499, or HONORS 450	3
Environmental Option Course ⁵	3

	<i>Credits</i>
<i>Second Term</i>	
ECONS 490 [M] [CAPS]	3
ENGLISH 301, 402, or 403	3
Environmental Option Course ⁵	3
Electives	6

¹ MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. Alternative to MATH 201 is MATH 106, 172, or 220.

² For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

³ Alternative to MATH 202 is MATH 171.

⁴ Concentrated Area Course: Three courses from any one of the following concentration areas: (1) Human Health & the Environment: ANTH 405, CE 341, IPM 452, PHIL 370, SOE 402, SOE 445; (2) Global Environment: CROP SCI 360, HISTORY 494, PHIL 370, SOC 332, SOE 285, SOE 315, SOE 335; (3) Renewable Resources: Forest, Wildlife & Biosystems: BIOLOGY 330, BIOLOGY 401, CROP SCI 411, PHIL 370, SOE 300, SOE 301, SOE 312; (4) Non-Renewable Resources: Energy & Minerals: PHIL 370, PHYSICS 408, SOE 340, SOE 350, SOE 470; (5) Independent Concentration - upon approval of advisor (choose 3 courses).

⁵ Environmental Option courses: COMSOC 476 or 477, SOE 444, SOE 438, SOIL SCI 368.

FINANCIAL MARKETS (120 CREDITS)

Students are admitted to the Financial Markets option upon making their intention known to the department. Admitted students must meet the following two benchmarks to remain in good standing:

- Minimum WSU cumulative GPA of 2.0.
- Cumulative GPA of 2.0 or higher in ECONS 301, 302, and 311.

First Year

	<i>Credits</i>
<i>First Term</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> Credits	
Biological Sciences [BSCI] or Physical Sciences [PSCI] ²	3
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 202 [QUAN] ³	3
Electives	3

Second Year

<i>First Term</i> Credits	
ACCTG 230	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ²	4
COM 102 [COMM], COM 210 [COMM], or H D 205 [COMM]	3 or 4
ECONS 302	3
MIS 250	3

<i>Second Term</i> Credits	
ACCTG 231	3
Arts [ARTS]	3
ECONS 301	4
MGTOP 215	4

Third Year

<i>First Term</i> Credits	
Diversity [DIVR]	3
ECONS 311 [M]	3
ECONS 320	3
ECONS 322	3
Electives	3

<i>Second Term</i> Credits	
ECONS 300-400-level Elective	3
ECONS 420	3
FIN 325	3
Financial Markets Option Required Course ⁴	3
Electives	3

Fourth Year

<i>First Term</i> Credits	
ECONS 300-400-level Elective	3
ECONS 483, 495, 497, 499, or HONORS 450	3
ENGLISH 301, 402 [M], 403 [M]	3
FIN 421 OR 427	3
Electives	3

<i>Second Term</i> Credits	
ECONS 400-level Elective	3
ECONS 425 or 427	3
ECONS 490 [M] [CAPS]	3
Financial Markets Option Required Course ⁴	3
Electives	3

¹ MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. Alternative to MATH 201 is MATH 106, 172, or 220.

² For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

³ Alternative to MATH 201 is MATH 106, 172, or 220; alternative to MATH 202 is MATH 171.

⁴ Financial Markets option (6 credits): Approved courses include ECONS 424, FIN 350, 456, STAT/

MATH 360, one 400-level FIN course, and one 400-level ECONS course not used to fulfill major requirements.

INTERNATIONAL ECONOMICS AND DEVELOPMENT (120 CREDITS)

Students are admitted to the International Economics and Development option upon making their intention known to the department. Admitted students must meet the following two benchmarks to remain in good standing:

- Minimum WSU cumulative GPA of 2.0.
- Cumulative GPA of 2.0 or higher in ECONS 301, 302, and 311.

First Year

<i>First Term</i> Credits	
ECONS 101 [SSCI] OR 102 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 201 ¹	3
Electives	3

<i>Second Term</i> Credits	
Biological Sciences [BSCI] or Physical Sciences [PSCI] ²	3
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 202 [QUAN] ³	3
Electives	3

Second Year

<i>First Term</i> Credits	
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ²	4
COM 102 [COMM], COM 210 [COMM], or H D 205 [COMM]	3 or 4
Diversity [DIVR]	3
ECONS 302	3
Electives	3

<i>Second Term</i> Credits	
Arts [ARTS]	3
ECONS 300-400-level Elective	3
ECONS 301	4
STAT 212 or MGTOP 215	4
Complete Writing Portfolio	

Third Year

<i>First Term</i> Credits	
ECONS 300-400-level Elective	3
ECONS 311 [M]	3
ECONS 322	3
ECONS 324	3
ECONS 327	3

<i>Second Term</i> Credits	
ECONS 300-400-level Elective	3
ECONS 320	3
ECONS 323	3
ECONS 326	3
ECONS 420	3

Fourth Year

<i>First Term</i> Credits	
Economics Option Requirement ⁴	3
ECONS 400-level Elective	3
ECONS 427	3

ECONS 431	3
ECONS 483, 495, 497, 499, or HONORS 450	3

<i>Second Term</i> Credits	
Economics Option Requirement ⁴	3
ECONS 490 [M] [CAPS]	3
ENGLISH 301, 402 [M], or 403 [M]	3
Electives	6

¹ MATH 201 will be waived with an ALEKS score of 80% or higher, or the completion of MATH 202 or equivalent. Alternative to MATH 201 is MATH 106, 172, or 220.

² For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

³ Alternative to MATH 202 is MATH 171.

⁴ Economics Option Requirements: Two courses from the following: IBUS 380, ECONS 330, ECONS 428, ECONS 430, POL S 435, SOC 340.

QUANTITATIVE ECONOMICS (120 CREDITS)

Students are admitted to the Quantitative Economics option upon making their intention known to the department. Admitted students must meet the following two benchmarks to remain in good standing:

- Minimum WSU cumulative GPA of 2.0.
- Cumulative GPA of 2.0 or higher in ECONS 301, 302, and 311.

First Year

<i>First Term</i> Credits	
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i> Credits	
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
ECONS 101 or 102	3
ENGLISH 101 [WRTG]	3
MATH 172	4
Electives	3

Second Year

<i>First Term</i> Credits	
COM 102 [COMM], 210 [COMM], or H D 205 [COMM]	3 or 4
Diversity [DIVR]	3
Economics Emphasis Course ²	2 or 3
ECONS 301	4
Humanities [HUM]	3

<i>Second Term</i> Credits	
Arts [ARTS]	3
Economics Emphasis Course ²	3
ECONS 302	3
MATH 220	2
STAT 212 or MGTOP 215	4
Complete Writing Portfolio	

Third Year

<i>First Term</i> Credits	
Economics Emphasis Course ²	3
ECONS 300-400-level Elective ³	3

ECONS 311 [M]	3	ECONS 101 and 102 (or 198 and a 300/400-level
Electives	6	ECONS courses), and 302 or 320 are required. In
<i>Second Term</i>		
ECONS 300-400-level Elective ³	3	addition, ECONS 301 or 305, and two 300-level or
ECONS 420	3	higher ECONS electives are required (only three
ECONS 424	3	hours of ECONS 497 or 499 may be used to fulfill
Electives	6	the upper-division ECONS electives requirement).

Fourth Year

<i>First Term</i>			
ECONS 400-500-level Elective ³	3	The minor in Environmental and Resource Economics and Management requires a minimum of 18 credits. The following courses are required: ECONS 101, 301 or 305, 326, and 330; one of ECONS 430, 431, or 433; and 3 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 2.0 GPA is required in the minor and no courses may be taken pass/fail. A student wishing to declare a minor should consult with an advisor as early as possible to develop the required program.	
ECONS 483, 495, 497, 499, or HONORS 450	3		
MATH 364, 401, or ECONS 526	3		
MATH 420 or ECONS 527	3		
Electives	3		
<i>Second Term</i>			
ECONS 400-500-level Elective ³	3		
ECONS 490 [CAPS] [M]	3		
ENGLISH 301, 402 [M], or 403 [M]	3		
STAT 360, 443, or ECONS 525	3		
Electives	3		

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Economics Emphasis Courses (3 courses required from one area): (1) Math: MATH 273, 301, and 315; (2) Management Operations: ECONS 426, 452; MGTOP 340; (3) Computer Science: CPT S 121, 122, and 215.

³ ECONS courses not used to fulfill major requirement.

Minors

Agribusiness Economics

The minor in Agribusiness Economics requires 18 credits and includes ECONS 101; ECONS 301 or 305; ECONS 350 and 450, or ECONS 351 and 451, or ECONS 352 and 452; ECONS 335; and 3 elective credits in ECONS. 9 credits of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. A 2.0 GPA is required in the minor and no courses may be taken pass/fail.

Business Economics

To be admitted to the business economics minor, students must have a cumulative 2.0 GPA. A minor in Business Economics requires 18 credits of ECONS courses, nine of which must be at the 300-400 level 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 course), 305 or 321, 320, 326 or 327, and 404 are required. A 2.0 GPA is required in the minor and no courses may be taken pass/fail.

Economics

To be admitted to the economics minor, students must have a cumulative 2.0 GPA. A minor in Economics requires 18 credits of ECONS courses, nine of which must be at the 300-400-level taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Environmental and Resource Economics and Management

The minor in Environmental and Resource Economics and Management requires a minimum of 18 credits. The following courses are required: ECONS 101, 301 or 305, 326, and 330; one of ECONS 430, 431, or 433; and 3 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 2.0 GPA is required in the minor and no courses may be taken pass/fail. 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, and theory (HISTORY 409, 494, PHIL 370, POL S 430, PSYCH 466, SOE 335 [M], or 438); environmental (ARCH 490, 494, BIOLOGY 330, 372 [M], CE 401, CROP SCI 360, SOE 110, 285, 300, 303, or 483); social/cultural (ANTH 203, 309, ANTH/SOC 418, SOC 331, 332, 415, 430, SOE 312, WGSS 332, or WGSS 460); economic (ECONS 330, 427, 428, 430, 431, I BUS 380, or I BUS 496); and one additional course from any of the aspect areas. The minor requires 18 credits, with at least 9 credits at the 300-400 level taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. A 2.0 GPA is required in the minor and no courses may be taken pass/fail. Students wishing to apply for the minor may do so with the School of Economic Sciences.

Description of Courses

ECONOMIC SCIENCES

ECONS

101 [SSCI] Fundamentals of Microeconomics 3 Course Prerequisite: MATH 101, MATH 103 (or higher) or concurrent enrollment, MGTOP 215, STAT 205, STAT 212 or concurrent enrollment, or a minimum ALEKS score of 40%. Enrollment not allowed if credit earned for ECONS 198 with a C or higher and ECONS 102. 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, MATH 103 (or higher) or concurrent enrollment, MGTOP 215, STAT 205, STAT 212 or concurrent enrollment, or a minimum ALEKS score of 40%. Enrollment not allowed if credit earned for ECONS 198 with a C or higher and ECONS 101. Theory and policy related to unemployment, inflation, foreign trade, government spending, taxation, and banking.

105 Introduction to Economic Sciences Seminar 1 For new undergraduate economics majors, an introduction to advising, study options and program of study planning, degree completion, and career planning.

198 Economics Honors 3 Course Prerequisite: Admitted to the Honors College. Enrollment in ECONS 198 is not allowed if credit has already been earned for ECONS 101 and 102. Introduction to economic theory and policy issues.

299 Topics in Economics 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: ECONS 101, 102, or ALEKS math placement score of 45%. Issues in economics.

301 Intermediate Microeconomic Theory with Calculus 4 Course Prerequisite: ECONS 101 or 198; MATH 171 with a C or better, or MATH 202 with a C or better. 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 with a C or better, or MATH 202 with a C or better. 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, 360, or MGTOP 215; MATH 171 with a C or better, or MATH 202 with a C or better. Methods of empirical analysis in the context of economic analysis and forecasting problems.

320 Money and Banking 3 Course Prerequisite: ECONS 102 or 198. Analysis of banking institutions and monetary policy in the US, with comparison to abroad. Recommended: ECONS 101.

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 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 [M] 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).
- 329 The Economics of Gaming** 3 Course Prerequisite: ECONS 101, 102, 198, or a minimum ALEKS math placement score of 45%. Exploration of the critical role that economics plays in the design, development, and success of modern electronic games.
- 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 [QUAN] Business Finance Economics** 3 Course Prerequisite: MATH 101 with a C or better, 103 with a C or better, 106, 171, 201, 202, or a minimum ALEKS math placement score of 45%. 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 or 305. 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 and Supply Chain Analysis** 3 Course Prerequisite: ECONS 301 or 305; ECONS 311. In-depth analysis and application in transport economics, modeling, and policy evaluation across all transportation modes.
- 427 Economic Development** 3 Course Prerequisite: ECONS 301 or 305. Development theories, policies, and performance of Third World economies; population, land reform, foreign trade, aid, investment, debt, dependency.
- 428 [DIVR] Global Capitalism Today: Perspectives and Issues** 3 Course Prerequisite: ECONS 101, 102, or 198. 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 or 305; MATH 171 or 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 [CAPS] [M] Economics Capstone** 3 Course Prerequisite: ECONS 301 or 305; ECONS 302; ECONS 311; average of these 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. Course Prerequisite: By department permission. Professional off-campus internships arranged or coordinated by departmental faculty according to student's field of specialization. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. 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 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.
- 505 Economics for Agricultural Decision Making** 3 Managerial economics with specific applications to agricultural issues.
- 506 Mathematics Primer for Economists** 3 Intensive overview of the essential mathematical tools needed for graduate study in topics of economic sciences.
- 509 Quantitative Methods in Economic Dynamics** 3 Course Prerequisite: ECONS 502; ECONS 503; ECONS 511. Basic numerical methods of optimization, equation solving, function approximation, numerical dynamic programming, random number generation and simulation, and the solution of dynamic stochastic general equilibrium models; econometric estimation methods of nonlinear structural economic models, including Bayesian Estimation, Generalized Method of Moments, Indirect Inference, and Simulated Method of Moments.
- 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.
- 522 Financial and Commodity Derivatives** 3 Design, trading, structure, and pricing of derivatives; working knowledge of how derivative securities work, how they are used, and how they are priced.
- 523 Big Data Management and Processing for Economics** 3 Introduction to data management and processing; efficient collection, storage, cleaning, version control, and data analysis; effective programming for achieving these goals. Recommended preparation: one 3-credit introductory statistics course. Cooperative: Open to UI degree-seeking students.
- 524 Applied Machine Learning for Economics** 3 Introduction to machine learning algorithms and concepts; supervised and unsupervised learning methods; foundational theory and application to data; statistical and computational methods. Recommended preparation: linear algebra, calculus, and statistics with calculus. Cooperative: Open to UI degree-seeking students.
- 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 Mathematical Economics with Applications** 3 Linear algebra, matrix algebra, calculus-based analysis of consumer and producer theory, comparative statistics, and constrained optimization. Required preparation must include intermediate microeconomics and calculus course work. Cooperative: Open to UI degree-seeking students.
- 527 Microeconomic Analysis** 3 Consumer and producer behavior; partial and general equilibrium; game theory; imperfectly competitive markets; and market failures. Required preparation must include intermediate microeconomics and calculus course work. Cooperative: Open to UI degree-seeking students.
- 528 Master's Macroeconomics Analysis** 3 Master's-level course to develop a coherent theoretical framework to interpret macro data and to analyze macro policy. 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.
- 536 Applied Statistics and Econometrics for Economics and Finance** 3 Data and problem driven approach to formulating, estimating, and interpreting models that address problems in the area of finance and financial economics; review relevant basic statistics and probability concepts, and apply these to linear regression, regression diagnostics, and time series econometrics. Recommended preparation: 3-credit introductory statistics (MGTOP 215); 3-credit microeconomics or macroeconomics course; 3-credit mathematics with calculus course; 3-credit introductory finance course.
- 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.

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 3
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).

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
May be repeated for credit; cumulative maximum 3 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.

701 Master's Independent Capstone Project and /or Examination V 1-6
May be repeated for credit. Capstone project or final examination for professional master's degree under the Graduate School. The credits will include a balloted evaluation of the student's completion of the program's capstone/examination requirements by the program's graduate faculty. Students must have graduate degree-seeking status and obtain approval from their major advisor/committee chair before enrolling for 701 credit. Cooperative: Open to UI degree-seeking students. 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: Admitted to the Agricultural Economics or Economics PhD program. 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 and Sport Management

education.wsu.edu/college/elsm
Cleveland 351
509-335-9117

Chair and Professor, S. Kruse; Associate Professors, K. Huggins, S. Liden, Y. Rhee, K. Rodela; Assistant Professors, S. Calderone, S. Jedlicka, J. Walls; Scholarly Assistant Professor, J. Mancinelli; Teaching Associate Professors, K. Cowin, T. Crawford, G. Hill; Teaching Assistant Professors, E. Ariyo, C. Lebens, R. McBride.

The department offers courses of study leading to a Bachelor of Arts in Sport Management or an undergraduate minor in Sport Management. Masters degrees (Master of Arts; Master of Education) are offered in the areas of educational leadership and sport management. The Doctor of Philosophy (Education) and the Doctor of Education degrees are offered in Educational Leadership.

The Department of Educational Leadership and Sport Management, housed in the College of Education, has excellent facilities for undergraduate and graduate study and research. The department sponsors and hosts a number of state, national, and international programs. 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 study toward an advanced degree should contact the Office of Graduate Education in the College of Education. Individuals applying for admission to a graduate program must complete an application to the WSU Graduate School, and submit the following materials to the College of Education Office of Graduate Education: 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 the Graduate Record Examination (for the Sport Management program only). Interested students should contact the Office of Graduate Education for specific requirements of each program area.

Bachelor of Arts in Sport Management

The Department of Educational Leadership and Sport Management offers a major in Sport Management, which leads to a Bachelor of Arts in

Sport Management. This degree provides professional preparation for students wishing to pursue a management career with sport organizations or in the sport and recreation industry. 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 2.75 is required for admission to the major or minor.

Student Learning Outcomes

The Sport Management curriculum is designed to enable graduating students to:

- Identify and analyze ethical, legal, and socio-cultural issues and formulate responses for use in managerial decision making and policy determinations in sport.
- Employ principles of strategic planning, and financial and human resource management.
- Assess marketing and media needs in sport and formulate short-term and long-term solutions.
- Develop and apply critical thinking and abstract reasoning skills in analyzing sport management issues and in managerial planning and decision making.
- Demonstrate information literacy and communication skills.
- Conceive, plan, execute, and evaluate a sports event.

Practical application of theory and knowledge is obtained through enrollment in practicum hours 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 300-400-level sport management courses is admission to the Sport Management major or minor. Additional prerequisites for specific courses are listed in the course descriptions. The department chair or assistant chair must approve any exceptions to these requirements.

Undergraduate Minors

The Department of Educational Leadership and Sport Management offers an undergraduate minor in Sport Management. Students interested in declaring a minor in Sport Management should contact the department or consult its website for additional information.

Schedules of Studies

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

SPORT MANAGEMENT (120 CREDITS)

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. Applications are evaluated by program faculty who provide recommendations based on a variety of factors including but not limited to fulfillment of admission criteria, professionalism, and likelihood of success in the program.

The application for admission opens mid-semester and the deadline for application submission is the Friday before finals week, with admission effective the following term. Candidates must complete formal admission procedures and be admitted to the Sport Management major prior to taking any 300-400-level Sport Management coursework, except SPMGT 394. Students transferring from other institutions need to enroll in SPMGT 276 to be eligible for admission. The following minimum criteria must be met for consideration for admission:

Minimum Criteria for Admission to the Sport Management Major

- Completion of at least 30 credits of coursework. Minimum WSU cumulative GPA of 2.75.
- A grade of C or better in each of the following courses: COM 102 or HD 205, ENGLISH [WRTG] UCORE, MATH [QUAN] UCORE, and SPMGT 276.

The application requires a written statement (maximum of two pages) describing relevant work experience, involvement in extracurricular activities, and professional goals. This statement will be evaluated by faculty on the basis of the breadth and depth of the experiences, as well as for writing conventions and clarity of expression.

Students will be required to maintain a 2.75 minimum GPA. If a student's cumulative GPA falls below 2.75 the student will be placed on probation. A second semester below 2.75 will result in the student being released from the major.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
ENGLISH [WRTG]	3
Humanities [HUM]	3
SPMGT 101 [DIVR] or Diversity [DIVR]	3
Electives	3
<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
COM 102 [COMM] or HD 205 [COMM]	3 or 4
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
Social Sciences [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
ACCTG 220	3
Arts [ARTS]	3
SPMGT 276	3
SPMGT 394	1
Electives	6
<i>Second Term</i>	<i>Credits</i>
Area of Specialization ^{2,3}	6
SPMGT 290	3
SPMGT 394	1
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Area of Specialization ^{2,3}	6
SPMGT 365	3
SPMGT 367 [M]	3
SPMGT 374 or SPMGT 377	3
SPMGT 394	2

<i>Second Term</i>	<i>Credits</i>
Area of Specialization ^{2,3}	6
SPMGT 374 or SPMGT 377	3
SPMGT 379	3
SPMGT 464	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Area of Specialization ^{2,3}	3
ENGLISH 402 [M]	3
SPMGT 468 [M]	3
SPMGT 489 [CAPS]	3
SPMGT 490	1
Electives	2

<i>Second Term</i>	<i>Credits</i>
SPMGT 491 ⁴	10-12

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Business Specialization: 21 credits are required with a minimum of 9 credits of 300-400-level coursework. Required courses include B LAW 210, ECONS 101, MGMT 301 and MKTG 360. Approved elective courses include any ACCTG, B LAW, ECONS, ENTRP, FIN, IBUS, MGMT, MGTOP, MIS, or MKTG course.

³ Communication Specialization: 21 credits are required with a minimum of 9 credits of 300-400-level coursework. Approved courses include any COM, COMJOUR, COMSOC or COMSTRAT course.

⁴ Enrollment in SPMGT 491 requires senior standing, satisfactory completion of SPMGT 490 and a cumulative GPA of 2.75. Additionally, the internship contract must be approved by the internship coordinator prior to enrollment in this course.

Minors

Sport Management

The minor in sport management requires 18 credits of course work. 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, education, kinesiology, law, and the social sciences. To be considered for admission to the sport management minor, a student must have earned at least 60 credits, have a minimum cumulative GPA of at least 2.75 and be admitted to a major. Graded courses in the minor may not be taken pass/fail. The department chair or assistant chair must approve any exceptions to these requirements. Required courses include SPMGT 276 and 290, and 12 credits from SPMGT 101, 365, 367, 374, 377, 379, 384, 394, 464, 468, 496, or 497. Credits for the minor must include 9 credits of upper-division work taken in

residence at WSU or through WSU-approved education abroad or educational exchange courses.

Students are required to maintain a 2.75 minimum GPA. If a student's cumulative GPA falls below 2.75, the student is placed on probation. A second semester below 2.75 results in the student being released from the minor.

Description of Courses

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.

509 Leading School Improvement 3 Leadership functions and strategies used in planning, evaluating, and influencing school improvement.

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 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.

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.
- 539 Applied Research for Educational Leaders 3** Integrates the principles, skills, and tools of research into the leadership and managerial practices of educational leaders.
- 561 Introduction to College Student Development 3** Student development theory, related research and the application of theory to practice in student affairs work.
- 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.
- 591 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.
- 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.
- 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. Course Prerequisite: Admitted to the Educational Leadership PhD or EdD program. 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.
- SPORT MANAGEMENT**
- The general prerequisite for enrollment in 300 and 400-level sport management courses is 60 hours of coursework and admission to the sport management major or sport management minor. Students of junior or senior status in a 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**
- 101 [DIVR] Sport and Popular Culture: Trends and Issues 3** Explores how sport shapes or reinforces cultural and social values and ideologies.
- 276 Introduction to Sport Management 3** Course Prerequisite: ENGLISH 101 with a C or better; COM 102 with a C or better or H D 205 with a C or better; MATH [QUAN] with a C or better; 2.5 cumulative GPA. Principles and concepts in sport management; overview of sport industries and career opportunities.
- 290 Sport Programs 3 (2-3)** Course Prerequisite: ENGLISH 101 with a C or better; COM 102 with a C or better or H D 205 with a C or better; MATH [QUAN] 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: Admitted to the major or minor in Sport Management. 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: Admitted to the major or minor in Sport Management. 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: Admitted to the major or minor in Sport Management. 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: Admitted to the major or minor in Sport Management. Legal aspects of the supervision, management and business of sport.
- 379 Sport Communication 3** Course Prerequisite: Admitted to the major or minor in Sport Management; junior standing. Introduction to media and communication tools (video editing, new and social media, and public relations) for sport management purposes.
- 384 Global Sport Management 3** Introduction to international sport governance and overview of key characteristics of sport management on a global scale.
- 394 Practicum in Sport Management V 1-4** May be repeated for credit; cumulative maximum 8 hours. Supervised practicum. S, F grading.
- 464 Sport Marketing 3** Course Prerequisite: Admitted to the major or minor in Sport Management; junior standing. 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: Admitted to the major or minor in Sport Management; junior standing. Analysis of management processes and structures of sport organizations.

- 489 [CAPS] Theory and Application in Sports Event Management** 3 Course Prerequisite: SPMGT 374; SPMGT 377; SPMGT 464; SPMGT 468 or concurrent enrollment; admitted to the major in Sport Management; senior standing. Investigation and application of the components of the sport management profession; examination of fundamental principles used in event and facility management.
- 490 Internship Seminar** 1 Course Prerequisite: SPMGT 365; SPMGT 367; SPMGT 377; admitted to the major in Sport Management; 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: SPMGT 490; admitted to the major in Sport Management; senior standing; cumulative minimum GPA 2.75. 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.
- 563 Sport Governance and Policy** 3 Sources, types, and patterns of authority that influence the governance of sport policy; governmental and organizational policy-making processes.
- 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.
- 579 Mass Communication in Sport Management** 3 Mass media functions and effects, public relations, and advertising for sport organizations. Required preparation: MKTG 360, SPMGT 464, or equivalent marketing course.
- 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.

School of Electrical Engineering and Computer Science

school.eecs.wsu.edu
EME 102
509-335-6602

Director, Boeing Centennial Chair in Computer Engineering, and Professor, P. Pande; Associate

Director, Boeing Centennial Chair in Computer Science, and Professor, A. Kalyanaram; Huie-Rogers Endowed Chair in Computer Science and Regents Professor, D. Cook; Distinguished Professor in Power and Regents Professor, A. Bose; Boeing Distinguished Professor of Electrical Engineering, and Professor, V. Venkatasubramanian; Edmund O. Schweitzer III Chair in Power Apparatus and Systems, and Professor, N. Schulz; Professors, S. Broschat, J. Delgado-Frias, D. Heo, S. Roy, A. Saberi, B. Shirazi, K. Wang; Associate Professors, V. Arnaoudova, B. Belzer, H. Cai, Z. Dang, J. Doppa, A. Dubey, A. Gebremedhin, S. Gupta, D. Kim, S. Lofffard, P. Pedrow, J. Schneider, K. Sivakumar; Assistant Professors, G. Bhat, D. Tao, Y. Yan, J. Yu; Scholarly Professor - Career A. Abu-Hajar, A. O'fallon; Scholarly Associate Professors - Career, S. Arslan Ay, M. Kejarawal, J. Murray, J. Thompson, M. Torabi Konjin; Scholarly Assistant Professors - Career, J. Guerrero, A. Jillepalli, S. Xie, B. Zeng; Teaching Assistant Professor - Career, C. Cole; Research Professor, L. Holder; Professors Emeriti, D. Bakken, T. Fischer, C. Hauser, G. LaRue (Associate), R. Olsen, J. Ringo.

The School of Electrical Engineering and Computer Science offers courses of study leading to the degrees of Bachelor of Science in Electrical Engineering, Computer Engineering, Software Engineering, or Computer Science, Bachelor of Arts in Computer Science, Master of Science in Electrical Engineering, Computer Engineering, or Computer Science, Doctor of Philosophy in Electrical and Computer Engineering, and Doctor of Philosophy in Computer Science. The programs of study leading to a bachelor of science in electrical engineering, computer engineering, or software engineering are accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. The bachelor of arts and bachelor of science computer science programs are accredited by the Computing Accreditation Commission of ABET, <http://www.abet.org>. In collaboration with the College of Arts and Sciences, an interdisciplinary degree leading to the Bachelor of Science in Data Analytics is also available (see Mathematics and Statistics for complete information).

All the undergraduate programs in the School of EECs have five educational objectives. The first educational objective varies slightly across our degree programs: 1) Our graduates have professional careers in the electrical engineering industry or academia or are engaged in advanced studies (Electrical Engineering); 1) Our graduates have professional careers in the computer engineering industry or academia or are engaged in advanced studies (Computer Engineering); 1) Our graduates have professional careers in the software engineering industry or academia or are engaged in advanced studies (Software Engineering); and 1) Our graduates have professional careers in the computing industry or academia or are engaged in advanced studies (B.S. and B.A. Computer Science). The four remaining educational objectives are the same for all degree programs: 2) Our graduates adapt to changes in technology as well as to the needs of society. 3) Our graduates continue to seek knowledge to thrive in an increasingly globalized society. 4) Our graduates are successful team members or team leaders. 5) Our graduates conduct themselves with integrity and incorporate proper ethical considerations in their work.

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.

Electrical Engineering Student Learning Outcomes

Students in electrical engineering will have acquired the following skills and knowledge by the time of graduation: 1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics; 2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors; 3) an ability to communicate effectively with a range of audiences; 4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts; 5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives; 6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions; 7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

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.

Computer Engineering Student Learning Outcomes

Students in Computer Engineering will have acquired the following skills and knowledge outcomes by the time of graduation: 1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics; 2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors; 3) an ability to communicate effectively with a range of audiences; 4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts; 5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives; 6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions; 7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

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 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 and security, computer graphics, parallel and distributed systems, artificial intelligence, machine learning, 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 artificial intelligence, software engineering, data sciences, and computer systems.

Computer Science Student Learning Outcomes

Students in computer science will have acquired the following skills and knowledge by the time of graduation: 1) an ability to analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions; 2) an ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline; 3) an ability to communicate effectively in a variety of professional contexts; 4) an ability to recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles; 5) an ability to function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline; 6) an ability to apply computer science theory and software development fundamentals to produce computing-based solutions; 7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Software Engineering

Software engineering applies engineering practices to the development of software. The Software Engineering curriculum includes all the core requirements of the Computer Science program, along with advanced courses in software development, testing and validation, maintenance, security, and management and integration. Students learn about the real world challenges and requirements of the software engineering profession, such as delivering high quality software that meets user expectations, delivering software on time and within budget, maintaining software, and working effectively as part of a team. The program offers a two-semester senior design project that typically has an industry sponsor and provides students with valuable experience in applying their skills to the collaborative development of large-scale software applications.

Software Engineering Student Learning Outcomes

Students in software engineering will have acquired the following skills and knowledge by the time of graduation: 1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics; 2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors; 3) an

ability to communicate effectively with a range of audiences; 4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts; 5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives; 6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions; 7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Data Analytics

An interdisciplinary undergraduate degree in data analytics is also available. See the Program in Data Analytics for complete information.

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 (120 CREDITS)

Students may be admitted to the Bachelor of Arts in Computer Science degree program in either the School of Electrical Engineering and Computer Science (Pullman), or in the School of Engineering and Applied Sciences (Tri-Cities). Admission requirements are the same on all campuses, but the application process may vary.

Students are admitted to the Computer Science major upon demonstrating they are calculus-ready and making their intention known to the department. Calculus-ready is defined as having an ALEKS math placement score of 83% or higher; or completion of MATH 108, and 171 or a higher calculus course with a grade of C or better; or completing the Math AP with a score of 2 (places the student in MATH 171), or 3 (credit is given for MATH 171); or achieving an IB score of HL 5; or achieving a CLEP score of 50.

To remain in good standing students must complete CPT S 121, 122, and 223, or CPT S 131, 132, and 233, MATH 171, 172, 216, each with a grade of C or better, and earn a cumulative WSU GPA of 2.5 or higher upon completion of the above courses.

Alternate Pathway:

Completion of ALL standard pathway benchmarks and additionally: ENGLISH 101 or 105, CPT S 260, and MATH 273 or 301, all with a grade of C or better, and a 2.5 cumulative WSU GPA (or transfer GPA if no WSU GPA exists).

No courses listed in this schedule of study may be taken on a pass/fail basis. With the exception

of CPT S 488, 489, and ENGR 489 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>Credits</i>
Arts [ARTS]	3
CPT S 121 or 131 ¹	4
HISTORY 105 [ROOT]	3
MATH 171	4
PHIL 201 [QUAN]	3

<i>Second Term</i>	<i>Credits</i>
CPT S 122 or 132 ¹	4
ENGLISH 101 [WRTG]	3
MATH 172	4
MATH 216	3
Social Sciences [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
CPT S 223 or 233 ¹	3
CPT S 260	3
Diversity [DIVR]	3
Minor Elective ²	3
STAT 212 or 360	3 or 4

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
CPT S 355	3
MATH 220	2
Physical Sciences [PSCI] with lab ³	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CPT S 322 [M]	3
ENGLISH 402 [WRTG] [M]	3
Minor Electives (choose two) ²	5 or 6
Science Elective (with lab) ³	4

<i>Second Term</i>	<i>Credits</i>
300-400-level Minor Elective ²	3
CPT S 302	3
CPT S 317	3
CPT S 360 or 370 ¹	4
Science Elective ³	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level Minor Elective ²	3
CPT S 327	3
CPT S 350	3
CPT S 421 ⁴	3
Humanities [HUM]	3

<i>Second Term</i>	<i>Credits</i>
300-400-level Minor Elective ²	3
Advanced CPT S Electives (choose two) ⁵	6
CPT S 423 [CAPS] ⁴	3
Complete CPT S Exit Interview and Survey	

¹ Students may choose between a C/C++ (CPTS 121, 122, 223, 360) path or a Java programming (CPTS 131, 132, 233, 370) path. Students should stick to one path option. The Java track is not available in Tri Cities.

² Elective credits may include a minor program. Completion of a minor is strongly encouraged.

³ Science electives: A minimum of 15 credits required. Must include a year-long sequence (two semesters including a laboratory in each semester) of [BSCI] or [PSCI], and two additional science courses, one of which must have a laboratory component. Electives include BIOLOGY 106, 107; CHEM 101, 102 or 105, 106; PHYSICS 101/111, 102/112 or 201/211, 202/212.

⁴ Consult with an advisor at campus of residence for allowed substitutions.

⁵ Advanced CPT S Electives: 6 credits required. These credits must be in 300- or 400- or 500-level CPT S courses and they must include at least one of the following courses: CPT S 315, 415, 451, 471, or 475. A maximum of 3 credits from CPT S 490 and 499, or 3 credits from CPT S 488 or 499 may be selected as CPT S electives. Consult with advisor at campus of residence for course choices.

BACHELOR OF SCIENCE, COMPUTER SCIENCE (120 CREDITS)

Students are admitted to the Computer Science major upon demonstrating they are calculus-ready and making their intention known to the department. Calculus-ready is defined as having an ALEKS math placement score of 83% or higher; or completion of MATH 108, and 171 or a higher calculus course with a grade of C or better; or completing the Math AP with a score of 2 (places the student in MATH 171), or 3 (credit is given for MATH 171); or achieving an IB score of HL 5; or achieving a CLEP score of 50.

To remain in good standing students must complete CPT S 121, 122, and 223, or CPT S 131, 132, and 233, MATH 171, 172, 216, and PHYSICS 201/211, each with a grade of C or better, and earn a cumulative WSU GPA of 2.5 or higher upon completion of the above courses.

Alternate Pathway:

Completion of ALL standard pathway benchmarks and additionally: ENGLISH 101, CPT S 260, and MATH 273 or 301, all with a grade of C or better, and a 2.5 cumulative WSU GPA (or transfer GPA if no WSU GPA exists).

No courses listed in this schedule of study may be taken on a pass/fail basis. With the exception of CPT S 488, 490, 499, and ENGR 489, 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>Credits</i>
CPT S 121 or 131 ¹	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
PHIL 201	3

<i>Second Term</i>	<i>Credits</i>
CPT S 122 or 132 ¹	4
HISTORY 105 [ROOT]	3
MATH 172	4
MATH 216	3

Second Year

<i>First Term</i>	<i>Credits</i>
CPT S 223 or 233 ¹	3
CPT S 260	3

MATH 220	2
MATH 273 or 301	2 or 3
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1

<i>Second Term</i>	
CPT S 317	3
CPT S 322 [M]	3
CPT S 355	3
PHYSICS 202	3
PHYSICS 212	1
CPT S Technical Elective ²	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	
CPT S 302	3
CPT S 327	3
CPT S 350	3
CPT S 360 or 370 ¹	4
ENGLISH 402 [WRTG] [M]	3

<i>Second Term</i>	
Diversity [DIVR]	3
STAT 360	3
Computer Science Electives ³	6
CPT S Technical Elective ²	3

Fourth Year

<i>First Term</i>	
Arts [ARTS]	3
CPT S 421	3
Social Sciences [SSCI] ⁴	3
CPT S Technical Electives ²	6

<i>Second Term</i>	
Biological Sciences with Lab [BSCI]	4
CPT S 423 [CAPS]	3
Humanities [HUM]	3
Computer Science Electives ³	6
Complete CPT S Exit Interview and Survey	

¹ Students may choose between a C/C++ (CPT S 121, 122, 223, 360) path or a Java programming (CPT S 131, 132, 233, 370) path. Students should stick to one path option. The Java track is not available in Tri-Cities.

² CPT S Technical Electives consist of 4 courses (12 credits) taken from the courses listed below, with at least one course from the Software area and one course from the Data and Information Management area. CPT S 483 special topics course may also be considered as a CPT S Technical Elective with departmental approval. Consult your academic advisor. Systems: CPT S 411, 427, 428, 442, 455, 460, 464, 466; Data and Information Management: CPT S 315, 415, 451, 471, 475; Software: CPT S 321, 323, 422, 443, 479, 481, 484, 487, 489; Artificial Intelligence and Machine Learning: CPT S 434, 437, 440; Scientific and Visual Computing: CPT S 430, 442, 453.

³ Computer Science Electives: Four additional courses (12 credits) at the 300-400-level that are not used as Technical Electives. At least 6 credits must be CPT S courses. Approved non-CPT S courses are: 300-400-level E E courses, CE 463, DTC 335, E M 464, MATH 315, 401, 420, 421, MBIOS 478, MSE 302, PHYSICS 303, 443, and STAT 436. Additional Free Electives may include a maximum of 3 credits each of CPT S 490 and 499, or 3 credits each of CPT S 488, 499, and ENGR 489.

⁴ ECONS 101 or 102 recommended.

COMPUTER ENGINEERING (123 CREDITS)

Students are admitted to the Computer Engineering major upon demonstrating they are calculus-ready and making their intention known to the department. Calculus-ready is defined as having an ALEKS math placement score of 83% or higher; or completion of MATH 108 and 171, or a higher calculus course, with a grade of C or better; or completing the Math AP with a score of 2 (places the student in MATH 171), or 3 (credit is given for MATH 171).

To remain in good standing students must complete CPT S 121 or 131, MATH 171, 172, 220, 273, and PHYSICS 201/211, each with a grade of C or better, and earn a cumulative WSU GPA of 2.5 or higher upon completion of the above courses.

Alternate Pathway:

Completion of ALL standard pathway benchmarks and additionally: ENGLISH 101, CHEM 105, PHYSICS 202/212, E E 261, 262, MATH 315, all with a grade of C or better, and a 2.5 cumulative WSU GPA (or transfer GPA if no WSU GPA exists). Everett and Bremerton applicants follow the alternate pathway.

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>	
CHEM 105 [PSCI]	4
CPT S 121 or 131 ¹	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	
CPT S 122 or 132 ¹	4
MATH 172	4
MATH 216	3
PHYSICS 201	3
PHYSICS 211	1

Second Year

<i>First Term</i>	
CPT S 223 or 233 ¹	3
E E 214	4
MATH 220	2
MATH 273	2
PHYSICS 202	3
PHYSICS 212	1

<i>Second Term</i>	
Arts [ARTS]	3
E E 234	4
E E 261	3
E E 262	1
HISTORY 105 [ROOT]	3
MATH 315	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	
E E 311	3
E E 321	3

E E 324 [M]	4
E E 352 [M]	3
ENGLISH 402 [WRTG]	3

<i>Second Term</i>	
Biological Sciences [BSCI]	3 or 4
CPT S 360 or 370 ¹	4
E E 334	3
Engineering Science Elective ²	3
STAT 360	3

Fourth Year

<i>First Term</i>	
CPT E Technical Electives ³	3
E E 415	2
ECONS 101 [SSCI] or 102 [SSCI]	3
Humanities [HUM]	3
Senior Design Elective I ⁴	3

<i>Second Term</i>	
CPT E Technical Electives ³	6
Diversity [DIVR]	3
E E 302	3
E E 416 [CAPS] [M]	3
Complete CPT E Exit Interview and Survey	

¹ Students may choose between a C/C++ (CPT S 121, 122, 223, 360) path or a Java programming (CPT S 131, 132, 233, 370) path. Students should stick to one path option. The Java track is not available in Tri-Cities.

² Engineering Science Elective: Choose from E E 331, 341, ME 301, or MSE 302. (Note: If either E E 331 or E E 341 is taken as an engineering science elective, it cannot also count as a technical elective.)

³ Technical electives (9 credits) must be 300-400-level courses and must be chosen with an advisor's approval. Any of the following courses may be chosen to fulfill technical elective requirements: CPT S 317, 322, 350, 355, 411, 422, 430, 437, 440, 442, 443, 451, 452, 455, 460, 466; E E 331, 341, 351, 431, 432, 434, 451, 464, 466, 470, 476, 489, 496; One only of MATH 325, 340, 364, 415, 421, 440, 441, 448, 453, 464, 466.

⁴ Senior Design Electives adhere to one of the following sequences: (1) ASIC & Digital Systems: E E 416 and 434; (2) VLSI Design: E E 466 and 416. Students are strongly recommended to complete both senior design elective sequences.

ELECTRICAL ENGINEERING (124 CREDITS)

Students are admitted to the Electrical Engineering major upon demonstrating they are calculus-ready and making their intention known to the department. Calculus-ready is defined as having an ALEKS math placement score of 83% or higher; or completion of MATH 108, and 171 or a higher calculus course with a grade of C or better; or completing the Math AP with a score of 2 (places the student in MATH 171), or 3 (credit is given for MATH 171).

To remain in good standing students must complete CPT S 121 or 131, MATH 171, 172, 220, 273, and PHYSICS 201/211, each with a grade of C or better, and earn a cumulative WSU GPA of 2.5 or higher upon completion of the above courses.

Alternate Pathway:

Completion of ALL standard pathway benchmarks and additionally: ENGLISH 101, CHEM 105,

PHYSICS 202/212, E E 261, 262, MATH 315, all with a grade of C or better, and a 2.5 cumulative WSU GPA (or transfer GPA if no WSU GPA exists). Everett and Bremerton applicants follow the alternate pathway.

No courses listed in this schedule of study may be taken on a pass/fail basis. With the exception of E E 488, E E 499, and ENGR 489, 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. Students should also consult with an advisor regarding allowed course substitutions to the schedule of studies listed below.

First Year

<i>First Term</i>	<i>Credits</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>Credits</i>
CPT S 121 or 131	4
MATH 172	4
MATH 220	2
PHYSICS 201	3
PHYSICS 211	1

Second Year

<i>First Term</i>	<i>Credits</i>
CPT S 122 or 132	4
E E 214	4
MATH 273	2
PHYSICS 202	3
PHYSICS 212	1

<i>Second Term</i>	<i>Credits</i>
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>Credits</i>
E E 311	3
E E 321	3
E E 331	3
E E 352 [M]	3
Engineering Science Elective ¹	3

<i>Second Term</i>	<i>Credits</i>
E E 302	3
E E 341	3
E E 361	3
STAT 360	3
Track Elective ^{2,3}	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
E E 415	3
Engineering Science Elective ¹	3
ENGLISH 402 [WRTG]	3
Track Electives ^{2,3}	6

<i>Second Term</i>	<i>Credits</i>
300-400-level Track Electives ^{2,3}	6
Biological Sciences [BSCI]	3 or 4
E E 416 [CAPS] [M]	3
Humanities [HUM]	3
Complete E E Exit Interview and Survey	

¹ Engineering Science Electives (6 credits): Choose from CE 211, ME 212, 301, MSE 302.

² Track Electives: Students follow one of five tracks for an emphasis in their degree program. A total of 15 credits are required for each track. Any electives within a track must be chosen from the list of approved technical electives in footnote 3. Power Track: required: E E 362 [M], 491, at least 6 credits from E E 486, 489, 492, 493, 494, and remaining credits from list of approved technical electives; Microelectronics Track: required: E E 351, 476, at least two from E E 431, 434, 496, and one from E E 431, 434, 466, 488, 496, 499, ENGR 489 with a combined maximum of 3 credits total from E E 488 and ENGR 489 or E E 499; Systems Track: required: E E 464, 489, at least one from E E 432, 451, and one from E E 351, 431, 432, 451, 470, and remaining credits from list of approved technical electives; General Track: at least one from E E 324 [M], 351, 362 [M], 489; at least three 400-level E E letter graded course not used to meet other program requirements, and one course from the list of approved technical electives; or Computer Engineering Track: required: E E 434, 466, at least one from E E 324 [M], 334, 431, 476, CPT S 360, and remaining credits from list of approved technical electives and at least one 400-level E E letter graded course not used to meet other program requirements.

³ Technical Electives approved for Power Track, Systems Track, General Track (minimum 9 credits 400-level E E courses), and Computer Engineering Track (minimum 3 credits 400-level E E courses) include: ASTRONOM 435, CE 463, CHEM 331, 333, 345, MATH 320 [M], 325, 340, 364, 401 [M], 402 [M], 415, 420, 421 [M], 440, 441, 448, 453, 464, 466, ME 304, 401, MSE 402, 403, PHYSICS 303, 304, 320, 443, 450, and 463, or any 300-400-level CPT S or E E course not used to fulfill other requirements.

SOFTWARE ENGINEERING (121 CREDITS)

Students are admitted to the Software Engineering major upon demonstrating they are calculus-ready and making their intention known to the department. Calculus-ready is defined as having an ALEKS math placement score of 83% or higher; or completion of MATH 108, and 171 or a higher calculus course with a grade of C or better; or completing the Math AP with a score of 2 (places the student in MATH 171), or 3 (credit is given for MATH 171); or achieving an IB score of HL 5; or achieving a CLEP score of 50.

To remain in good standing students must complete CPT S 121, 122, and 223, or CPT S 131, 132, and 233, MATH 171, 172, 216, and PHYSICS 201/211 or CHEM 105, each with a grade of C or better, and earn a cumulative WSU GPA of 2.5 or higher upon completion of the above courses.

Alternate Pathway (Everett students follow this pathway):

Completion of ALL standard pathway benchmarks, except CPT S 223/233, and additionally: ECONS 101 or 102, ENGLISH 101 or 105, MATH 220, and two of MATH 273 301, PHIL 201 or STAT 212, all with a grade of C or better, and a 2.5 cumulative WSU GPA (or transfer GPA if no WSU GPA exists). Everett applicants follow the alternate pathway.

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>Credits</i>
CPT S 121 or CPT S 131 ¹	4
ENGLISH 101 [WRTG] or ENGLISH 105 [WRTG]	3
MATH 171 [QUAN]	4
Math Requirement ²	3

<i>Second Term</i>	<i>Credits</i>
CPT S 122 or CPT S 132 ¹	4
HISTORY 105 [ROOT]	3
MATH 172	4
MATH 216	3

Second Year

<i>First Term</i>	<i>Credits</i>
CPT S 223 or CPT S 233 ¹	3
CPT S 260	3
MATH 220	2
Math Requirement ²	2 or 3
PHYSICS 201/211 [PSCI] or CHEM 105 [PSCI]	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
CPT S 321	3
CPT S 355	3
ECONS 101 [SSCI] or ECONS 102 [SSCI]	3
Humanities [HUM]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CPT S 302	3
CPT S 317	3
CPT S 322 [M]	3
CPT S 360 or CPT S 370 ¹	4
ENGLISH 402 [WRTG] or ENGLISH 403 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
Biological Science [BSCI]	3
CPT S 350	3
CPT S 487	3
Diversity [DIVR]	3
MATH/CPT S 453 or STAT 419	3
STAT 360	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
CPT S 327	3
CPT S 421	3
CPT S 422 [M]	3
CPT S 484	3
Software Engineering Option Course ³	3

Second Term	Credits
CPT S 423 [CAPS]	3
CPT S 476	3
Data and Information Management Elective ⁴	3
Software Engineering Option Courses ³	6
Complete CPT E Exit Interview and Survey	

¹ Students may choose between a C/C++ (CPT S 121, 122, 223, 360) path or a Java programming (CPT S 131, 132, 233, 370) path. Students should stick to one path option. The Java track is not available in Tri-Cities.

² Math Requirement: minimum 5 credits from the following: MATH 273, MATH 301, PHIL 201, STAT 212.

³ Software Engineering Option Courses (9 credits required): Any 400-level course in CPT S, E E, or MATH not used to fulfill major requirements. Upper-division courses in other disciplines may be used with prior approval by advisor.

⁴ Data and Information Management Elective (3 credits required): Choose at least one from CPT S 315, 415, 451, 471, 475.

Minors

Computer Engineering

The minor in computer engineering consists of a minimum of 18 credits, 9 of which must be 300-400-level taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Required courses include CPT S 223 or 233, E E 214, E E 234, and E E 324, and 6 credits from any 300-400-level CPT S course (excluding CPT S 302), E E 334, 434, or 466. All prerequisites for these courses must be met. Each student's program of study requires approval of the computer engineering undergraduate coordinator. For all courses and their prerequisites, a grade of C or better is required to complete the minor.

Computer Science

The minor in computer science consists of 20 credits which must include CPT S 121, 122, and 223, or CPT S 131, 132, and 233; and three 300-400-level CPT S courses, taken in residence at WSU or through WSU-approved education abroad or educational exchange courses, excluding CPT S 302 and 401. All prerequisites for courses in the minor must be met. The minor program must be approved by the computer science undergraduate coordinator. For all courses and their prerequisites, a grade of C or better is required to complete the minor.

Electrical Engineering

The minor in electrical engineering consists of 18 credit hours, 9 of which must be 300-400-level and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. The 18 credits must include the following courses: E E 214, 261, and 262. The remaining credits must be selected from any 300-400-level E E courses excluding E E 302 and E E 304. All prerequisites for minor courses must be met. The minor program must be approved by the electrical engineering undergraduate coordinator. For all courses and their prerequisites, a grade of C or better is required to complete the minor.

Software Engineering

The minor in Software Engineering consists of 20 credits from CPT S 121, 122, 223 (or CPT S 131, 132, 233) and three 300-400-level courses chosen from CPT S 321, 322, 422, 476, 478, 484, or 487. A maximum of 8 course credits from the requirements of the student's major can be used to satisfy the requirements of the minor. 9 hours must be 300-400-level courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. For all courses and their prerequisites, a grade of C or better is required to complete the minor.

Certificates

CySER CAE-CO Fundamentals

Students participating in the CySER CAE-CO Fundamentals Certificate will receive in-depth and wide-ranging training that integrates cybersecurity research and education with professional skills in teamwork, communication, leadership, and lifelong learning. A core principle in this certificate is training that organically merges theoretical knowledge with experiential learning in cyber operations and cyber defense.

The certificate requires CPT S 327, 427, 428 and four elective courses from: CPT S 415, 443, 455, 460, 464, 466, 475, 478, 489; E E 334, 434, 489; or MIS 374.

Additionally, students will:

- Complete the Senior Design course sequence (CPT S 421 and 423) with a project focused on cybersecurity.
- Complete an internship with a cybersecurity-related experience.
- Demonstrate involvement in CySER research (realized via class projects, senior design projects, independent study).
- Attend the CySER summer workshop.
- Attend CySER seminars (at least 60% of the bi-weekly seminars in a semester).
- Recommend at least four credits of foreign language or demonstrate equivalent proficiency in Russian, Chinese, Korean, Arabic, or Persian.

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 admitted majors or minors in computer science, computer engineering, or electrical engineering, and to juniors and seniors admitted to other degree programs requiring these computer science courses.

CPT S

111 [QUAN] Introduction to Computer Programming 3 (2-3) Course Prerequisite: MATH 101 with a C or better, MATH 103 with a C or better, or higher level MATH course with a C or better, or a minimum ALEKS math placement score of 45%. 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 C/C++ 4 (3-3) Course Prerequisite: MATH 108, 171, 172, 182, 201, 202, 206, or 220, each with a C or better, CPT S 111 with a B+ or better, a min ALEKS math placement score of 78%, or by permission with an AP Exam in Cpt S Principles or Cpt Sci A with a 4 or better. Formulation of problems and top-down design of programs in a modern structured language (C/C++) for their solution on a digital computer.

122 Data Structures C/C++ 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 taught in C/C++ programming language.

131 Program Design and Development Java 4 (3-3) Course Prerequisite: MATH 108, 171, 172, 182, 201, 202, 206, or 220, each with a C or better, CPT S 111 with a B+ or better, a min ALEKS math placement score of 78%, or by permission with an AP Exam in Cpt S Principles or Cpt Sci A with a 4 or better. Formulation of problems and top-down design of programs in a modern structured language for their solution on a digital computer. Taught in Java programming language.

132 Data Structures Java 4 (3-3) Course Prerequisite: CPT S 131 with a C or better. Advanced programming techniques: data structures, recursion, sorting and searching, and basics of algorithm analysis. Taught in Java programming language.

215 Data Analytics Systems and Algorithms 3 Course Prerequisite: CPT S 122, CPT S 132, or CS 122. Exploration of fundamental concepts, constructs, and techniques of modern data analytics systems. (Crosslisted course offered as CPT S 215, CS 215).

223 Advanced Data Structures C/C++ 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 taught in C/C++ programming language.

224 Programming Tools 2 Course Prerequisite: CPT S 122 with a C or better, or CPT S 132 with a C or better. Debugging tools, scripting languages, UNIX programming tools.

233 Advanced Data Structures Java 3 Course Prerequisite: CPT S 132 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. Taught in Java programming language.

260 Introduction to Computer Architecture 3 Course Prerequisite: CPT S 223 with a C or better or concurrent enrollment, or CPT S 233 with a C or better or concurrent enrollment. Computer systems architecture; logic, data representation, assembly language, memory organization and trends.

- 302 Professional Skills in Computing and Engineering** 3 Course Prerequisite: CPT S 122 or 132, OR CPT S 121 or 131 and E E 261; admitted to a major in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics; junior standing. Foundation in computing and engineering professional development. (Crosslisted course offered as CPT S 302, E E 302). Credit not granted for both CPT S/E E 302 and CPT S 401.
- 315 Introduction to Data Mining** 3 Course Prerequisite: CPT S 215, 223, 233, or CS 215, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. The process of automatically extracting valid, useful, and previously unknown information from large repositories. (Crosslisted course offered as CPT S 315, CS 315). Recommended preparation: prior Python programming.
- 317 Automata and Formal Languages** 3 Course Prerequisite: CPT S 122 or 132, with a C or better; MATH 216 with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Finite automata, regular sets, pushdown automata, context-free language, Turing machines and the halting problem.
- 321 Object-Oriented Software Principles** 3 Course Prerequisite: CPT S 223 or 233, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Object-oriented programming for flexibility, efficiency, and maintainability; logic and UI decoupling; complexity analysis, data structures, and algorithms for industry-quality software.
- 322 [M] Software Engineering Principles I** 3 Course Prerequisite: CPT S 215, 223, or 233, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, Data Analytics, or major in Neuroscience. 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 or 233, with a C or better; CPT S 322 with a C or better or concurrent enrollment; admitted to the major or minor in Cpt Sci, Cpt Engr, E E, Swr Engr, or Data Analytics. Enrollment not allowed if credit earned in CPT S 487. Practical aspects of software design and implementation using object-oriented, aspect-oriented and procedural programming. Credit not granted for both CPT S 323 and 487.
- 327 Introduction to Cyber Security** 3 Course Prerequisite: CPT S 223 or 233 with a C or better; CPT S 260 or E E 234 with a C or better; CPT S 360 or 370 with a C or better or concurrent enrollment; MATH 216 with a C or better. Security and privacy principles in modern computers and network communications covering various security protection mechanisms, including cryptography, secure communication protocols, and anonymity techniques.
- 350 Design and Analysis of Algorithms** 3 Course Prerequisite: CPT S 215, 223, or 233, with a C or better; CPT S 317 with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Analysis of data structures and algorithms; computational complexity and design of efficient data-handling procedures.
- 355 Programming Language Design** 3 Course Prerequisite: CPT S 223 or 233, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Design concepts of high-level programming languages; survey of existing languages, experience using some languages.
- 360 Systems Programming C/C++** 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; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Implementation of systems programs, concepts of computer operating systems; laboratory experience in using operating system facilities taught in C/C++ programming language.
- 370 Systems Programming Java** 4 (3-3) Course Prerequisite: CPT S 233 with a C or better; CPT S 260 with a C or better or E E 234 with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Implementation of systems programs, concepts of computer operating systems; laboratory experience in using operating system facilities. Taught in Java programming language.
- 401 Computers and Society** 3 Course Prerequisite: CPT S 215, 223, or 233; admitted to the major in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics; 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 and CPT S/E E 302.
- 411 Introduction to Parallel Computing** 3 Course Prerequisite: CPT S 215, 223, or 233, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Fundamental principles of parallel computing, parallel programming experience on multicore machines and cluster computers, and design of algorithms and applications in parallel computing. Recommended preparation: CPT S 350.
- 415 Big Data** 3 Course Prerequisite: CPT S 215, 223, or 233, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Big data models, databases and query languages, modern distributed database systems and algorithms. (Crosslisted course offered as CPT S 415, CS 415).
- 421 Software Design Project I** 3 (1-6) Course Prerequisite: C or better in CPT S 321 and 322; or C or better in CPT S 322 and CPT S 360 or 370; or C or better CPT S 322 and concurrent enrollment in CPT S 360 or 370; admitted major or minor in Cpt S, Cpt Engr, E E, Sftwr Engr, or Data Analytc. Large-scale software development including requirements analysis, estimation, design, verification and project management.
- 422 [M] Software Engineering Principles II** 3 Course Prerequisite: CPT S 321 with a C or better or CPT S 323 with a C or better; CPT S 322 with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Dependable software systems; software verification and validation, testing; CASE environments; software management and evolution.
- 423 [CAPS] Software Design Project II** 3 (1-6) Course Prerequisite: CPT S 421 with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Laboratory/group design project for large-scale software development, requirements analysis, estimation, design, verification techniques.
- 427 Applied Cyber Security** 3 Course Prerequisite: CPT S 327 with a C or better. Wireless protocol security, network packet analysis, incidence response cycles, fault tolerance, security in virtual and cloud environments, and distributed computer security.
- 428 Advanced Cyber Security** 3 Course Prerequisite: CPT S 327 with a C or better. Key aspects of cyber security with an emphasis on software and systems security focusing on concepts, principles, methodologies, and techniques for measuring and defending the various security properties of both operating systems and application software. Credit not granted for both CPT S 428 and CPT S 528.

- 430 Numerical Analysis 3** Course Prerequisite: MATH 315 with a C or better; one of CPT S 121, 131, or MATH 300, with a C or better. 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, MATH 548, 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 121, 131, or E E 221, with a C or better; STAT 360 with a C or better; admitted to the major or minor in Computer Science, Computer Engr, Electrical Engr, Software Engr, Data Analytics, or major in Neuroscience. 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.
- 437 Introduction to Machine Learning 3** Course Prerequisite: CPT S 215, 223, or 233, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Topics in machine learning including linear models for regression and classification, generative models, support vector machines and kernel methods, neural networks and deep learning, decision trees, unsupervised learning, and dimension reduction. Recommended preparation: E E 221; linear algebra; multivariate calculus; probability and statistics.
- 438 Scientific Visualization 3** Course Prerequisite: CPT S 223 or 233, with a C or better; CPT S 224 with a C or better; MATH 172 or 182, with a C or better; admitted to the major or minor in Computer Science, Computer Engr, Electrical Engr, Software Engr, or Data Analytics. Data taxonomy, sampling, plotting, using and extending a visualization package, designing visualization and domain-specific techniques.
- 439 Critical Infrastructure Security: The Emerging Smart Grid 3** Course Prerequisite: Senior standing. Smart electric grid, communication networks, distributed computing, fault tolerant computing, cyber security, analyzing interdependencies between the smart grid components, smart grid standards and protocols. (Crosslisted course offered as E E 439, CPT S 439).
- 440 Artificial Intelligence 3** Course Prerequisite: CPT S 223 or 233, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, Data Analytics, or major in Neuroscience. 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 or CPT S 360 with a C or better; MATH 220 with a C or better; admitted major or minor in Computer Science, Computer Engr, Electrical Engr, Software Engr, or Data Analytics. 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: CPT S 223 or 233; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, Data Analytics, or major in Neuroscience; junior standing. 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.
- 451 Introduction to Database Systems 3** Course Prerequisite: CPT S 215, 223, or 233, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. 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; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Design of lexical analyzers, syntactic analyzers, intermediate code generators, code optimizers and object code generators.
- 453 Graph Theory 3** Course Prerequisite: MATH 220, 225, or 230. Graphs and their applications, directed graphs, trees, networks, Eulerian and Hamiltonian paths, matrix representations, construction of algorithms. (Crosslisted course offered as MATH 453, MATH 553, CPT S 453, CPT S 553). Required preparation must include linear algebra. Recommended preparation: MATH 301. Cooperative: Open to UI degree-seeking students.
- 455 Introduction to Computer Networks 3** Course Prerequisite: CPT S 360, 370, or E E 234, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. 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; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering; Software Engineering, or Data Analytics. 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 223, 233, or E E 234, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. 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; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering; Software Engineering, or Data Analytics. 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.
- 471 Computational Genomics 3** Course Prerequisite: CPT S 223 or 233, with a C or better; CPT S 350 with a C or better or concurrent enrollment; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Fundamental algorithms, techniques and applications. Credit not granted for both CPT S 471 and CPT S 571.
- 475 Data Science 3** Course Prerequisite: CPT S 215, CPT S 223, or CPT S 233, with a C or better. The data science process, data wrangling, exploratory data analysis, linear regression, classification, clustering, principal components analysis, recommender systems, data visualization, data and ethics, and effective communication. Credit not granted for both CPT S 475 and CPT S 575. Recommended preparation for 575: Familiarity with algorithm design and analysis, basic linear algebra, and basic probability and statistics.
- 476 Software Construction and Maintenance 3** Course Prerequisite: CPT S 322 with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Software quality, construction (API design and use, object-oriented runtime issues), and maintenance (refactoring, reengineering, reverse engineering).
- 478 Software Process and Management 3** Course Prerequisite: CPT S 322 with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Software Engineering Process (definition, assessment, and improvement); Software Engineering Management; Software Configuration Management.

- 479 Mobile Application Development 3** Course Prerequisite: CPT S 223 or 233, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Mobile application development; user interface; location and maps; sensor; camera; cross platform mobile application development tools.
- 481 Python Software Construction 3** Course Prerequisite: CPT S 223 with a C or better; CPT S 224 or CPT S 360 with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. 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: Admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Required background preparation varies with course offering, see instructor. Current topics in computer science or software engineering.
- 484 Software Requirements 3** Course Prerequisite: CPT S 322 with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Elicitation, analysis, specification, and validation of software requirements as well as the management of requirements during the software life cycle.
- 485 Gerontechnology I 3** Course Prerequisite: CPT S 215, 223, or 233; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, Data Analytics, or major in Psychology. Introduction to the field of gerontechnology, including aging and senses, mobility and exercise, data analysis, and research methods. (Crosslisted course offered as CPT S 485, PSYCH 485).
- 486 Gerontechnology II 3** Course Prerequisite: CPT S 215, 223, or 233; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, Data Analytics, or major in Psychology. In-depth exploration of gerontechnology, including socialization, caregiver issues, dementia, app design and data visualization. (Crosslisted course offered as CPT S 486, PSYCH 486).
- 487 Software Design and Architecture 3** Course Prerequisite: CPT S 321 with a C or better; CPT S 322 with a C or better; admitted major or minor in Computer Sci, Computer Engr, Electrical Engr, Software Engr, or Data Analytics. Enrollment not allowed if credit already earned for CPT S 323. Software design; design principles, patterns, and anti-patterns; design quality attributes and evaluation; architectural styles, architectural patterns and anti-patterns. Credit not granted for both CPT S 487 and CPT S 587, or for both CPT S 487 and 323.
- 488 Professional Practice Coop/Internship I V 1-2** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. Practicum for students admitted to the VCEA Professional Practice and Experiential Learning Program; integration of coursework with on-the-job professional experience. (Crosslisted course offered as ENGR 488, BIO ENG 488, CHE 488, CE 488, CPT S 488, E E 488, ME 488, MSE 488, SDC 488). S, F grading.
- 489 Web Development 3** Course Prerequisite: CPT S 322 with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Web development using markup languages, style sheet language, and scripting languages; developing and consuming web services; testing web applications.
- 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.
- 515 Advanced Algorithms 3** Advanced algorithms and data structures, design and analysis, intractability.
- 516 Algorithmics 3** Discrete structures, automata, formal languages, recursive functions, algorithms, and computability.
- 527 Computer Security 3** Examines cyber vulnerabilities and attacks against computer systems and networks; includes security protection mechanisms, cryptography, secure communication protocols, information flow enforcement, network monitoring, and anonymity techniques.
- 528 Advanced Cyber Security 3** Key aspects of cyber security with an emphasis on software and systems security focusing on concepts, principles, methodologies, and techniques for measuring and defending the various security properties of both operating systems and application software. Credit not granted for both CPT S 428 and CPT S 528.
- 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, MATH 548, 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, singular value decomposition, and computation of eigenvalues and eigenvectors (Francis's algorithm). (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, MATH 553, CPT S 453, CPT S 553). Required preparation must include linear algebra. Recommended preparation: MATH 301. Cooperative: Open to UI degree-seeking students.

- 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 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. (Crosslisted course offered as E E 524, CPT S 561).
- 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.
- 575 Data Science** 3 The data science process, data wrangling, exploratory data analysis, linear regression, classification, clustering, principal components analysis, recommender systems, data visualization, data and ethics, and effective communication. Credit not granted for both CPT S 475 and CPT S 575. Recommended preparation for 575: Familiarity with algorithm design and analysis, basic linear algebra, and basic probability and statistics.
- 577 Structured Prediction: Algorithms and Applications** 3 Machine learning algorithms to predict structured outputs from structured inputs for diverse applications, including: natural language processing, computer vision, social networks, smart environments, and computer engineering.
- 580 Advanced Topics in Computer Science** 3 May be repeated for credit.
- 581 Software Maintenance** 3 Software maintenance, refactoring, reengineering, reverse engineering.
- 582 Software Testing** 3 Software testing, testing levels, testing objectives, testing techniques.
- 583 Software Quality** 3 Software quality, quality assurance, process and product quality, software measures, quality attributes, quality management.
- 587 Software Design and Architecture** 3 Software design; design principles, patterns, and anti-patterns; design quality attributes and evaluation; architectural styles, architectural patterns and anti-patterns. Credit not granted for both CPT S 487 and CPT S 587, or for both CPT S 487 and 323.
- 591 Elements of Network Science** 3 Fundamental elements of the emerging science of complex networks, with emphasis on social and information networks. Recommended preparation: CPT S 350 with a C or better.
- 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. Course Prerequisite: Admitted to the Computer Science PhD program. 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 admitted majors or minors in electrical engineering, computer engineering, or computer science, and to juniors and seniors admitted to 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 or concurrent enrollment. Solutions to engineering problems using modern software tools such as Matlab.
- 234 Microprocessor Systems** 4 (3-3) Course Prerequisite: CPT S 121 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; 4 credits of PHYSICS 202 with a C or better, or PHYSICS 202 and 212, each with a C or better, or PHYSICS 206 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.

- 302 Professional Skills in Computing and Engineering** 3 Course Prerequisite: CPT S 122 or 132, OR CPT S 121 or 131 and E E 261; admitted to a major in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics; junior standing. Foundation in computing and engineering professional development. (Crosslisted course offered as CPT S 302, E E 302). Credit not granted for both CPT S/E E 302 and CPT S 401.
- 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 261 with a C or better; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, Software Engineering, or major in Neuroscience. 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; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, Software Engineering, or major in Neuroscience. 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; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, Software Engineering, or major in Neuroscience. 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; MATH 315 with a C or better; 4 credits of PHYSICS 202, or PHYSICS 202 and 212, each with a C or better, or PHYSICS 206 with a C or better. Admission to the major not required. Students will be required to pass a math skills test. Fundamentals of transmission lines, electrostatics, magnetostatics, and Maxwell's Equations for static fields.
- 334 Computer Architecture 3** (3-3) Course Prerequisite: E E 234 with a C or better; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software 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; admitted to the major or minor in E E, Cpt S, Cpt E, Software Engr, or major in Neuroscience. Discrete and continuous-time signals, LTI systems, convolution, sampling, Fourier transform, filtering, DFT, amplitude modulation, probability applications.
- 351 Distributed Parameter Systems 3** Course Prerequisite: E E 331 with a C or better; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software Engineering. Maxwell's equations, plane waves, waveguides, resonators, antennas, numerical methods.
- 352 [M] Electrical Engineering Laboratory I 3** (1-6) Course Prerequisite: E E 262 with a C or better; E E 311 with a C or better or concurrent enrollment; E E 321 with a C or better or concurrent enrollment; admitted to the major or minor in E E, Cpt S, Cpt E, or Software 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; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software Engineering. Power system hardware; transformers, and electromechanical machinery; introduction to power system operation.
- 362 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; admitted to the major or minor in E E, Cpt S, Cpt E, or Software Engineering. Experiments in simulation, modeling, transformers, rotating machines, and transmission lines.
- 415 Design Project Management 3** (1-6) Course Prerequisite: E E 341 and E E 361, both with a C or better; or E E 334 and CPT S 360, both with a C or better; admitted to the major or minor in E E, Cpt S, Cpt E, or Software Engineering. Project scheduling/planning, technical writing, oral presentation skills, working in teams, TQC, TQM, market-driven organizations.
- 416 [CAPS] [M] Electrical Engineering Design 3** (1-6) Course Prerequisite: E E 415 with a C or better; ENGLISH 402 or 403 with a C or better, or concurrent enrollment; admitted to the major or minor in E E, Cpt S, Cpt E, Cpt A, or Software Engineering; senior standing. Electrical engineering design of specific projects including design specification; written and oral presentations and reports.
- 431 RF and Microwave Circuits and Systems 3** Course Prerequisite: E E 311; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software 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 331; E E 341 with a C or better; STAT 360 with a C or better or STAT 443 with a C or better; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software 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; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software Engineering. Application Specific Integrated Circuit and Digital System Design methods, semi-custom, full-custom, and field-programmable devices; digital system architectures, electronics, and tests.
- 439 Critical Infrastructure Security: The Emerging Smart Grid 3** Course Prerequisite: Senior standing. Smart electric grid, communication networks, distributed computing, fault tolerant computing, cyber security, analyzing interdependencies between the smart grid components, smart grid standards and protocols. (Crosslisted course offered as E E 439, CPT S 439).
- 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; admitted to the major or minor in E E, Computer Science, Computer Engineering, Software Engineering, or major in Neuroscience. 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: CPT S 360, 370, or E E 234, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. 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; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, Software Engineering, or major in Neuroscience. Discrete and fast Fourier transforms; Z-transform; sampling; discrete convolution; digital filter design; effects of quantization.
- 466 VLSI Design 3** Course Prerequisite: E E 234 with a C or better; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software Engineering. Very Large Scale Integrated circuit, system and physical design using CAD software; project specification, modeling, implementation, documentation and reporting.

- 476 Analog Integrated Circuits** 3 Course Prerequisite: E E 311 with a C or better; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software Engineering. Analysis and design of analog integrated circuits in CMOS and BiCMOS technologies; current mirrors, gain stages, operational amplifiers, frequency response, and compensation. Credit not granted for both E E 476 and 576.
- 483 Topics in Electrical and Computer Engineering** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Current topics in electrical engineering and computer engineering.
- 485 Electric Energy Distribution Systems** 3 Course Prerequisite: E E 361 with a C or better; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software Engineering. Fundamentals of distribution systems engineering, distribution system modeling and analysis, distribution load flow analysis, voltage regulation, recent advances in distribution automation.
- 486 Power Electronics** 3 Course Prerequisite: E E 361 with a C or better; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software Engineering. Analysis and modeling of power electronics-based converters, steady state operation, converter topologies, non-ideal effects; power supplies; applications. Cooperative: Open to UI degree-seeking students.
- 488 Professional Practice Coop/Internship** I V 1-2 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. Practicum for students admitted to the VCEA Professional Practice and Experiential Learning Program; integration of coursework with on-the-job professional experience. (Crosslisted course offered as ENGR 488, BIO ENG 488, CHE 488, CE 488, CPT S 488, E E 488, ME 488, MSE 488, SDC 488). S, F grading.
- 489 Introduction to Control Systems** 3 Course Prerequisite: E E 341 with a C or better or concurrent enrollment; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software 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; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software 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 or concurrent enrollment; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software 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; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software Engineering. Analysis and equipment fundamentals of power system protection; symmetrical components, fault calculations; fuses; and relays including burden calculations.
- 494 Protective Relay Labs** 3 (1-6) Course Prerequisite: E E 361 with a C or better; E E 493 with a C or better or concurrent enrollment; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software 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: CHEM 105, 4 credits of PHYSICS 202, or PHYSICS 202 and 212, or PHYSICS 206; admitted to the major or minor in Electrical Engineering, Computer Science, Computer Engineering, or Software 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. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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.
- 522 High Voltage Engineering** 3 High voltage engineering concepts and techniques that facilitate design, research, and development of modern electric power apparatus and interconnected components.
- 523 Power Systems Stability and Control** 3 Course Prerequisite: E E 521 with a B- or better. 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. Recommended preparation: E E 489 with a B- or better.

- 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. (Crosslisted course offered as E E 524, CPT S 561).
- 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.
- 526 High Voltage Overhead Transmission Lines 3** Course Prerequisite: Graduate standing in Electrical Engineering. Electrical analysis, performance, and design of high voltage transmission lines; power capacity, electromagnetic environment, electromagnetic compatibility, measurements, grounding.
- 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).
- 529 Power Quality 3** Existing and future power quality issues, including identification, measurement, and mitigation; power quality definitions, standards, and classification; voltage quality; power systems harmonics; DER integration; and emerging power quality concerns. Recommended preparation: E E 491 or equivalent.
- 530 Digital Signal Processing II 3** Course Prerequisite: E E 507. Frequency selective digital filtering, least-squares filtering, adaptive filtering, multirate signal processing. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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. Credit not granted for both E E 476 and 576.
- 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. (Crosslisted course offered as E E 582, ECE 582.) Cooperative: Open to UI degree-seeking students.
- 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. (Crosslisted course offered as E E 595 and ECE 595.)
- 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.
- 701 Master's Independent Capstone Project and /or Examination V 1-6** May be repeated for credit. Capstone project or final examination for professional master's degree under the Graduate School. The credits will include a balloted evaluation of the student's completion of the program's capstone/examination requirements by the program's graduate faculty. Students must have graduate degree-seeking status and obtain approval from their major advisor/committee chair before enrolling for 701 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: Admitted to the Electrical Engineering PhD program. 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 Engineering and Applied Sciences - WSU Tri-Cities

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Interim Academic Director of SEAS and Professor: M. Osman; Professors: A. Hossain, S. Hudson, J. Iannelli; Associate Professors: Y. Demissie, R. Lewis, D. Lowry, J. Miller, C. Mo, M. Saad; Assistant Professors: Y. Zhang; Engineering Technician, S. Jordan.

The School of Engineering and Applied Sciences (SEAS) offers undergraduate programs leading to the degrees of Bachelor of Science in Civil Engineering (BSCE), Computer Science (BSCS), Electrical Engineering (BSEE), and Mechanical Engineering (BSME); and Bachelor of Arts in Computer Science (BACS).

At the graduate level SEAS offers programs leading to the Master of Science degree in Computer Science, Electrical Engineering, Environmental

Engineering, and Mechanical Engineering. Students interested in earning a Master of Science degree in Civil Engineering, or a Doctor of Philosophy degree in Civil Engineering, Computer Science, Electrical Engineering, or Mechanical Engineering should apply for admission to the corresponding Pullman program and state in their application an intention to reside on the Tri-Cities campus.

CIVIL ENGINEERING

The BSCE program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

The education objectives for the BSCE program are:

- Graduates are engaged in civil engineering careers in industry, government or academia, or pursuing advanced studies;
- Graduates are successful team members or team leaders who conduct themselves with integrity and high standards of ethics;
- Graduates demonstrate competence and ongoing development of their professional skills to adapt to changes in technology and the needs of a globalized society.

The student learning outcomes for the BSCE program are that graduates will attain:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- An ability to communicate effectively with a range of audiences
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

COMPUTER SCIENCE

The BSCptS and BACptS programs are accredited by the Computing Accreditation Commission of ABET, <http://www.abet.org>.

The education objectives for both the BSCS and BACS programs are:

- Our graduates have professional careers in industry or academia or are engaged in advanced studies.
- Our graduates keep abreast and adapt to changes in technology as well as the needs of a globalized society.
- Our graduates are successful team members or team leaders who conduct themselves with integrity and act ethically.

The student learning outcomes for both the BSCS and BACS programs are that graduates will be able to:

- Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline
- Apply computer science theory and software development fundamentals to produce computing-based solutions
- Acquire and apply new knowledge as needed, using appropriate learning strategies.

ELECTRICAL ENGINEERING

The BSEE program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

The education objectives for the BSEE program are:

- Our graduates have professional careers in industry or academia or are engaged in advanced studies.
- Our graduates keep abreast of, and adapt to, changes in technology as well as the needs of a globalized society
- Our graduates are successful team members or team leaders who conduct themselves with integrity and act ethically.

The student learning outcomes for the BSEE program are that graduates will attain:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- An ability to communicate effectively with a range of audiences
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

MECHANICAL ENGINEERING

The BSME program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

The education objectives for the BSME program are:

- Graduates will be involved in the practice of engineering or in pursuit of graduate studies.
- Graduates will perform successfully as members of professional teams in the global arena.
- Graduates will function professionally and continuously improve their professional skills.

The student learning outcomes for the BSME program are that graduates will attain:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- An ability to communicate effectively with a range of audiences
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

COURSES AND DEGREE REQUIREMENTS:

The listing for the courses and degree requirements for the BS in Civil Engineering may be found in this catalog under the Department of Civil and Environmental Engineering.

Courses and degree requirements for the BA in Computer Science, the BS in Computer Science, and the BS in Electrical Engineering may be found in this catalog under the School of Electrical Engineering and Computer Science.

Courses and degree requirements for the BS in Mechanical Engineering may be found under the School of Mechanical and Materials Engineering.

Voiland College of Engineering and Architecture

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Dean and Professor, M. Rezac; Associate Dean for Research and Graduate Studies and Professor, D. Field; Associate Dean for International Programs and Professor, J. Iannelli; Associate Dean for Academic Affairs and Associate Professor, K. Sivakumar; Associate Dean for Student Success and Associate Research Professor, S. Pressley.

The Voiland 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, the Department of Civil and Environmental Engineering, the School of Electrical Engineering and Computer Science, the

School of Engineering and Applied Sciences (Tri-Cities), the School of Engineering and Computer Science (Vancouver), and the School of Mechanical and Materials Engineering. In addition, as listed below, the college offers ENGR courses relevant to several degree programs. A minor is available to all non-engineering majors at the university. The minor provides an understanding of the ways in which engineering can be applied to solve real-world problems.

Supplementing the curriculum, the Voiland College Professional Practice and Experiential Learning Office (ProPEL) guides students in what it means to be a professional, to act professionally and to develop real-world skills. Professional practice and experiential learning partnerships in industry help Voiland students apply knowledge acquired in the classroom to real-world situations, develop critical thinking skills, clarify the attitudes about careers in their field, and improve professional soft skills. The Voiland College Internships and Career Services Office, home to the ProPEL program, provides guidance on search strategies for internships, cooperative education, industry mentoring, apprenticeships, practicums, and research experiences, both domestic and international.

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 be admitted to 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. All courses taken for the engineering minor must be passed with a grade of C or better.

Description of Courses

ENGINEERING

ENGR

- 101 Success in Engineering Study V** 1-2 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Participation in the STARS program; by department consent. Engineering study with an emphasis on working in groups and evaluating personal needs and goals.
- 107 [QUAN] Introductory Mathematics for Engineering Applications 4** (3-3) Course Prerequisite: MATH 106 with a grade of C or better, or a minimum ALEKS math placement score of 75%. 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 (1-3) Introduction to engineering disciplines, problem solving, design teamwork and ethics.

121 Grand Challenges in Engineering 1 May be repeated for credit; cumulative maximum 2 hours. Introduction to the Grand Challenge Scholars Program and the National Academy of Engineering's Grand Challenges through a creative learning experience in research or design, an interdisciplinary experience, an entrepreneurship or innovation experience, a global or cross-cultural experience, and a service learning experience. S, F grading.

201 Metal Fabrication 3 (1-6) Credit not granted for students who have already completed AGTM/ENGR 202, 203, or 204. Theory, applications, and practices of welding, machining, and associated techniques in fabricating with metals. (Crosslisted course offered as AGTM 201, ENGR 201).

202 Welding 1 (1-3) Credit not granted for students who have already completed AGTM/ENGR 201. Theory application and practices of welding and associated techniques in fabricating with metals. One of 3 two-week sessions of Metal Fabrication. Each session includes 3 hours lecture and 12 hours lab per week. (Crosslisted course offered as AGTM 202, ENGR 202).

203 Machining 1 (1-3) Credit not granted for students who have already completed AGTM/ENGR 201. Theory application and practices of machining and associated techniques in fabricating with metals. One of 3 two-week sessions of Metal Fabrication. Each session includes 3 hours lecture and 12 hours lab per week. (Crosslisted course offered as AGTM 203, ENGR 203).

204 Metal Fabrication 1 (1-3) Credit not granted for students who have already completed AGTM/ENGR 201. Theory application and practices of cutting and associated techniques in fabricating with metals. One of 3 two-week sessions of Metal Fabrication. Each session includes 3 hours lecture and 12 hours lab per week. (Crosslisted course offered as AGTM 204, ENGR 204).

320 Entrepreneurship Boot Camp and the Entrepreneurial Mindset 3 Course Prerequisite: Junior standing. Focus on commercializing ideas, modifying existing products, exploiting market opportunities, and creating new enterprises. (Formerly ENGR 401.)

420 Multidisciplinary Engineering Design I 3 (1-4) Course Prerequisite: Admitted to an engineering major; senior standing. Needs analysis and conceptualization of technological products and business plan for target market; multidisciplinary team development.

421 [CAPS] [M] Multidisciplinary Engineering Design II 3 (1-4) Course Prerequisite: Admitted to an engineering major; senior standing. Prototype solution developed and evaluated and business plan completed; presentation to stake holders; team development and assessment. Field trip required.

430 Interdisciplinary Design I 3 (1-4) Course Prerequisite: Senior standing. Programming, resource flows, site analysis and schematic design; multidisciplinary team development.

431 [CAPS] Interdisciplinary Design II 3 (1-4) Course Prerequisite: ENGR 430 with a C or better; admitted to an engineering major; senior standing. Master plan, design development, construction documentation, sustainability analysis; multidisciplinary team development.

488 Professional Practice Coop/Internship I V 1-2 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. Practicum for students admitted to the VCEA Professional Practice and Experiential Learning Program; integration of coursework with on-the-job professional experience. (Crosslisted course offered as ENGR 488, BIO ENG 488, CHE 488, CE 488, CPT S 488, E E 488, ME 488, MSE 488, SDC 488). S, F grading.

489 Professional Practice Coop/Internship II 1 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Sophomore standing; by department permission. Practicum for students admitted to the VCEA Professional Practice and Experiential Learning Program; continuation of ENGR 488. (Crosslisted course offered as ENGR 489, SDC 489). S, F grading.

530 Interdisciplinary Research and Design I 3 (1-4) Literature review, resource flows, research proposal, and multidisciplinary team development.

531 Interdisciplinary Research and Design II 3 (1-4) Design analysis, sustainability analysis, research and scholarly work development; multidisciplinary team development.

School of Engineering and Computer Science - WSU Vancouver

ecs.vancouver.wsu.edu
VECS 201, Vancouver Campus
360-546-9639

Director and Associate Professor, X. Zhao; Professors, H. Gurocak, D. Kim; Associate Professors, X. Chen, T. Karacolak, J. H. Kim, P. Sekhar, S. Solovitz, H. Tan, S. Wallace, F. Zhao, X. Zhang; Assistant Professors, J. Campos do Prado, H. Gao, A. Wisniewska; Scholarly Professor, J. Lynch; Scholarly Associate Professor, H. Rad; Scholarly Assistant Professors, P. Bonamy, A. Majdara, B. McCamish; Adjunct Faculty, F. Kabir, D. Lowe, K. Morgan; Academic Coordinators, K. Deford, C. Potter.

The School of Engineering and Computer Science (ENCS) is an academic unit of the WSU Voiland 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, and data-intensive computation. In Mechanical Engineering, students can customize their study through three option areas: (1) Micro/nanotechnology; (2) Design and Manufacturing; (3) Renewable Energy. The Renewable Energy track is an interdisciplinary option track — available to ECE students and MECH students — incorporating elements of all ENCS disciplines. In Electrical Engineering, students can choose upper division elective courses such as computer architecture, signal processing, IC fabrication, RF/Antenna Design, Power systems, 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 Computer Science (BSCS), Bachelor of Science in Electrical Engineering (BSEE), Bachelor of Science in Mechanical Engineering (BSME), Master of Science in Computer Science (MSCS), Master of Science in Electrical Engineering (MSEE), and Master of Science in Mechanical Engineering (MSME). For students who want to continue their education, ENCS also offers opportunities to pursue Ph.D. degrees in Computer Science, and in Electrical and Mechanical Engineering.

The undergraduate programs in Electrical Engineering and Mechanical Engineering are accredited by the Engineering Accreditation Commission of ABET, www.abet.org. The undergraduate program in Computer Science is accredited by the Computing Accreditation Commission of ABET, www.abet.org.

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.
- You will exhibit the workplace behaviors expected by employers.
- You will be committed to high standards of professionalism.
- You will adapt to the changing landscape of computer science.

Student Learning Outcomes

Our graduates will have an ability to:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.

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 such as computer architecture, signal processing, IC fabrication, RF/Antenna Design, Power systems, 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 our 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, teamwork, and task 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 Learning Outcomes

Our graduates will have:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

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 are involved with analyzing and manufacturing the products they design. They design consumer products, develop robotic systems, 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 three option areas:

- Micro/Nano Technology Option: Provides education in basic semiconductor concepts, fundamentals of microscopic phenomena in microfluidics, micro device fabrication techniques, nano-science and its impact on design of the next generation engineering systems.
- Design and Manufacturing Option: Emphasizes

mechanical system design and realization through computer aided engineering, material failure in mechanical design, and advanced manufacturing.

- **Renewable Energy Option:** Includes work in Solar Power, Wind Power, as well as enhanced coursework in other option track courses. The Renewable Energy track is an interdisciplinary option track - available to ECE students as well as MECH students.

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 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 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 Learning Outcomes

Our graduates will have:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Admission to the Major

Admission to a degree program is required by WSU prior to the granting of a baccalaureate degree. Qualification for initial admission, as well as continuation of admitted status, will be evaluated based on several criteria including academic integrity, overall grade point average (GPA), GPA in mathematics, science, and major core courses; computer science, electrical engineering, or mechanical engineering. Students will be admitted to the major once the required courses have been completed. Additional details regarding admission to the major are available in the schedules of studies for each major or from the School of ENCS academic coordinators.

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 coordinator 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 program has a theme on Cloud Computing a modern and critical set of technologies that span core areas of Computer Science. The coursework and research are in the general areas of computing theory; artificial intelligence; big data; software development; and systems and networks. 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 Electrical 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 (ECE 700). The program has Lab-on-a-Chip theme, which is used as a unifying platform to make connections between courses. The coursework and research are in the general areas of antenna design; RF/microwave systems; Micro/nanoelectronics; MEMS; sensors and signal processing; nanotechnology; electrical power systems; and digital/embedded systems. Our laboratories, including a class-100 clean room and RF laboratories, are equipped with state-of-the-art equipment. Teaching and research assistantships are available for qualified students.

A Bachelor of Science degree from an accredited program in electrical engineering provides a good

background for the MSEE 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.

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 (MECH 700). The program has a theme of Digital Design and Manufacturing a modern and critical set of digital technologies for advanced modeling, simulation, analysis, integration of information technology, sensing, automation, and big data to rapidly design and manufacture products. The coursework and research are in the general areas of product design, sustainable engineering, advanced materials, automation, and new manufacturing processes. 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 (VANCOUVER ONLY) (120 CREDITS)

For the major in the Computer Science degree program on the Vancouver campus, students are admitted to the major upon demonstrating they are ready to take MATH 171 (Calculus I) or higher and making their intentions known to the department.

To remain in good standing, students must pass CS 121, 122, 166, MATH 171, 172, and PHYSICS 201/211 (or their transfer equivalents) with a grade of C or better and have a WSU cumulative GPA of 2.5 when the final benchmark is completed.

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>Credits</i>
CS 121	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 171 [QUAN]	4
<i>Second Term</i>	<i>Credits</i>
CS 122	4
CS 166	3
ENGLISH 101 [WRTG]	3
MATH 172	4

Second Year

<i>First Term</i>	<i>Credits</i>
CS 223	3
CS 260	3
ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 220	2
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab	4
CS 224	3
CS 261	3
MATH 273 or 301	2-3
PHYSICS 202	3
PHYSICS 212	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CS 317	3
CS 360	4
CS Option Course ¹	3
ENGLISH 402 [WRTG]	3
STAT 360	3

<i>Second Term</i>	<i>Credits</i>
CS 320 [M]	3
CS 351	3
CS 355	3
CS Option Course ¹	3
Diversity [DIVR]	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CS 420 [CAPS] [M]	3
CS 450	3
CS Option Courses ¹	6

<i>Second Term</i>	<i>Credits</i>
CS 402 [M]	3
CS 421	3
CS 460	3
CS Option Course ¹	3
CS Security Option Course ²	3

¹ CS Option Courses: 15 credits of option area courses are required for completion of the degree program. The option courses must be chosen from 300-400-level CS courses and may also include up to 6 hours from the following list: MATH 315, 320, 325, 364, 420, 448, 453, 466, ECE 324, 366, and 424. Other computer science-related courses may be substituted, as approved by the department.

² CS Security Option Courses: 3 credits of security option area courses are required for completion of the degree program. These credits are in addition to the 15 credits of CS Option Courses required above. CS Security Option Courses must be chosen from the following courses: CS 425, 426, and 427.

BACHELOR OF SCIENCE, ELECTRICAL ENGINEERING (VANCOUVER ONLY) (121 CREDITS)

For the major in the Electrical Engineering degree program on the Vancouver campus, students are admitted to the Electrical Engineering major upon

demonstrating they are ready to take MATH 171 (Calculus I) or higher and making their intention known to the department.

To remain in good standing, students must complete the benchmark courses: CS 251, ECE 214, 234, 260, MATH 171, 172, 220, 273, 315, CHEM 105, PHYSICS 201 and 211, and PHYSICS 202 and 212 (or their transfer equivalents) with a grade of C or better and obtain a WSU cumulative GPA of 2.5 or higher when the final benchmark course is completed.

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>Credits</i>
CHEM 105 [PSCI]	4
ECE 101	2
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
CS 251	4
ENGLISH 101 [WRTG]	3
MATH 172	4
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI]	3 or 4
ECE 214	3
MATH 220	2
MATH 273	2
PHYSICS 202	3
PHYSICS 212	1

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
ECE 234	3
ECE 260	4
ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 315	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ECE 321	3
ECE 325	4
ECE Elective ¹	3
ENGLISH 402 [WRTG]	3
STAT 360	3

<i>Second Term</i>	<i>Credits</i>
ECE 341	3
ECE 370	3
ECE Electives ¹	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
ECE 411	3
ECE 451	2
ECE Electives ¹	9

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
ECE 405 [M]	3

ECE 452 [M] [CAPS]	3
ECE Electives ¹	6

¹ ECE Electives must be chosen from CS 330, 466, ECE 302, 316, 324, 327, 345, 349, 366, 414, 421, 424, 425, 461, 462, 466, 471, 476, 483, 495, 496, MECH 441, 467, 468, or be pre-approved by a faculty advisor.

BACHELOR OF SCIENCE, MECHANICAL ENGINEERING (VANCOUVER ONLY) (120 CREDITS)

For the major in the Mechanical Engineering degree program on the Vancouver campus, students are admitted to the Mechanical Engineering major upon demonstrating they are ready to take MATH 171 (Calculus I) or higher and making their intentions known to the department.

To remain in good standing, students must complete the benchmark courses: MECH 211, 212, 215, MATH 171, 172, 220, 273, 315, CHEM 105, and PHYSICS 201 and 211 (or their transfer equivalents) with a grade of C or better and obtain a WSU cumulative GPA of 2.5 or higher when the final benchmark is completed.

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>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
MECH 103	2

<i>Second Term</i>	<i>Credits</i>
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
MATH 172	4
MATH 220	2
MECH 101	2

Second Year

<i>First Term</i>	<i>Credits</i>
ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 273	2
MECH 211	3
MECH 251	2
PHYSICS 201	3
PHYSICS 211	1

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI]	3 or 4
MATH 315	3
MECH 212	3
MECH 215	3
PHYSICS 202	3
PHYSICS 212	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 402 [WRTG]	3
MECH 301	3
MECH 303	3

MECH 304	3
MECH 309 [M]	3
<i>Second Term</i>	
MECH 310	4
MECH 314	3
MECH 348	3
MECH 404	3
400-level MECH Option Courses/Technical Electives ¹	3
Fourth Year	
<i>First Term</i>	
MECH 402	3
MECH 414	3
MECH 416 [M]	2
400-level MECH Option Courses/Technical Electives ¹	6
<i>Second Term</i>	
Diversity [DIVR]	3
MECH 417 [CAPS]	3
400-level MECH Option Courses/Technical Electives ¹	9

¹ Technical Electives or 400-level MECH Option Courses: The program emphasizes fundamentals and provides flexibility in selecting a course of study through five technical electives. Students can either take any six elective courses (18 credits), 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. The following are the technical elective courses and option areas: (Option 1) Micro and Nanotechnology: MECH 431, 435, 438, 450; (Option 2) Design and Manufacturing: MECH 476, 477, 485, 489; (Option 3) Mechatronics: MECH 405, 467, 468; (Option 4) Renewable Energy: MECH 441, ECE 421, choice of two courses from MECH 405, 431, 439, 442, 450, 468.

Minors

Computer Science (Vancouver only)

The minor in computer science consists of 20 credit hours, 9 of which must be 300-400-level courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Completion of the minor requires CS 121 or 251; CS 122; CS 223, 224 or CS 261; and 9 credits of 300-400 level CS courses excluding CS 402. All courses must be completed with a grade of C or better and all course prerequisites must be met. The minor course of study must be pre-approved by the computer science academic coordinator.

Electrical Engineering (Vancouver only)

Students majoring in other disciplines may elect to obtain a minor in electrical engineering. The minor in electrical engineering consists of 20 credit hours that must include ECE 214, 260, 321, 325, and any two upper division ECE 3XX or 4XX courses except ECE 451 and 452. Though it is not required,

students may choose their two optional courses in the following concentrations:

- VLSI design: ECE 349 and 366
- Digital signal processing: ECE 341 and 414
- Computer engineering: ECE 324 and 424
- Power systems: ECE 461 and 462

All minor courses, except ECE 214, 260, 321 and 341, must be taken in residence at WSU Vancouver. The University requires at least 9 credit hours for any minor be 300-400-level and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. All prerequisites for minor courses must be met. All minor courses must be completed with a minimum 2.0 GPA.

Mechanical Engineering (Vancouver only)

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 215, 303, 309, 314, 348, 431, 438, 441, 450, 467, or 468. 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 admitted majors or minors in computer science and to juniors and seniors admitted to other degree programs requiring these computer science courses.

CS

121 Program Design and Development 4 (3-3) Course Prerequisite: MATH 108, 171, 172, 182, 201, 202, 206, or 220, each with a C or better, or a minimum ALEKS math placement score of 78%. 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.

166 Discrete Mathematics 3 Course Prerequisite: CS 122 with a C or better or concurrent enrollment; MATH 171 with a C or better or concurrent enrollment. Introduction to the theoretical foundations of computing. Combinatorics, relations, trees, graphs, Boolean algebra, proof methods, and discrete probability as applied to computer science.

215 Data Analytics Systems and Algorithms 3 Course Prerequisite: CPT S 122, CPT S 132, or CS 122. Exploration of fundamental concepts, constructs, and techniques of modern data analytics systems. (Crosslisted course offered as CPT S 215, CS 215).

223 Advanced Data Structures 3 Course Prerequisite: CS 122 with a C or better. Advanced data structures, object oriented programming concepts, 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 108, 171, 172, 182, 201, 202, 206, or 220, each with a C or better, or a minimum ALEKS math placement score of 78%. Enrollment not allowed if credit already earned for CS 261. 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; CS 166 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 122 with a C or better. Enrollment not allowed if credit already earned for CS 251. C language concepts, professional practices and C programming; module linkage; assembly language concepts and programming.

315 Introduction to Data Mining 3 Course Prerequisite: CPT S 215, 223, 233, or CS 215, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. The process of automatically extracting valid, useful, and previously unknown information from large repositories. (Crosslisted course offered as CPT S 315, CS 315). Recommended preparation: prior Python programming.

317 Automata and Formal Languages 3 Course Prerequisite: CS 122 with a C or better; CS 166 with a C or better or MATH 301 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 223 with a C or better; CS 224 with a C or better; admitted to the major in Computer Science. Introduction to software engineering; requirements analysis, definition and specification; software process models; prototyping; architecture; object-oriented design using 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 215 with a C or better, CS 223 with a C or better, or 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 122 with a C or better; CS 251 or 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; admitted to the major in Computer Science. Social, legal, ethical and professional issues that arise in the context of computing.
- 415 Big Data 3** Course Prerequisite: CPT S 215, 223, or 233, with a C or better; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, or Data Analytics. Big data models, databases and query languages, modern distributed database systems and algorithms. (Crosslisted course offered as CPT S 415, CS 415).
- 420 [CAPS] Software Design Project I 3** Course
Prerequisite: CS 320 with a C or better; CS 360 with a C or better or concurrent enrollment; 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.
- 421 Software Design Project II 3 (2-3)**
Course Prerequisite: CS 420 with a C or better; admitted to the major in Computer Science; senior standing. Large-scale software development in a team environment; software design and implementation, project management, testing and integration; teamwork skills, communication, source code management, documentation and presentations. Continuation and completion of CS 420 project.
- 425 Digital Forensics 3** Course Prerequisite: CS 360 with a C or better or concurrent enrollment. Use of computers in the investigation of criminal and civil incidents in which computers or computer technology play a significant or interesting role.
- 426 Applied Systems Security 3** Course
Prerequisite: CS 360 with a C or better or concurrent enrollment. Foundations, theory, and practice of non-cryptographic computer security; design of secure software; adding security to existing systems; other contemporary topics in security.
- 427 Cryptography and Network Security 3**
Course Prerequisite: CS 166 with a C or better; CS 360 with a C or better; senior standing. 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 223 with a C or better; STAT 212 with a C or better or STAT 360 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: Admitted to the major in Computer Science; 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; admitted to the major in Computer Science. 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 Cloud Data Management 3** Course
Prerequisite: CS 351 with a C or better. Principles of cloud data management: data models, fragmentation, processing paradigms, consistency, storage, and commercial cloud data management platforms.
- 454 Information Retrieval 3** Course
Prerequisite: CS 223 with a C or better. Fundamentals principles and algorithms related to information retrieval: text querying, indexing, and retrieval methods, evaluation metrics, ranking, semi-structured data, crawling and scraping of the web using link-based algorithms, and user interface issues.
- 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 223, 224, or 360, each 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: Admitted to the major in Computer Science. Current topics in computer science or software engineering.
- 487 Software Design and Architecture 3**
Course Prerequisite: CPT S 321 with a C or better; CPT S 322 with a C or better; admitted major or minor in Computer Sci, Computer Engr, Electrical Engr, Software Engr, or Data Analytics. Enrollment not allowed if credit already earned for CPT S 323. Software design; design principles, patterns, and anti-patterns; design quality attributes and evaluation; architectural styles, architectural patterns and anti-patterns. Credit not granted for both CPT S 487 and CPT S 587, or for both CPT S 487 and 323.
- 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 Cloud Systems 3** Fundamental concepts of cloud computing and their applications within commercial systems; exposure to current research topics in this area.
- 515 Advanced Algorithms 3** Advanced algorithms and data structures, design and analysis, intractability.
- 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 Cryptography and Network 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.
- 563 Concurrent Programming 3** Multithreaded programming; parallel programming; distributed programming; theory of concurrency; synchronization techniques; libraries and tools.
- 564 Distributed Systems 3** Distributed systems concepts; distributed systems models; socket programming; remote procedure call; distributed file systems; transactions and concurrency control; fault tolerance.
- 565 File and Storage Systems 3** Design and implementation of file and storage systems, introduction of the architecture and characteristics of the components on which storage systems are built.
- 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.
- 582 Software Testing 3** Software testing, testing levels, testing objectives, testing techniques.
- 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 admitted majors or minors in electrical engineering.
- ECE**
- 101 Introduction to Electrical Engineering 2 (1-3)** Course Prerequisite: MATH 106 or a minimum ALEKS math placement score of 80%. 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 or a minimum ALEKS math placement score of 80%. 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.
- 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. Magnetically coupled circuits, frequency response, Laplace transforms, Fourier analysis, and 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.
- 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.
- 327 Introduction to Power Electronics 3 (2-3)** Course Prerequisite: ECE 321; ECE 325. Power semiconductors, high-frequency magnetics, and their application to switch-mode power converters, electric motor drives, and utility systems.
- 341 Signals and Systems 3 (2-3)** Course Prerequisite: ECE 321. Discrete and continuous systems, sampling, convolution, Fourier and Z transforms, random signals.
- 345 Introduction to Digital Communications 3** Course Prerequisite: ECE 214; 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; 4 credits PHYSICS 202, or PHYSICS 202 and 212. 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; admitted to the 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.
- 412 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 Introduction to Solar Cells 3** (2-3) Course Prerequisite: 4 credits of PHYSICS 202, or PHYSICS 202 and 212. 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 or CS 261. 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; ECE 370; ENGLISH 402; admitted to the major in Electrical Engineering; senior standing. 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.
- 461 Power Systems Analysis and Design I 3** Course Prerequisite: ECE 370. Basic components and their representations in power systems, power transformers, and transmission lines.
- 462 Power Systems Analysis and Design II 3** (2-3) Course Prerequisite: ECE 461. Power flow, symmetrical faults, symmetrical components, unsymmetrical faults, and transient stability, the computer simulation software application in power systems analysis.
- 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.
- 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.
- 478 Introduction to CMOS Integrated Circuit Design 3** Course Prerequisite: ECE 214; ECE 325. CMOS integrated circuit design including MOS transistors, combinational and sequential circuit design and layout, gate and interconnect delay modeling, power estimation, clock distribution, datapath and memory design, testing, and design-for-test.
- 483 Topics in Electrical Engineering V 1-4** May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Admitted to the major in Electrical Engineering; junior standing. Current topics in electrical engineering.
- 489 Introduction to Control Systems 3** Course Prerequisite: ECE 321 or MECH 304. Laplace Transform, modeling techniques, block diagrams, system characteristics (linearity, time invariance, stability, steady-state error, etc.), root locus, frequency response methods, PID controllers, controller design with MATLAB, and state-space methods.
- 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.
- 501 Fundamentals of Laboratory-on-Chip 3** Operating principles of laboratory-on-chip (LoC) technologies, basics of design and fabrication, integration with microdevices, digital and high-frequency circuits, sensors, and power systems.
- 522 High Voltage Engineering 3** High voltage engineering concepts and techniques that facilitate design, research, and development of modern electric power apparatus and interconnected components.
- 525 Experimental Methods for Electrical Engineering 3** Design of experiments; data analysis methods; statistical testing; dynamic measurements; uncertainty analysis, yield concepts; data acquisition; probability distributions; and report writing. Recommended preparation: basic statistics knowledge.
- 533 Advanced Antenna Design 3** Advanced antenna types and design methods, small antennas, reconfigurable antennas, wideband microstrip antennas, millimeter-wave antennas, phased arrays, design of array feed, mutual coupling, system level implications such as full-duplex and MIMO. Recommended preparation: ECE 370; ECE 471.
- 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.
- 537 High Frequency Circuit Design 3** Active microwave components (diodes, transistors); microwave transistor amplifiers; oscillators; mixers; stability criteria and circles; noise in microwave circuits; noise figure. Recommended preparation: ECE 370; ECE 425.
- 543 Advanced Hardware Verification 3** Contemporary methods of functional hardware verification for complex digital designs, including functional simulation, coverage metrics, event and assertion-based verification, property specification language, and formal verification techniques. Recommended preparation: ECE 324.
- 569 Advanced Power Electronics 3** Advanced design, analysis, modeling, and verification of applied power electronics and related control systems. Recommended preparation: ECE 327.
- 576 Sensors 3** (2-3) Classification of sensors, sensing modalities, comparison; figures of merit; sensing parameters; sensor miniaturization; sensor manufacturing; and case study: Pressure sensor, gas sensor, temperature sensor, and biosensor. Required preparation: Circuit analysis.
- 582 Advanced Topics V 1-3** May be repeated for credit. (Crosslisted course offered as E E 582, ECE 582.) Cooperative: Open to UI degree-seeking students.
- 586 Solid State Device Design and Modeling 3** Design and modeling of solid-state devices such as PN diode, BJT, and MOSFET; Simulation and device design using TCAD tools for physical modeling and fabrication process integration. Recommended preparation: Basic semiconductor physics.
- 595 Directed Study in Electrical Engineering V 1** (0-3) to 3 (0-9) May be repeated for credit. Current topics in electrical engineering. (Crosslisted course offered as E E 595 and ECE 595.)
- 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.

MECHANICAL ENGINEERING - VANCOUVER

Enrollment in many upper-level mechanical engineering courses is restricted to admitted majors or minors in mechanical engineering.

MECH**101 Introduction to Mechanical Engineering**

2 Course Prerequisite: MATH 106 and MATH 108, or concurrent enrollment, or MATH 171 or concurrent enrollment. 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; 4 credits of PHYSICS 201, or PHYSICS 201 and 211 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, or concurrent enrollment; 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: 4 credits of PHYSICS 201, or PHYSICS 201 and 211. 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 Introduction to Electronic Circuits

3 Course Prerequisite: MATH 315 or concurrent enrollment; 4 credits of PHYSICS 202, or PHYSICS 202 and 212. Introduction to DC and AC circuits, analog electronic components, digital circuits, and engineering measurements.

309 [M] Introduction of Engineering

Materials 3 (2-3) Course Prerequisite: MECH 215; CHEM 105 or concurrent enrollment; 4 credits of PHYSICS 201, or PHYSICS 201 and 211 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; admitted to the major in Mechanical Engineering. Basic mechanical engineering drawing; shaping and non-shaping manufacturing processes; exposure to 3D-CAD; manufacturing processes laboratory.

314 Machine Design I

3 Course Prerequisite: MECH 215; MECH 309; admitted to the major in Mechanical Engineering. Design process, factor of safety, stress-deformation, combined stresses, curved members; deformation analysis, static and fatigue failure theories; design of mechanical elements, stress analysis and finite elements; shafts and coupling design.

348 Dynamics Systems and Control

3 Course Prerequisite: MECH 212; MECH 251; MATH 315; admitted to the 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; admitted to the 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 II

3 Course Prerequisite: MECH 215; MECH 309; MECH 314. Static and fatigue failure theories applied to design of mechanical elements, stress analysis and finite elements; design for fatigue life of various mechanical elements, design and selection of standard mechanical components, and design of clutches and brakes.

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; 4 credits of PHYSICS 202, or PHYSICS 202 and 212. Crystal properties, energy bands, semiconductor charge carriers, p-n junctions, field-effect transistors, bipolar junction transistors, optoelectronic devices, integrated circuits.

435 Introduction to Microfluidics

3 Course Prerequisite: MATH 315; MECH 303. Overview of microfluidics, scaling laws, intermolecular forces, surface tension, passive scalar transport, electrowetting, electrokinetics, dielectrophoresis, microfabrication.

438 Microfabrication Technology

3 Course Prerequisite: CHEM 105; MATH 315; 4 credits of PHYSICS 202, or PHYSICS 202 and 212. 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.

439 Foundations of Aerodynamics

3 Course Prerequisite: MATH 315; MECH 303. Governing equations of fluid mechanics, potential flow, introduction to aerodynamics, thin airfoil theory, compressible flow, viscous effects.

441 Fundamentals of Renewable Energy

3 Course Prerequisite: 4 credits of PHYSICS 202, or PHYSICS 202 and 212; 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; 4 credits of PHYSICS 202, or PHYSICS 202 and 212. 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 and 348, OR ECE 260. Design of automation systems, motion control, programmable logic. Credit not granted for both MECH 467 and MECH 567.

468 Robotics

3 Course Prerequisite: MECH 304 and 348, OR ECE 260. 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.
- 477 Manufacturing for Polymer Composites** 3 Course Prerequisite: MECH 309. Polymeric materials and their composites; various manufacturing processes; transport phenomena in composite manufacturing; process modeling and design.
- 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.
- 501 Digital Design and Manufacturing** 3 Fundamentals of digital design and manufacturing; exposure to current research topics in the area.
- 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.
- 523 Computational Fluid Dynamics and Heat Transfer** 3 Partial differential equation systems, finite difference method, stability analysis, methods for wave equation, heat equation, Laplace equation, finite volume method.
- 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) Design of automation systems, motion control, programmable logic. 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.

Engineering and Technology Management Program

etm.wsu.edu
Carpenter 533
509-335-5595

Program Director, G. T. Vanek; Faculty: Associate Professors, K. Bachman, L. Magpili, D. Paulus; Adjunct Instructors, R. Cameron, R. Crick, L. Scheinkopf.

Washington State University's Engineering and Technology Management (ETM) program prepares engineering and business professionals to make strategic and operational decisions and become leaders in the management of technology. Courses provide practicing professionals with the knowledge, tools, and skills to manage projects, operations, organizations, and people. The ETM program is specifically tailored for those who want to advance their careers while still working full time. Offered 100% online, live classes are available and accessible from anywhere.

Convenience and quality for students and their employers are at the forefront of our goals. Each course session is streamed live through Zoom, giving students the ability to interact with faculty and peers in the class in real time. Integrated audio, video, file sharing, and messaging platforms allow discussions to be conducted and serve as collaborative tools for team projects, breakout discussion groups, and student presentations. All classes, including course materials and Zoom recordings, are archived as well and are available for review during the semester. For students interested in a modular approach or wishing to develop depth in a specified area, the ETM program offers six graduate level certificates which can be completed on a compact schedule. Each course can be applied towards two certificates and the master's degree.

List of Certificates

- Constraints Management
- Industrial Leadership
- Logistics and Supply Chain Management
- Project Management
- Six Sigma Quality Management
- Systems Engineering Management

Admission Requirements

Students who apply to the Master of Engineering and Technology Management degree program are generally employed in an engineering or technical field and have earned a bachelor's degree from an accredited school with a minimum GPA of 3.0. One of our strictest requirements is that applicants are working in, and/or, have significant industry or engineering experience and math through at least college algebra; although calculus is preferred. Prospective students must provide email addresses for three professional references willing to write letters of recommendation (not required for admission to the certificate program), a resume showing relevant work experience, and a three- to five- paragraph personal statement outlining the significance of the ETM Master's degree in light of their career goals and work history. Applications should be submitted a minimum of six weeks prior to the start of the semester to allow for careful review of qualifications and processing.

For questions about the on-line certificates or master's degree program, please contact the ETM office at (509) 335-5595 or by email etm@wsu.edu.

Program Mission

The mission of the Engineering and Technology Management Master's Degree Program is to empower graduates to develop as successful professionals with advanced technical and management skills that allow them to ascend to leadership roles in globally competitive industries.

Student Learning Outcomes

The purpose of the WSU Voiland School of Engineering and Architecture Program in Engineering and Technology Management is to prepare students for high-level professional development in positions that require an understanding of management principles in engineering, projects, and organizations.

Objective 1: Provide graduates with current management knowledge and tools.

- Communicate effectively with logical, clear, and organized thinking, to a broad range of audiences.
- Clearly articulate ideas in group settings to a range of audiences.
- Demonstrate effective writing skills.
- Demonstrate active listening skills and foster open communication.
- Behave ethically and professionally in fulfillment of responsibilities with consideration of global, economic, environmental, societal, and organizational impacts.
- Identify and articulate ethical issues.
- Make decisions consistent with societal and organizational standards.
- Demonstrate a desire for and ability to acquire and apply new knowledge through effective lifelong learning strategies, to address current local, national, and global challenges.
- Anticipate the local and global impact of decisions.
- Remain current in technological development.
- Remain cognizant of current issues, local, national, and international.

Objective 2: Provide graduates with the expertise and confidence to assume leadership positions in technical environments.

- Demonstrate the ability to successfully establish, lead, manage and work in multidisciplinary teams.
- Provide leadership, motivation, and feedback to team members.
- Prioritize and identify critical issues.
- Make relevant contributions to team success.
- Demonstrate problem-solving abilities and rational effective decision making under uncertainty by applying the principles and core concepts of ETM.
- Identify core issues and problems.
- Show ability to find innovative solutions.
- Constructively challenge current assumptions and practices.
- Be able to make sound decisions under uncertainty.
- Understand the financial implications of engineering decisions.

Objective 3: Increase the graduate's value to an employer.

- Apply the principles and core concepts of ETM to real-world problems to develop optimal, affordable, sustainable solutions in real-world situations.
- Create and execute plans in a technical environment.
- Manage limited resources and constraints.
- Adapt professional life to the global environment.
- Prepared to advance to higher levels of management.
- Demonstrate the ability to understand, analyze, and improve organizational practices through the use of current technology, analysis, and design to address evolving business and customer needs.
- Apply measurement and analytical tools to improve process systems.
- Apply measurement and analytical tools to increase the quality of products and/or services.
- Provide leadership, guidance, and assistance to coworkers when implementing changes.
- Understand the financial and legal workings of organizations.

Description of Courses

ENGINEERING MANAGEMENT

E M

403 Managing Variability Using Statistics

3 Managing variability and uncertainty using statistics for engineering decision-making involving risk. Credit not granted for both E M 403 and 503.

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.

438 Lean Tools for Systems Improvement

3 Integration of the best of Lean, Six Sigma, and Theory of Constraints to accelerate the continuous improvement process. Credit not granted for both E M 438 and 538.

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. Credit not granted for both E M 460 and 560.

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.

470 Systems Improvement: Integrating TOC, Lean, and Six Sigma

3 Leveraging Theory of Constraints, Lean, and Six Sigma to achieve integrated systems level improvement. Credit not granted for both E M 470 and 570.

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: an undergraduate course in statistics.

485 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 Leading Design and Innovation 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.

503 Managing Variability Using Statistics

3 Managing variability and uncertainty using statistics for engineering decision-making involving risk. Credit not granted for both E M 403 and 503.

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.

522 Leading People and Organizations

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.

538 Lean Tools for Systems Improvement

3 Integration of the best of Lean, Six Sigma, and Theory of Constraints to accelerate the continuous improvement process. Credit not granted for both E M 438 and 538.

540 Operations Research and Analytics for Managers

3 Applying linear, integer, goal programming; network optimization; queuing analysis; dynamic programming; simulation; Markov analysis; and forecasting to engineering management decisions.

- 560 Integrated Supply Chain Management** 3 Concepts and techniques for design and managing manufacturing and service, operations intended to develop a world class organization. Credit not granted for both E M 460 and 560.
- 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 Trade-off Analytics: Exploring the System Tradespace** 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.
- 568 Risk Assessment and Management** 3 Risk management strategies and techniques for the design and management of engineering and technology systems.
- 570 Systems Improvement: Integrating TOC, Lean, and Six Sigma** 3 Leveraging Theory of Constraints, Lean, and Six Sigma to achieve integrated systems level improvement. Credit not granted for both E M 470 and 570.
- 575 Managing Innovation: Strategy and Performance** 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: an undergraduate course in statistics.
- 585 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.
- 587 Managing Human Factors for Safety and Productivity** 3 An integrated approach to time-and-motion studies, human factors, and ergonomics to design work that simultaneously improves both productivity and safety.
- 590 Leading Design and Innovation** 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.

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.

701 Master's Independent Capstone Project and /or Examination V 1-6 May be repeated for credit. Capstone project or final examination for professional master's degree under the Graduate School. The credits will include a balloted evaluation of the student's completion of the program's capstone/examination requirements by the program's graduate faculty. Students must have graduate degree-seeking status and obtain approval from their major advisor/committee chair before enrolling for 701 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 English

english.wsu.edu/
Avery 202, Pullman campus
509-335-2581

Chair and Professor, D. L. Potts; Regents Professor, D. Lee; Professors, N. Bell, T. Butler, D. Campbell, P. Chilson, R. Christopher, R. Eddy, D. Grigar, W. Hamlin, M. Hanly, D. Hellegers, T. Lewis, M. Mays, P. Narayanan, N. Shahani, C. Siegel, P. Thoma; Associate Professors, A. Boyd, M. Edwards, J. Hegglund, L. McAuley, A. Oforlea, W. Olson, J. Staggers, R. Whitson; Assistant Professors, J. Phelps-Hillen, P. Wilde; Scholarly Professors, M. Delahoyde, L. Levy, K. Robertson; Scholarly Associate Professors, V. Cozza, L. Hunter, L. Russo, M. Sciachitano, K. Watts; Scholarly Assistant Professors, G. Escalera, B. Fry, R. Goodrich, C. McGill, E. Siler, M. Thomas, L. Westerfield; Professors Emeriti, P. Brians, J. Burbick, W. Condon, P. Ericsson, T. Faulkner, D. Gillespie, L. Gordon, A. Hammond, D. Hughes, R. Johnson, W. Johnson, G. Kennedy, N. Kiessling, A. Kuo, R. Law, S. Linden, B. Monroe, T. Reed, S. Ross, B. Sitko, J. Taylor; Retired Professor, V. Villanueva.

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 and public relations. The curriculum provides majors the opportunity to complete their studies with a small discussion seminar, internship, or senior project in their area of emphasis.

Students who are preparing to teach English in the public schools of Washington should examine the summary of requirements for majors and minors listed in the Department of 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 Master of Arts and Doctor of Philosophy (American Studies). The department also administers the Program in Women's, Gender, and Sexuality Studies (WGSS), offering interdisciplinary courses of study leading to the Bachelor of Arts degree in its field. Students interested in this field should consult the requirements listed under WGSS. Students may also complete an English degree consisting, in part, of international literature, philosophy, art, architecture, and music courses from the Humanities sequence offered jointly by the School of Languages, Cultures, and Race and the Department of English, within the Literary Studies option described below.

English Major Options

Six options are offered for the English major, all leading to the degree of Bachelor of Arts in English:

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.

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.

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.

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.

Integrative English Studies is for students interested in integrating courses from the above three options.

Linguistics is for students interested in languages, types of linguistic structure, and theories of linguistic analysis.

Student Learning Outcomes

A graduate in English studies is a creative and critical thinker and writer. An education in English presents students with opportunities to:

- Reading literary and cultural texts carefully and critically to demonstrate an understanding of equity, oppression, and diversity across time and contexts.
 - Producing a variety of creative and critical texts using appropriate technologies that contribute to literary and cultural discourses.
 - Developing abilities in critical reading, writing, and thinking necessary to communicate successfully with other audiences both within and outside the University.
 - Exploring the record of the human experience in language and valuing social and cultural differences.
- For more information, please see: <http://english.wsu.edu/undergraduate-studies.html>.

Women's, Gender, and Sexuality Studies

Women's, Gender, and Sexuality Studies is an interdisciplinary degree program offering courses in which students work together to explore the ways that race, ethnicity, sexuality, social class, nationality, age, and ability intersect to shape gendered experience, injustice, and social change. Using an intersectional lens, students gain expertise in analyzing gendered social roles and the ways in which they affect personal lives, artistic expression, work, social relationships, institutional structures, the production of knowledge, and national and international political and economic relations. WGSS offers a BA in Women's, Gender, and Sexuality Studies and minors in Queer Studies and Women's Studies. For more information, consult the separate entry for "Women's, Gender, and Sexuality Studies."

Preparation for Graduate Study

Students interested in a graduate program in English at Washington State University should pursue 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: <https://english.wsu.edu/graduate-studies/>.

Schedules of Studies

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

CREATIVE WRITING OPTION (120 CREDITS)

A student may be admitted to the English – Creative Writing Option upon making their intention known to the department.

Requirements in this option involve a minimum of 45 credits, 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 select UCORE 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

First Term	Credits
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Humanities [HUM] ²	3
Quantitative Reasoning [QUAN]	3
Foreign Language, if necessary, or Elective	3 or 4

Second Term	Credits
Arts [ARTS]	3
ENGLISH 251	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4
Foreign Language, if necessary, or Elective	3 or 4

Second Year

First Term	Credits
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
ENGLISH 351 or 353	3
Social Sciences [SSCI]	3
Electives (literature courses recommended)	7

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
ENGLISH 352	3
300-400-level Literature Elective ³	3
Humanities Electives ²	3
Complete Writing Portfolio	

Third Year

First Term	Credits
ENGLISH 302 [M]	3
ENGLISH 357, 402 [M], 498, OR 499	3
300-400-level Literature Elective ³	3
Electives	6

Second Term	Credits
ENGLISH 451 [M], 452 [M], or 453	3
Writers of Color Course ⁴	3
300-400-level Electives	9

Fourth Year

First Term	Credits
Integrative Capstone [CAPS]	3
300-400-level Creative Writing or Literature Elective ⁵	3
400-level Literature Elective ³	3
300-400-level Electives	6
Complete English Portfolio	

Second Term	Credits
ENGLISH 446	3
ENGLISH 451 [M], 452 [M], or 453	3
300-400-level Creative Writing or Literature Elective ⁵	3
Electives	3

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² Humanities Electives: At least one from HUMANITY 101, 103, 302 [M], 303, 304, 335, 350, 410, or 450 is required. Upper-division HUMANITY courses are not recommended for first-year students.

³ Literature Electives: Approved courses include ENGLISH 305, 306, 309, 311, 314, 315, 317, 321, 322, 332, 341, 366, 370, 371, 372, 373, 382, 409, 419, 470, and 480-489.

⁴ Writers of Color Courses: Choose from ENGLISH 311, 314 [M], 315, 321, 322 [M], 341 [M], 345 [M], or 489.

⁵ Approved courses include any 300-400-level ENGLISH courses not used to fulfill other requirements.

INTEGRATIVE ENGLISH STUDIES OPTION (120 CREDITS)

A student may be admitted to the English – Integrative English Studies Option upon making their intention known to the department.

Requirements for this degree include 24 credits of core classes; 3 credits of an Internship or other High-Impact Practice (ENGLISH 498 and/or 499), and 18 credits of English and Humanities electives to include a maximum of 3 credits of 100-200-level coursework and a minimum of 9 credits of 400-level coursework.

First Year

First Term	Credits
Biological Sciences [BSCI] with lab ¹	4
HISTORY 105 [ROOT]	3
Humanities [HUM] ²	3
Quantitative Reasoning [QUAN]	3
Electives	3

Second Term	Credits
Arts [ARTS] ²	3
ENGLISH 101 [WRTG]	3
Physical Sciences [PSCI] with lab ¹	4
Social Sciences [SSCI]	3
Electives	3

Second Year

First Term	Credits
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI] ²	3
Communication [COMM] or Written Communication [WRTG] ²	3
Diversity [DIVR] ²	3
ENGLISH or HUMANITY Elective ³	3
Electives	3

Second Term	Credits
ENGLISH 251, 339, 342, 361, or 357	3
ENGLISH 256, 301, 307 [M], 308 [M], 360, or WGSS 300 [M]	3
ENGLISH 302 [M]	3
Electives	6
Complete Writing Portfolio	

Third Year

First Term	Credits
ENGLISH 305, 306, 366, 368, 370, 371, 372, 401, or 454	3

ENGLISH 373 or 489	3
ENGLISH Elective ³	3
Foreign Language, if needed, or Electives ⁴	4
Electives	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 309, 317, or 363	3
ENGLISH 322 or 362	3
Foreign Language, if needed, or Electives ⁴	3 or 4
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 472	3
300-400-level ENGLISH Elective ³	3
400-level ENGLISH Electives ³	6
Electives	3
Complete English Portfolio	

<i>Second Term</i>	<i>Credits</i>
ENGLISH 410 [CAPS], 415 [CAPS], 494 [CAPS], or Integrative Capstone ²	3
ENGLISH 498 (Internship) or 499 (Independent Study) ⁵	3
400-level ENGLISH Elective ³	3
Electives ⁶	3

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² Only 3 ENGLISH courses may be used to fulfill UCORE requirements.

³ English and Humanities Electives: (18 credits) Approved courses include any ENGLISH course 108-495 (excluding ENGLISH 402 and 403) not used to fulfill other requirements; HUMANITY 101, 103, 130, 302, 304, 335, 350, 410, 450. Maximum of 3 credits HUMANITY courses; maximum of 3 credits of 100-200 level coursework and minimum of 9 credits of 400-level coursework. May need to include [M] course to meet University requirements.

⁴ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁵ Internship and Independent Study credit may vary depending on the scale of the project. Students must complete at least 3 credits of ENGLISH 498 and/or 499.

⁶ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework.

LINGUISTICS OPTION (120 CREDITS)

N. Bell, Coordinator

A student may be admitted to the English – Linguistics Option upon making their intention known to the department.

A student in the Bachelor of Arts in English - Linguistics option 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 complete the option in linguistics will earn a Bachelor of Arts in English degree.

The linguistics option requires 45 credits, variously distributed in the following sequence, depending upon the special emphasis which the student and advisor select together.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
ENGLISH 256 [SSCI]	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Diversity [DIVR]	3
Linguistics MATH, CPT S, or STAT Elective ²	3
Linguistics PHIL Elective ²	3
Foreign Language, if needed, or Elective ^{3,4}	3 or 4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
ENGLISH 444	3
Linguistics Core Electives ⁵	3
Foreign Language, if needed, or Elective ^{3,4}	3 or 4
Electives ⁴	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 456 [M]	3
300-400-level FOR LANG Elective ²	3
Linguistics Emphasis Elective ²	3
Electives ⁴	6

<i>Second Term</i>	<i>Credits</i>
ENGLISH 443	3
300-400-level FOR LANG Elective ²	3
Linguistics Emphasis Elective	3
Electives ⁴	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
PHIL 443 [M]	3
Linguistics Core Electives ⁵	3
Electives ⁴	9

<i>Second Term</i>	<i>Credits</i>
ENGLISH 457	3
Integrative Capstone [CAPS]	3
Linguistics Emphasis Elective ²	3
300-400-level Electives	7

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² Linguistics Electives: minimum 21 credits required, with a minimum of 12 credits from 300-400-level courses. Coursework must include: a) a minimum of 3 credits selected from CPT S 111, 121, 401, 440, 443, MATH 140, 171, 172, 182, 202, 273, 283,

PSYCH 311, STAT 205, 212, 360, 443; b) minimum of 3 credits in PHIL 201, 401, 499; c) minimum of 6 credits in 300-400-level FOR LANG courses; and d) Emphasis Electives: Remaining courses should be taken in an area of emphasis and chosen in consultation with an advisor to include sufficient 300-400-level coursework to meet the 40-credit University requirements. Approved courses include any unused Linguistics Elective or Linguistics Core Elective, COMSOC 321, 421, ENGLISH 546, any unused FOR LANG course, PSYCH 490, 492, TCH LRN 333, and TCH LRN 414.

³ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁴ Electives: Students in this major are encouraged to pursue a second major, minor, or certificate and should speak to their advisor about complementary options.

⁵ Linguistics Core Electives: Minimum of 6 credits to be selected from ANTH/FOR LANG 350, ANTH 450, ENGLISH 112, 454, 458, or 499.

LITERARY STUDIES OPTION (120 CREDITS)

A student may be admitted to the English – Literary Studies Option upon making their intention known to the department.

Requirements in this degree include 15 credits of core classes, 15 credits 300-400-level English literature or Humanities classes, including at least 6 credits at the 400 level, and 6 credits of electives in English or Humanities at any level, including a Writers of Color course and excluding ENGLISH 201.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
HISTORY 105 [ROOT]	3
Humanities [HUM] ²	3
Quantitative Reasoning [QUAN]	3
Electives	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
ENGLISH 101 [WRTG]	3
Physical Sciences [PSCI] with lab ¹	4
Social Sciences [SSCI]	3
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Communication [COMM] or Written Communication [WRTG]	3
HUMANITY Elective ²	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
Two from ENGLISH 370, 371, 372, or 373	6
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 302 [M]	3

⁵ Writers from Marginalized Groups Elective: Choose from ENGLISH 309, 311, 314 [M], 317, 321, 322 [M], 341 [M], 345 [M], or 409.

TEACHING OPTION WITHOUT CERTIFICATION (120 CREDITS)

A student may be admitted to the English – Teaching Option without Certification upon making their intention known to the department.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3

Second Term

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4
Quantitative Reasoning [QUAN]	3
Social Sciences [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Diversity [DIVR]	3
ENGLISH 301 or 302 [M]	3
Electives	6

Second Term

<i>Second Term</i>	<i>Credits</i>
American Literature Elective ²	3
ENGLISH 305 or 306	3
ENGLISH 326	3
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 325	3
English or Humanities Electives ³	3
Writers from Marginalized Groups Elective ⁴	3
Electives	6

Second Term

<i>Second Term</i>	<i>Credits</i>
ENGLISH 324 [M]	3
English or Humanities Electives ³	3
Integrative Capstone [CAPS]	3
300-400-level Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 323	3
English or Humanities Electives ³	3
300-400-level Electives	9

Second Term

<i>Second Term</i>	<i>Credits</i>
English Literature Elective ⁵	3
Electives	13

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² American Literature Elective: Choose from ENGLISH 210, 368, 371, 372, 470, 480, 481, or 482.

³ English or Humanities Elective: At least one from HUMANITY 101, 103, 302 [M], 303 [M], 304 [M], 335, 350, 410, or 450 is required. Other approved courses include ENGLISH 210, 366, 368, 370, 371, 372, 373, 419, and 480-489 not used to fulfill other major requirements.

⁴ Writers from Marginalized Groups Elective: Choose from ENGLISH 309, 311, 314 [M], 317, 321, 322 [M], 341 [M], 345 [M], or 409. Students should consider the University requirement of two [M] courses when selecting course.

⁵ English Literature Elective: Choose from ENGLISH 366, 370, 373, 419, 483, 484, 485, 486, 487, 488, 489, HUMANITY 302 [M], 303 [M], 304, 335, 338, 350, 410, or 450.

Minors

Creative Writing

The Creative Writing minor requires a minimum of 16 credits, at least 9 of which must be upper-division and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Required courses include ENGLISH 251 or 252; 9 credits to be chosen from ENGLISH 351, 352, 353, 354, 355, 358, 359, 446, 451, 452, 453; 3 credits of any 300-400 level ENGLISH course; and 1 credit of ENGLISH 357, 358, 498, 499.

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

The Department of English administers the Humanities minor. For details, see the separate entry under "Humanities."

Linguistics

The student must complete 18 credits to earn the minor in Linguistics, half of which must be 300-400-level taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Required courses: ENGLISH 256; ENGLISH 443; ENGLISH 444; ENGLISH 457; two from ANTH 350, 450, ENGLISH 112, 454, 458, or PHIL 443.

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

Editing and Publishing Certificate

This career-oriented three-track program equips students in all disciplines with a working, practical knowledge of editing and publishing. To earn the certificate, students must complete the following three core courses: DTC 201, ENGLISH 357 and 405 (9 credits), plus one (3 credit) approved elective from their designated track, either the digital track (DTC 330, 331, 336, 354, 355, or 475), literary track (ENGLISH 451, 452, or 453), or scholarly/popular track (ENGLISH 255, 363, 364, 402, 403, or 495). Students must also complete three 1-credit internships from a slate of approved editorial-based positions.

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/WGSS 407, CES 465, ENTOM 150, FS 201, HISTORY 381, 382, HORT 150, MATH 398, MBIOS 320, PHIL 350, 365, 370, PSYCH 320, 401, 403, PSYCH/WGSS 324, SOC 333, SOE 210, 275, 285, 312, 335, 438, 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 Global Campus 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, ENGLISH 301, 355, 402, and 498. ENGLISH 498 must be taken only after the other four courses have been completed. The certificate can be earned through the Global Campus 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, FOR LANG 440 or 441, and 3 credits of ENGLISH 498. ENGLISH 256 is highly recommended.

Description of Courses

ENGLISH

ENGLISH

100 Introductory College Composition 3

Course Prerequisite: Appropriate Writing Exam score. Designed to introduce students to writing and reading in the university.

- 101 [WRTG] College Composition 3** Course Prerequisite: Appropriate Writing Exam score or ENGLISH 100. Designed to further 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** May be repeated for credit; cumulative maximum 2 hours. Student-centered group tutorial focusing on writing improvement; concurrently connected to the ENGLISH 101 course. S, F grading.
- 104 Introductory Composition for Multilingual Writers 3** Course Prerequisite: Appropriate Writing Exam score. Designed to introduce non-native speakers of English to writing and reading in the university.
- 105 [WRTG] College Composition for Multilingual Writers 3** Course Prerequisite: Appropriate Writing Exam score, or ENGLISH 104 with a C or better. Designed to further 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 Multilingual Writers 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.
- 109 [HUM] Creative Writing Now 3** An introductory course in the craft and conventions of contemporary creative writing (fiction, nonfiction, poetry, or drama).
- 110 [HUM] Reading Now 3** Contemporary writing including fiction, poetry, creative nonfiction and graphic novels.
- 112 [HUM] Language in the Real World 3** Introduction to the field of linguistics, through the exploration of ways that linguistic knowledge is used to address real-world issues.
- 150 [ARTS] Introduction to Film as Narrative 4 (3-3)** 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. (Crosslisted course offered as ENGLISH 205, HUMANITY 205).
- 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 WGSS 211, ENGLISH 211.)
- 212 [ARTS] Introduction to Comics and Graphic Novels 3** Introduction to the reading, history, and making of comics and graphic novels.
- 216 Introduction to American Cultural Studies 3** Introduction to the interdisciplinary study of American cultures and the field of American studies. (Crosslisted course offered as AMER ST 216, CES 216, ENGLISH 216, HISTORY 216, WGSS 216.)
- 219 [HUM] Introduction to the Environmental Humanities 3** An introduction to the Humanities, as an interdisciplinary field, and how Humanities methods and research contribute to, intersect with, and can learn from, environmental thought and action.
- 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 World Literature in English 3** Literature in English from such regions as Africa, Asia, and the Caribbean.
- 251 [ARTS] 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 [SSCI] Introduction to the Study of Language 3** Introduction to the ways in which sound, meaning, and structure of words and sentences in natural languages are described and analyzed by linguists.
- 260 Rhetoric and Gender 3** Historical survey of women writers whose contributions distinguish them as rhetoricians of their time. (Crosslisted course offered as ENGLISH 260, WGSS 260.)
- 298 Writing and Research Honors 3** Course Prerequisite: Must be an Honors student. 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: Must be an Honors student. 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 [HUM] 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, WGSS 306.)

- 309 Women Writers** 3 Women's artistic and intellectual contributions to prose, fiction, drama, and poetry. (Crosslisted course offered as ENGLISH 309, WGSS 309.)
- 310 [DIVR] [M] Intersections of Race, Class, Gender, and Sexuality** 3 Course Prerequisite: SOC 101 or WGSS 101. Intersections between race, class and gender through case studies; experiences in interdisciplinary methods. (Crosslisted course offered as WGSS 300, ENGLISH 310, SOC 300.)
- 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, WGSS 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 [DIVR] [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 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.
- 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 [ARTS] 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 [ARTS] 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.
- 343 Introduction to Screenwriting** 3 Workshop-based introduction to the art and craft of screenwriting; exploration of style and format, character development and story arcs.
- 345 [M] Contemporary Latina/o Literatures** 3 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 [ARTS] [M] 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).
- 357 Editing and Publishing** 3 May be repeated for credit; cumulative maximum 6 hours. Principles of working in literary, commercial, and scholarly editing and publishing.
- 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 [DIVR] 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.
- 365 [WRTG] Proposal Writing** 3 Course Prerequisite: ENGLISH 101; junior standing Theory and practice in proposal writing with focus on document management, writing and editing, and submission of proposals that consider social and political dimensions to obtain funding for academic or business projects.
- 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 [HUM] 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 [HUM] 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.
- 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 [WRTG] [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, WGSS 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 [CAPS] 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 [CAPS] Form and Theory in Creative Writing: Prose and Poetry** 3 Course Prerequisite: ENGLISH 351, 352, 353, or 359; junior standing. 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 [M] Language Acquisition** 3 Theories and processes of first, second, and bilingual language acquisition.
- 457 [SSCI] Sociolinguistics** 3 The study of language in social context, its relationship to social structures, and how it varies across race, gender, age, socioeconomic status, and geographic region.
- 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.
- 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, WGSS 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 [DIVR] 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 [CAPS] [M] Advanced Topics in Literature** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to the major in English; junior standing. 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: Admitted to the 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 May be repeated for credit; cumulative maximum 6 hours. 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** 1 Introduction to the principles and procedures of English studies.
- 514 Seminar in 20th Century American Literature** 3 May be repeated for credit; cumulative maximum 6 hours.
- 515 Contemporary Theories of Rhetoric** 3 May be repeated for credit; cumulative maximum 6 hours. 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.
- 545 Graduate Student Writing Workshop** 3 May be repeated for credit; cumulative maximum 6 hours. Workshop for graduate students in any discipline to improve proficiency in writing academic genres such as dissertations, abstracts, articles, and grant proposals.
- 546 Topics in Teaching English as a Second Language** 3 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.
- 547 Introduction to Critical Theory** 3 May be repeated for credit; cumulative maximum 6 hours. Foundational theories and critical approaches relevant to advanced scholarship in all areas of English studies.
- 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.
- 560 Critical Theories, Methods, and Practice in Digital Humanities** 3 History, theory, and practice of digital humanities, with attention paid to how digital humanities are transforming disciplinary knowledge. (Crosslisted course offered as DTC 560, ENGLISH 560).
- 561 Studies in Technology and Culture** 3 Foundation examination of key concepts, tools, and possibilities afforded by engaging with technology through a critical cultural lens. (Crosslisted course offered as DTC 561, ENGLISH 561).
- 562 Writing and Rhetoric in Science and Technology** 3 The study and practice of written, visual, and verbal conventions of STEM disciplines for academic, scientific, technical, and public audiences.
- 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. Cooperative: Open to UI degree-seeking students.
- 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. Course Prerequisite: Admitted to the English PhD program. 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, L. S. Lavine; Professors, E. H. Beers, A. Felsot, W. S. Sheppard, J. D. Stark, D. B. Walsh, R. S. Zack; Associate Professors, D. W. Crowder, D. G. James, J. Owen; Assistant Professors, E. Murray, T. Northfield; Assistant Research Professors, S. Bossert, J. Gutierrez Illan, J. Han, B. Hopkins, N. Naeger, L. Nottingham; Assistant Extension Professor, W. S. Wheeler; Adjunct Faculty, G. Angellela, W. R. Cooper, R. A. Schmidt-

Jeffris, W. Walker; Professors Emeriti, J. F. Brunner, V. Hebert, V. Jones, K. S. Pike.

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, integrated pest management, ecology, insect/plant interactions, population genetics, physiology, taxonomy/systematics, biological diversity, environmental toxicology, and medical/veterinary entomology.

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 provide needed training for students in agriculture, data sciences, education, veterinary medicine, microbiology, public health, environmental sciences, and natural sciences.

The department offers courses of study leading to the degrees of Bachelor of Science in Biology with an Entomology option <https://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>.

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://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.

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.

Student Learning Outcomes

(For the Master of Science and Doctor of Entomology Degrees)

The Department of Entomology offers graduate programs leading to Doctoral and Master of Science degrees. Upon completion of a Degree Program in Entomology, it is expected that graduates will have:

- Knowledge of Entomology and its Application
- Strong Critical and Creative Thinking Skills
- Understanding of Statistical Analyses and Research Methods
- Strong Communication Skills as Effective Scientists and Practitioners in Entomology
- They will be able to design and complete a research project by using the knowledge they have accrued through completion of the curriculum and research experience.

The curriculum provides the opportunity to study the basic and applied aspects of the science.

Facilities and training are available for graduate study in major areas of entomology, including (but not limited to) apiculture; behavior; integrated biological control and sustainable pest management; integrated pest management; ecology; insect/plant interactions; medical/veterinary entomology; population genetics; physiology; systematics; biological diversity and environmental toxicology.

Departmental faculty, adjunct faculty, and affiliate faculty may all serve as student advisors (see rules regarding the composition of an advising committee). Faculty are housed both on campus and at Research and Extension Centers throughout the state. The 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 lab in Wapato, Washington.

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 Insects, Infection and Illness: Medical Entomology for Non-Science Majors** 4 (3-3) Multidisciplinary aspects of infectious disease caused by insect transmission of pathogens.
- 103 [BSCI] Discover Insects: Laboratory for Non-Science Majors** 1 (0-3) The biology and diversity of insects provide the context for training in the scientific method, including ways to take measurements, gather data, and organize information.
- 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, [BSCI] 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.

351 Ecological and Integrated Pest Management 3 Course Prerequisite: BIOLOGY 106, 107, or 120. Philosophy, ecological foundation, tactics, and strategies of ecologically-based and integrated pest management.

361 Honey Bee Biology 3 Biology of the honey bee, including behavior, genetics, evolution, pollination, sociality, and beekeeping practices. Cooperative: Open to UI degree-seeking students.

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.

460 Biotechnology and the Environment 3 Course Prerequisite: BIOLOGY 106, 107, or 120; 3 credit hours CHEM. Benefits, regulations, and human and environmental impacts of biotechnology used for crop protection, agricultural and energy production, and environmental remediation and management. (Crosslisted course offered as ENTOM 460, SOE 460).

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.

511 Science Writing Workshop 2 Instruction, tools, and peer review support to write graduate research proposal or journal article. (Crosslisted course offered as CROP SCI 511, ENTOM 511, SOIL SCI 511).

539 Taxonomic Entomology 4 (2-6) Survey of approximately 200 major families; collecting and preservation techniques. 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. Course Prerequisite: Admitted to the Entomology PhD program. 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 3 Immediate and prolonged effects of pesticides on human and other animals; legal and moral repercussions of pesticide use. Credit not granted for both IPM 452 and 552. Recommended for graduate-level course: 12 credit hours of biology or ecology courses.

552 Pesticides and the Environment 3 Immediate and prolonged effects of pesticides on human and other animals; legal and moral repercussions of pesticide use. Credit not granted for both IPM 452 and 552. 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, C. K. Keller; Associate Director for Undergraduate Education and Clinical Associate Professor, A. B. King; Associate Director for Research and Graduate Studies and Professor, M. S. Carroll; Professors, S. M. Bollens, S. Hampton, P. B. Larson, C. T. Robbins, L. A. Shipley, J. Vervoort; Associate Professors, C. M. Cooper, A. K. Fremier, J. Harrison, S. Henderson, S. L. Katz, M. Kramer, S. P. Long, B. C. Moore, M. Ostrom, G. Rollwagen-Bollens, R. D. Sayler, M. Swanson; Assistant Professors, C. S. Goldberg, J. Manning, J. McIntyre, K. Moffett, S. Roley, D. Singh, D. H. Thornton; Clinical Assistant Professor, M. Berger; Senior Instructor, K. Wilkie; Instructors, J. Menard, W. Schlosser, K. Whitman; Adjunct Faculty, H. Brenkert-Smith, S. Caddy, J. Chappell, S. Converse, R. Cook, D. Dauble, R. Everett, J. Forbey, R. Gootee, B. Green, J. Gross, C. Grue, L. Heinse, T. Johnson, E. Laija, B. T. Maletzke, O. Neill, T. Paveglio, P. L. Pavek, P. Regan, J. L. Rachlow, L. Reed, T. S. Ridel, M. Rowe, M. A. Schroeder, S. Self, E. W. Shallenberger, K. Strickler, B. Tissot, T. N. Tollefson; Affiliate Faculty, J. Bishop, C.

Bustamante, L. Carpenter-Boggs, A. Felsot, J. Freed, J. Garcia-Pabon, J. Goldberger, T. Hudson, P. Jacoby, C. Mack, L. New, T. Norton, A. Perleberg, C. Shultz, J. Stark, S. Sylvester, P. Thiers, K. Zobrist; Professors Emeriti, D. M. Baumgartner, K. A. Blatner, W. Budd, R. C. Chapman, F. F. Foit, A. Ford, D. Gaylord, D. P. Hanley, L. H. Hardesty, G. W. Hinman, J. R. Pratt, P. E. Rosenberg, R. L. Shew, A. Watkinson, G. D. Webster, J. A. Wolff, G. I. Young.

Humans are rapidly altering planetary biogeochemical processes and earth systems without fully knowing the consequences. Environmental challenges include 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 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. The School integrates the geosciences (the physical context for global change), ecosystem and natural resource sciences (the biological context), and social/sustainability sciences (the human context). School faculty are located throughout WSU – in Pullman, Tri-Cities, Vancouver, and the WSU research and extension centers.

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, wildlife, 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 themes to better address new and emerging challenges in the study of earth, environment, and ecology. These include:

• "Water: Connecting Earth and Life," current strengths in eco-hydrology: modeling land and water interactions, biophysical, chemical and ecological dynamics in freshwater ecosystems and water resources in the Columbia River Basin.

• "Global Change: Sustaining Healthy Landscapes and Communities," existing strengths in landscape and spatial ecology, wildlife ecology and conservation of biodiversity, restoring ecosystems, and environmental social science.

•“Dynamic Earth,” Earth system science, with existing strengths in earth system chemistry, planetary evolution and deep time, and geologic and environmental hazards.

Specific information below describes courses and majors under the Bachelor of Science 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, Forest Ecology and Management, and Wildlife Ecology and Conservation Sciences. Additional information about the School can be found at: <http://environment.wsu.edu/>.

Student Learning Outcomes

Graduates of the School of the Environment are concerned with the diverse environmental challenges confronting the future of all life on Earth. Students learn to communicate and use critical thinking and creative problem solving to address pressing issues confronting global ecology and sustainability on a dynamic and changing Earth. Students apply scientific methods, quantitative and symbolic reasoning, and decision-making processes as individuals or teams to explore complex scientific and environmental issues and analyze problems in both the natural and social sciences. We emphasize realistic experiential education (e.g., hands-on labs, field trips and camps) to prepare students for graduate studies or employment in the fields of natural resources, environmental science or earth sciences. Graduates achieve expertise in a professional specialty and develop the technical skills and a deeper understanding of the science and environmental management needed to succeed in a global society increasingly dependent on developing a sustainable future.

Web Link: <http://environment.wsu.edu/outcomes/>

Earth Sciences Major

Earth Science is the study of the Earth, its composition, processes, 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, environments, and processes through which these materials form and interact, and its physical, chemical, and biological evolution. 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. Students will demonstrate quantitative understanding of earth materials and processes.

The Geology Club is open to all students interested in geology and allied sciences. It provides additional opportunities for our students to learn about local and regional geology. Weekend field and mineral collecting trips take advantage of the very diverse geology of the inland northwest region, and provides other out-of-class opportunities for students to informally interact with each other, faculty and professionals outside of WSU.

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: SOE 102, 207, 210, 315, 320, 340, 350, 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 and natural sciences. This is the most flexible of our majors, offering exceptional opportunities for tailoring of courses to match individual student interests and needs within the realm of environmental and ecosystem sciences.

Environmental and Ecosystem Sciences is 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.

The School of the Environment has well-equipped laboratory facilities for physical, chemical, and biological assessment of aquatic ecosystems (streams and lakes), modeling environmental processes,

and evaluating impacts of human activities. There are active research programs examining effects of invasive species, ecosystem restoration, and many aspects of water resource management.

The Environmental Science Club provides opportunities for students with common interests to share ideas and discuss relevant topics concerning environmental issues. The club contributes to sustainability programs at WSU and helps promote environmentally conscious activities on and around the WSU campus. In addition, it provides out of class opportunities for students to interact with faculty and other professionals. These interactions create opportunities for networking that helps students find summer and permanent employment as well as internship opportunities in their chosen field.

Forest Ecology and Management Major

The Forest Ecology and Management major is designed to provide students the educational basis for successfully pursuing a professional career in forestry. Each forestry student, in addition to completing the university UCORE requirements, basic science requirements, the School of the Environment environmental common core takes a block of forestry classes in such areas as forest measurements, sampling, remote sensing, geographic information systems, plant ecology and silviculture. In addition, students completing the basic requirements of this degree also have the option to select a limited number of professional electives to further focus their basic skill set. For example, by selecting the correct courses students may easily complete a minor in geospatial analysis. Students completing this degree also meet the qualifications required in U.S. Office of Personnel Management for forester.

The student chapter of the Society of American Foresters (Forestry Club) provides out of class opportunities for students to interact with each other socially and professionally, with the faculty and other professionals in the region. Students regularly work on forestry related projects for landowners in the area under the supervision of faculty members, gaining practical field experience and further insights into the profession. These experiences are often helpful in obtaining summer jobs, internships and professional employment upon graduation.

Wildlife Ecology and Conservation Major

The Wildlife Ecology and Conservation major provides students with a basic background in the sciences plus additional courses emphasizing wildlife ecology and management of wildlife habitats and populations. Students are prepared to pursue a variety of careers focusing on wildlife biology and wildlife management. The core requirements plus 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, geospatial analysis, or forestry.

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 so as a part of this major through the pre-vet option.

The student chapter of The Wildlife Society provides out of class opportunities for students including lectures, field trips, hands-on learning while interacting with socially and professionally with each other, faculty and other professionals. These types of contacts along together with 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.

Teaching and research facilities and laboratories on campus provide students with knowledge and training in wildlife ecology and conservation, including Bear Research Education and Conservation Program, Wild Ungulate and Small Mammal Research Facility, Large Carnivore Conservation Lab, Endangered Species Lab, Conservation Genetics and Environmental DNA Lab, Geographic Information System Lab, and the E.H. Steffen Center. These facilities and nearby natural forest, rangeland and aquatic ecosystems provide opportunities for field and experiential learning.

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.

Minors

The School of the Environment offers minors in: Earth Science, Environmental Science, Forestry, Natural Resources, 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

For each graduate degree, students may specialize in a variety of biological, geochemical, physical or social science aspects of Earth, environmental or natural resource science through advanced coursework and graduate research. Graduate course requirements are flexible, and students with degrees in 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) submit 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 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 CREDITS)

A student may be admitted to the Earth Sciences major upon making their intention known to the School of the Environment.

A student maintains eligibility for the major by completing each of the following courses with a C or better by the start of the third semester in the major: SOE 101 or 102, SOE 110 or BIOLOGY 106, and CHEM 101 or 105. The following courses must be completed with a C or better by the end of the fourth semester in the major: MATH 140, MATH 171, or STAT 212, and SOE 350. In addition, admitted students must maintain a minimum cumulative GPA of 2.0.

A student who does not meet these minimum requirements for maintaining eligibility in the major may be released by the School of the Environment after two semesters of failing to meet minimums. A student may be eligible to re-enter into the same major when minimum requirements are met.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 101[PSCI] or 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH 106 or electives ¹	3
SOE 100	1
SOE 101 or 102	4

<i>Second Term</i>	<i>Credits</i>
CHEM 102 or 106	4
ECONS 101 [SSCI]	3
ENGLISH 101 [WRTG]	3
MATH 108 or electives ¹	2
SOE 210	4

Second Year

<i>First Term</i>	<i>Credits</i>
Humanities [HUM]	3
PHYSICS 101 or 201, or ASTRONOM 135 or 138	3 or 4
PHYSICS 111 or 211, if taking PHYSICS 101 or 201	0 or 1
SOE 340 [M]	4
SOE 350	4

<i>Second Term</i>	<i>Credits</i>
MATH 140 [QUAN], MATH 171 [QUAN], or STAT 212 [QUAN] ¹	4
SOE 110 or BIOLOGY 106	4
Earth Sciences or Professional Electives ^{2,3}	7 or 8
Complete Writing Portfolio	

<i>Third Term</i>	<i>Credits</i>
Summer Session: SOE 207 ⁴	3

Third Year

<i>First Term</i>	<i>Credits</i>
SOIL SCI 368	3
Earth Sciences or Professional Electives ^{2,3}	9
Foreign Language, if needed, or Electives ⁵	3 - 4

<i>Second Term</i>	<i>Credits</i>
COM 102 [COMM] or H D 205 [COMM]	3 or 4
SOE 315 or 461	3
Earth Sciences or Professional Electives ^{2,3}	6
Foreign Language, if needed ⁵	0 or 4

Fourth Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
SOE 300 or BIOLOGY 372	3 or 4
Earth Sciences or Professional Electives ^{2,3}	9

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
SOE 312 [DIVR]	3
SOE 474 [CAPS] [M] or 480 [CAPS] ³	3
Earth Sciences or Professional Electives ^{2,3}	6
Exit Survey ⁶	

¹ MATH 106 and 108 are required courses. However, if students have tested into or taken MATH 140, 171, 172, STAT 212, or ALEKS with an 80% or better, MATH 106 and 108 will be waived. If waived, students may need to take additional credits to meet the University minimum requirement of 120 credits.

² Earth Sciences or Professional Electives: Students will complete six (6) courses of Earth Sciences electives, selected from the following list: SOE 303, 320, 356, 357, 405, 474, 475, 480, and Geology 490 (Co-op course with the University of Idaho). In addition, students will complete 22 credits of professional electives, 13 of which must be upper division. Professional Electives are courses selected by students in concert with their advisor and 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. Course used to fulfill the [CAPS] requirement cannot be used to fulfill Earth Sciences or Professional Electives.

³ The School of the Environment requires students

to take three [M] courses. At least one writing in the major [M] course should come from the professional electives.

⁴ SOE 207 is the approved Experiential Elective for Earth Science majors.

⁵ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁶ Students must complete a School of the Environment exit survey, administered during the final semester.

ENVIRONMENTAL AND ECOSYSTEM SCIENCES (120 CREDITS)

A student may be admitted to the Environmental and Ecosystem Sciences major upon making their intention known to the School of the Environment.

A student maintains eligibility for the major by completing each of the following courses with a C or better by the end of the fourth semester in the major: MATH 106, MATH 108, BIOLOGY 106, BIOLOGY 107, CHEM 101 or 105, CHEM 102 or 106, SOE 101 or 102, and SOE 110. In addition, admitted students must maintain a minimum cumulative GPA of 2.0.

A student who does not meet these minimum requirements for maintaining eligibility in the major may be released by the School of the Environment after two semesters of failing to meet minimums. A student may be eligible to re-enter into the same major when minimum requirements are met.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106	4
HISTORY 105 [ROOT]	3
MATH 106 or electives ¹	3
SOE 110 [BSCI]	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 101 [PSCI] or 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 108 or electives ¹	2
SOE 101 or 102	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 107	4
ECONS 101 [SSCI]	3
SOE 210 or 250 ²	3 or 4
Foreign Language, if needed ³	0 - 4
200-level Required Electives ⁴	2 or 3

<i>Second Term</i>	<i>Credits</i>
CHEM 102 or 106	4
Humanities [HUM]	3
SOE 300 or BIOLOGY 372 [M] ²	3 or 4
STAT 212 [QUAN], MATH 140 [QUAN], or 171 [QUAN]	4
Foreign Language, if needed ³	0 - 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3

COM 102 [COMM] or H D 205 [COMM]	3 or 4
SOIL SCI 368	3
Professional Electives ⁵	7

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR], if needed, or Electives ⁶	3
SOE 312 [DIVR] or POL S 430 ⁶	3
SOE 315 or 461	3
SOE Experiential Requirement or Electives ⁷	3
Professional Electives ⁵	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
SOE 403, STAT 360, 370, or 412 ⁸	3
SOE 404 [CAPS] [M], 454 [CAPS] [M], or 477 [CAPS] ⁹	3
Writing in the Major [M] or Electives ¹⁰	3
Professional Electives ⁵	7

<i>Second Term</i>	<i>Credits</i>
Writing in the Major [M] or Electives ¹⁰	3
Professional Electives ^{5,9}	13
Exit Survey ¹¹	

¹ MATH 106 and 108 are required courses. However, if students have tested into or taken MATH 140, 171, 172 or ALEKS with an 80% or better, MATH 106 and 108 will be waived. If waived, students may need to take additional credits to meet the University minimum of 120 credits.

² Students who take SOE 250 must also take BIOLOGY 372.

³ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁴ Approved 200-level required electives include SOE 204, 230, 250, 275, 285. Not all courses available on all campuses.

⁵ Environmental and Ecosystem Sciences Professional Electives (31 credits) are courses selected by students in concert with their advisor and 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. Approved courses include but are not limited to: ECONS 330, or any 300-400-level SOE or SOIL SCI course, or as approved by advisor.

⁶ SOE 312 satisfies both the [DIVR] and the Society and Environmental Management requirements.

⁷ SOE Experiential Requirement: Students in the School of the Environment are required to fulfill the SOE Experiential Requirement before graduation. This requirement is designed to give students experience they will not receive in the traditional classroom-oriented course, and to better prepare them for a successful career after graduation. Students may choose 3 credits of coursework from SOE 492 or 495, or as approved by advisor. As an alternative to coursework, students may meet the requirement by documenting at least 135 hours of relevant practical experience. Students choosing the practical experience option may need an additional 3 credits of electives to meet the University requirement of 120 total credits.

⁸ MATH 172 is a prerequisite for STAT 360 and 370.

⁹ Students who take SOE 477 [CAPS] may need to take an [M] course within their Professional Electives to fulfill the requirement for 3 [M] courses.

¹⁰ The School of the Environment requires students to complete 3 [M] courses. Check with advisor for course recommendation.

¹¹ Students must complete a School of the Environment exit survey, administered during the final semester.

FOREST ECOLOGY AND MANAGEMENT (120 CREDITS)

A student may be admitted to the Forest Ecology and Management major upon making their intention known to the School of the Environment.

A student maintains eligibility for the major by completing each of the following courses with a C or better by the end of the fourth semester in the major: MATH 106, MATH 108, BIOLOGY 106, BIOLOGY 107, CHEM 101 or 105, SOE 204 and SOE 301. In addition, admitted students must maintain a minimum cumulative GPA of 2.0

A student who does not meet these minimum requirements for maintaining eligibility in the major may be released by the School of the Environment after two semesters of failing to meet minimums. A student may be eligible to re-enter into the same major when minimum requirements are met.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI]	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 106 or Electives ¹	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 107	4
CHEM 101 [PSCI] or 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 108 or Electives ¹	2

Second Year

<i>First Term</i>	<i>Credits</i>
COM 102 [COMM] or H D 205 [COMM]	3 or 4
ECONS 330	3
SOE 204	2
SOE 300 or BIOLOGY 372	3 or 4
SOE 301	3

<i>Second Term</i>	<i>Credits</i>
MATH 140 [QUAN] or STAT 212 [QUAN]	4
SOE 302	3
SOE 312 [DIVR]	3
SOIL SCI 201	3
SOIL SCI 374	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
SOE 210	4
SOE 304	4
SOE 305	3
SOIL SCI 368	3
Foreign Language, if needed ²	0-4

<i>Second Term</i>	<i>Credits</i>
ECONS 352	3
SOE 315 or 461 ³	3
SOE 403	3

SOE 438	3
SOE Experiential Requirement or electives ⁴	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
SOE 446 [M] or 450 [M] ⁵	3
SOE 454 [CAPS] [M] ⁵	3
STAT 412	3
Professional Electives ⁶	3
Complete Forestry Experiential Requirement ⁷	
<i>Second Term</i>	<i>Credits</i>
SOE 464 [M] ⁵	3
SOE 484	3
SOE 485	4
SOIL SCI 468	4
Foreign Language, if needed ²	0-4
Exit Survey ⁸	

¹ MATH 106 and 108 are required courses. However, if students have tested into or taken MATH 140, 171, 172, STAT 212, or ALEKS with an 80% or better, MATH 106 and 108 will be waived. If waived, students may need to take additional credits to meet the University minimum requirement of 120 credits.

² Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

³ SOE 315 requires additional prerequisites of CHEM 102 or 106, and SOE 101 or 102.

⁴ SOE Experiential Requirement: Students in the School of the Environment are required to fulfill the SOE Experiential Requirement before graduation. This requirement is designed to give students experience they will not receive in the traditional classroom-oriented course, and to better prepare them for a successful career after graduation. Students may choose 3 credits of coursework from SOE 492 or 495, or as approved by advisor. As an alternative to coursework, students may meet the requirement by documenting at least 135 hours of relevant practical experience. Students choosing the practical experience option may need an additional 3 credits of electives to meet the University requirement of 120 total credits.

⁵ The School of the Environment requires students to take three [M] courses.

⁶ Forest Ecology and Management Professional Elective (3 credits) is a course selected by students in concert with their advisor and pertaining to their major and/or to a specific sub-discipline of interest. Approved Professional electives include, but are not limited to: any CRM J course or any 200-400-level ANIM SCI, BIOLOGY, MBIOS, SOE, or SOIL SCI course.

⁷ Forestry Experiential Requirement: Forestry majors will need to complete an additional 135 hours of volunteer or paid work related to their field of study and approved by their advisor to meet the requirements of the Forestry Core.

⁸ Students must complete a School of the Environment exit survey, administered during the final semester.

WILDLIFE ECOLOGY AND CONSERVATION SCIENCES - HONORS ACCELERATED PRE-VET PROGRAM (124 CREDITS)

This program allows qualified students in the Honors College to earn both a Bachelor of Science in Earth and Environmental Science and Doctor of Veterinary Medicine within a seven-year span.

A student may be admitted to the Wildlife Ecology & Conservation Sciences major by making their intention known to the School of the Environment no later than the first semester of the sophomore year.

A student maintains eligibility for the major's accelerated pre-vet program by completing each of the following courses with a C or better by the end of the third semester in the major: MATH 106, MATH 108, BIOLOGY 106, BIOLOGY 107, CHEM 105, and SOE 300. In addition, admitted students must maintain a minimum cumulative GPA of 2.0.

A student who does not meet these minimum requirements for maintaining eligibility in the major may be released by the School of the Environment after two semesters of failing to meet minimums. A student may be eligible to re-enter into the same major when minimum requirements are met.

First-Third Years

Students will participate in a three-year program, completing all Honors requirements, the Wildlife Ecology and Conservation Sciences core, and pre-veterinary medicine requirements. Students must complete a minimum of 90 undergraduate credits including 30 credits of upper-division coursework in the first three years.

Fourth-Seventh Years

Students will enter the College of Veterinary Medicine and complete the requirements for total credits and upper-division credits before earning the BS in Earth and Environmental Sciences in their fourth year. Those students finishing all required classes would complete only the DVM curriculum from this point on. Successful completion of the College of Veterinary Medicine program will earn the Doctor of Veterinary Medicine.

Interested students must be advised by faculty in the School of the Environment, and should contact the school no later than the first semester of the sophomore year. NOTE: If the student is not accepted or withdraws from the accelerated track, the student could earn the BS in Earth and Environmental Sciences and/or apply to the College of Veterinary Medicine under normal procedures.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106	4
CHEM 105	4
ENGLISH 298	3
Foreign Language, if needed ¹	0 - 4
MATH 106 ²	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 106 or 116	4
ECONS 198	3
Foreign Language, if needed ¹	0 - 4
MATH 108 ²	2

Second Year

<i>First Term</i>	<i>Credits</i>
HONORS 280	3
SOE 300 ³	3
SOE 310	4
SOIL SCI 368	3
STAT 212	4

<i>Second Term</i>	<i>Credits</i>
CHEM 345	4
HONORS 290 ⁴	0 - 3
HONORS 398 ⁵	0 - 1
PHYSICS 101	3
PHYSICS 111	1
SOE 312	3
SOE 431	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 301	4
HONORS 370	3
MBIOS 303	4
SOE 301	3
SOE 435	4

<i>Second Term</i>	<i>Credits</i>
HONORS 380	3
HONORS 390	3
HONORS 450	3
SOE 302	3
SOE 446 [M]	3
SOE 450 [M] or 464 [M]	3
Complete School of the Environment Exit Survey	

Fourth Year

<i>First Term</i>	<i>Credits</i>
DVM coursework	15

<i>Second Term</i>	<i>Credits</i>
DVM coursework	15

¹ Language proficiency equivalent to four years of high school foreign language or four semesters of college-level foreign language are required by the Honors College for graduation.

² MATH 106 and 108 are required courses. However, if students have tested into or taken MATH 140, 171, 172, or ALEKS with an 80% or better, MATH 106 and 108 will be waived. If waived, students may need to take additional credits to meet the minimum 90 undergraduate credits.

³ Alternative to SOE 300 is BIOLOGY 372 [M]

⁴ Students who complete CHEM 116 fulfill the Honors College HONORS 290 requirement and another 3-credit course can be substituted.

⁵ The Honors College recommends that students enroll in and complete HONORS 398, an optional one-credit "Thesis Proposal" class. HONORS 398 should be taken sophomore or junior year.

WILDLIFE ECOLOGY AND CONSERVATION SCIENCES - PRE-VETERINARY OPTION (120 CREDITS)

A student may be admitted to the Wildlife Ecology and Conservation Sciences major upon making their intention known to the School of the Environment.

A student maintains eligibility for the major by completing each of the following courses with a

C or better by the end of the fourth semester in the major: Math 106, Math 108, Biology 106, Biology 107, Chemistry 105, SOE 204 and SOE 300. In addition, admitted students must maintain a minimum cumulative GPA of 2.0.

A student who does not meet these minimum requirements for maintaining eligibility in the major may be released by the School of the Environment after two semesters of failing to meet minimums. A student may be eligible to re-enter into the same major when minimum requirements are met.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH 106 or Electives ¹	2-3
SOE 100	1

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 106	4
COM 102 [COMM] or H D 205 [COMM]	3 or 4
ENGLISH 101 [WRTG]	3
MATH 108 ¹	0-2

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 345	4
ECONS 101 [SSCI]	3
SOE 204	4
SOE 300 or BIOLOGY 372	3 or 4
SOE 301	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
MATH 140 [QUAN], 171 [QUAN], or STAT 212 [QUAN]	4
MBIOS 303	4
SOE 302	3
Foreign Language, if needed ² Complete Writing Portfolio	0-4

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 301	4
SOE 310	4
SOIL SCI 368	3
STAT 412	3
Foreign Language, if needed ²	0-4

<i>Second Term</i>	<i>Credits</i>
Advanced Wildlife Elective ³	3
PHYSICS 101	3
PHYSICS 111	1
SOE 312 [DIVR]	3
SOE 435	4
Water Science Course ⁴	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Advanced Wildlife Elective ³	3
Animal Systematics Course ⁵	4
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Plant Course ⁶	3
SOE 441	4

<i>Second Term</i>	<i>Credits</i>
Humanities [HUM]	3

Integrative Capstone ⁷	3
SOE 210	4
SOE 438	3
SOE Experiential Requirement ⁸	0-3
Exit Survey ⁹	

¹ MATH 106 and 108 are required courses. However, if students have tested into or taken MATH 140, 171, 172, STAT 212, or ALEKS with an 80% or better, MATH 106 and 108 will be waived. If waived, students may need to take additional credits to meet the University minimum requirement of 120 credits.

² Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

³ Advanced Wildlife Elective (6 credits): Choose from SOE 318, 431, 446 [M], 450 [M], and 464 [M]. Selecting at least one [M] course is recommended. The School of the Environment requires students to take three [M] courses.

⁴ Choose one of the following three Water Science courses: SOE 275 (fall), 411 (fall), or 461 (spring).

⁵ Choose one of the following Animal Systematics Courses: BIOLOGY 423, 428, or 432 [M].

⁶ Choose one of the following two plant courses: SOE 305 (Fall), or 306 (Spring).

⁷ Choose one of the following two integrated capstone courses: SOE 471 [CAPS] (spring), or 454 [CAPS] [M] (fall).

⁸ SOE Experiential Requirement: Students in the School of the Environment are required to fulfill the SOE Experiential Requirement before graduation. This requirement is designed to give students experience they will not receive in the traditional classroom-oriented course, and to better prepare them for a successful career after graduation. Students may choose 3 credits of coursework from SOE 492 or 495, or as approved by advisor. As an alternative to coursework, students may meet the requirement by documenting at least 135 hours of relevant practical experience. Students choosing the practical experience option may need an additional 3 credits of electives to meet the University requirement of 120 total credits.

⁹ Students must complete a School of the Environment exit survey, administered during the final semester.

WILDLIFE ECOLOGY AND CONSERVATION SCIENCES – BASIC OPTION (120 CREDITS)

A student may be admitted to the Wildlife Ecology and Conservation Sciences major upon making their intention known to the School of the Environment.

A student maintains eligibility for the major by completing each of the following courses with a C or better by the end of the fourth semester in the major: MATH 106, MATH 108, BIOLOGY 106, BIOLOGY 107, CHEM 101 or 105, SOE 204 and SOE 300. In addition, admitted students must maintain a minimum cumulative GPA of 2.0.

A student who does not meet these minimum requirements for maintaining eligibility in the major may be released by the School of the Environment after two semesters of failing to meet minimums. A student may be eligible to re-enter into the same major when minimum requirements are met.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI]	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 106 or electives ¹	3
SOE 100	1

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 107	4
CHEM 101 [PSCI] or 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 108 or electives ¹	2

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
COM 102 [COMM] or H D 205 [COMM]	3 or 4
SOE 204	4
SOE 300 or BIOLOGY 372	3 or 4
SOE 301	3

<i>Second Term</i>	<i>Credits</i>
CHEM 102 or 106	4
SOE 302	3
SOE 312 [DIVR]	3
STAT 212 [QUAN]	4
Foreign Language, if needed ² Complete Writing Portfolio	0-4

Third Year

<i>First Term</i>	<i>Credits</i>
SOE 210	4
SOE 310	4
SOIL SCI 368	3
STAT 412	3
Foreign Language, if needed ²	0-4

<i>Second Term</i>	<i>Credits</i>
SOE 435	4
SOE 438	3
Advanced Wildlife Elective ³	3
Water Science Course ⁴	3
Professional Electives ⁵	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Animal Systematics Course ⁶	4
Humanities [HUM]	3
SOE 441	4
Plant Course ⁷	3
Professional Elective ⁵	3

<i>Second Term</i>	<i>Credits</i>
Advanced Wildlife Elective ³	3
Integrative Capstone [CAPS] ⁸	3
Professional Electives ⁵	7
SOE Experiential Requirement ⁹	0-3
Exit Survey ¹⁰	

¹ MATH 106 and 108 are required courses. However, if students have tested into or taken MATH 140, 171, 172, STAT 212, or ALEKS with an 80% or better, MATH 106 and 108 will be waived. If waived, students may need to take additional credits to meet the University minimum requirement of 120 credits.

² Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

³ Advanced Wildlife Elective (6 credits): Choose from SOE 318, 431, 446 [M], 450 [M], and 464 [M]. Selecting at least one [M] course is recommended. The School of the Environment requires students to take three [M] courses.

⁴ Choose one of the following three Water Science courses: SOE 275 (fall), 411 (fall), or 461 (spring).

⁵ Wildlife Ecology and Conservation Sciences Professional Electives (13 credits) are courses selected by students in concert with their advisor and pertain to their major and career goals. Selecting at least one [M] course is recommended. The School of the Environment requires students to take three [M] courses.

⁶ Choose one of the following Animal Systematics Courses: BIOLOGY 423, 428, or 432 [M].

⁷ Choose one of the following two plant courses: SOE 305 (Fall), or 306 (Spring).

⁸ Choose one of the following two integrated capstone courses: SOE 471 [CAPS] (spring), or 454 [CAPS] [M] (fall).

⁹ SOE Experiential Requirement: Students in the School of the Environment are required to fulfill the SOE Experiential Requirement before graduation. This requirement is designed to give students experience they will not receive in the traditional classroom-oriented course, and to better prepare them for a successful career after graduation. Students may choose 3 credits of coursework from SOE 492 or 495, or as approved by advisor. As an alternative to coursework, students may meet the requirement by documenting at least 135 hours of relevant practical experience. Students choosing the practical experience option may need an additional 3 credits of electives to meet the University requirement of 120 total credits.

¹⁰ Students must complete a School of the Environment exit survey, administered during the final semester.

Minors

Earth Sciences

An Earth Sciences minor requires a minimum of 17 credits. Required courses: SOE 101 or 102, and SOE 210. Restricted electives: at least 9 credits from SOE 303, 315, 322, 340, 350, 356, 357, 390, 405, 412, 474, 475, 480. The minor must include 9 credits of 300-400-level course work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Environmental Science

A minor in Environmental Science requires a minimum of 16 credits. Students must complete SOE 110, 444, and a minimum of 9 additional credits selected from SOE 230, 275, 280, 285, 300, 312, 411, 412, 438, 450, 454, and 477, or any advisor approved elective. Of these 16 credits, 9 must be in upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. This minor is not open to students majoring in Wildlife Ecology and Conservation Sciences or in Environmental and Ecosystem Sciences.

Forestry

A minor in Forestry requires a minimum of 19 credits. Required courses: SOE 204, SOE 300 or BIOLOGY 372, SOE 301, and 305. Restricted electives: at least 6 credits selected from SOE 304, 306, 420, 464, 484, 485, 486. The minor must include 9 credits of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Natural Resources

A Natural Resources Minor requires a minimum of 16 credit hours. Required course: SOE 100. Restricted electives: at least 15 credit hours from SOE 300, 301, 302, 305, 312, 403, 411, 417, 435, 438, 450, 461, 464, and ECONS 330, with at least 9 credit hours of SOE courses with a natural resources focus (wildlife, forestry, environmental science) or other approved courses numbered 300 or higher. This minor is not open to students majoring in Wildlife Ecology and Conservation Sciences or Environmental and Ecosystem Sciences. Credit hours for the minor must include 9 credit hours of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Wildlife Ecology

The minor in Wildlife Ecology requires a minimum of 17 credits. Required courses: SOE 310 and 435. Restricted electives: at least 9 credits from SOE 318, 431, 441, 446, and 450. Electives may include one of BIOLOGY 423, 428, or 432. The minor must include 9 credits taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Certificates

Water Resources Science and Management

The Certificate in Water Resources Science and Management, administered by the School of the Environment, is an interdisciplinary certificate for students interested in water resources. The certificate includes 15 credits and an experiential requirement. Students must complete a minimum of one course from each of four water cluster areas listed below. Courses listed under more than one cluster area will not count toward two cluster areas simultaneously. Note that listed courses may require prerequisites. To ensure an interdisciplinary experience, selected courses must represent two or more different subject areas. A final grade of "C" or better is required for each course applied to the certificate and a cumulative GPA of 3.0 or better is required for the certificate program as a whole.

Subsurface and Surface Hydrology: CE 351, 402, 460, SOE 250, 303, 315, 463, SOE/CE 475, SOIL SCI 414;

Water Chemistry/Ecology/Biology: AGTM 315, BIOLOGY 390, 465, 469, BSYSE 554, CE 341, 418, SOE 275, 300, 411, 412, 417, 454, 463, 464, 465, 492;

Water Methods & Analysis: CE 315, 341, 351, 415, 416, 418, 419, 442, 450, 451, SOE 311, SOIL SCI 468;

Water Policy & Management: CE 405, 456, CROP

SCI 360, ECONS 330, 430, 431, HISTORY 422, SOC 331, 332, SOE 438, 444, 461;

Experiential Requirement: In addition to the course requirements described above, the certificate also includes an experiential requirement of required attendance at a minimum of three water-related activities hosted by the certificate program. Participants in the program are required to attend Water Meeting and Social and Water Research Center Invited Lecture Event, both of which are conducted every Fall and Spring semester. Additional activities that may fulfill the Experiential Requirement include: field trips, documentary film screenings with discussion, and water-related internships. These additional activities require committee approval and/or competitive application.

Description of Courses

SCHOOL OF THE ENVIRONMENT

SOE

100 An Introduction to Our Environment: Geology, Ecology, and Environmental Stewardship 1 A holistic understanding of the Earth's environment; knowledge of geology, ecology, environmental science, and human political dimensions; basic comprehension of environmental issues.

101 [PSCI] Welcome to the Earth: An Introduction to Geology 4 (3-3) Course Prerequisite: Enrollment not allowed if credit already earned for SOE 102. Introductory physical geology for non-science majors; emphasis on western US. Credit not granted for both SOE 101 and 102.

102 Geology for Science Majors 4 (3-3) Course Prerequisite: MATH 103, 106, 140, 171, 201, or 202, or concurrent enrollment in any of these, or a minimum ALEKS math placement score of 40%. Enrollment not allowed if credit already earned for SOE 101. Modern concepts of earth science; mineral rock, resource, and map study. Field trip required. Credit not granted for both SOE 101 and 102.

103 [PSCI] Other Worlds: Comparative Planetology of our Solar System 3 Study of the geological processes and environments on planets and moons of our solar system.

105 [PSCI] Natural Resources and Natural Hazards 3 Survey of key natural resources, the physical processes by which nature and society produce those resources, and the processes of related natural hazards. Recommended Preparation: MATH 103 or higher with a C or better, or a minimum ALEKS math placement score of 45%.

110 [BSCI] The Environment, Human Life, and Sustainability 4 (3-3) Interactions between humans and their environment; multidisciplinary introduction to environmental concepts and concerns.

204 Field Methods for Careers in the Natural Sciences 4 (3-3) Introduction to basic concepts, field techniques and the use of spreadsheets in natural resources. Field trips required.

- 207 Geology Field Camp 3** (0-9) Course Prerequisite: SOE 101 or 102; SOE 210. Introduction to geologic field methods; basic geologic mapping.
- 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.
- 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.
- 250 [PSCI] Introduction to Earth System Science 3** Course Prerequisite: SOE 110 or BIOLOGY 106, each with a C or better. Earth's fundamental systems (the geo-, atmo-, hydro-, and bio-spheres) in the context of global change. Recommended: CHEM 101 or 105.
- 275 Rivers: Form, Function, and Management 3** Introduction to rivers, stream ecology, and restoration.
- 280 [PSCI] How the Earth's Climate System Works 3** Understanding how the Earth's climate system works to provide a scientific foundation for making informed evaluations about management and policy.
- 285 The Science and Policy of Climate Change 3** The science of the climate system; the case for reducing greenhouse gas emissions, and the best policies to do so.
- 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: SOE 300 or BIOLOGY 372 or concurrent enrollment in either. 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: SOE 300 or BIOLOGY 372; SOE 301. Identification and ecology of arid land plants (trees, shrubs, grasses, forbs) and the ecosystems in which they occur. Field trips required.
- 303 Environmental Geology 3** Course Prerequisite: SOE 101 or 102. Geological hazards and geologic problems associated with human activities. Required field trip.
- 304 Ecosystem Field Measurements 4** (3-3) Course Prerequisite: SOE 204; SOE 300 or BIOLOGY 372 or concurrent enrollment in either; SOE 301 or concurrent enrollment. Measurement and analysis of forests, wildlife habitat, and rangelands using field equipment and spatial sampling techniques; development of employment skills in forestry, forest restoration, and wildlife management.
- 305 Silviculture 3** Course Prerequisite: SOE 204; SOE 300 or BIOLOGY 372; SOE 301. Stand dynamics, natural regeneration methods, intermediate stand treatment, relationships of natural resource management to silvicultural practice. Field trips required.
- 306 Plants in the Environment 3** Course Prerequisite: SOE 300. How plants interact with their physical and biotic environments; physiological function of plant acclimation, adaptation, and tolerance with emphasis on forests and trees.
- 310 Methods in Wildlife Ecology 4** (3-3) Course Prerequisite: BIOLOGY 106 with a C or better. Field and laboratory sampling techniques in wildlife research and management.
- 311 Modeling the Environment 4** (3-3) Construction and testing of computer simulation models of environmental systems. Cooperative: Open to UI degree-seeking students.
- 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.
- 314 Service Learning in Ecuador: Building Sustainable Local Solutions for Human and Environmental Health 3** Experience working alongside local communities in Ecuador on projects that will improve rural access to sustainable energy, clean water, improved ecosystem health, and sustainable livelihoods. Spring break field trip required.
- 315 Water and the Earth 3** (2-3) Course Prerequisite: CHEM 102 or 106; one of MATH 108, 140, 171, 172, 182, 201, 202, or ENGR 107; one of SOE 101, SOE 102, 4 credits PHYSICS 101 or 201, or PHYSICS 101 and 111, or PHYSICS 201 and 211. Global hydrologic cycle, including rivers and weathering, groundwater, rainwater and the atmosphere, oceans, human impacts. Field research required.
- 318 Wildlife Genetics 3** Course Prerequisite: BIOLOGY 106; BIOLOGY 107 with a C or better; one of MATH 106, 108, 140, 171, or a minimum ALEKS math placement score of 80%. Application of genetic tools for wildlife conservation and management, including forensics, detection of rare species, and population estimation. Cooperative: Open to UI degree-seeking students.
- 320 Sedimentary Petrology and Sedimentation 3** (2-3) Course Prerequisite: SOE 350. Sedimentary rock composition and origins applying fundamental principles of sedimentology. Field trip required.
- 322 Geology of the Pacific Northwest 3** Course Prerequisite: SOE 101 or 102. Physical geology of the Pacific Northwest focusing on geological processes important in its evolution. Field trips required.
- 335 [M] Environmental Policy and Law 3** Course Prerequisite: SOE 110. Global, national, and regional environmental issues and policy.
- 340 [M] Structural Geology and Plate Tectonics 4** (3-3) Course Prerequisite: One of MATH 106, 108, 140, 171, or a minimum ALEKS math placement score of 80%; SOE 210. Basic understanding and techniques of working in deformed rocks in mountain belts. Field trip required.
- 350 Earth Materials 4** (2-6) Course Prerequisite: CHEM 101 or 105; SOE 101, 102, 210, or 230. Composition, physical properties, structure, crystallography, identification, and origin of minerals. Field trip required.
- 356 Magmatic Processes 3** (2-3) Course Prerequisite: SOE 350. Study of volcanic activity, generation and evolution of magma, and the formation and growth of Earth's crust. Field trips required.
- 357 Introduction to Metamorphic Rocks and Minerals and How They Impact Our World 3** (2-3) Fundamental processes in the field of earth sciences; application of theoretical concepts from metamorphism to challenges and realities of the modern world, including climate, earthquakes, and industry.
- 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.
- 402 Human Health and the Environment 3** Problem-solving approach to adverse effects on human health caused by contamination of environmental media or anthropogenic changes in ecosystems.
- 403 Sampling for Terrestrial Ecosystem Management 3** (2-3) Course Prerequisites: SOE 204; STAT 212 or 412. Simple random sampling, stratified sampling, and sampling in proportion to importance; foundation presented for selecting a sampling scheme, implementing it in the field, and assessing variance.
- 404 [CAPS] [M] The Ecosystem 3** Course Prerequisite: SOE 110; BIOLOGY 106; BIOLOGY 372 or concurrent enrollment; junior standing. Ecosystem organization and processes; theory and applications to contemporary environmental problems.
- 405 Near Surface Geophysics 3** Exploration of near surface geophysics techniques as applicable, but not limited to, groundwater analysis, environmental remediation, archaeology, and natural resources detection.
- 406 Introduction to Radiological Science 3** Course Prerequisite: One course each in biology, calculus, chemistry, and physics. Fundamentals of atomic physics, interactions of radiation with matter, radiation dosimetry and biology, radioecology, and radiological health protection.
- 408 [M] Field Geology 3** (0-9) Course Prerequisite: SOE 207; SOE 340; SOE 350; senior standing. Advanced field problems and methods; data interpretation and report preparation. Cooperative: Open to UI degree-seeking students.
- 411 [M] Limnology and Aquatic Ecosystem Management 3** (2-3) Course Prerequisite: BIOLOGY 106; CHEM 101 or 105. Introduction to the science and management of aquatic ecosystems, emphasizing lakes.

- 412 [M] Global Biogeochemistry** 3 Course Prerequisite: BIOLOGY 106; CHEM 101 or 105. Cycles of biogeochemically important elements and anthropogenic changes to those cycles in terrestrial and aquatic environments on a global scale. Field trip required. Credit not granted for both SOE 412 and SOE 512.
- 416 Soil Processes in the Earth's Critical Zone** 3 Soil geochemistry and processes; theory and applications with a focus on reactions at the solid, liquid, and gaseous interface between the lithosphere, atmosphere, hydrosphere, and biosphere. (Crosslisted course offered as SOE 416/516, SOIL SCI 416/516). Credit not granted for both SOE/SOIL SCI 416 and SOE/SOIL SCI 516. Recommended preparation: Basic knowledge of soils (e.g. SOIL SCI 201 or equivalent; CHEM 106; PHYSICS 102).
- 417 Fisheries Science and Management** 3 Course Prerequisite: SOE 411 or BIOLOGY 412; STAT 212 or MATH 171. Background on the development of fisheries science and examination of the natural and social scientific theories and techniques applied to the management of fisheries.
- 420 Long-term Research in Forest Ecosystems: Old-growth Forests of Yosemite National Park** 3 Course Prerequisite: By instructor permission. Field research methods course in forest ecosystems at site in old-growth mixed-conifer forest in Yosemite National Park. Course usually runs in late May.
- 430 Introduction to Wildland Fire** 3 Course Prerequisite: SOE 300 or BIOLOGY 372; SOE 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) Course Prerequisite: BIOLOGY 106 with a C or better; BIOLOGY 107 with a C or better; junior standing. 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 SOE 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 Public Lands 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: SOE 312.
- 441 Population Ecology and Conservation** 4 (3-3) Course Prerequisite: BIOLOGY 372 or SOE 300 with a C or better in either; SOE 435 with a C or better; STAT 212 with a C or better and concurrent enrollment in STAT 412, or STAT 412 with a C or better. Ecology, conservation, management of vertebrate populations, especially threatened and endangered species; designed for wildlife and conservation biology majors.
- 444 Environmental Assessment** 3 National and state policy frameworks for environmental assessment that support integration of science and the public into agency decision-making process. Credit not granted for both SOE 444 and SOE 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 SOE 445 and SOE 545. Cooperative: Open to UI degree-seeking students.
- 446 [M] Wildlife Habitat Ecology** 3 (2-3) Course Prerequisite: SOIL SCI 368 or concurrent enrollment; STAT 212 or 412; senior standing. The ecology of how wildlife use, respond to, and affect resources in their environment. Field trip required.
- 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.
- 454 [CAPS] [M] Restoration Ecology** 3 (2-3) Course Prerequisite: Senior standing. Ecological principles used to restore biological communities; ecological processes and species on degraded landscapes.
- 460 Biotechnology and the Environment** 3 Course Prerequisite: BIOLOGY 106, 107, or 120; 3 credit hours CHEM. Benefits, regulations, and human and environmental impacts of biotechnology used for crop protection, agricultural and energy production, and environmental remediation and management. (Crosslisted course offered as ENTOM 460, SOE 460).
- 461 Watershed Management** 3 Course Prerequisite: BIOLOGY 106; CHEM 101 or 105. Principles and practices of management of forest and rangelands for protection, maintenance, and improvement of water resource values. Field trip required. Recommended preparation: SOE 204 or sufficient background in spreadsheets.
- 463 Water in the Environment** 3 Course Prerequisite: MATH 140 or 171, or 4 credits PHYSICS 101 or 201, or PHYSICS 101 and 111, or PHYSICS 201 and 211, or PHYSICS 205. Water flows in the natural environment, including cloud formation, rainfall, evaporation, infiltration, groundwater, river flows, lakes, estuaries, mixing, and erosion.
- 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.
- 465 Aquatic Microbial Ecology** 2 Course Prerequisite: BIOLOGY 372. Biological, ecological and environmental impact of microbes in aquatic systems.
- 470 Introduction to Economic Geology** 3 (2-3) Course Prerequisite: SOE 340; SOE 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.
- 471 [CAPS] International Wildlife Conservation** 3 Course Prerequisite: Junior standing. A broad survey of international wildlife conservation that touches on biological, social, and political aspects of wildlife management; focus on understanding the unique challenges that are encountered in the international arena.
- 474 [CAPS] [M] Physics and Chemistry of the Earth** 4 (3-3) Course Prerequisite: CHEM 101 or 105; CHEM 102 or 106; 4 credits of PHYSICS 101 or 201, or PHYSICS 101 and 111, or PHYSICS 201 and 211; SOE 101, 102, or 210; junior standing. Earth's operations as described by sub-disciplines of geology, chemistry, physics, and mathematics; earth's composition as related to solar system formation.
- 475 Groundwater** 3 (2-3) Course Prerequisite: CE 317 or SOE 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 SOE 475, CE 475). Cooperative: Open to UI degree-seeking students.
- 476 Biology and Ecology of Pacific Salmon** 3 Course Prerequisite: BIOLOGY 106 or 107; CHEM 101 or 105. The life histories, habitat requirements, and current issues facing Pacific salmon. Credit not granted for both SOE 476 and SOE 576.
- 477 [CAPS] Environmental Dispute Resolution and Conflict Management** 3 Course Prerequisite: Junior standing. Exploration of the consequences of complex social, economic, and environmental dynamics that lead to disputes and conflicts over environmental and natural resources; develop toolbox of skills and approaches that may be used to facilitate collaborative solutions and resolution of disputes.
- 480 How to Build a Habitable Planet** 3 An introduction to the origin and evolution of Earth including the effects of water, CO₂, and humans on the planet; exploration of radioactive decay, geochronology, radiogenic and stable isotope geochemistry, and chemical proxies in dynamic systems.
- 483 Sustainability: Applied Improvement or Promotion Projects** 3 Course Prerequisite: Minimum 3 credits of [PSCI] or [BSCI]; senior standing. An applied multidisciplinary introduction to sustainability; classroom learning followed with an applied sustainability improvement or promotion project for Washington State University.

- 484 Forest Management and Planning 3** Knowledge, skills, and experience in drafting a management plan and managing forested properties for a variety of values, ranging from generation of diverse forest products to maintenance of important environmental values associated with forest lands.
- 485 Disturbance Ecology 3 (2-3)** Course Prerequisite: SOE 204; SOE 301; SOE 302 or concurrent enrollment. Fire, disease, and other disturbances are primary drivers of structure and composition in terrestrial ecosystems; study of management of insect outbreaks and fungal organisms in combination with fire and other disturbances.
- 486 Applied Remote Sensing: From Drones to Satellites 3** Course Prerequisite: SOIL SCI 368 or concurrent enrollment, or SOIL SCI 374 or concurrent enrollment. Remote sensing to measure changes in forests, plants, wildlife, wildfire, crops, and geologic features; analyzing and applying data from satellites, drones, airplanes, and lidar to measures on the ground.
- 491 Senior Seminar 1** Course Prerequisite: Senior standing. Recommended preparation: Admission to a major in science, mathematics, or engineering.
- 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. Open to all SOE majors. Cooperative: Open to UI degree-seeking students.
- 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 earth science, environment and ecosystem science, forestry, and wildlife. S, F grading.
- 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 SOE 498 and SOE 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.
- 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.
- 505 Geodynamics 4 (3-3)** Overview of topics in geodynamics including conductive and convective heat transfer, mantle convection, plate flexure, faulting, and plate tectonics. Recommended preparation: Calculus and introductory physics.
- 510 Species Distribution Modeling 3** Theory and application of species distribution models, including niche, occupancy, and spatial capture-recapture models; manipulation of spatial data and software packages (ArcGIS, R, MaxEnt, PRESENCE). Cooperative: Open to UI degree-seeking students.
- 512 [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. Credit not granted for both SOE 412 and SOE 512.
- 516 Soil Processes in the Earth's Critical Zone 3** Soil geochemistry and processes; theory and applications with a focus on reactions at the solid, liquid, and gaseous interface between the lithosphere, atmosphere, hydrosphere, and biosphere. (Crosslisted course offered as SOE 416/516, SOIL SCI 416/516). Credit not granted for both SOE/SOIL SCI 416 and SOE/SOIL SCI 516. Recommended preparation: Basic knowledge of soils (e.g. SOIL SCI 201 or equivalent; CHEM 106; PHYSICS 102).
- 520 Radiation Instrumentation 3 (2-3)** Methods for analysis of radiation and radiative materials, including use of radiation monitoring equipment and analysis of instrument data.
- 521 Uses and Regulation of Radiation 3** Uses and regulation of radiation and radioactive materials in medicine, industry, power production, and scientific research.
- 524 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.
- 526 Ecology of the Columbia River 3** Interdisciplinary approach to the interconnections between the physical, geological, chemical, biological, and social dimensions of this large, iconic aquatic ecosystem. Recommended preparation: BIOLOGY 372.
- 531 Fundamentals of Environmental Toxicology 3** Fundamentals of toxicology; environmental fate and biological effects of chemical pollutants in air, water, and food.
- 532 Applied Environmental Toxicology 3** Overview of and current issues in the field of environmental toxicology.
- 535 Integrated Water Resources Science and Management 3** Introduction to the physical, social, and cultural drivers that shape how water is managed within the larger environmental and human landscape.
- 536 Climate Change Impacts on Physical, Natural, and Human Systems 3** Methods for studying human-caused climate variability and change; discussion of impacts on the physical environment and natural and human systems.
- 540 Agroecology 3** Social and ecological aspects of agriculture and human food systems.
- 541 Orogenic Systems 3 (2-3)** Detailed analysis of the construction of mountain belts. Field trip required. Recommended preparation: B.S. in Geology or related field. Cooperative: Open to UI degree-seeking students.
- 542 Extensional Tectonics 3** Case study of Western US Basin and Range Province to explore processes and dynamics of extensional tectonics. Field trip required. Recommended preparation: B.S. in Geology or a related field. Cooperative: Open to UI degree-seeking students.
- 544 Environmental Assessment 3** National and state policy frameworks for environmental assessment that support integration of science and the public into agency decision-making process. Credit not granted for both SOE 444 and SOE 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 SOE 445 and SOE 545. Cooperative: Open to UI degree-seeking students.
- 548 Applied Spatial Ecology 3** Foundational research principles in spatial ecology applied to new data; production of methods and results sections suitable for publication, using R and GIS programming. Recommended preparation: Introductory-level experience with R and ArcGIS.
- 552 Analytical Methods in Earth Sciences 3** Theory, operation, and application of analytical techniques commonly applied in Earth and Material Sciences, specifically electron probe microanalysis (EPMA), X-ray fluorescence (XRF), inductively-coupled plasma mass spectrometry (ICP-MS) and X-ray powder diffraction (XRD).
- 555 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.
- 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 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.
- 576 Biology and Ecology of Pacific Salmon 3** The life histories, habitat requirements, and current issues facing Pacific salmon. Credit not granted for both SOE 476 and SOE 576.

577 Advanced Environmental Hydrology 2 Water (ground, soil, surface, plant, atmosphere) dynamics and support of ecosystem functions and organization in natural, disturbed, and human/impacted systems. Recommended preparation: college-level physics, multivariate calculus, and introduction to hydrology.

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.

592 Advanced Topics in Environmental and Natural Resource Sciences V 1-4 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By instructor permission.

593 Graduate Seminar in Earth and Environmental Sciences 1 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. Cooperative: Open to UI degree-seeking students.

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 SOE 498 and SOE 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. Course Prerequisite: Admitted to a School of the Environment PhD program. 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
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Department Chair and Associate Professor, S. Meisel; Professors, K. Haas, I. Palmer; Associate Professors, A. Bawa (Vancouver), P. Christenson (Tri-Cities), D. DeHart, J. Hedges, H. Higgs (Vancouver), M. Holloman, M. Kinkel, R. Safavi; Assistant Professor, H. Meredith; Career Track Faculty, D. Janssen; Instructors, D. Doty, A. Rocha.

The Fine Arts Department provides a range of experiences in the visual arts. The department offers diverse courses of study leading to the degrees of Bachelor of Arts in Fine Arts (within this degree, there are three options at the undergraduate level: an Art Studio option, and an Art History option as BA-FA degrees, and a Bachelor of Fine Arts BFA in studio). At the graduate level there is the terminal degree of Master of Fine Arts (MFA). 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, digital media and interdisciplinary studies. These are supported by a strong art history component.

Students with a BA in Fine Arts - Art Studio Option or the BFA in Fine Arts, 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, a grounding in art history, and an awareness of contemporary trends in art 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.

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 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.

Student Learning Outcomes

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.

Admission Process

Prospective applicants for admission to the major are responsible for acquainting themselves with all requirements and procedures. Details including specific course requirements and portfolio submission are available in the departmental office or at finearts.wsu.edu.

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 MFA program at Washington State University is a three-year interdisciplinary program where students may focus in, 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. Graduates meet with faculty for one-on-one studio discussions. The program culminates in a thesis exhibition held in the Jordan Schnitzer Museum of Art WSU. A final oral examination and a thesis document are also required. The degree requires 57 graded credit hours and 5 credit hours of thesis work (FINE ART 700) totaling 62 credits. The MFA Handbook is viewable at finearts.wsu.edu.

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 CREDITS)

A student may be admitted to the Bachelor of Arts Fine Arts – Art History Option upon completing FINE ART 102 or 103 and 9 credits of 200-300-level art history courses, while maintaining a minimum cumulative GPA of 2.0 in FINE ART courses.

For the Bachelor of Arts in Fine Arts a total of at least 48 credits of FINE ART with a minimum cumulative GPA of 2.0 is required; 30 of these credits must be in 300-400-level courses.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
FINE ART 102	3
FINE ART 201 [ARTS]	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
FINE ART 103	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4
Quantitative Reasoning [QUAN]	3 or 4
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
Foreign Language, if necessary, and/or Electives	7

<i>Second Term</i>	<i>Credits</i>
FINE ART 202 [ARTS]	3
Humanities [HUM]	3
Foreign Language, if necessary, and/or Electives	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
FINE ART 301, 302 [M], or 404 [M] ²	3
FINE ART 303	3
FINE ART Studio Elective ³	3
300-400-level Electives	4
Electives	3

<i>Second Term</i>	<i>Credits</i>
FINE ART [M] Course ²	3
FINE ART 304	3
300-400-level Art History Elective ^{4,2}	3
Electives	5

Fourth Year

<i>First Term</i>	<i>Credits</i>
FINE ART [M] Course, if needed, or Electives ²	3
FINE ART 408 [CAPS]	3
300-400-level Art History Electives ^{4,2}	6
300-400-level Elective	3

<i>Second Term</i>	<i>Credits</i>
FINE ART 408	3
300-400-level Art History Electives ^{4,2}	6
300-400-level Electives	6

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² FINE ART [M]: Repeatable [M] course cannot be used to fulfill both of the two required [M] courses.

³ FINE ART studio electives are FINE ART 110, 320, 332, 340, 350, 370, or 381.

⁴ 300-400-level Art History Electives are AMER ST 473; ANTH 301; FINE ART 301, 302 [M], 305 [M], 307 [M], 308 [M], 331, 380, 401, 403 [M], 404 [M], 405 [M], 490, 498 [M], 499; PHIL 431, or as approved by advisor.

BACHELOR OF ARTS IN FINE ARTS - STUDIO OPTION (120 CREDITS)

A student may be admitted to the Bachelor of Arts Fine Arts – Studio Option upon completing FINE ART 102 or 103 and 9 credits of 200-300-level art history courses, while maintaining a minimum cumulative GPA of 2.0 in FINE ART courses.

For the Bachelor of Arts in Fine Arts a total of at least 48 credits of FINE ART with a minimum cumulative GPA of 2.0 is required; 30 of these credits must be in 300-400-level courses.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
FINE ART 102	3
FINE ART 110	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
FINE ART 103	3
FINE ART 111, 312, 320, or 370	3
FINE ART 201 [ARTS]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3 or 4

Second Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
FINE ART 340 or 350	3
Humanities [HUM]	3
Physical Sciences [PSCI] with lab ¹	4
Foreign Language, if necessary, or Elective	3 or 4

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
FINE ART 202 [ARTS]	3
FINE ART 332, 333, or 381	3
Foreign Language, if necessary, and/or Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
300-400-level FINE ART Elective	3
FINE ART 303	3

Social Sciences [SSCI]	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
300-400-level FINE ART Elective	3
FINE ART 304	3
Electives	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level Electives	6
300-400-level FINE ART Elective	3
FINE ART [M] Course ²	3
Integrated Capstone [CAPS]	3

<i>Second Term</i>	<i>Credits</i>
300-400-level Electives	7
300-400-level FINE ART Elective	3
FINE ART [M] Course ²	3

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² FINE ART [M]: Repeatable [M] course cannot be used to fulfill both of the two required [M] courses.

BACHELOR OF FINE ARTS (BFA) (120 CREDITS)

For the degree Bachelor of Fine Arts a total of at least 70 credits in FINE ART are required; 46 of these must be in 300-400-level courses.

Admission requirements (students should prepare for BFA review 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 credits 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>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
FINE ART 102	3
FINE ART 110	3
Quantitative Reasoning [QUAN]	3 or 4

<i>Second Term</i>	<i>Credits</i>
FINE ART 103	3
FINE ART 111, 312, 320, or 370	3
FINE ART 201 [ARTS]	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4

Second Year

<i>First Term</i>	<i>Credits</i>
300-400-level FINE ART Elective	3
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
FINE ART 340 or 350	3
Foreign Language or Electives	3 or 4

<i>Second Term</i>	<i>Credits</i>
300-400-level FINE ART Elective	3
FINE ART 202 [ARTS]	3
FINE ART 332, 333, or 381	3
Foreign Language and/or Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
300-400-level FINE ART Elective	3
FINE ART 303	3
FINE ART 312	3
Social Sciences [SSCI]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
300-400-level FINE ART Electives	6
FINE ART 304	3
Humanities [HUM]	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level FINE ART Electives	9
FINE ART 498 [M]	3
Integrated Capstone [CAPS]	3

<i>Second Term</i>	<i>Credits</i>
300-400-level FINE ART Electives	3
FINE ART [M] ²	3
FINE ART 493	4
Electives	3

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² FINE ART [M]: Repeatable [M] course cannot be used to fulfill both of the two required [M] courses.

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 FINE ART 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.

Exhibition Studies

Exhibition Studies is an interdisciplinary minor designed to facilitate successful career options of museum, gallery, collections management and / or cultural institution professions. The minor requires 18 credits of coursework including 9 credits of 300-400 level coursework taken in residence at WSU or through WSU-approved education abroad

or educational exchange courses. A grade of C or higher must be earned in all courses used to fulfill minor requirements. Required courses include 2 core courses (6 credits) selected from FINE ART 103, 201, 490 (3 credits with the Museum of Art/WSU, departmental approval required), and HISTORY 427. An additional 2 courses (6 credits) must be selected from ANTH 201, 430; ID 205, and SOC 373. The remaining 6 credits of electives must be selected from the following approved courses: AMDT 308; AMER ST/DTC/ENGLISH 475; ANTH 201, 350, 430; ARCH 456; COM 101, 105, 471; DTC/ENGLISH 336; FINE ART 102, 103, 201, 301, 303, 304, 307, 333, 381, 385, 405, 434, 435; FOR LANG 350; HISTORY 400, 427; ID 205, 305, 312; LND ARCH 327; MGMT 401; SDC 250, 350; SOC 373, 430; SOIL SCI 201, 202; TCH LRN 480. ANTH 498; FINE ART 490, 495; HISTORY 498, and SOIL SCI 498 and other courses may be used towards the elective coursework requirement if approved by the Department of Fine Arts.

Certificates

The Business of Art

The Business of Art Certificate is open to all majors. This program harnesses the skills and mindset of the entrepreneur to empower students interested in implementation of applied, innovative arts projects and prepares students to access careers that require skills in both business and art. To complete the certificate students must complete 15 credits consisting of two core courses and three additional electives with a minimum GPA of 2.0. Required core courses include one from FINE ART 102, 103, or 110; and ENTRP 490. Three additional electives should be drawn from ENTRP 426; ENTRP 489 or FIN 223; FINE ART 332, 340, or 350; and FINE ART 363.

Eco Arts and Public Engagement

Students in the Eco Arts and Public Engagement Certificate program will learn and explore how to best synergize the fields of ecology, creative writing, art, and landscape architecture to further their professional careers as creative environmental advocates and innovators, socially engaged community stewards, and cultivators and designers.

The certificate requires 15 credits with a minimum GPA of 2.0 and a minimum of one course from each from each of four emphasis areas: Fine Arts (FINE ART 201, 321, 331, 363, 365, or 435); English (ENGLISH 219, 251, 341, 470, or an ENGLISH 498 Internship related to the Eco Arts on the Palouse project); Landscape Architecture (LND ARCH 150, 327, or 380); and School of the Environment (SOE 110, 280, 285, or 300). Additionally, HORT 330 is required.

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 [ARTS] 2D Art and Design 3 (0-6) Introduction to two-dimensional art and design through an interdisciplinary approach using a combination of manual methods, digital imaging technologies, and machine tools.

103 [ARTS] 3D Art and Design 3 (0-6) Introduction to three-dimensional art and design through an interdisciplinary approach using a combination of manual methods, digital imaging technologies, and machine tools.

110 [ARTS] 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 [ARTS] World Art History I 3 Art and architecture of Western and Non-Western cultures from approximately 3000 BCE to 1300 CE.

202 [ARTS] World Art History II 3 Art and architecture of Western and Non-Western cultures from 1300 to 2010.

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 [ARTS] [M] Arts of Ancient Greece and Rome 3 The arts of ancient Greece, Etruria, and Rome from the Greek Dark Ages to the early Christian era.

307 [ARTS] [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 Women artists of the Middle Ages through the 18th century. (Crosslisted course offered as FINE ART 308, WGSS 308.)

310 [M] Women Artists II 3 Women artists of the 19th to 20th century. (Crosslisted course offered as FINE ART 310, WGSS 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 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 Art and Design - Print and Screen** 3 (0-6) Introduction to principles and processes of digital media through print/screen based projects; emphasis on image/text relationships, color, composition.
- 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 [ARTS] Ceramics** 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. 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 [ARTS] Sculpture** 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. 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.
- 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) Fundamentals in digital photography in conjunction with image editing and printing techniques; formal, conceptual, 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 and technical development with photography including location and studio lighting and camera techniques; research and portfolio development. 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. Intermediate principles and processes of digital imaging workflow including software, image compositing, color management and output options.
- 398 Sketchbook, Creative Ideation** 3 May be repeated for credit; cumulative maximum 12 hours. Explores strategies for documenting, synergizing, and maintaining creative ideas, including collecting information, brainstorming, and mind-mapping to aid creative integration; no drawing experience required, and drawing will not be the main subject of instruction.
- 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 May be repeated for credit; cumulative maximum 6 hours. Contemporary theories of art and how those theories are developed.
- 408 [CAPS] Art History Thesis** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to the major in Fine Arts, with an Art History option; junior standing. 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; admitted to the major in Fine Arts. Continuation of FINE ART 321. Advanced problems in painting. Six credits only with permission of instructor.
- 433 Design for Print** 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) Interactive possibilities in digital media; may include web-based projects, installation, creative coding, AR/VR, 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; cumulative maximum 6 hours. Course Prerequisite: FINE ART 382; admitted to the major in Fine Arts. Advanced studio art techniques and development; research of historic and contemporary photographic trends; discussion of personal direction.
- 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: Admitted to the 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: Admitted to the major in Fine Arts. Experience in work-related fine arts environments for practical application and experience. S, F grading.
- 498 [CAPS] [M] Contemporary Issues Seminar** 3 Course Prerequisite: FINE ART 304; senior standing. Research seminar examining current issues confronting art and artists; students learn how to develop their professional art career.
- 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** 3 May be repeated for credit; cumulative maximum 9 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.
- 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.
- 555 Critical Practices** 6 (4-8) May be repeated for credit; cumulative maximum 36 hours. Studio practice, critical analysis of the student's own and others' work, investigation of critical theory and visual culture through display and making art via a variety of disciplines. Cooperative: Open to UI degree-seeking students.
- 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

sfs.wsu.edu

**Food Science & Human Nutrition Bldg, 106
509-335-4763
food.science@wsu.edu**

Interim Director and Associate Professor, G. Ganjyal; Professors, C. Edwards, T. Henick-Kling, C. Ross, M. Zhu; Associate Professors, J. Harbertson; Assistant Professor, M. Michael; Instructors, T. Bernhard, UI Affiliates: Professors, C. Bohach, S. Mimmich, G. Moller, D. Ryu; Associate Professor, G. Unlu; Assistant Professors, C. Cantley; Da Chen.

The School of Food Science (SFS) works closely with the University of Idaho (UI) to offer courses of study in the undergraduate major field of food science. Some traveling to the UI campus will occur usually starting the junior year. Students complete a prescribed course of study leading to the Bachelor of Science in Food Science with an option in general science emphasizing areas in processing and engineering, food sensory, food safety, hospitality and business management, business, science, enology, or fermentation science. Graduate degrees are also offered leading to Master of Science in Food Science and a 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, engineering, microbiology, nutrition, physics, 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) classes. In the junior and senior years, the curriculum emphasizes courses in food processing and engineering, food chemistry, food analysis, food microbiology, sensory evaluation, and other specialized areas such as the processing and manufacture of cereal and dairy products, and fermented foods. A student may be admitted to the Food Science major upon making their intention known to the department. Contact the Food Science Advisor to begin the process, science@wsu.edu.

Student Learning Outcomes

- Our graduating seniors will:
- Demonstrate a level of comprehension of Food Science concepts and analyses equivalent to or greater than that required by the Institute of Food Technologists Core Competencies Guidelines.
 - Critically evaluate and summarize a food science issue or problem.
 - Apply critical thinking and problem-solving skills to address current challenges in the food industry.
 - Communicate effectively in both written and oral format with an audience possessing varying degrees of food science knowledge.

See <https://sfs.wsu.edu/student-learning-outcomes-undergraduate/>.

Options in Food Science

The **General Option** emphasizes open electives so students can take specific classes in their area of interest or choose a minor to complement their

degree. This option prepares students to work in the food industry and related industries, government agencies, and governmental organizations. This degree is an IFT (Institute of Food Technologists) Approved Undergraduate Program and provides a strong science background leading to graduate or professional degrees in various fields.

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. 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 biology, chemistry, microbiology, 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 <https://sfs.wsu.edu/personnel/> 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 and TOEFL 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), visit Food Science and Human Nutrition (FSHN) Bldg., Rm 106, or review 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.

GENERAL OPTION (120 CREDITS)

A student may be admitted to the Food Science – General Option major upon making their intention known to the department.

The general option under 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>Credits</i>
CHEM 105 [PSCI]	4
FS 110	3
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 107 [BSCI]	4
CHEM 106	4
ENGLISH 101 [WRTG] or 105 [WRTG]	3

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 345	4
COM 102 [COMM] or H D 205 [COMM]	3 or 4
PHYSICS 101	3
PHYSICS 111	1
Social Sciences [SSCI]	3
Emphasis Electives ¹	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 140 or 333	3
CHEM 370 OR MBIOS 303	3 or 4
FS 220	3
MBIOS 101, or MBIOS 304 and 305	4 or 6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
FS 302 [M]	1
FS 303	3
FS 416	3
FS 417	2
Humanities [HUM]	3
STAT 212	4

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
FS 350	5
FS 418	1
FS 432	3
FS 433	1
Emphasis Electives ¹	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
FS 460	3
FS 461 [M]	1

Emphasis Electives ¹	3
Food Science Electives ²	8
<i>Second Term</i>	
FS 470	3
FS 489 [CAPS]	3
Emphasis Electives ¹	4
Food Science Electives ²	4

¹ Emphasis Electives (14 credits required): Approved courses include ACCTG 230; AFS 101, 201, 401; CROP SCI/HORT 102; ECONS 101, 351; ENGLISH 402 [M] or 403 [M]; ENTOM 101, 150; HBM 258; HORT 435; MGMT 301; MKTG 360; SOIL SCI 101; or VIT ENOL 113; or as approved by advisor.

² Food Science Electives (minimum 12 credits, but additional FS courses count towards Emphasis electives): Approved courses include FS 201, 301, 304, 329, 401, 402, 405, 406, 407, 409, 429, 430, 436, 464, 465, 466, 475, 495, 496, 499, or as approved by advisor.

Minors

Food Science

A minor in Food Science requires 16 semester credits including FS 110 or 201, and 220. Additional credits may be selected from FS 303*/302L, 350, 401, 405, 416*, 417, 429, 430, 433*/432L, 460, 461, 465, 466, 470, 489, or other courses upon departmental approval. Nine credits of upper-division course work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. No courses applied to the minor may be taken pass/fail.

* Taught on the University of Idaho (UI) campus as a UI Cooperative course. Apply through the Non-degree Cooperative program to enroll in UI courses. These courses are processed as transfer credit, so will not count towards the nine credits in residence.

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 may be required. Cooperative: Open to UI degree-seeking students.

201 [BSCI] Science on Your Plate 3 Overview of the basic science behind foods; explores the discoveries, inventions, myths, and misconceptions related to foods; examines the evolution of foods and government regulations for conventional and organic foods. 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.
- 301 Food Mycology** 3 (2-3) Course Prerequisite: MBIOS 101 or concurrent enrollment, or MBIOS 304 and 305, either with concurrent enrollment. Survey of the fungi important in food production, storage, and spoilage. (Crosslisted course offered as FS 301, PL P 301). 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. Field trip required. Cooperative: Open to UI degree-seeking students.
- 303 Food Processing** 3 Course Prerequisite: FS 110; FS 220; concurrent enrollment in FS 302; 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 Chemistry and Processing** 3 Course Prerequisite: CHEM 345. Cereal and legume structure, chemistry, and function as it relates to processing and utilization. Cooperative: Open to UI degree-seeking students.
- 329 Dairy Foods Composition and Quality** 4 (3-3) Course Prerequisite: FS 110; CHEM 345. Introduction to the dairy processing industry. Chemistry of milk components. Standards of identity of dairy products. Quality control tests of fluid milk. Microbiology of fluid milk. Organoleptic properties of fluid milk. Chemical changes during storage. Federal, state, and international regulations applied to dairy foods. Cleaning and sanitation in dairy manufacturing plants. Dairy effluents and waste management. Two 1-day field trips required. Cooperative: Open to UI degree-seeking students.
- 350 Instrumental and Sensory Analysis of Food** 5 (3-6) Course Prerequisite: CHEM 345; FS 110 or 201; FS 302 and 303; STAT 212. Evaluation of the chemical and physical properties of foods including both sensory and instrumental analysis. 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.
- 402 Industrial Fermentations** 3 Course Prerequisite: CHEM 370 or MBIOS 303; MBIOS 101 or 305. Science and technology associated with industrial-scale food fermentations. Cooperative: Open to UI degree-seeking students.
- 405 Ciders and Other Fermented Foods** 3 (2-3) Course Prerequisite: BIOLOGY 106 and 107, or MBIOS 101, or MBIOS 304 and 305. Chemistry, microbiology, and technology associated with the production of cider, beer, and other food fermentations. Two half-day field trips required. (Crosslisted course offered as FS 405, ANIM SCI 405). Recommended preparation: FS 304 and 465. Cooperative: Open to UI degree-seeking students.
- 406 Evaluation of Dairy Products** 2 Identifying attributes of different dairy products caused by production, processing, and storage issues; determining probable cause of those attributes and how to reduce their occurrence. Recommended preparation: FS 329; FS 429; FS 430. Cooperative: Open to UI degree-seeking students.
- 407 Evaluation of Dairy Products Lab** 1 (0-3) Course Prerequisite: FS 406 or concurrent enrollment. Identifying defects in dairy products and intense training for Collegiate Dairy Products Evaluation Competition. Cooperative: Open to UI degree-seeking students. S, F grading.
- 409 Principles of Environmental Toxicology** 3 Nature, properties, effects, and detection of toxic substances in the environment and in environmentally exposed species, including humans. Credit not granted for both FS 409 and 509. Recommended preparation: BIOLOGY 102 or 107; CHEM 102; CHEM 105; CHEM 106; STAT 212. Cooperative: Open to UI degree-seeking students.
- 416 Food Microbiology** 3 Course Prerequisite: MBIOS 101, or MBIOS 304 and 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; admitted to the major in Food Science; junior standing. Development of skills and communication tools and techniques for oral presentations of current food science research. Cooperative: Open to UI degree-seeking students.
- 429 Dairy Processing** 3 Course Prerequisite: MBIOS 303 or CHEM 370; 4 credits of PHYSICS 101, or PHYSICS 101 and 111. Basic dairy chemistry, microbiology, and processing from cow to consumer; dairy quality, safety, and sanitation; milk components, fluid milk, concentrated milk, cream, butter, ice cream, fermented milk, cheese, and dairy powders. Credit not granted for both FS 429 and FS 529. Recommended preparation: FS 110 or VIT ENOL 113. Cooperative: Open to UI degree-seeking students.
- 430 Dairy Processing Lab** 1 (0-3) Course Prerequisite: FS 429 or concurrent enrollment. Hands-on training in processing of various dairy products (e.g., fluid milk, butter, ice cream, cheese, and yogurt); milk pick-up and raw milk quality; cleaning and sanitation of dairy plants. Credit not granted for both FS 430 and FS 530. Cooperative: Open to UI degree-seeking students.
- 432 Food Engineering** 3 Course Prerequisite: FS 303; 4 credits of PHYSICS 101, or PHYSICS 101 and 111. Food engineering for improving the efficiency of food processing operations and quality processed food; heat transfer, steam, 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. Credit not granted for both FS 436 and 536. Cooperative: Open to UI degree-seeking students.
- 460 Food Chemistry** 3 Course Prerequisite: CHEM 345; CHEM 370 or 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.
- 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: CHEM 370 or MBIOS 303; MBIOS 101 or 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). Credit not granted for both FS/VIT ENOL 465 and FS 565. Recommended preparation for graduate students: CHEM 370 or MBIOS 303; MBIOS 304; MBIOS 101 or 305. Cooperative: Open to UI degree-seeking students.
- 466 Wine Microbiology and Processing Laboratory 1** (0-3) Course Prerequisite: FS 465 or concurrent enrollment; MBIOS 101 or 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. Credit not granted for both FS 470 and FS 570. Recommended preparation: FS 416; FS 432; FS 460. Cooperative: Open to UI degree-seeking students.
- 475 Quality Management Tools for Food Products 3** Course Prerequisite: FS 302 or concurrent enrollment; FS 303 or concurrent enrollment; STAT 212 or concurrent enrollment. Fundamental concepts for quality management and improvement of bio manufactured goods, and application of principles of statistical process control in a variety of situations and systems. Cooperative: Open to UI degree-seeking students.
- 489 [CAPS] Food Product Development 3** (1-6) Course Prerequisite: FS 302; 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.
- 509 Principles of Environmental Toxicology 3** Nature, properties, effects, and detection of toxic substances in the environment and in environmentally exposed species, including humans. Credit not granted for both FS 409 and 509. Recommended preparation: BIOLOGY 102 or 107; CHEM 102; CHEM 105; CHEM 106; STAT 212. 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.
- 515 Food Fermentations -- Microbiology and Technology 3** Fundamental understanding of food fermentation science and technology knowledge and principles; application of scientific knowledge to assess and solve food fermentation science and technology problems. Recommended preparation: MBIOS 101 or 305; MBIOS 303. 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.
- 529 Dairy Processing 3** Basic dairy chemistry, microbiology, and processing from cow to consumer; dairy quality, safety, and sanitation; milk components, fluid milk, concentrated milk, cream, butter, ice cream, fermented milk, cheese, and dairy powders. Credit not granted for both FS 429 and FS 529. Recommended preparation: FS 110 or VIT ENOL 113. Cooperative: Open to UI degree-seeking students.
- 530 Dairy Processing Lab 1** (0-3) Course Prerequisite: Concurrent enrollment in FS 529. Hands-on training in processing of various dairy products (e.g., fluid milk, butter, ice cream, cheese, and yogurt); milk pick-up and raw milk quality; cleaning and sanitation of dairy plants. Credit not granted for both FS 430 and FS 530. 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.
- 532 Advanced Food Microbiology 3** Current topics in food-borne pathogens, including novel detection method, virulence and pathogenesis, and their interaction with environment and host. Recommended preparation: BIOLOGY 107, MBIOS 305, or FS 416. Cooperative: Open to UI degree-seeking students.
- 536 Principles of Sustainability 3** Issues and processes in sustainability; resource management, waste generation and management; industrial approaches to sustainability; case studies. Credit not granted for both FS 436 and 536. 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). Credit not granted for both FS/VIT ENOL 465 and FS 565. Recommended preparation for graduate students: CHEM 370 or MBIOS 303; MBIOS 304; MBIOS 101 or 305. Cooperative: Open to UI degree-seeking students.

570 Advanced Food Technology 3 Physical principles of food preservation and recent advances in food technology. Credit not granted for both FS 470 and FS 570. Recommended preparation: FS 416; FS 432; FS 460. Cooperative: Open to UI degree-seeking students.

583 Advances in Cereal Chemistry and Technology 3 Chemistry and functionality of cereal grains as related to their processing, product development, and nutrition. Recommended preparation: CHEM 345, FS 460, or MBIOS 303. 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. Course Prerequisite: Admitted to the Food Science PhD program. 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.

General Studies — Liberal Arts

CAS Advising Center, Daggy 201
509-335-8731

Information about Bachelor of Arts in Humanities or Social Sciences may be found under the School of Languages, Cultures, and Race.

General Studies — Sciences

Thompson 309
509-335-4581

Associate Director, S. Ritchie

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. There are three options under General Studies - Sciences: General Studies - Biological Sciences, General Studies - Mathematics, and General Studies - Physical Sciences. Program planning and advising are provided by the School of Biological Sciences, the Department of Mathematics and Statistics, and the Department of Physics and Astronomy, respectively. For more information on specific advisors and how to contact them, go to <https://cas.wsu.edu/undergraduate-studies/advising/meet-our-advisors/>

Student Learning Outcomes

- Ability to understand and communicate effectively about scientific or mathematical concepts.
- Ability to think critically and adapt concepts to analyze and solve problems
- Ability to apply scientific or mathematical skills in formulating logical hypotheses to explain natural phenomena.
- Ability to design tests of hypotheses through experiments, observational studies, mathematical models, or statistical tests.
- Ability to identify central body of knowledge in a scientific discipline or mathematical specialty.
- Ability to use scientific or mathematical knowledge to analyze contemporary social, cultural, and environmental issues and contribute to informed opinion.

Plans of Study

Students may follow Plan A or Plan B for each of the General Studies options below, except for the Mathematical Science option which offers only the Plan A option. All options require 120 credit hours for the degree. In addition, students will satisfy the University Core Requirements and College of Arts and Sciences graduation requirements.

Students must complete two [M] courses and at least 40 of the 120 hours for the degree must be at the 300-400-level. Honors students must complete the Honors College requirements which replace the UCORE requirements but must satisfy the College of Arts and Sciences additional graduation requirements.

Students who complete a General Studies Science curriculum receive a Bachelor of Science degree. The transcript (not the diploma) will identify the option and areas of concentration.

Plan A—Primary/Secondary Concentration:

Primary concentration: a minimum of 24 semester credits, including at least 15 upper division (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 upper division (300-400-level) credits, must be completed in an area specified by the option or in another academic program with a minimum 2.00 GPA.

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 upper division (300-400-level) credits must be completed with at least a 2.0 GPA. 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 are broadly defined and include astronomy, chemistry, geology, mathematics, physics, and approved courses in computer sciences and engineering.

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 - 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. Plan A is the only option offered for this degree. It requires prerequisites of three semesters of calculus and linear algebra. Students will work with the academic

advisor in the Department of Mathematics and Statistics 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 must satisfy all prerequisite work for 300-400 level courses. Students will work with the academic advisor in the Department of Physics and 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 - BIOLOGICAL/ MATHEMATICAL/PHYSICAL SCIENCES PLAN A AND PLAN B (120 CREDITS)

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. Students must complete two [M] courses and at least 40 of the 120 hours for the degree must be at the 300-400-level.

General Studies—Biological Sciences. This degree has two plans of study (Plan A or Plan B). Both require BIOLOGY 106 and 107, CHEM 105, 106, and 345, and MATH 140 or 171.

Plan A students complete 24 credits (minimum 15 credits at the 300-400 level) from the following academic areas: biology, biochemistry, botany, genetics and cell biology, microbiology, zoology, and approved biology-based courses in agriculture. In addition, students must complete a 15 credits (minimum 6 credits upper division) from a concentration area outside of the biological sciences. Both concentration areas require a minimum 2.0 GPA.

Plan B students complete a total of 39 credits (minimum 21 credits at the 300-400 level) in three or more departments or program areas chosen from biology, biochemistry, botany, genetics and cell biology, microbiology, zoology, and approved biology-based courses in agriculture. Students must complete a minimum of 9 credits in each department or program area with a minimum 2.0 GPA.

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- Mathematical Sciences. Primary Concentration: Students are required to complete minimum of 24 credits (minimum 15 credits at the 300-400 level) including MATH 171, 172, 273, and 220. Other approved coursework includes any MATH course, or STAT 360, 370, 422, 423, 443, 446, 447, or 456. Secondary concentration: a minimum of 15 semester credits (including a minimum 6 credits at the 300-400-level), must be completed in another academic department, program or area published in the catalog. Both concentration areas require a minimum 2.0 GPA.

General Studies- Physical Sciences. This degree has two plans of study (Plan A and Plan B). Both require CHEM 105 and 106, MATH 171 and 172, and PHYSICS 201 and 202.

Plan A students must have a primary and secondary concentration. For the primary concentration students are required to complete minimum of 24 credits (minimum 15 credits at the 300-400 level) from one of the following areas: applied technologies (computer science, engineering, or other technical disciplines), astronomy, chemistry, geology, mathematics, physics, or statistics. Students will work with the academic advisor for this program in the Department of Physics and Astronomy. For the secondary concentration a minimum of 15 semester credits (including a minimum 6 at the 300-400-level), must be completed in another academic department, program or area published in the catalog. Both concentration areas require a minimum 2.0 GPA.

Plan B students must complete 39 credits (minimum of 21 credits in the 300-400 level) in three or more physical sciences with a minimum of 9 credits in each concentration area and a minimum 2.0 GPA in each concentration area.

Paul G. Allen School of Global Health

globalhealth.wsu.edu

Paul G. Allen Center for GAH; 245 SE Ott Road

509-335-2489

globalhealth@wsu.edu

Director and Professor Dr. T. Kawual; Associate Director and Professor, T. Baszler; Regents Professor, D. R. Call; Professors, J. Celli, T. Marsh, M. K. Njenga, J. Yoder; Associate Professors, L. Knodler, F. Landkester, E. Lofgren, S. T. Mwangi, A. Omsland, V. Vadyvaloo; Assistant Professors, P. Fernandez, B. Gunn, M.A. Islam, M. Letko, S. Omulo, E. Osoro, B. Ramay; Affiliate Professors, T. Bankhead, K. Brayton, S. Broschat, A. Nicola, S. Noh; Affiliate Assistant Professors, O. Cornejo, M. Quinlan, D. Shaw; Adjunct Faculty, R. Bishop, S. Cleveland, A. Dijkeng, J. Futse, M. F. Galletti, G. Kaufman, K. K. Lahmers, Y. Lin, B. Martin, M. Mousel, E. Mpolya, I. O. Olatoye, S. Ramabu, G. Shirma, M. Ueti; Regents Professor Emeritus, T. F. McElwain.

The Paul G. Allen School for Global 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. Students conduct research on the WSU-Pullman campus, including in the state-of-the-art BSL2 and BSL3 laboratories in the Allen Center, and in global field sites. 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 range of specialized facilities which are available in the cooperating academic units.

UNIQUE ASPECTS OF THE PROGRAMS

- Multidisciplinary options. Students working with Allen School faculty can enroll in specific disciplinary programs such as Anthropology, Economics, Immunology/Infectious Diseases, and Molecular Biosciences or develop an individualized Interdisciplinary Program.
- Real-world education. Blending rigorous academic training with experiential learning
- Learning from leaders in the discipline. Providing students with opportunities to work with top scientists, practitioners, and leaders in global animal health, both on campus and in the field.

Certificates

Global Animal Health Pathway

The Global Animal Health Pathway (GAHP) requires a minimum of 15 course credits to earn a certificate. These credits will be satisfied through both required and elective courses: 5 credits will be satisfied through required coursework, 6 credits (minimum) will be satisfied through the required GAH Project, and the remaining credits, up to 4, will be satisfied through elective courses or additional

project work. Elective credits may be obtained from courses offered by WSU, and on-line courses offered through the University of Washington Global Health Pathway that are approved for the GAHP. Required courses and approved elective courses are listed below. Students wishing to enroll in the GAHP program must maintain a minimum satisfactory level or 3.00 GPA in graded professional coursework and remain in the upper 75% of the DVM class.

REQUIRED COURSES (5 credits): VET MED 501, 597 (Section 6), 576, 600, and GLANHLTH 503.

REQUIRED GLOBAL ANIMAL HEALTH PROJECT (6 credits minimum): All GAHP students will be required to complete a global animal health project. The student will work with an Allen School faculty mentor to design a project, which may be completed in conjunction with a project team outside the Allen School. The project must be oriented toward global animal health and be approved by the GAHP Advisory Committee. The student will register for VET MED 600P (Scientific Writing and Presentation – required in DVM curriculum, see above under required courses) for project write-up and presentation. The student will devote at least 6 weeks (6 credits) during one summer to complete this requirement and should register for one or more of the following WSU courses to meet the required course credit. Coursework: VET MED 504, 599, 676, or 690.

ELECTIVE COURSES (up to 4 additional credits): Elective course credits may be earned through formal classroom instruction during any semester or summer session and/or through the completion of an additional summer project. Coursework: VET MED 504, 599, 676, 690, SPANISH 362, or SPANISH 405.

Foreign Language Skills: A foreign language is not required, but is highly recommended. The foreign language proficiency provides students with an in-depth understanding of cultural and contextual elements critical to working in the field of global animal health. Further, foreign language proficiency will increase the graduate's competitiveness for global health career opportunities upon graduation.

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.

503 Animal Human Disease Interface 1 Use of evidence-based tools in addressing global animal health challenges at the human-animal interface.

504 Multidisciplinary Approaches to Global Health Challenges 1 Multidisciplinary collaboration around an important global health problem that includes a significant animal health component.

563 Deconstruction of Research 3 Course Prerequisite: Graduate standing in a WSU biomedical based graduate program. Nature and development of scientific investigation through oral and written avenues, and methods of critical analyses applied to questions of biomedical interest. (Crosslisted course offered as NEUROSCI 563, GLANHLTH 563, MBIOS 563, VET MICR 563, VET PATH 563, VET PH 563).

564 Topics in Biomedical Experimentation V 1-3 May be repeated for credit; cumulative maximum 6 hours. Examination of the philosophy of experimental design and practical application and analysis of various experimental approaches in biomedical research. Recommended preparation: graduate standing in a WSU biomedical-based program, and an advanced undergraduate or graduate statistics course. (Crosslisted course offered as NEUROSCI 564, GLANHLTH 564, MBIOS 564, PHIL 564, VET MICR 564, VET PATH 564, VET PH 564).

Department of History

history.wsu.edu
Wilson-Short 301
509-335-5139

Department Chair and Professor, M. Sutton; Professors, R. Bauman, P. Boag, W. Brecher, S. Kale, L. Mercier, S. Peabody, J. Spohnholz, O. Svengen; Associate Professors, B. Farley, L. Gordillo, L. Hatter, L. Heidenreich, N. Kawamura, R. McCoy, J. Sanders, R. Sun, J. Thigpen, X. Wang, A. Wright; Assistant Professor, A. Chastain; Clinical Faculty, K. Faunce, S. Fountain, T. Hanshew, T. Jordan, K. Phoenix, C. Stratton, C. Weller, K. Whalen; Instructors, J. Dodson, R. Ellis, R. Franklin, N. Harrington, S. Herzog, F. Hill, B. Miller, L. Musgrave, E. Smelyansky, L. Turner-Rahman, A. Whelchel; Staff, J. Pike, L. Torkelson.

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.

Undergraduate Learning Goals

- **Thesis:** To clearly state an argument, describe the topic comprehensively, and deliver all relevant information for full understanding.
- **Source Criticism:** To identify and consider the influence of historically-based contexts and assumptions.
- **Historiography:** To demonstrate awareness of the contested character of history and the historical record.
- **Analysis of Evidence:** To integrate and synthesize knowledge from multiple sources through effective qualitative and/or quantitative evidence analysis.
- **Research Skills:** To demonstrate research retrieval skills through the identification and selection of appropriate sources.
- **Communication Skills:** To communicate effectively through formal written work, oral presentations, and other media.

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 (126 CREDITS)

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 complements a History endorsement.

To be admitted to the History - Education option, a student must make their intention known to the department and have earned at least a 2.5 cumulative GPA.

A grade of C or better is required in all history courses used to fulfill the requirements for this degree.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
HISTORY 101 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3 or 4

<i>Second Term</i>	<i>Credits</i>
ECONS 102 [SSCI] or POL S 101 [SSCI]	3
ENGLISH 101 [WRTG]	3
HISTORY 102 [HUM]	3
HISTORY 121	3
Physical Sciences [PSCI] with lab ¹	4

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS] (Non-History) ²	3
ECONS 102 [SSCI] or POL S 101 [SSCI]	3
ENGLISH 201 [WRTG], 301 [WRTG], 302 [M], or 402 [WRTG] ³	3
HISTORY 110	3
HISTORY 308 or 410	3

<i>Second Term</i>	<i>Credits</i>
200-level HISTORY course ⁴	3
HISTORY 111	3
HISTORY 120	3
HISTORY 279	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
300-400-level HISTORY courses ⁵	6
HISTORY 300 [M]	3
TCH LRN 301	3
Foreign Language, if needed ⁶	0 - 4

<i>Second Term</i>	<i>Credits</i>
300-400-level HISTORY course ⁵	6
HISTORY 324 or 380	3
Integrative Capstone [CAPS]	3
Foreign Language, if needed ⁶	0 - 4

<i>Third Term</i>	<i>Credits</i>
TCH LRN 317 (Summer Session)	2

Fourth Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR] (Non-History) ²	3
HISTORY 469 [M]	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

<i>Second Term</i>	<i>Credits</i>
ED PSYCH 468	3
HISTORY 324 or 380	3
TCH LRN 467 [M]	3
TCH LRN 469	2 - 3
TCH LRN 470	3

Fifth Year

<i>First Term</i>	<i>Credits</i>
TCH LRN 415	16
Complete History Department's Exit Survey	

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² Only 3 HISTORY courses may be used to meet UCORE requirements.

³ One from ENGLISH 201, 301, 302, or 402 is required for admission to the Teacher Education Program. Students who take ENGLISH 302 will need to take an additional [WRTG] or [COMM] course.

⁴ 200-level HISTORY course: Choose one from HISTORY 230, 232, 270, 271, 272, 273, 274, or 275.

⁵ History education majors must choose their 12 hours of 300-400-level electives from the following: one from early U.S.: HISTORY 311, 313, 314, 316, or 415; one from Modern U.S.: HISTORY 312, 318, 319 or 417; one from Europe: HISTORY 340, 341, 342, 343, 344, 345, 347, 349, 350, 353, 354, 356, 359, 367, 368, 381, 382, 386, 391, 444, 448 or 463; and one from non-West: HISTORY 291, 294, 306, 315, 325, 330, 331, 332, 333, 334, 335, 337, 339, 364, 366, 370, 371, 372, 373, 374, 377, 387, 388, 435, 436, 474, 475, 476, 483, 492, or 495.

⁶ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

HISTORY - GENERAL OPTION (120 CREDITS)

36 credits of history are required, including 6 credits of US history, 6 credits of European history, and 9 credits of Non-Western/Global history; 21 credits at the 300-400-level, which must include HISTORY 300 and 469; and a 12-credit concentration (at least 6 credits 300-400-level) in the same or in related disciplines with the advisor's approval.

To be admitted to the History – General option, a student must make their intention known to the department and have earned at least a 2.0 cumulative GPA.

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.

A grade of C or better is required in all history courses used to fulfill the requirements for this degree.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3 or 4
Electives	4

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
HISTORY 105 [ROOT]	3
Social Sciences [SSCI]	3
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Biological Sciences [BSCI] with lab ¹	4
HISTORY Electives ²	6
Electives	3

<i>Second Term</i>	<i>Credits</i>
Concentration Course ³	3
Physical Sciences [PSCI] with lab ¹	4
Foreign Language, if needed, or Elective	3 or 4
HISTORY Electives ²	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Concentration Course ³	3
Foreign Language, if needed, or Elective	3 or 4
HISTORY Electives ²	9

<i>Second Term</i>	<i>Credits</i>
HISTORY 300 [M]	3
Concentration Course ³	3
HISTORY Electives ²	3
Electives ⁴	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
Concentration Course ³	3
HISTORY Electives ²	6
Electives ⁴	6

<i>Second Term</i>	<i>Credits</i>
HISTORY 469	3
Integrative Capstone [CAPS]	3
Electives ⁴	6
Complete History Department's Exit Survey	

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² History Electives – 30 credits required, minimum 15 credits at 300-400 level and one [M] course - must include 6 hours US history (HISTORY 110, 111, 201, 216, 235, 250, 280, 298, 308, 311, 312, 313 [M], 314, 316, 318, 319, 324, 328, 360, 361, 320, 321, 322, 390, 398, 409, 410, 415, 417, 423, 486, or 496), 6 hours European history (HISTORY 101, 102, 340, 341, 342, 343, 344, 345, 347, 349, 350, 353, 354, 356 [M], 359, 367, 368, 381, 382, 386, 391, 444, 448, 462, or 463 [M]) and 9 hours Non-Western/Global history (HISTORY 230, 270, 271, 272, 273, 274, 275, 291, 306, 325, 330 [M], 331, 332, 333, 334, 335, 337, 339, 366, 370, 371, 372 [M], 373, 374, 377 [M], 387, 388, 435, 436, 474, 475, 476 [M], 483, 492, or 495).

³ Concentration Courses (12 credits, minimum 6 credits at the 300-400-level): Courses in the same or related disciplines with the advisor's approval. In consultation with their advisor, students are encouraged to select a concentration area that best meets their career objectives. Internal concentrations and courses include: Africa and the Middle East: HISTORY 272, 273, 274, 306, 371, 372, 396; American West: HISTORY 308, 319, 320, 324, 328, 398; Asia: HISTORY 201, 270, 271, 272, 273, 275, 306, 370, 371, 372, 373, 374, 377, 379, 387, 474, 475, 476; Atlantic History: HISTORY 230, 231, 235, 250, 274, 280, 308, 313, 314, 330, 331, 332, 333, 334, 335, 339, 435, 492; Diplomatic History: HISTORY 311, 312, 366, 387, 388, 463, 486, Environmental History: HISTORY 294, 308, 324, 325, 409; Europe: HISTORY 101, 102, 340, 341, 342, 343, 344, 345, 347, 349, 350, 353, 354, 356, 355, 359, 367, 368, 386, 435, 436, 444, 448, 462; Gender and Sexuality: HISTORY 298, 335, 336, 337, 350, 398,

399; History of Imperialism/Colonialism: HISTORY 291, 313, 314, 339, 341, 354, 379, 388, 435, 436, 462, 495; Latin America: HISTORY 230, 232, 330, 331, 332, 333, 334, 335; Popular Culture and the Arts: HISTORY 216, 232, 281, 320, 321, 322, 355, 423, 444, 448, 492; Public History: HISTORY 315, 410, 427, 438, 498 (required); Race and Ethnicity: HISTORY 235, 250, 280, 298, 308, 315, 360, 361, 398; Social Movements: HISTORY 281, 307, 345, 360, 399, 423, 426; Science and Technology: HISTORY 294, 301, 381, 382, 483; United States: HISTORY 110, 111, 216, 250, 298, 307, 308, 311, 312, 313, 314, 316, 318, 319, 320, 324, 326, 328, 360, 388, 390, 398, 399, 409, 410, 415, 417, 426; War and Peace: HISTORY 316, 318, 319, 345, 349, 364, 366, 368, 386, 387, 388, 390, 391. Students may not use the 12-credit concentration areas to fulfill the 6 hours of US history, 6 hours of European history, and 9 hours of Non-Western/Global history required in the major.

⁴ Electives should include sufficient 300-400-level courses to meet University requirement of 40 credits of upper division coursework.

HISTORY - PRE-LAW OPTION (120 CREDITS)

36 credits in history are required including 6 credits of US history, 6 credits of European history, and 9 credits of Non-Western/Global history; 12 credits of 100-200-level HISTORY; 3 credits of additional HISTORY; 21 credits of 300-400-level, which must include HISTORY 300 and 469. Included in the program of study below are 30 credits 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 be admitted to the History Pre-Law option, a student must make their intention known to the department and have earned at least a 2.5 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

First Term	Credits
Biological Sciences [BSCI] with lab ¹	4
COM 102 [COMM]	3
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3 or 4
Second Term	Credits
ANTH 101 [DIVR]	3
Arts [ARTS]	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4
PSYCH 105 [SSCI]	3

Second Year

First Term	Credits
SOC 101	3
Pre-Law Option	3
HISTORY Electives ²	6
Electives	4
Second Term	Credits
Pre-Law Option ³	6
Foreign Language, if needed, or Elective	3 or 4
HISTORY Electives ²	6
Complete Writing Portfolio	

Third Year

First Term	Credits
HISTORY 300 [M]	3
Pre-Law Option ³	6
Foreign Language, if needed, or Elective	3 or 4
HISTORY Elective ²	3
Second Term	Credits
Pre-Law Option ³	3
HISTORY Electives ²	6
300-400-level Electives	6

Fourth Year

First Term	Credits
300-400-level Pre-Law Option ³	3
HISTORY Electives ²	6
300-400-level Electives	6
Second Term	Credits
HISTORY 469 [M]	3
Integrative Capstone [CAPS]	3
HISTORY Elective ²	3
300-400-level Electives	3
Complete History Department's Exit Survey	

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² History Electives – 30 credits required, minimum 15 credits at 300-400 level and one [M] course – must include 6 hours US history (HISTORY 110, 111, 201, 216, 235, 250, 280, 298, 308, 311, 312, 313 [M], 314, 316, 318, 319, 324, 328, 360, 361, 320, 321, 322, 390, 398, 409, 410, 415, 417, 423, 486, or 496), 6 hours European history (HISTORY 101, 102, 340, 341, 342, 343, 344, 345, 347, 349, 350, 353, 354, 356 [M], 359, 367, 368, 381, 382, 386, 391, 444, 448, 462, or 463 [M]) and 9 hours Non-Western/Global history (HISTORY 230, 270, 271, 272, 273, 274, 275, 291, 306, 325, 330 [M], 331, 332, 333, 334, 335, 337, 339, 366, 370, 371, 372 [M], 373, 374, 377 [M], 387, 388, 435, 436, 474, 475, 476 [M], 483, 492, or 495).

³ Pre-Law requirements (may also fulfill UCORE requirements) – Political Science: POL S 300 and two courses from POL S 101, 102, or 206; Business/Accounting: two courses from ECONS 101, 102, 198, ACCTG 220, or B LAW 210; Social Sciences/Humanities: one course from PHIL 201, 360, 370, or 470; English: one course from ENGLISH 201, 301 or 402 [M].

SOCIAL STUDIES - EDUCATION OPTION (132 CREDITS)

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 be admitted to Social Studies - Education Option, a student must make their intention known to the department and have earned at least a 2.5 cumulative GPA.

A grade of C or better is required in all history courses used to fulfill the requirements for this degree.

First Year

First Term	Credits
Arts [ARTS] (Non-History) ¹	3
Biological Sciences [BSCI] with lab ²	4
ENGLISH 101 [WRTG]	3
HISTORY 101 [HUM]	3
Quantitative Reasoning [QUAN]	3 or 4

Second Term	Credits
ANTH 101 [DIVR] or 203 [DIVR]	3
HISTORY 102 [HUM]	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ²	4
SOC 102 [SSCI]	3

Second Year

First Term	Credits
200-level HISTORY course ³	3
ECONS 102	3
HISTORY 110	3
POL S 101 [SSCI]	3
Foreign Language, if needed ⁴	0-4

Second Term	Credits
ENGLISH 201 [WRTG], 301 [WRTG], 302 [M], or 402 [WRTG] ⁵	3
HISTORY 111	3
HISTORY 120	3
HISTORY 308 or 410	3
Foreign Language, if needed ⁴	0-4
Complete Writing Portfolio	

Third Year

First Term	Credits
European History Elective ⁶	3
HISTORY 121	3
HISTORY 300 [M] or SOC 320	3
TCH LRN 301	3

Second Term	Credits
ANTH/POL S/PSYCH/SOC Elective ⁷	3
Geography Elective ⁸	3
HISTORY 279	3
HISTORY 324	3
HISTORY 469 [M]	3

Third Term	Credits
TCH LRN 317 (Summer Session)	2

Fourth Year

First Term	Credits
Integrative Capstone [CAPS] ¹	3
Non-Western/Global History Elective ⁹	3

TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

<i>Second Term</i>	<i>Credits</i>
American History Elective ¹⁰	3
ED PSYCH 468	3
HISTORY 380	3
TCH LRN 467 [M]	3
TCH LRN 469	2 - 3
TCH LRN 470	3

Fifth Year

<i>First Term</i>	<i>Credits</i>
TCH LRN 415	16
Complete History Department's Exit Survey	

¹ Only 3 HISTORY courses may be used to meet UCORE requirements.

² To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

³ 200-level HISTORY course: Choose one from HISTORY 230, 232, 270, 271, 272, 273, 274, or 275.

⁴ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁵ One from ENGLISH 201, 301, 302, or 402 is required for admission to the Teacher Education Program. Students who take ENGLISH 302 will need to take an additional [WRTG] or [COMM] course.

⁶ European History Elective (3 credits required): Approved courses include HISTORY 340, 341, 342, 343, 344, 345, 347, 349, 350, 353, 354, 356 [M], 359, 367, 368, 381, 382, 386, 391, 444, 448, 462, and 463 [M].

⁷ ANTH/POL S/PSYCH/SOC Electives (3 credits required): Approved courses include ANTH 307, 316, 320, 330, 331, 350, POL S 300, 316, 427, 450, 455, PSYCH 310, 324, 361, 470, SOC 320, 346, 351, 384, and 430. Courses may not be used to fulfill more than one major requirement.

⁸ Geography Elective (3 credits required): Approved courses include ANTH 309, HISTORY 319, 495, and TCH LRN 487.

⁹ Non-Western/Global History Elective (3 credits required): Approved courses include HISTORY 291, 294, 306, 325, 330 [M], 331, 332, 333, 334, 335, 337, 339, 364, 366, 370, 371, 372 [M], 373, 374, 377 [M], 387, 388, 435, 436, 474, 475, 476 [M], 483, 492, and 495.

¹⁰ American History Elective (3 credits required): Approved courses include HISTORY 311, 312, 313 [M], 314, 315, 316, 318, 319, 320, 321, 322, 328, 360, 361, 390, 398, 409, 410, 415, 417, 423, and 486.

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.

Modern Asia

Asia's population, economic power, cultural influence, political volatility, environmental impacts, and military threats make it the world's most dynamic region, and its importance will continue to grow in the coming generations. Learning about it is more critical than ever. The minor in Modern Asia is designed to deepen students' appreciation of the complexity and diversity of the region encompassing East Asia, South Asia, and the Middle East. Students who focus on one country or region will also develop pan-Asian perspectives.

Students who have completed 60 credits may be admitted to the minor in Modern Asia. The minor requires a 2.0 GPA and a minimum of 18 credits taken from ASIA 201, 301, 303; HISTORY/ASIA 270, 271, 272, 273, 275, 373, 374, 387, 472, 473, 474, 475, 476, 477, 478, 479, 483, 499. These courses must be taken in residence at WSU, through WSU Global Campus, or through departmental approval of education abroad or educational exchange courses.

Religious Studies

A minor in Religious Studies requires 18 credits from the course list below, 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. Courses include: ANTH 303, ENGLISH 305, 306, 308, 341, 483, 484, 485, FINE ART 201, 202, 302, HISTORY 307, 308, 332, 340, 341, 343, 344, 364, 370, 371, 372, 373, 374, 465, 474, HUM 103, 335, PHIL 207, 446.

War and Society

The minor in War and Society addresses political, social, economic, and cultural impacts of war. The minor requires 18 credits, 9 of which 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. Approved courses include: HISTORY 386, 387, 388, 390, 416, 418, 419, 445, 449, 455, 464, 466, 468.

Description of Courses

ASIA

ASIA

111 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 [HUM] 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 Traditional Japanese Culture 3 Traditional Japanese society and culture from ancient themes 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 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 Global Issues, Regional Realities 3 Introduction to the study of interconnections of global and local issues and themes; universalizing and particularizing tendencies in contemporary societies. 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 [DIVR] 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 [DIVR] 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 [DIVR] Islam in Global History 3 Charts spread of Islam among the world's peoples, Islamic contributions to world heritage, and Islam's role in modern global affairs. (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 [HUM] Islam in Theory and Practice 3 Fundamental principles of Islam, including the relation between faith and practice, and the social, economic, political, and judicial systems in Islam. (Crosslisted course offered as PHIL 280, ASIA 280).

- 301 [DIVR] East Meets West** 1 May be repeated for credit; cumulative maximum 3 hours. Analytical themes to explore historical and contemporary interactions between U.S. and Asia in cultural, political, and economic dimensions. 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).
- 303 Topics in Asian Studies** V 1-2 May be repeated for credit; cumulative maximum 4 hours. Topics in Asian Studies.
- 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 HISTORY 306, ASIA 306).
- 314 [HUM] [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 [HUM] [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).
- 322 [DIVR] Ecology in East Asian Cultures** 3 Major ecological issues in East Asia through cultural representations, and analysis of their implications to the U.S. (Crosslisted course offered as ASIA 322, CHINESE 322, HUMANITY 322, JAPANESE 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).
- 371 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 371, ASIA 371). (Formerly HISTORY 473, ASIA 473.)
- 372 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 372, ASIA 372). (Formerly HISTORY 472, ASIA 472.)
- 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 [HUM] Japanese Civilization** 3 Overview of Japanese history from the Stone Age to the present, including political, social, economic, and cultural history. (Crosslisted course offered as HISTORY 374, ASIA 374).
- 377 [DIVR] 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 377, ASIA 377). (Formerly HISTORY 477, ASIA 477.)
- 378 The Two Koreas in the Modern World** 3 Course Prerequisite: Junior standing. Korean history, society, and culture with an emphasis on the two Koreas' standing within the global order. (Crosslisted course offered as HISTORY 378, ASIA 378.) (Formerly HISTORY 478, ASIA 478.)
- 379 [SSCI] History of East Asian Economic Development Since 1945** 3 The historical relationships between politics and economics in East Asia since 1945. (Crosslisted course offered as HISTORY 379, ASIA 379). (Formerly HISTORY 479, ASIA 479.)
- 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).
- 474 [CAPS] Modern South Asia: Community and Conflict** 3 Course Prerequisite: Junior standing. 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 The People's Republic of China, 1949 to Present** 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).
- 483 [CAPS] Medicine, Science, and Technology in World History** 3 Course Prerequisite: Junior standing. The emergence of modern technological society with emphasis on scientific development and exchange among world civilizations across history. (Crosslisted course offered as HISTORY 483 and ASIA 483).
- 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.

HISTORY

HISTORY

- 101 [HUM] Ancient, Medieval, and Early Modern Europe** 3 Survey of ancient Greece, Rome, the Middle Ages and the Renaissance and Reformation within the Mediterranean, Near East, and Europe.
- 102 [HUM] Modern Europe** 3 European history and its impact upon the global community from the seventeenth through twentieth centuries.
- 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 [DIVR] 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.
- 201 Asian Pacific American History** 3 Historical experience of Asian/Pacific Americans since the 19th century. (Crosslisted course offered as CES 211, HISTORY 201).
- 216 Introduction to American Cultural Studies** 3 Introduction to the interdisciplinary study of American cultures and the field of American studies. (Crosslisted course offered as AMER ST 216, CES 216, ENGLISH 216, HISTORY 216, WGSS 216.)

- 230 [HUM] Introduction to Latin American History 3** Overview of the most significant events, social and ethnic groups, practices, and institutions of colonial and modern Latin America.
- 232 [ARTS] The Mexican Revolution and the Arts 3** The history of the Mexican Revolution 1910-1920 and its influence on the Arts from 1920-1940.
- 235 [HUM] 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 235).
- 250 [DIVR] Peoples of the United States 3** Examination of the peoples of the United States from the beginnings of the colonial era to the present. (Formerly HISTORY 150.)
- 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 [DIVR] 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 [DIVR] 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 [DIVR] Islam in Global History 3** Charts spread of Islam among the world's peoples, Islamic contributions to world heritage, and Islam's role in modern global affairs. (Crosslisted course offered as HISTORY 273, ASIA 273).
- 274 Introduction to African History 3** Survey of the history of Africa from human origins to present.
- 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).
- 279 Introduction to Social Studies Methods 3** Course Prerequisite: Admitted to the major in History or Social Studies. Introduction to the content, pedagogy, and state requirements of teaching history and social studies at the secondary level. (Formerly HISTORY 380.)
- 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).
- 281 [DIVR] History of Organized Crime in America 3** Role and impact of the rise of organized crime in the United States. (Formerly HISTORY 130.)
- 291 History of World Trade 3** The evolution of the institutions, conditions, and consequences of world trade after 1000. (Formerly HISTORY 491.)
- 294 Global Environmental History 3** Historical dynamics of human communities and their ecological settings. (Formerly HISTORY 494.)
- 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, WGSS 298.)
- 300 [M] Writing about History 3** Course Prerequisite: Admitted to the major in History; sophomore standing. Historical topics, use of sources, analytical thought, and precision in language.
- 301 History in Popular Culture 3** Historical people and events in fiction, film, video, and digital media. (Formerly HISTORY 400.)
- 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 HISTORY 306, ASIA 306).
- 307 Religion and American Culture 3** American religions from pre-contact times to the present focusing on the evolution of religious faiths. (Formerly HISTORY 407.)
- 308 [DIVR] North American Indian History, Precontact to Present 3** Traces American Indians from precontact to the present against the backdrop of sovereignty, treaty rights, and trust responsibility. Cooperative: Open to UI degree-seeking students.
- 309 [SSCI] Place-based Digital History 3** Regional history drawn from environmental history methods and approaches combined with practical digital authoring, mapping, and other visualization tools, emphasizing both quantitative and qualitative data.
- 311 The US and the World to World War I 3** Examination of US foreign relations with the rest of the world from the American Revolution to World War I. (Formerly HISTORY 411.)
- 312 The US and the World Since World War I 3** Examination of US foreign relations with the rest of the world from World War I to the present. (Formerly HISTORY 412.)
- 313 Early American History to 1750 3** The cultures and interactions of Native Americans, Europeans, and Africans; development of colonial American societies and institutions. (Formerly HISTORY 413.)
- 314 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. (Formerly HISTORY 414.)
- 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.
- 316 Civil War and Reconstruction 3** The Civil War as a problem in historical causation and social, political, and economic impact of the war. (Formerly HISTORY 416.)
- 318 [HUM] United States, 1914-1945 3** America through World War I, cultural tensions of the Twenties, and the crises of Depression and WWII. (Formerly HISTORY 418.)
- 319 [HUM] 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. (Formerly HISTORY 419.)
- 320 [ARTS] Modern US History Through Film 3** Analysis of modern American history through the lens of film.
- 321 [DIVR] 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 [DIVR] US Popular Culture Since 1930 3** Movies, radio, television, sports, music, and other popular arts in historical context.
- 324 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. (Formerly HISTORY 422.)
- 325 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. (Formerly HISTORY 425.)
- 326 Abraham Lincoln and the Lincoln Legacy 3** Broad overview of the life, presidency and legacy of Abraham Lincoln.
- 328 The American West 3** Multicultural exploration of the frontier experience and western America; environment, economic development, gender, class and race emphasized. (Formerly HISTORY 421.)
- 330 History of Mexico 3** War of independence, 19th century Mexico and the liberal-conservative struggle; modern Mexico since the Revolution of 1910. (Formerly HISTORY 430.)
- 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.
- 332 [HUM] 20th Century Latin America 3** Contemporary history of Latin America, analyzing political, economic, social, and cultural history through a thematic, comparative approach. (Formerly HISTORY 432.)

- 333 History of Cuba and the Caribbean 3** Historical development of the Caribbean, with emphasis on Cuba, from the Spanish arrival to Castro's revolution. (Formerly HISTORY 433.)
- 334 Revolution in Latin America 3** Social and political development in Central America; reasons for dictatorships and revolutionary movements; comparison with other Latin American regions. (Formerly HISTORY 434.)
- 335 [DIVR] 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, WGSS 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 WGSS 336, HISTORY 336.)
- 337 Women in the Ancient World 3** Seminar investigating women within ancient societies from Archaic Greece to early Byzantium, focusing upon the lives and roles of women.
- 339 Slavery and Freedom in World History 3** Course Prerequisite: Junior standing. History of slavery, abolition, and post-emancipation societies around the world; trends and debates in historiographical literature. (Formerly HISTORY 439.)
- 340 [HUM] Ancient Greece from Homer to Alexander the Great 3** Seminar investigating ancient Greece from the Bronze Age through the Hellenistic era, focusing upon the societies and geopolitics of antiquity.
- 341 [HUM] The Rise and Fall of Ancient Rome 3** Seminar investigating ancient Rome from the city's founding to the empire's fall in west and continuation in the east.
- 342 History of England to 1485 3** English history; intellectual and cultural development.
- 343 [HUM] 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. (Formerly HISTORY 440.)
- 344 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. (Formerly HISTORY 441.)
- 345 Inquisitors, Heretics, and Witches in the Early Modern World 3** Political, cultural, and religious history of Europe, 1500-1650. (Formerly HISTORY 445.)
- 347 [HUM] Europe in the French Revolutionary and Napoleonic Era, 1789 to 1815 3** The history of Europe during the French Revolution and the Napoleonic Era (1789-1815). (Formerly HISTORY 447.)
- 349 Europe and Two World Wars, 1914-1945 3** Political, intellectual, economic, and international aspects of European life during and between two world wars. (Formerly HISTORY 449.)
- 350 [HUM] Witches, Nuns, Merchants, and Queens in Europe 1200-1800 3** Women's experiences in Europe from the Renaissance to the Enlightenment and the ideas and roles that affected their lives. (Crosslisted course offered as HISTORY 350, WGSS 350.)
- 353 Age of Revolution: Europe, 1815-1871 3** The consolidation of industrial society and the nation-state in 19th-century Europe. (Formerly HISTORY 453.)
- 354 [HUM] Age of Empire: Europe, 1871-1914 3** Consolidation of the nation-state, socialism and nationalism, war and imperialism, the Russian Revolution, and the outbreak of World War I. (Formerly HISTORY 454.)
- 355 [HUM] Life and Culture of the Popular Classes in Europe, 1200-1800 3** The transformation of Europe's popular culture (music, games, stories, beliefs) through social, religious, commercial, and print revolutions.
- 356 [HUM] [M] Europe Since 1945 3** Course Prerequisite: Junior standing. Europe from the end of World War II to the present; the Cold War, European integration, the fall of communism, social and intellectual life. (Formerly HISTORY 450.)
- 359 Modern Britain 3** Britain and the Empire from the Napoleonic wars to the present. (Formerly HISTORY 459.)
- 360 [SSCI] 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 360. HISTORY 360 formerly offered as HISTORY 313.)
- 361 [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. (Formerly HISTORY 314.)
- 364 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. (Formerly HISTORY 464.)
- 366 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. (Formerly HISTORY 466.)
- 367 Modern France 3** The history of France from the revolution of 1789 to the present. (Formerly HISTORY 467.)
- 368 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. (Formerly HISTORY 468.)
- 369 [ARTS] Queer Identities in Contemporary Cultures 3** Course Prerequisite: CES 101, HISTORY 105, HISTORY 305, WGSS 101, or WGSS 120. Analysis of roots/legacies of creative resistance writing by Queer communities of color; students learn to produce creative resistance work. (Crosslisted course offered as WGSS 369, HISTORY 369.)
- 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.)
- 371 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 371, ASIA 371). (Formerly HISTORY 473, ASIA 473.)
- 372 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 372, ASIA 372). (Formerly HISTORY 472, ASIA 472.)
- 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 [HUM] Japanese Civilization 3** Overview of Japanese history from the Stone Age to the present, including political, social, economic, and cultural history. (Crosslisted course offered as HISTORY 374, ASIA 374.)
- 377 [DIVR] 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 377, ASIA 377). (Formerly HISTORY 477, ASIA 477.)
- 378 The Two Koreas in the Modern World 3** Course Prerequisite: Junior standing. Korean history, society, and culture with an emphasis on the two Koreas' standing within the global order. (Crosslisted course offered as HISTORY 378, ASIA 378.) (Formerly HISTORY 478, ASIA 478.)
- 379 [SSCI] 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 379, ASIA 379). (Formerly HISTORY 479, ASIA 479.)
- 380 Methods of Teaching Social Studies 3** Course Prerequisite: Admitted to the major in History or Social Studies. Methods, resources, selection of content, past and present issues in social studies education. (Formerly HISTORY 480.)
- 381 Science in Western Civilization Through Newton 3** Development of Western science and its influence on European culture and society.

- 382 [HUM] History of Science and Technology Since Newton** 3 Development of modern science and its influence on Western culture and society.
- 383 Drugs in World History** 3 Exploration of the impact of drugs on economic systems, the development of cultures, and general lifestyles of societies around the world.
- 385 Ancient Warfare and Society: Militarism & Violence from Homeric Greece through the Late Roman Empire** 3 Warfare and its impact on ancient societies from Homer to the fall of the Western Roman Empire (roughly the 9th c. BCE to the 5th c. CE).
- 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.
- 391 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. (Formerly HISTORY 455.)
- 393 Geographical History of the US** 3 Perspectives on the geographical history of the U.S. from early times to the present. (Formerly HISTORY 319.)
- 395 Topics in History V** 1-3 May be repeated for credit; cumulative maximum 6 hours. Analytical study of selected historical movements and events. Cooperative: Open to UI degree-seeking students.
- 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] Women, Gender, and the History of the Un-West** 3 The multicultural history of women in the west through women's literature, archives, and oral history. (Crosslisted course offered as HISTORY 398, WGSS 398.)
- 399 [DIVR] LGBTQ+ History: Culture, Politics, and Social Change in the U.S.** 3 History and theory of queer sexualities and gender identities in the United States including community development, politics and cultures. (Crosslisted course offered as HISTORY 399, WGSS 399.)
- 409 [CAPS] 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).
- 415 Jeffersonian-Jacksonian America** 3 Social and political history of the United States from 1789 to 1845; Jeffersonian and Jacksonian eras.
- 417 [CAPS] United States, 1877-1914** 3 Course Prerequisite: Junior standing. Major historical and cultural developments, issues, interpretations, and debates of importance during the Gilded Age and Progressive Era.
- 420 [CAPS] American History, 1980-Present** 3 Course Prerequisite: Junior standing. Recent social, cultural, economic, and political change; the impact of new technologies; trends in popular culture; and the war on terror.
- 423 Radicals, Reformers, and Romantics: The Impact** 3 Changing thought and its impact in the United States from colonial times to the present.
- 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.
- 435 [CAPS] European Colonization of the Globe, 1400-1800** 3 Course Prerequisite: Junior standing. The factors underlying European colonization and trade before 1800 and its engagement with indigenous societies worldwide.
- 436 [CAPS] Empire and Decolonization, 1800 to the Present** 3 Course Prerequisite: Junior standing. History of empires, imperialism, and decolonization since 1800.
- 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.
- 444 [CAPS] The Renaissance: Art, Violence, and Early Globalization** 3 Course Prerequisite: Junior standing. Political, cultural, and religious history of Europe, 1300-1500.
- 448 Modern Europe as Reflected In Art** 3 Early Modern Europe as reflected in architecture and the visual arts.
- 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).
- 465 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. (Crosslisted course offered as HUMANITY 450, HISTORY 465.)
- 469 [M] Seminar in History** 3 May be repeated for credit. Course Prerequisite: HISTORY 300 with a C or better; admitted to the major in History.
- 474 [CAPS] Modern South Asia: Community and Conflict** 3 Course Prerequisite: Junior standing. 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 The People's Republic of China, 1949 to Present** 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).
- 483 [CAPS] Medicine, Science, and Technology in World History** 3 Course Prerequisite: Junior standing. The emergence of modern technological society with emphasis on scientific development and exchange among world civilizations across history. (Crosslisted course offered as HISTORY 483 and ASIA 483).
- 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).
- 492 [CAPS] 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.
- 495 [CAPS] Space, Place, and Power in History: Historical Geography in Global Perspective** 3 Course Prerequisite: Senior standing. Introduction to the discipline of historical geography; geographical and spatial approaches to European, North American, and Asian history.
- 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: Admitted to the 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.
- 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.
- 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.
- 535 Field Course in Latin American History** 3 May be repeated for credit; cumulative maximum 9 hours. Readings and interpretive problems in Latin American history.
- 540 Seminar in History** 3 May be repeated for credit.
- 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).
- 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 historiography of comparative, transnational, and global approaches to history.
- 573 Field Course in African History** 3 May be repeated for credit; cumulative maximum 6 hours. Readings and interpretive problems in African history.
- 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.
- 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).
- 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. Course Prerequisite: Admitted to the History PhD program. 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
Elmina White Honors Hall 130
509-335-4505

Dean and Professor, M. G. Norton; Associate Dean, D. Shier; Assistant Dean and Professor, R. Bond; Associate Professors, L. Gerber, A. Lampman, J. Schultz; Professors Emeritus, K. Andersen, C. Elstad.

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 lifelong 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 competency in foreign language and encourages education abroad as premier vehicles for acquiring key competencies for an increasingly globalized society and economy.

Student Learning Outcomes

Honors College undergraduates understand the importance of becoming citizens of the world. They engage in multiple leadership opportunities, pursue research projects that result in a thesis or creative project, and often participate in an international educational experience. Their Honors curriculum emphasizes skills that help them achieve excellence, both within their major as well as their Honors coursework. As stated on our website, <https://honors.wsu.edu/learning-goals-outcomes/> students in the Honors College commit to the following learning outcomes as they pursue higher education at WSU: critical and creative thinking, communication, information literacy, scientific literacy, quantitative and symbolic reasoning, cultural competency, and integration of knowledge.

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 competency 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 as well as participation in a study abroad experience and completion of at least six credits while abroad. Students can also demonstrate competency by completing a foreign language through the 204 level. The MESI Certificate in Mindfulness-based Emotional and Social Intelligence requires a combination of coursework, mindfulness training, and co-curricular service learning.

The Honors College requires its students to demonstrate competency in a foreign language. With sufficient high school preparation, students can elect to take an online examination 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 minimum 3.2 cumulative GPA. Any graded courses used to fulfill Honors College graduation requirements must receive a grade of C or better. Successful completion of the Honors College requires that students fulfill the Honors Curriculum and have a cumulative GPA of 3.2 or better.

Each semester, students enrolled in the Honors College typically take one to two Honors courses in addition to their major courses. Honors College

requirements and recommended timeline are listed below:

First Year

- ENGLISH 298
- Math requirement¹
- Foreign Language competency requirement²
- [BSCI] or [PSCI] with lab

Second or Third Year

- HONORS 270 Principles and Research Methods in Social Sciences³
- HONORS 280 Contextual Understanding in the Arts and Humanities
- HONORS 290 Science as a Way of Knowing⁴

Third or Fourth Year

- HONORS 370 Case Study: Global Issues in Social Science or 3 credits ED ABRD 991.
- HONORS 380 Case Study: Application of Arts and Humanities to Global Issues or 3 credits ED ABRD 992.
- HONORS 390 Case Study: Application of Science to Global Issues or 3 credits ED ABRD 993.
- HONORS 450 Honors Thesis⁵

Optional Coursework:

- HONORS 198 Honors First-Year Experience
- HONORS 298 Approaches to Global Leadership
- HONORS 398 Honors Thesis Proposal Seminar
- HONORS 430 (Education Abroad Research)

¹Students typically take the math required by their major. Honors College accepts: MATH 105, 140, 171, 172, 202, 251 and 252 combined, and 273, 283, STAT 205, or STAT 212. Check with an Honors College advisor for any questions concerning the math requirement.

²Assessed proficiency in a second language at the intermediate level or completion of a foreign language through the 204 level. May be completed at any time before graduation. Check with an Honors advisor for specifics. Education Abroad is strongly recommended for language acquisition. The following foreign language level courses in any language will be accepted as meeting the foreign language competency standard set by the Honors College: 204, 261, 306, 307, and 308.

³ECONS 198 is an approved substitute for this requirement.

⁴Approved substitutes for this course include: CHEM 116, MATH 182, PHYSICS 205 or 206.

⁵Three credits required. HONORS 398 strongly recommended as preparation. Approved substitutes for this course include: BIO ENG 411, CE 465, CHE 451, CPT S 423, ENGR 421, E E 416, and ME 416.

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.

Mindfulness-Based Emotional and Social Intelligence

The Mindfulness-Based Emotional and Social Intelligence (MESI) certificate is open to all students of the Honors College and offers a transformative program combining academic coursework, community engagement, and mindfulness practices to help prepare students for lives of personal and professional integrity and engagement. To earn the certificate, students must complete 15 or more credits distributed as follows: (A) 9 credits in identified MESI-related sections of HONORS 198, 270, 280, 290, 298, 370, 380, or 390; (B) 3 credits related to community engagement from HONORS 211, 212, 499 or – in connection with an Honors thesis or capstone project – HONORS 450; (C) 2 credits of workshops, practica or retreats offered in connection with the MESI program, including HONORS 201, 301 or others approved by an Honors advisor; (D) at least 1 additional credit from any of the above categories. A grade of C or better must be earned in each of the letter-graded courses applied toward the certificate. Students are strongly encouraged to work with an Honors College advisor to plan an appropriate schedule of studies. See an Honors College advisor for approval of each component of the certificate.

Description of Courses

UNIVERSITY HONORS

- BIOLOGY 298 – Honors Biology for Non-Science Majors
- CHEM 116 – Chemical Principles Honors II
- ECONS 198 – Economics Honors
- ENGLISH 298 – Writing and Research Honors

MATH 182 – Honors Calculus II
 MATH 230 – Honors Introductory Linear Algebra
 MATH 283 – Honors Calculus III
 PHYSICS 205 – Physics Honors I
 PHYSICS 206 – Physics Honors II
 - see Honors College courses below -

HONORS

- 198 Honors First-Year Experience** 1 Course
 Prerequisite: Must be an Honors student. Making a successful transition to college including advising, schedule planning and undergraduate research opportunities. S, F grading.
- 201 MESI Workshop Series** 1 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Must be an Honors student. Workshop series featuring current experts on topics in mindfulness-based emotional and social intelligence (MESI) and personal wellbeing.
- 211 Introduction to Community Engagement** 1 Course Prerequisite: Must be an Honors student. Introduction to community engagement and its importance in work and life.
- 212 Active and Immersive Community Engagement** 1 (0-3) May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: HONORS 211; must be an Honors student. Community-based service-learning projects and written reflection.
- 270 Principles and Research Methods in Social Science** 3 Course Prerequisite: Must be an Honors student. Scholarship in social sciences; exposure to theoretical frameworks.
- 280 Contextual Understanding in the Arts and Humanities** 3 Course Prerequisite: Must be an Honors student. Scholarship in the arts/humanities; exposure to theoretical frameworks.
- 290 Science as a Way of Knowing** 3 Course Prerequisite: Must be an Honors student; any BSCI or PSCI or concurrent enrollment in either. Exploration of how scientific knowledge is acquired, refined and advanced; hands-on experience with scientific scholarship. Recommended preparation: For science or engineering majors.
- 298 Approaches to Global Leadership** 2 Course Prerequisite: Must be an Honors student; by permission only. Leadership in a global context through exploration of critical issues, case studies, and team projects. S, F grading.
- 301 University Scholars Lecture Series** 1 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Must be an Honors student. Themed lecture series and discussion seminar.
- 370 Case Study: Global Issues in Social Sciences** 3 Course Prerequisite: Must be an Honors student; HONORS 270 or ECONS 198, or transferable degree. 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: Must be an Honors student; HONORS 280 or transferable degree. 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: Must be an Honors student; HONORS 290, SCIENCE 299, CHEM 116, MATH 182, PHYSICS 205, PHYSICS 206, or transferable degree. Using research skills to analyze a global case study or international perspective in the sciences.

398 Honors Thesis Proposal Seminar 1 Course Prerequisite: Must be an Honors student; sophomore standing. Seminar to complete the honors thesis proposal for HONORS 450. S, F grading.

399 Honors Thesis Seminar 1 Course Prerequisite: Must be an Honors student; 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. Course Prerequisite: Must be an Honors student. 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. Course Prerequisite: Must be an Honors student. Thesis or project directed by student's major department. S, F grading.

499 Special Problems V 1-4 May be repeated for credit. Course Prerequisite: Must be an Honors student. 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

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Johnson Hall 149
509-335-9502

Regents Professor, B. W. Poovaiah; Professors, L. K. Chalker-Scott, K. M. Evans, M. Keller, D. S. Main, C. A. Miles, S. Musacchi, M. J. Pavsek, C. P. Peace, M. D. Whiting; Associate Professors, B. R. Bondada, L. W. DeVetter, S. P. Ficklin, L. A. Kalcsits, M. M. Moyer; Assistant Professors, J. M. Blauer, T. S. Collins, P. M. McCord, C. A. Torres; Associate Research Professor and Instructor, M. G. Kumar; Assistant Research Professors, Y. Ma, R. M. Sharpe; Associate Research Professor, S. Jung; Senior Instructor, C. Kawula; Adjunct/Affiliate Faculty, C. Benedict, C. J. Coyne, A. Dhingra, I. Hanrahan, G. A. Hoheisel, L. A. Honaas, P. E. Jacoby, J. P. Mattheis, J. R. McFerson, R. McGee, D. W. McMoran, R. Navarre, D. R. Rudell, M. R. Salazar-Gutiérrez, R. K. Thornton, T. D. Waters, M. J. Willett, C. Wohleb, W. H. Wolfe, T. Yang, I. Zasada, Y. Zhang; Professors Emeriti, M. Ahmedullah, P. K. Andrews, J. K. Fellman, W. G. Hendrix, L. K. Hiller, R. Hummel, L. Knowles,

N. R. Knowles, F. E. Larsen, V. Lohr, R. Maleike, P. P. Moore, M. E. Patterson, J. M. Roberts, L. E. Schrader, K. A. Struckmeyer, R. E. Thornton.

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, Bachelor of Science in Viticulture and Enology, Master of Science in Horticulture, Master of Science in Agriculture, Doctor of Philosophy in Horticulture, and Doctor of Philosophy in Molecular Plant Sciences. 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 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, entomology, and plant pathology. Students pursuing a Bachelor of Science degree in Integrated Plant Sciences may choose among five 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; or Turfgrass Management. More information regarding IPS is available under the Integrated Plant Sciences catalog section and at <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 and Sustainable Agriculture, 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 at <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, including Horticulture Club.

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, and processing, tree fruits, small fruits, and vegetables. Graduates can look forward to careers as growers and farm managers, fieldman, 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.

VITICULTURE AND ENOLOGY

The BS in Viticulture and Enology is 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. A unique feature of this degree is that students have the flexibility to begin their coursework on either the Pullman or Tri-Cities campus, but must finish on the Tri-Cities campus.

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 courses carrying a HORT subject is required, of which at least 9 hours must be in 300-400-level courses and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. A maximum of 3 hours of the 16 hours may be from the following courses: HORT 399, 495, 499.

Viticulture and Enology

The minor in Viticulture and Enology requires at least 16 credit hours of course work, 9 of which must be in the 300-400 level and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. The minor requires VIT ENOL 113, 313, and 422, and 7 additional credit hours from BIOLOGY 420, FS 460, HBM 350, PL P 300, SOIL SCI 201, or any VIT ENOL course - with the following exception: No more than 4 credits of VIT ENOL 399, 495, 496, or 499 may be used towards this minor. At least 3 of the 7 additional credits must be upper division. Courses not in the elective course list may be used with advisor approval.

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] Science and Art of Growing Plants 4 (3-3)

Understand and apply the science behind how plants grow and the art of growing plants for personal and commercial use.

202 Crop Growth and Development 4 (3-3)

Course Prerequisite: HORT/ CROP SCI 102. Morphology, anatomy, growth and development of agronomic and horticultural crops. (Crosslisted course offered as HORT 202, CROP SCI 202).

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.

330 Landscape Plants for Urban and Community Environments 3 (2-3)

Plants for solving problems in human-dominated landscapes: their characteristics, functions such as storm water management and climate change mitigation, ecology, identification, and selection. Recommended preparation: BIOLOGY 120 or HORT 202. Cooperative: Open to UI degree-seeking students.

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.

345 Crop Plant Genetics 3 Course Prerequisite:

BIOLOGY 106, 107, 120, or HORT/CROP SCI 202. Key principles of genetics for crop plants: Mendelian, transmission, population, and quantitative genetics; the genetic consequences of types of reproductive systems; genetic diversity sources and resources; applied crop plant genetics areas of biodiversity management, breeding, and on-farm cultivar choice/management; integration of crop plant genetics in the broader context of crop improvement. 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.

350 Food Systems in Western Washington

3 Course Prerequisite: CROP SCI/HORT 102; ECONS 101; SOIL SCI 201. Introduction to local and regional food systems unique to western Washington with an emphasis on the farm-to-table processes of foods and beverages. (Course offered as HORT 350, AFS 350).

- 351 Plant Propagation** 4 (3-3) Course Prerequisite: BIOLOGY 106, BIOLOGY 107, BIOLOGY 120, or HORT 202. Physiological and biochemical basis for sexual and asexual propagation of plants by seed, cutting, layering, grafting, budding, specialized plant structures and micropropagation. Field trip required.
- 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: Admitted to the Viticulture and Enology major, IPS major or by interview; junior standing. Planned and supervised work experience. (Crosslisted course offered as HORT 399, VIT ENOL 399). S, F grading.
- 403 Special Topics** V 1-4 May be repeated for credit; cumulative maximum 12 hours. Specialized topics in horticulture; content will vary. Cooperative: Open to UI degree-seeking students.
- 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). Credit not granted for both HORT/VIT ENOL 413 and HORT 513. 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. Cooperative: Open to UI degree-seeking students.
- 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 Integrated Plant Sciences** 3 Course Prerequisite: Junior standing. Critical examination of current impacts and future trends in plant sciences. (Crosslisted course offered as HORT 425, CROP SCI 425.)
- 435 Chemistry and Biochemistry of Fruit and Wine** 3 Course Prerequisite: BIOLOGY 420; MBIOS 101 or 305; MBIOS 303 or CHEM 370. 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). Credit not granted for both HORT/VIT ENOL 435 and HORT 535. Recommended preparation: Analytical chemistry.
- 440 Winery Operations and Equipment** 3 Course Prerequisite: CHEM 345. Major equipment and unit operations in the winemaking process, with primary focus on operations from receipt of grapes through bottling process. (Crosslisted course offered as VIT ENOL 440, HORT 440).
- 441 Winery Operations and Equipment Lab Field Trip** 1 (0-3) Course Prerequisite: VIT ENOL 113; VIT ENOL/HORT 440 or concurrent enrollment. Lab companion course for VIT ENOL/HORT 440; offered only as a week-long field trip over spring break to visit wineries and wine industry suppliers; specific visits will vary by year, but will include visits to two or three wineries, at least one cooperage and several equipment and packaging suppliers; requires participation for all 5 days of spring break. (Crosslisted course offered as VIT ENOL 441, HORT 441).
- 445 [M] Plant Breeding** 4 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). Cooperative: Open to UI degree-seeking students.
- 480 Plant Genomics and Biotechnology** 3 Course Prerequisite: MBIOS/BIOLOGY 301. Advanced concepts in plant genomics and biotechnology with emphasis on approaches, techniques, and application. (Crosslisted course offered as HORT 480, CROP SCI 480). Recommended preparation: BIOLOGY 420 or HORT 416.
- 495 Research Experience** V 1-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Not open to graduate students. 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.
- 508 Research Orientation and Presentation** 2 Develop knowledge, skills and experience needed for development of graduate research project proposals and communication of research to scientific audiences via oral presentations, posters, and written summaries.
- 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). Credit not granted for both HORT/VIT ENOL 413 and HORT 513. 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. Cooperative: Open to UI degree-seeking students.
- 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.
- 522 Data Analysis in Systems Biology** 3 Methods and modeling of biological data analysis including computer skills, network science, and hypothesis development as applied to gene co-expression, regulatory, protein-protein interaction, and metabolic network models. Recommended preparation: Introductory coursework covering topics of general statistics, genomics, and protein structure and function.

- 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). Credit not granted for both HORT/VIT ENOL 435 and HORT 535. Recommended preparation: Analytical chemistry.
- 545 Statistical Genomics** 3 (2-3) Develop concepts and analytical skills for modern breeding by using Genome-Wide Association Study and genomic prediction in framework of mixed linear models and Bayesian approaches. (Crosslisted course offered as CROP SCI 545, ANIM SCI 545, BIOLOGY 545, HORT 545, PL P 545.) Recommended preparation: BIOLOGY 474; MBIOS 478. Cooperative: Open to UI degree-seeking students.
- 550 Bioinformatics for Research** 4 (3-3) Foundational knowledge about advanced bioinformatics analyses of next-generation sequencing data. Recommended preparation: Molecular Biology and/or Genetics.
- 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. Course Prerequisite: Admitted to the Horticulture PhD program. 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.
- 399 Professional Work Experience** V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Admitted to the Viticulture and Enology major, IPS major or by interview; junior standing. 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). Credit not granted for both HORT/VIT ENOL 413 and HORT 513. 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. Cooperative: Open to UI degree-seeking students.
- 433 [CAPS] [M] Critical Thinking in Vineyard and Winery Management** 3 Course Prerequisite: VIT ENOL 313; VIT ENOL 413 or concurrent enrollment; VIT ENOL 440 or concurrent enrollment. Expansion and application of previous learning in viticulture and enology to develop economic and environmentally sustainable vineyard and winery management plans.
- 435 Chemistry and Biochemistry of Fruit and Wine** 3 Course Prerequisite: BIOLOGY 420; MBIOS 101 or 305; MBIOS 303 or CHEM 370. 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). Credit not granted for both HORT/VIT ENOL 435 and HORT 535. Recommended preparation: Analytical chemistry.
- 440 Winery Operations and Equipment** 3 Course Prerequisite: CHEM 345. Major equipment and unit operations in the winemaking process, with primary focus on operations from receipt of grapes through bottling process. (Crosslisted course offered as VIT ENOL 440, HORT 440).
- 441 Winery Operations and Equipment Lab Field Trip** 1 (0-3) Course Prerequisite: VIT ENOL 113; VIT ENOL/HORT 440 or concurrent enrollment. Lab companion course for VIT ENOL/HORT 440; offered only as a week-long field trip over spring break to visit wineries and wine industry suppliers; specific visits will vary by year, but will include visits to two or three wineries, at least one coooperage and several equipment and packaging suppliers; requires participation for all 5 days of spring break. (Crosslisted course offered as VIT ENOL 441, HORT 441).
- 465 Wine Microbiology and Processing** 3 Course Prerequisite: CHEM 370 or MBIOS 303; MBIOS 101 or 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). Credit not granted for both FS/VIT ENOL 465 and FS 565. Recommended preparation for graduate students: CHEM 370 or MBIOS 303; MBIOS 304; MBIOS 101 or 305. Cooperative: Open to UI degree-seeking students.
- 466 Wine Microbiology and Processing Laboratory** 1 (0-3) Course Prerequisite: FS 465 or concurrent enrollment; MBIOS 101 or 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.
- 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.

Department of Human Development

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Chair and Associate Professor, M. Bumpus; Professors, M. Cleveland, M. Diversi, D. Handy, L. Hill, P. Pendry; Associate Professors, C. Bolkan, B. Cooper, R. Cooper, J. Hewa, S. Perone, K. Rodgers, A. Salazar, S. Waters, E. Weybright, A. Whitehall; Assistant Professors, C. Bletscher, T. Burkhard, M. Cheng, L. Colon, J. Duckworth, R. Dueben, K. Forsythe, M. K. Patton, J. Putney, S. Reisz, N. Scalise, R. Weaver, B. Wilson; Instructor, L. Krupke; Adjunct Instructors, T. Ashford, D. Bice, W. Ewest, M. Garcia, S. Grant, N. Kaivan, N. Porter, D. Rock, C. Seeley, M. Strey; Professors Emeriti, B. Boyd, M. K. Deen, J. Dillman, S. Horton, J. Lanigan, A. Lawrence, J. McReynolds, D. Nelson, L. Parker, K. Peterson, T. Power, E. Soliday, G. Tan, M. Tate, M. Wandschneider, M. Young.

Undergraduate Program

In the Department of Human Development, students focus on how children, youth, adults, and families develop, change, and face challenges throughout the lifespan. The Department of Human Development is a multidisciplinary department devoted to understanding the nature of human development within the context of families, schools, and communities. Students completing a Human Development degree are well prepared for a wide range of careers working with children, adolescents, adults, and/or families in a variety of professional settings; many Human Development graduates are also well equipped to enter graduate school in a number of disciplines.

Human Development majors may choose to focus their studies in one of seven options: Family and Consumer Sciences Education, Lifespan Development, Early Childhood Education, Child/Youth Development, Gerontology, Family Services or Prevention Science. All options lead to a Bachelor of Arts in Human Development.

The *Family & Consumer Sciences Education option* is for students interested in teaching in a junior or senior high school setting. Family and consumer sciences teachers instruct courses in foods and nutrition, family health, human development, apparel and textiles, family resource management, family communication, and interior design. Graduates are prepared for Family and Consumer Sciences and Career and Technical Education state certification. They are also well prepared for careers with agencies and organization that serve the needs of families in the community.

The *Lifespan Development option* is for students who desire to deepen their understanding of the foundations of development from childhood, adolescence, to adulthood. Students in this option will gain psychosocial and bioecological perspectives on the interrelationships between individuals, families, organizations, and communities. A Lifespan Development focus opens the doors for many helping professions. Students are ready for careers in public and private human service agencies, and local, state and federal government.

The *Early Childhood Education option* focuses on children birth-age 5. Students gain a deeper understanding of the importance of building relationships with children, observing and documenting their development and learning, planning and implementing age-appropriate curricula and assessing the success of the planned curricula. This option prepares students to be early childhood educators as they complete a 270-hour practicum in a high-quality, early childhood classroom. While this option focuses on preparing for a teaching role, students are also ready for careers outside of the classroom working with young children and their families.

The *Child/Youth Development option* is designed for students preparing for careers or graduate education focused primarily on children and adolescents. Examples include careers developing programming for youth (e.g., parks and recreation, after-school programs, youth development programs); working with youth engaged in systems of care, including those who have experienced trauma (e.g. residential treatment facilities, foster care systems, behavioral health or developmental services); working in the juvenile justice system; counseling youth and families.

The *Gerontology option* is for students who desire to deepen their understanding of the foundations of development across the entire lifespan, particularly in adulthood to later life. Students in this option will gain an overview of the interdisciplinary field of gerontology and explore psychosocial and bioecological perspectives on adult development and aging over the life course as it affects individuals, families, and communities and has social, political, and economic implications world-wide. Examples of careers in Gerontology include working directly with older adults in a variety of settings and administering programs for older adults.

The *Human Services option* is for students who seek to improve the quality of life for individuals, families

and communities through direct service, advocacy or policy. Students will gain an understanding of: the foundations of human development including conditions which support or limit optimal functioning, family functioning and family dynamics and how those relate to human development across the lifespan, service delivery systems, and strategies for working with diverse clientele. Students in this option may be interested in careers such as family social service programs, advocacy and nonprofit work, community education, and counseling support. This option will also prepare students for advanced education in social work, counseling, and family law.

The *Prevention Science option* is designed for students who are interested in taking a developmental approach to improving public health. Specifically, the Prevention Science option focuses on (a) identifying risk and protective factors that shape human development throughout the lifespan, and (b) designing, implementing, and evaluating interventions, programs, and policies that promote well-being for individuals, families, and communities. The option in Prevention Science is a good fit for students interested in graduate studies in fields such as Prevention Science, Public Health, and Community Psychology; in addition, this option will prepare students for careers in fields such as community coalition coordinator, public health prevention coordinator, and residential youth counselor.

The department also offers four certificates: early childhood education, adolescence, gerontology, and family studies. Students completing a human development degree may also complete a minor or approved certificate of study. A minor or certificate of study should be selected in consultation with a human development advisor, preferably by the end of the third semester.

Student Learning Outcomes

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.

Graduate School Preparation

The human development degree provides preparation for graduate work leading to teaching, research, counseling, or administrative positions in domains such as academia, social services, and counseling.

Graduate Program

The department also administers an interdisciplinary doctoral program in Prevention Science. Students in the program learn to conduct basic research on risk and protective factors, and to develop, evaluate, and disseminate evidence-based programs to promote the well-being of people across the lifespan. The program is offered in collaboration with the Colleges of Communication, Education, Medicine, 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.

CHILD AND YOUTH DEVELOPMENT OPTION (120 CREDITS)

Students can be admitted as a Human Development major after completing 24 credits and earning a GPA of at least 2.0. A cumulative GPA of 2.6 or better in all H D courses that apply to the option, including substitutions is required to (a) maintain admission in the major; and (b) complete the Bachelor of Arts degree in Human Development. Of the 44 credits required for the major and Child and Youth Development option, a minimum of 21 must be taken at WSU.

First Year

First Term	Credits
Arts [ARTS]	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
H D 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3
Written Communication [WRTG]	3

Second Term	Credits
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
Communication [COMM] or Written Communication [WRTG]	3
H D 200	2
HISTORY 105 [ROOT]	3
Elective ²	3

Second Year

First Term	Credits
H D 204	3
H D 220	3
Humanities [HUM]	3
Electives ²	6

Second Term	Credits
H D 306, 307, or 408	3
H D 350 [DIVR]	3
Electives ²	9
Complete Writing Portfolio	

Third Year

First Term	Credits
H D 306, 307, or 408	3
H D 310 [M]	3
Child and Youth Elective ³	3
Electives ²	6

Second Term	Credits
Child and Youth Electives ³	6
Electives	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
H D 410 [M]	3
H D 479	3
H D 497 ⁴	3
Electives ²	6
<i>Second Term</i>	<i>Credits</i>
H D 498 ⁵	3
Integrative Capstone [CAPS]	3
Electives	9

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework.

³ Child and Youth Electives (9 credits; minimum 6 H D credits): Students must complete at least three courses from the following: H D 300, 301, 302, 341, 360, 418, 430, ANTH 302, PSYCH 464, SOC 352, 362, 367.

⁴ H D 497 is required and must be completed prior to H D 498, but no more than two semesters before H D 498.

⁵ The internship course (H D 498) is also available during the summer term of the junior or senior year. Students may take H D 498 for up to 9 credits. For students completing the Child and Youth Development options, the H D 498 internship experience must focus on a field relevant to child and/or adolescent development.

EARLY CHILDHOOD EDUCATION OPTION (120 CREDITS)

Students can be admitted as a Human Development major after completing 24 credits and earning a GPA of at least 2.0. A cumulative GPA of 2.6 or better in all H D courses that apply to the option, including substitutions is required to (a) maintain admission in the major; and (b) complete the Bachelor of Arts degree in Human Development. Of the 48-49 credits required for the major and Early Childhood Education option, a minimum of 21 must be taken at WSU.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
H D 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3
Written Communication [WRTG]	3
<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
Communication [COMM] or Written Communication [WRTG]	3
H D 200	2
HISTORY 105 [ROOT]	3
Elective ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
H D 204	3
H D 220	3

H D 306	3	ENGLISH 101 [WRTG]	3
Humanities [HUM]	3	H D 101 [SSCI]	3
Elective ²	3	Quantitative Reasoning [QUAN]	3 or 4
<i>Second Term</i>	<i>Credits</i>	<i>Second Term</i>	<i>Credits</i>
H D 300 or 302	3	ENGLISH 201 [WRTG] ¹	3
H D 341	3	H D 200	2
H D 350 [DIVR]	3	HISTORY 105 [ROOT]	3
Electives ²	6	Humanities [HUM]	3
Complete Writing Portfolio		Physical Sciences [PSCI] with lab ²	4

Third Year

<i>First Term</i>	<i>Credits</i>
H D 235	1
H D 300, 302, or 403	3
H D 310 [M]	3
H D 482	3
Electives ²	5
<i>Second Term</i>	<i>Credits</i>
H D 300, 302, or 403	3
H D 342	4
Electives ²	8

Fourth Year

<i>First Term</i>	<i>Credits</i>
H D 445 ³	3
Integrative Capstone [CAPS]	3
Electives ²	9
<i>Second Term</i>	<i>Credits</i>
H D 410	3
H D 446 ⁴	6
Electives ²	6

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework.

³ H D 445 must be taken before H D 446 but no more than two semesters before H D 446.

⁴ All H D majors complete a practicum/internship experience. H D 446 is reserved for students completing the option in Early Childhood Education and requires a half-day each day, 5 days a week for a semester.

FAMILY AND CONSUMER SCIENCES OPTION (120 CREDITS)

Students can be admitted as a Human Development major after completing 24 credits and earning a GPA of at least 2.0. A cumulative GPA of 2.6 or better in all H D courses that apply to the option, including substitutions, is required to (a) maintain admission in the major; and (b) complete the Bachelor of Arts degree in Human Development. A grade of C or better must be earned in all courses used to fulfill requirements for teacher certification. Of the 49 H D credits required for the major and Family and Consumer Sciences option, a minimum of 21 must be taken at WSU.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 140 [BSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
AMDT Elective ³	3
H D 204	3
H D 220	3
H D 306	3
<i>Second Term</i>	<i>Credits</i>
H D 302	3
H D 307	3
H D 310 [M]	3
HBM 258	3
TCH LRN 301	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
AMDT Elective ³	3
H D 320 [M]	3
H D 350 [DIVR]	3
H D 479	3
TCH LRN 317	2
<i>Second Term</i>	<i>Credits</i>
H D 410 [M]	3
H D 480	3
Integrative Capstone [CAPS]	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

Fourth Year

<i>First Term</i>	<i>Credits</i>
AG ED 440	2
ED PSYCH 468	3
H D 499	3
TCH LRN 467	3
TCH LRN 469	2
TCH LRN 470	3
<i>Second Term</i>	<i>Credits</i>
H D 407	8
TCH LRN 415	8

¹ One from ENGLISH 201, 301, 302 [M] or 402 is required for admission to the Teacher Education Program. Students who take ENGLISH 302 will need to take an additional [WRTG] or [COMM] course.

² Recommend one from AMDT 210 or CHEM 101.

³ Select two from: AMDT 210, 211, or 417.

GERONTOLOGY OPTION (120 CREDITS)

Students can be admitted as a Human Development major after completing 24 credits and earning a GPA of at least 2.0. A cumulative GPA of 2.6 or better in all H D courses that apply to the option, including substitutions is required to (a) maintain admission

in the major; and (b) complete the Bachelor of Arts degree in Human Development. Of the 44 credits required for the major and Gerontology option, a minimum of 21 must be taken at WSU.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Science [BSCI] or Physical Sciences [PSCI] ¹	3
H D 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3
Written Communication [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
Communication [COMM] or Written Communication [WRTG]	3
H D 200	2
HISTORY 105 [ROOT]	3
Elective ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
H D 204	3
H D 220	3
H D 308	3
Humanities [HUM]	3
Elective ²	3

<i>Second Term</i>	<i>Credits</i>
H D 350 [DIVR]	3
Gerontology Elective ³	3
Elective ²	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
H D 310 [M]	3
H D 360	3
Gerontology Elective ³	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
H D 405	3
Gerontology Elective ³	3
Electives ²	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
H D 410 [M]	3
H D 497 ⁴	3
Electives ²	9

<i>Second Term</i>	<i>Credits</i>
H D 498 ⁵	3
Integrative Capstone [CAPS]	3
Electives ²	9

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework.

³ Gerontology Electives (9 credits): Students must complete at least three courses from the following: H D 301, 302, 320, 430, 479; HBM 375; PSYCH 320, and 444.

⁴ H D 497 is required and must be completed prior to H D 498, but no more than two semesters before H D 498.

⁵ The internship course (H D 498) is also available during the summer semester of the junior or senior year. Students may take H D 498 for up to 9 credits. For students completing the Gerontology option, the H D 498 internship experience must focus on a field relevant to adult development and/or aging.

HUMAN SERVICES OPTION (120 CREDITS)

Students can be admitted as a Human Development major after completing 24 credits and earning a GPA of at least 2.0. A cumulative GPA of 2.6 or better in all H D courses that apply to the option, including substitutions is required to (a) maintain admission in the major; and (b) complete the Bachelor of Arts degree in Human Development. Of the 47 credits required for the major and Human Services option, a minimum of 21 must be taken at WSU.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
H D 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3
Written Communication [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
Communication [COMM] or Written Communication [WRTG]	3
H D 200	2
HISTORY 105 [ROOT]	3
Elective ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
H D 204	3
H D 220	3
Humanities [HUM]	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
H D 300, 301, or 302	3
H D 350 [DIVR]	3
H D 384	3
Electives ²	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
H D 300, 301, or 302	3
H D 310 [M]	3
H D 385	3
Human Services Elective ³	3
Elective ²	3

<i>Second Term</i>	<i>Credits</i>
H D 300, 301, or 302	3
Human Services Elective ³	3
Electives ²	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
H D 410 [M]	3
H D 497 ⁴	3
Electives ²	9

<i>Second Term</i>	<i>Credits</i>
H D 498 ⁵	3
Integrative Capstone [CAPS]	3
Electives ²	9

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework.

³ Human Services Electives (6 credits): Students must complete at least two courses from the following: H D 306, 307, 308, 320, 334, 360, 403, 405, 406, 408, 430, or 479, PSYCH 444.

⁴ H D 497 is required and must be completed prior to H D 498, but no more than two semesters before H D 498.

⁵ The internship course (H D 498) is also available during the summer term of the junior or senior year. Students may take H D 498 for up to 9 credits. For students completing the Human Services option, the H D 498 internship experience must focus on a human services field.

LIFESPAN DEVELOPMENT OPTION (120 CREDITS)

Students can be admitted as a Human Development major after completing 24 credits and earning a GPA of at least 2.0. A cumulative GPA of 2.6 or better in all H D courses that apply to the option, including substitutions is required to (a) maintain admission in the major; and (b) complete the Bachelor of Arts degree in Human Development. Of the 41 H D credits required for the major and Lifespan Development option, a minimum of 21 must be taken at WSU.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] or Physical Sciences [PSCI] ¹	3
H D 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3
Written Communication [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Physical Sciences [PSCI] (with lab) ¹	4
Communication [COMM] or Written Communication [WRTG]	3
H D 200	2
HISTORY 105 [ROOT]	3
Elective ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
H D 204	3
H D 220	3
Humanities [HUM]	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>	Quantitative Reasoning [QUAN]	3
H D 306, 307, or 308	3	Written Communication [WRTG]	3
H D 350 [DIVR]	3		
Lifespan HD Elective ³	3		
Electives ²	6		
Complete Writing Portfolio			

Third Year

<i>First Term</i>	<i>Credits</i>	Biological Sciences [BSCI] or	
H D 306, 307, or 308	3	Physical Sciences [PSCI] (with lab) ¹	4
H D 310 [M]	3	Communication [COMM] or Written	
Lifespan HD Elective ³	3	Communication [WRTG]	3
Electives ²	6	H D 200	2
		HISTORY 105 [ROOT]	3
		Elective ²	3

<i>Second Term</i>	<i>Credits</i>		
H D 306, 307, or 308	3		
Electives ²	12		

Fourth Year

<i>First Term</i>	<i>Credits</i>		
H D 410 [M]	3		
H D 497 ⁴	3		
Electives ²	9		

<i>Second Term</i>	<i>Credits</i>		
H D 498 ⁵	3		
Integrative Capstone [CAPS]	3		
Electives ²	9		

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework.

³ Lifespan HD Electives (6 credits): Students must complete two courses from the following: HD 300, 301, 320, 341, 360, 403, 405, 406, 408, 430, 479, and 480.

⁴ H D 497 is required and must be completed prior to H D 498, but no more than two semesters before H D 498.

⁵ The internship course (H D 498) is also available during the summer term of the junior or senior year. Students may take H D 498 for up to 9 credits. For students completing the Lifespan Development option, the H D 498 internship experience must focus on a field relevant to lifespan human development.

PREVENTION SCIENCE OPTION (120 CREDITS)

Students can be admitted as a Human Development major after completing 24 credits and earning a GPA of at least 2.0. A cumulative GPA of 2.6 or better in all H D courses that apply to the option, including substitutions is required to (a) maintain admission in the major; and (b) complete the Bachelor of Arts degree in Human Development. Of the 47 credits required for the major and Prevention Science option, a minimum of 21 must be taken at WSU.

First Year

<i>First Term</i>	<i>Credits</i>		
Arts [ARTS]	3		
Biological Sciences [BSCI] or			
Physical Sciences [PSCI] ¹	3		
H D 101 [SSCI]	3		

<i>Second Term</i>	<i>Credits</i>		
Biological Sciences [BSCI] or			
Physical Sciences [PSCI] (with lab) ¹	4		
Communication [COMM] or Written			
Communication [WRTG]	3		
H D 200	2		

Second Year

<i>First Term</i>	<i>Credits</i>		
H D 204	3		
H D 220	3		
Humanities [HUM]	3		
Electives ²	6		

<i>Second Term</i>	<i>Credits</i>		
H D 350 [DIVR]	3		
H D 384, 418, 430, or 479	3		
H D Focus ³	3		
Electives ²	6		
Complete Writing Portfolio			

Third Year

<i>First Term</i>	<i>Credits</i>		
H D 310 [M]	3		
H D 384, 418, 430, or 479	3		
H D Focus ³	3		
Electives ²	6		

<i>Second Term</i>	<i>Credits</i>		
H D 384, 418, 430, or 479	3		
H D Focus ³	3		
Electives ²	9		

Fourth Year

<i>First Term</i>	<i>Credits</i>		
H D 384, 418, 430, or 479	3		
H D 410 [M]	3		
H D 497 ⁴	3		
Electives ²	6		

<i>Second Term</i>	<i>Credits</i>		
H D 498 ⁵	3		
Integrative Capstone [CAPS]	3		
Electives ²	9		

¹ For a total of 7 credits—one Biological Sciences [BSCI] and one Physical Sciences [PSCI] course, including one lab course.

² Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework.

³ H D Focus (9 credits): Students must complete one H D option focus: Lifespan (H D 306, 307, 308); Child & Youth (H D 306, 307 or 408, 341); Gerontology (H D 308, 360, 405); or Family (H D 300, 301, 302).

⁴ H D 497 is required and must be completed prior to H D 498, but no more than two semesters before H D 498.

⁵ The internship course (H D 498) is also available during the summer semester of the junior or senior year. Students may take H D 498 for up to 9 credits. For students completing the Prevention Sciences option, the H D 498 internship experience must focus on a field relevant to prevention science.

Minors**Aging**

The minor in aging requires a minimum of 18 hours of credit including BIOLOGY 140; H D 308 or 405; 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.

Human Development

The Human Development minor requires 18 credits and a cumulative GPA of 2.6 or better in coursework used to fulfill this minor. Required coursework includes H D 101, 204, 220, and 9 additional H D elective credits selected from H D 300, 301, 302, 306, 307, 308, 320, 334, 341, 350, 360, 385, 403, 405, 406, 408, 430, 479, 480, or 482. A maximum of 3 credits of H D 485 may apply to the upper-division requirement of the minor. Coursework must include a minimum of 9 credits of 300-400-level courses taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Certificates**Adolescence**

The department of Human Development offers a Certificate in Adolescence. The certificate reflects a high standard of training and experience in this specific area of human development. Non-human development majors are required to complete any prerequisites for the internship requirement. The requirements include 6 credits in H D core courses that support the area of certification, 15 credits in required and optional courses and 4 credits of internship that reflect the area of certification. Students must maintain an overall GPA of 2.6 in those courses that count toward the certificate.

Certificate requirements:

Required courses: H D 220, 302, 307, 408, 498, one other 300-400 level H D course, H D 479 or 480, and one from PSYCH 230, 265, SOC 360, or 362.

Early Childhood Education

The Department of Human Development offers a Certificate in Early Childhood Education. The certificate is only available to students who (a) are living in the state of Washington; (b) are currently majoring in Human Development or who have completed the Human Development major within the past 10 years; and (c) have satisfied the necessary prerequisites. Students must maintain an overall GPA of 2.6 in courses required for the certificate. Required courses to complete the certificate include H D 302, 306, 341, 342, 446, 482.

Family Studies

The Department of Human Development offers a Certificate in Family Studies. The certificate reflects

a high standard of training and experience in the specific area of human development. Non-human development majors are required to complete any prerequisites for the internship requirement. The requirements include 6 credits in H D core courses that support the area of certification, 15 credits in required and optional courses, and 3 credits of internship that reflect the area of certification. Students must maintain an overall GPA of 2.6 in those courses that count toward the certificate.

Certificate requirements:

Required courses: H D 204, 301, 302, 320, 350, 403, one other 300-400 level H D course, H D 498.

Gerontology

The Department of Human Development offers a Certificate in Gerontology. The certificate reflects a high standard of training and experience in the specific area of human development. Non-human development majors are required to complete any prerequisites for the internship requirement. The requirements include 6 credits in H D core courses that support the area of certification, 15 credits in required and optional courses, and 3 credits of internship that reflect the area of certification. Students must maintain an overall GPA of 2.6 in those courses that count toward the certificate.

Certificate requirements:

Required courses: BIOLOGY 140; H D 308 or 405; H D 497; H D 498; PSYCH 363 or 490; SOC 351 or 356. Elective Courses, 6 credits minimum from the following: BIOLOGY 233; HBM 375, 497; H D 308 or 405 (if not used in required), 360; KINES 264, 361; MGMT 101, 301; PHIL 103, 365; PSYCH 320, 363, 490 (if not used in required); SOC 250, 351, 356 (if not used in required).

Human Services Case Management and Administration

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 concentrate 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 (1) be admitted to their WSU major or be a non-degree-seeking student, (2) have a cumulative GPA of at least 2.0, and (3) have completed 60 semester credits. The certificate is awarded based upon successful completion of 9 credits of core courses: H D 301 or 403, H D 385, H D 430, MGMT 301 or PSYCH 308, and 9 credits of either Case Management or Administration focus electives. Case Management focus electives: CRM J 365/SOC 367, CRM J 403, H D 300, 350, 360, 410, 498, POL S 436, PSYCH 110, 333, 444. Administration focus electives: ACCTG 230, 231, H D 334, 479, 498, MGMT 401, 450, MKTG 379, POL S 436, 442, 445, PSYCH 308, 309. Students

must maintain a cumulative GPA of 2.6 in those courses that count towards the certificate and 15 of the 18 credits must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

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.

204 [SSCI] Family Interactions 3 Introduction to the study of family processes: family generational, emotional, boundary, rule, and ritualistic systems.

205 [COMM] Developing Effective Communication and Life Skills 4 (3-2) Enhancing interpersonal communication, leadership, and team skills through action-based learning.

220 Human Development Theories 3 Introduction to foundational human development theories, key concepts, comparison, and application of theory to inform practice.

235 Introduction to Early Childhood Programs 1 Course Prerequisite: H D 306. Introduction to the field of early childhood education; connection with a field placement site in a community-based child care program for H D 342 is required. For students completing Early Childhood certificate. S, F grading.

275 Special Topics in Human Development: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. S, F grading.

300 Child Maltreatment 3 Course Prerequisite: Sophomore standing Overview of causes, identification, reporting, and treatment of children who are abused and/or neglected. Recommended preparation H D 204.

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. Recommended preparation H D 204.

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. Recommended preparation: H D 204.

306 Child Development 3 Course Prerequisite: H D 101; sophomore standing. Understanding growth and change across all developmental domains from prenatal through age 10, including contextual influences on development. Recommended preparation: H D 220.

307 Adolescence and Emerging Adulthood 3 Course Prerequisite: H D 101; sophomore standing. Understanding growth and change across all developmental domains from adolescence through emerging adulthood, including contextual influences. Recommended preparation: H D 220.

308 Adult Development 3 Course Prerequisite: H D 101; sophomore standing. Understanding growth and change in adulthood, including contextual influences on the adult years of human development. Recommended preparation: H D 220.

310 [M] Research Methods 3 Course Prerequisite: H D 200; admitted to the major in Human Development; sophomore standing. Overview of research techniques in human development; methods of evaluating research products.

320 [M] Resource Management 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.

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.

341 Guidance in Early Childhood Programs 3 Course Prerequisite: H D 306 or concurrent enrollment; 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 235; H D 306; H D 341 or concurrent enrollment; sophomore standing; by permission only. Planning and implementation of developmentally appropriate curriculum for use in programs serving young children.

350 [DIVR] Family Diversity 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. Recommended preparation: H D 204.

- 384 Prevention and Intervention in Human Development** 3 In-depth study of theory and empirical knowledge used to integrate prevention and intervention approaches to support healthy human functioning across the lifespan.
- 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.
- 404 Family and Consumer Sciences Professional Preparation Seminar** 3 Course Prerequisite: Junior standing. Family and consumer sciences career preparation through examination of career and technical education state processes, professional presentation and participation, FCCLA management, and study of curricula to engage diverse populations.
- 405 Gerontology** 3 Course Prerequisite: Junior standing. Examination and analysis of social context of aging including public policy, implications of demographic shifts, and quality-of-life issues.
- 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 in Human Development** 3 Course Prerequisite: H D 310; junior standing. Family policy issues in a changing society; ecological perspective; relationship of public policy to communities, organizations, families, and individuals.
- 415 [CAPS] Peak Experiences in Leadership** 3 Course Prerequisite: Junior standing. Experiential human development course that utilizes challenge and application to develop personal and group leadership skills.
- 418 [CAPS] Early Experiences and Lifespan Health** 3 Course Prerequisite: Junior standing. Examination of relationships between early life and lifespan health through an equity lens; exploration of the roles of systems, social policies, and intervention/prevention.
- 430 [M] Professional and Grant Writing Skills** 3 Course Prerequisite: H D 384 or 385; junior standing. Examination and development of skills important for effective professionals; communication, leadership, ethical behavior, cultural competence, grant writing, evaluation, and others.
- 445 Early Childhood Professional Preparation Seminar** 3 Course Prerequisite: H D 341; junior standing; by permission only. Preparation for careers and practicum placement in early childhood education, with an emphasis in self-assessment and professionalism; procurement of field practicum with an early childhood program in preparation for H D 446 Practicum in Early Childhood Programs.
- 446 Practicum in Early Childhood Programs** 6 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: H D 342; H D 445; junior standing; by permission only. Supervised teaching; emphasis on skill building in working with diverse groups of children and building partnerships with families.
- 449 Early Childhood Seminar** 3 Course Prerequisite: H D 306; 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 306; 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. Planning, designing, implementing, and evaluating community/school programs; engaging community/school stakeholders; needs assessment; logic models; process, outcome, and cost 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 306; 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: Junior 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.
- 496 Field Placement Preparation** 1 Course Prerequisite: H D majors or H D certificate students; junior standing; by permission only. Investigation of career goals, interviewing and professional presentation, resume preparation, internship competencies, and field placement procurement. S, F grading.
- 497 Professional Preparation Seminar** 3 Course Prerequisite: Junior standing; by permission only. Human service career preparation through examining related careers, career self-assessment, professional presentation, professional ethics, professional competencies, and field placement procurement.
- 498 Field Placement** V 1 (0-3) to 9 (0-27) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: H D 385 and 496, 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.
- 505 Developing Effective Leadership: Tidal Leadership** 2 Customized leadership course for acquiring essential skills beyond the discipline skills for professional and personal success; build a personal leadership platform.
- 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.
- 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
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.

PREVENTION SCIENCE

PREV SCI

508 Longitudinal Structural Equation Modeling 3
Longitudinal structural equation modeling and the use of Mplus statistical software to perform and interpret a broad range of longitudinal structural equation models. Recommended preparation: ED PSYCH 576, PSYCH 514, PSYCH 516, or previous knowledge of multivariate analysis and factor analysis.

510 Multilevel Modeling II: Advanced Multilevel Models for Longitudinal Data 3
Advanced applications of the general linear mixed model (aka multilevel model, hierarchical linear model, latent growth curve model, random coefficients model) used to analyze data from longitudinal, repeated measures designs; conduct cumulative steps in a longitudinal multilevel analysis, including setting up data file and coding variables, evaluating fixed and random effects and interpreting covariance structures, predicting between- and within-person variation using time-invariant and time-varying covariates, and interpreting empirical findings. Recommended preparation: ED PSYCH 575 or previous knowledge of multivariate analysis and multilevel modeling.

511 Introduction to Prevention Science 3
Disciplinary roots; the epidemiological approach to risk and prevention; design, implementation, and dissemination of preventive interventions.

512 Finite and Growth Mixture Modeling 3
Introduction to a specific type of latent variable statistical models, commonly referred to as finite mixture models, which include several distinct subtypes including latent class analysis, latent profile analysis, latent transition analysis, and latent class growth analysis; conceptual background for models and application of models in practice. Recommended preparation: ED PSYCH 514 and ED PSYCH 576, or knowledge of multivariate analysis and psychometrics.

513 Research Methods in Prevention Science 3
Introduction to process of research and methods in prevention science; techniques of research, data collection, and data analysis procedures.

535 Effective Prevention Strategies I 3
Community mobilization and problem analysis; program selection, implementation, and management; grant writing.

540 Effective Prevention Strategies II 3
Evaluation of prevention science 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.

800 Doctoral Research, Dissertation, and/or Examination V 1-18
May be repeated for credit. Course Prerequisite: Admitted to the Prevention Sciences PhD program. 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 Humanities

english.wsu.edu/
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, 103, 131, 302, 335, 303, 335, and 450 provide a survey of western civilization from ancient times to the modern era. English majors may substitute (by exception) upper-division 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 HUMANITY 101, 103, 302, 303, 304, 335, and 450 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.

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 [HUM] 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 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.
- 205 [HUM] Introduction to Shakespeare** 3 Shakespeare plays with emphasis on stage productions and film adaptations in various cultural contexts. (Crosslisted course offered as ENGLISH 205, HUMANITY 205).
- 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.
- 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.
- 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.
- 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.
- 322 [DIVR] Ecology in East Asian Cultures** 3 Major ecological issues in East Asia through cultural representations, and analysis of their implications to the U.S. (Crosslisted course offered as ASIA 322, CHINESE 322, HUMANITY 322, JAPANESE 322).
- 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. (Crosslisted course offered as HUMANITY 450, HISTORY 465.)

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

Crop and Soil Sciences Department Chair and Professor, R. Koenig; Viticulture and Enology Director and Professor, T. Henick-Kling; Plant Pathology Department Chair and Professor, T. Murray; Horticulture Department Interim Chair and Professor, D. Main; Entomology Department Chair and Professor, L. Lavigne; Regents Professors, J. Poovaiah, J. Reganold; Professors, I. Burke, L. Carpenter-Boggs, A. Carter, A. Felsot, M. Flury, G. Grove, P. Jacoby, M. Neff, H. Pappu, C. Peace, M. Pumphrey, N. Rayapati; Associate Professors, B. Bondada, D. Crowder, L. DeVetter, M. Kumar, K. Murphy, C. Neely, J. Owen, K. Sanguinet; Assistant Professors, T. Collins, D. Griffin, G. LaHue, H. Neely; Teaching Associate Professor, C. Perillo; Instructors, J. Holden, C. Kawula; Adjunct Faculty, C. Campbell, D. Cobos; Farm Manager and Instructor, B. Jaekel.

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, entomology, plant pathology, and food science.

Students pursuing a Bachelor of Science degree in Integrated Plant Sciences may choose among five majors highly sought by employers in the state and nationally: Agricultural Biotechnology; Field Crop Management; Fruit and Vegetable Management; Landscape, Nursery, and Greenhouse Management; or Turfgrass Management.

The program also offers the BS in Viticulture and Enology degree on the Tri-Cities campus.

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.

A student may be admitted to an IPS major upon making their intention known to the department. For complete information about all majors within the IPS degree programs, please see the IPS webpage at: <http://ips.wsu.edu>.

In addition to WSU's Six Learning Goals of the Baccalaureate, successful IPS graduates also will be able to:

- Plant Systems: Evaluate how cultivar differences, management practices, environmental changes, and emerging technology affect the plant system to influence productivity, environmental impact, and end-use quality.
- Use expert plant science vocabulary appropriately to describe the structure and functions of plant components and explain how major genetic and environmental factors influence plant growth and development.
- Evaluate the various contributions of plant-based systems from local to global systems, including the impact on human health, economics, and the environment.
- Analyze the breadth and depth of various roles plant science professionals play in contemporary plant systems, society, government, education, and industry
- Scientific Reasoning: Integrate traditional and emerging scientific disciplines, knowledge resources, and technologies via the scientific method to understand the plant system.
- Integrate basic science skills (biology, chemistry, math, etc.) and scientific disciplines (physiology, genetics, pathology, entomology, weed science, soil science, etc.) to describe how experiments are designed, conducted, and interpreted to test hypotheses about plant responses.
- Develop testable hypotheses and design targeted experiments.
- Obtain and analyze data, demonstrate competence in statistics, and assign a degree of confidence to conclusions.
- Critical Thinking: Address real-world plant science challenges that integrate contextual factors and stakeholder perspectives.
- Identify compelling research problems, critically evaluate current knowledge, and explain contextual factors that influence assumptions or perspectives.
- Evaluate the suitability and limitations of methods and technologies for obtaining evidence.
- Interpret evidence in the context of current knowledge, evaluate alternative interpretations, draw conclusions, and make recommendations relevant to real-world practice.
- Compare and contrast multiple stakeholder perspectives on methods and outcomes of horticultural and agronomic practices.
- Science and Professional Communication: Demonstrate interpersonal skills to effectively collaborate and communicate scientific knowledge to diverse target audiences.
- Deliver effective oral and written communications across genres and media to various plant science stakeholders.
- Demonstrate and refine interpersonal communication skills in collaborative teams and projects.
- Critique the effectiveness of presentation

options for communicating plant science research outcomes.

- Depth (Major-Level Outcome): Demonstrate major-specific mastery of a topic with specialized knowledge and skills in at least one area of inquiry within the IPS degree.

Agricultural Biotechnology

- Evaluate and apply effective technologies in genetics and molecular biology for crop improvement.
- Demonstrate knowledge and application of “big data” collection, management, and analysis.

Field Crop Management

- Assess the impact and effectiveness of management on field crop production.
- Implement efficient, economic, and sustainable management practices for field crop production.

Fruit and Vegetable Management

- Apply efficient and sustainable management practices for fruit and vegetable crops.

Landscape, Nursery, Greenhouse Management

- Design and manage horticultural production strategies for landscapes, nurseries, and greenhouses.

Turfgrass Management

- Being developed by the curriculum committee.

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, study abroad, 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. (See <http://cahnrs.wsu.edu/academics/Student-life/clubs/>)

Bachelor of Science in Viticulture and Enology

The BS in Viticulture and Enology degree 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. Pullman students may work with a V&E advisor, and begin taking courses, but require acceptance to WSU Tri Cities before admission to the major is granted.

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. (<http://cahnrs.wsu.edu/academics/scholarships/>).

Transfer Students

Students planning to transfer into the IPS program should take courses that meet the University Common Requirements (UCORE) and the IPS core requirements when possible. Transfer articulation agreements have been developed with several Washington community colleges degree programs. More information can be found on our Transfer Student website: <http://cahnrs.wsu.edu/>

academics/transfer/. Prospective transfer students are strongly encouraged to consult with an advisor within the IPS program for further guidance.

Graduate Studies

Master of Science in Agriculture (Pullman and Global Campus)

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. Students may elect to customize their program or choose from three options: General Agriculture, Food Science and Management, or Plant Health Management (online only). Access complete program description on-line at: <http://msag.wsu.edu/>.

Master of Science and Doctor of Philosophy degrees are also offered in Crop Science, Economics, Entomology, Food Science, Horticulture, Plant Pathology, and Soil Science. More information can be found on the CAHNRS Graduate Studies website: <http://cahnrs.wsu.edu/academics/graduate-studies/>.

Schedules of Studies

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

AGRICULTURAL BIOTECHNOLOGY (120 CREDITS)

The IPS - 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.

A student may be admitted to an IPS major upon making their intention known to the department.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HORT / CROP SCI 102	3
MATH 140 [QUAN] or MATH 106/108 [QUAN]	4 or 5

<i>Second Term</i>	<i>Credits</i>
CHEM 106 [PSCI]	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
HORT / CROP SCI 202	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4

Communication [COMM] or Written Communication [WRTG] ¹	3 or 4
STAT 212 [QUAN]	4
Electives	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 106 or 107	4
ENTOM 351	3
Humanities [HUM]	3
SOIL SCI 201	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 420	3
CHEM 345	4
ENTOM 343 [M]	3
MBIOS 301	4
PL P 429	3

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
MBIOS 303	4
MBIOS 305	3
Electives	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
CPT S 115 ²	3
HORT 480	3
MBIOS 404	3
MBIOS 478	3
Elective	4

<i>Second Term</i>	<i>Credits</i>
400-500-level Seminar in CAHNRS ³	1
CROP SCI 445 [M]	4
CROP SCI 495	1
HORT 416 ⁴	3
Integrative Capstone [CAPS] (CROP SCI 435 [CAPS] recommended)	3
MBIOS 401	3

¹ COM 102 or H D 205 recommended.

² STAT 412 can be taken as an alternative to CPT S 115.

³ Seminar in CAHNRS (1 credit): AGTM 451, CROP SCI /SOIL SCI 412, HORT/VIT ENOL 409, or as approved by advisor.

⁴ CROP SCI 411 [M] can be taken in the fall as an alternative to HORT 416.

BS IN VITICULTURE AND ENOLOGY (TRI-CITIES ONLY) (120 CREDITS)

Offered exclusively at the Tri-Cities campus, the BS in Viticulture and Enology prepares students for successful careers in the wine industry in Washington and beyond.

A WSU Tri Cities student may be admitted to the Viticulture and Enology degree program upon making their intention known to the department. Students from other campuses may work with a V&E advisor, and begin taking courses but acceptance to WSU Tri-Cities is required before admission to the major is granted.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 101 [PSCI] or 105 [PSCI]	4
ECONS 101 [SSCI] or 102 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 103 or 106 ¹	3
VIT ENOL 113	3

<i>Second Term</i>	<i>Credits</i>
CHEM 102 or 106	4
ENGLISH 101 [WRTG]	3
SOIL SCI 201	3
STAT 212 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 120 [BSCI]	4
CHEM 345	4
Communication [COMM] or Written Communication [WRTG] ²	3 or 4
Electives	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 107	4
Diversity [DIVR]	3
Humanities [HUM]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 420	3
ENTOM 343 [M]	3
HORT/VIT ENOL 313	3
MBIOS 101 ³	4
PL P 300 ⁴	2

<i>Second Term</i>	<i>Credits</i>
ENTOM 351	3
HORT/VIT ENOL 413	3
MBIOS 303 or CHEM 370	4 or 3
Specialization Electives ⁵	3
Electives	3

<i>Third Term</i>	<i>Credits</i>
(Summer Session) HORT/VIT ENOL 399, FS/VIT ENOL 496, or FS 401	2

Fourth Year

<i>First Term</i>	<i>Credits</i>
FS/VIT ENOL 465	3
HORT 418 [M]	3
HORT/VIT ENOL 409	1
HORT/VIT ENOL 435	3
Specialization Electives ⁵	3
Electives	2 or 3

<i>Second Term</i>	<i>Credits</i>
HORT 416 ⁶	3
VIT ENOL 422	3
VIT ENOL 433 [CAPS] [M]	3
VIT ENOL/HORT 440	3
Specialization Electives ⁵	3

¹ MATH 106 is recommended.

² COM 102 or H D 205 recommended.

³ MBIOS 305 can be taken as an alternative to MBIOS 101.

⁴ PL P 429 can be taken as an alternative, but PL

P 300 is recommended. PL P 300 is offered Even Years – Fall.

⁵ Specialization Electives (9 credits): Approved courses include HBM 350, 358; HORT 102*, 202*, 310, 320, 421, 495, 499; MATH 106*, 140; MBIOS 301, 306; MKTG 360; PHYSICS 101; SOE 322; SOIL SCI 302 [M], 374, 441, 468, or as approved by advisor. *Recommended.

⁶ CROP SCI 411 [M] can be taken in the fall as an alternative to HORT 416.

FIELD CROP MANAGEMENT (120 CREDITS)

The IPS - 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.

A student may be admitted to an IPS major upon making their intention known to the department.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 101 [PSCI] or 105 [PSCI]	4
Communication [COMM] or Written Communication [WRTG] ¹	3 or 4
ENGLISH 101 [WRTG]	3
HORT / CROP SCI 102	3

<i>Second Term</i>	<i>Credits</i>
CHEM 102 or 106	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
HORT / CROP SCI 202	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI], 107 [BSCI], or 120 [BSCI]	4
SOIL SCI 201	3
SOIL SCI 202	1
STAT 212 [QUAN]	4
Electives	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 106, 107, or 120	4
Diversity [DIVR]	3
MATH 140 [QUAN] ²	4
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CROP SCI 305	3
ECONS 350 ³	3
ENTOM 343 [M]	3
Major Electives ⁴	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
CROP SCI 302	3
CROP SCI 495, 498, or 499	1
ENTOM 351	3
Humanities [HUM]	3
Electives	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
CROP SCI 403	3
CROP SCI 411 [M] ⁵	3
PL P 429	3
Electives	3
Major Electives ⁴	3

<i>Second Term</i>	<i>Credits</i>
CROP SCI 412	1
Integrative Capstone [CAPS]	3
SOIL SCI 441	3
Electives	6
Major Electives ⁴	3

¹ COM 102 or H D 205 recommended.

² MATH 106 and 108 can be taken as an alternative to MATH 140.

³ ECONS 352 can be taken in the spring as an alternative to ECONS 350.

⁴ Major Elective (9 Credits): AFS 302 [M]; CROP SCI 360, 445 [M], 480, 495, 498, 499; ENTOM 361, 460; HORT 357; SOIL SCI 442; and/or consult with your advisor. No more than 3 credits of 495, 498, or 499 may be used toward Major Elective credits.

⁵ HORT 416 can be taken in the spring as an alternative to CROP SCI 411 [M]. However, two [M] courses are required so one elective should have [M] designation.

FRUIT AND VEGETABLE MANAGEMENT (120 CREDITS)

The IPS - 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.

A student may be admitted to an IPS major upon making their intention known to the department.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 101 [PSCI] or 105 [PSCI]	4
Communication [COMM] or Written Communication [WRTG] ¹	3 or 4
HISTORY 105 [ROOT]	3
HORT / CROP SCI 102	3

<i>Second Term</i>	<i>Credits</i>
CHEM 102 or 106	4
ENGLISH 101 [WRTG]	3
HORT / CROP SCI 202	4
Humanities [HUM]	3

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 120 [BSCI]	4
Arts [ARTS]	3
Diversity [DIVR]	3

MATH 140 [QUAN], 171 [QUAN],
202 [QUAN], or STAT 212 [QUAN] 3 or 4
SOIL SCI 201 3

Second Term Credits
BIOLOGY 107 4
ECONS 101 [SSCI] or 102 [SSCI] 3
HORT 351 4
Sustainability Elective² 2 or 3
Electives 3
Complete Writing Portfolio

Third Year

First Term Credits
BIOLOGY 420 3
ENTOM 343 [M] 3
HORT 310 3
HORT 320 3
Electives 3

Second Term Credits
ENTOM 351 3
Environmental HORT Elective³ 3
SOIL SCI 441 3
Electives 6

Third Term Credits
(Summer Session) HORT 399 1

Fourth Year

First Term Credits
HORT 313 3
HORT 418 [M] 3
Pest Management Elective⁴ 2 or 3
PL P 300 or PL P 429 2 or 3
Electives 5

Second Term Credits
Advanced Fruit or Vegetable Elective⁵ 3
HORT 416⁶ 3
HORT 425 [M] [CAPS] 3
Electives 6

¹ COM 102 or H D 205 recommended.
² Sustainability Elective courses (2-3 credits): BIOLOGY 330, 372 [M]; SOE 110; SOIL SCI 101, 302, 480; or as approved by advisor.
³ Environmental Horticulture Elective courses (3 credits): HORT 330, 331, 332, 357; or as approved by advisor.
⁴ Pest Management Elective courses (2-3 credits): CROP SCI 305; IPM 452, PL P 300, 429; or as approved by advisor. Courses cannot be used to fulfill more than one major requirement.
⁵ Advanced Fruit or Vegetable Elective courses (3 credits): HORT 413, 421 [M], or 480, or as approved by advisor.
⁶ CROP SCI 411 [M] can be taken in the fall as an alternative to HORT 416.

LANDSCAPE, NURSERY, AND GREENHOUSE MANAGEMENT (120 CREDITS)

The IPS - 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, arboretums, 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.

A student may be admitted to an IPS major upon making their intention known to the department.

First Year

First Term Credits
Communication [COMM] or Written
Communication [WRTG] ¹ 3 or 4
BIOLOGY 107 [BSCI] or 120 [BSCI] 4
HISTORY 105 [ROOT] 3
HORT / CROP SCI 102 3
Electives 3

Second Term Credits
BIOLOGY 106, 107, or 120 4
ENGLISH 101 [WRTG] 3
HORT / CROP SCI 202 4
MATH 140 [QUAN], 171 [QUAN],
202 [QUAN], or STAT 212 [QUAN] 3 or 4

Second Year

First Term Credits
CHEM 101 [PSCI] or 105 [PSCI] 4
HORT 330 3
Humanities [HUM] 3
SOIL SCI 201 3
Electives 3

Second Term Credits
CHEM 102 or 106 4
HORT 357 3
HORT 358 1
Horticulture Elective² 3
Electives 3
Complete Writing Portfolio

Third Year

First Term Credits
Arts [ARTS] 3
Diversity [DIVR] 3
ENTOM 343 [M] 3
Horticulture Elective² 3
Electives 2

Second Term Credits
ENTOM 351 3
HORT 331 3
HORT 351 4
Social Sciences [SSCI] 3
Electives 3

Third Term Credits
(Summer Session) HORT 399 1

Fourth Year

First Term Credits
Advanced Plant Science Elective ³ 3
Horticulture Elective² 3
PL P 300 or 429 2 or 3
Electives 6
Second Term Credits
Advanced Plant Science Elective³ 3
HORT 416⁴ 3

HORT 425 [CAPS] [M] 3
SOIL SCI 302 [M] or 441 3
Electives 3

¹ COM 102 or H D 205 recommended.
² Horticulture Electives (9 credits minimum): Approved courses include CROP SCI 301, 305, 401 [M], 443, HORT 310, 313, 320, 350, SOIL SCI 101, or as approved by advisor.
³ Advanced Plant Science Electives (6 credits): BIOLOGY 301, 332 [M], 372 [M], 409, 462, HORT 418 [M], 445 [M], 480, SOE 300, 450 [M], 454 [M], 464 [M], or as approved by advisor.
⁴ CROP SCI 411 [M] can be taken in the fall as an alternative to HORT 416.

TURFGRASS MANAGEMENT (120 CREDITS)

The IPS - 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, an 18-hole championship golfing facility at the Pullman campus.

A student may be admitted to an IPS major upon making their intention known to the department.

First Year

First Term Credits
CHEM 101 [PSCI] 4
Communication [COMM] or Written
Communication [WRTG] ¹ 3 or 4
ENGLISH 101 [WRTG] 3
HORT / CROP SCI 102 3

Second Term Credits
CHEM 102 4
HISTORY 105 [ROOT] 3
HORT / CROP SCI 202 4
STAT 212 [QUAN] 4

Second Year

First Term Credits
BIOLOGY 106 [BSCI] 4
Diversity [DIVR] 3
ECONS 101 [SSCI] 3
SOIL SCI 201 3
Electives 3

Second Term Credits
Arts [ARTS] 3
BIOLOGY 107 or 120 4
ENTOM 351 3
Humanities [HUM] 3
Electives 3
Complete Writing Portfolio

Third Year

First Term Credits
AGTM 315 3
CROP SCI 301 3
CROP SCI 305 3
ECONS / BUSINESS Electives² 3
ENTOM 343 [M] 3

<i>Second Term</i>	<i>Credits</i>
AGTM 412	3
CROP SCI / HORT Elective ³	3
SOIL SCI 441	3
SOIL SCI 442	2
Electives	2

<i>Third Term</i>	<i>Credits</i>
(Summer Session) CROP SCI 495, 498, or 499	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
AGTM Electives ⁴	3
CROP SCI 411 [M] ⁵	3
PL P 429	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
CROP SCI 401 [M]	3
CROP SCI 412	1
Integrative Capstone [CAPS]	3
Electives	7

¹ COM 102 or H D 205 recommended.

² ECONS/BUSINESS Elective (3 credits): ACCTG 230; ECONS 350, 352; MGMT 301; and/or consult with your advisor.

³ CROP SCI/HORT Elective (3 credits): CROP SCI 302; HORT 231, 232, 331; and/or consult with your advisor.

⁴ AGTM Electives (3 credits): AGTM 310, 314, 416; and/or consult with your advisor.

⁵ HORT 416 can be taken in the spring as an alternative to CROP SCI 411 [M].

Department of Integrative Physiology and Neuroscience

ipn.vetmed.wsu.edu/
Veterinary and Biomedical Research Bldg (VBR) 207
509-335-6624

Chair and Professor, S. Hentges; Regents Professor, J. M. Krueger; Professors, S. Appleyard, M. Chandra, R. Fuchs, H. Jansen, P. Talcott, G. Wayman; Associate Professors, R. L. Brown, T. Brown, B. Gillespie, S. Gizerian, S. Lampa, D. Lin, R. McLaughlin, P. Meighan, J. Peters, D. Rossi, L. Sprunger, B. Tanner, M. Varnum, A. Vasavada; Assistant Professors, E. Qualls-Creekmore, K. Delevich, L. Walleit; Emeritus, R. Ritter, S. Simasko, B. Slinker.

The Department of Integrative Physiology and Neuroscience (IPN) offers a course of study leading to the degree of Doctor of Philosophy in Integrative Physiology. This degree is designed to provide broad training in specific aspects of physiology 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 Integrative Physiology 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 successfully compete for extramural private and federal funds as the principal investigator or oversee an industrial research program).

Applicants are admitted directly into the Ph.D. from either a master's degree or bachelor's 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 Integrative Physiology program requirements. Applicants for admission to the Graduate Program in Integrative Physiology must have a minimum grade point average of 3.0 (A=4.0). 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.

Application documents must include the following:

- College transcripts (unofficial acceptable for initial review—upon admittance official transcripts are required)
- Three (3) letters of reference
- Resume or curriculum vita
- Personal statement describing why you are interested in studying neuroscience (clearly define which faculty mentor (minimum of 3) you are interested in working with and explain why). If admitted to WSU you will have the ability to refine your choice of faculty mentors while doing lab rotations. Included in the personal statement describe an achievement that you are proud of and discuss how you reached your goal, and any obstacles you had to overcome to reach it. Conversely, tell us about a time when you didn't achieve a goal and what you learned from the experience (maximum word length is 350 words).
- Writing Statement: Describe a major finding in physiology and/or biomedicine over the past five (5) years, and explain why you think it was important (maximum word length is 350 words for statement). Be sure to cite references used after the writing statement. An additional maximum length of 350 words is given for the cite references.
- Turning in a document over the maximum word length may cause your application to be disqualified from consideration.
- TOEFL scores (minimum score 100) required for applicants whose native language is not English

Inquiries should be directed to the Program in Integrative Physiology, Department Integrative Physiology and Neuroscience; 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. 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 1 (0-3) Macroscopic and microscopic functional morphology of the cell, tissues, and organ systems of domestic animals; emphasis on veterinary application. Recommended preparation: BIOLOGY 107 or junior standing.

309 Comparative Vertebrate Locomotion 2 Investigation of the functional morphology of vertebrate animals as related to design for the various means of locomotion; musculoskeletal structure, mechanics, gait identification, and structural modifications for running, jumping, digging, crawling, climbing, swimming, and flying. Recommended preparation: BIOLOGY 107 or junior standing.

425 Foundations of Medical Physiology 3 Course Prerequisite: BIO ENG 210, MBIOS 301, MBIOS 303, NEUROSCI 301, NEUROSCI 302, or PSYCH 372. Integrated functioning of organ systems, focusing on mechanisms of disease, organ dysfunction, and disturbances to whole-animal homeostasis and health. (Crosslisted course offered as NEUROSCI 425, VET PH 425).

426 Foundations of Medical Physiology Lab 1 (0-3) Course Prerequisite: Concurrent enrollment in NEUROSCI 425. Optional laboratory component of NEUROSCI/VET PH 425. Practical analysis of organ function and health using medical diagnostic equipment and clinical cases. (Crosslisted course offered as NEUROSCI 426, VET PH 426).

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) Physicochemical mechanisms of cellular function. (Crosslisted course offered as VET PH 555, PHARMSCI 555). Recommended preparation: Concurrent enrollment in MBIOS 513.

563 Deconstruction of Research 3 Course Prerequisite: Graduate standing in a WSU biomedical based graduate program. Nature and development of scientific investigation through oral and written avenues, and methods of critical analyses applied to questions of biomedical interest. (Crosslisted course offered as NEUROSCI 563, GLANHLTH 563, MBIOS 563, VET MICR 563, VET PATH 563, VET PH 563).

564 Topics in Biomedical Experimentation

V 1-3 May be repeated for credit; cumulative maximum 6 hours. Examination of the philosophy of experimental design and practical application and analysis of various experimental approaches in biomedical research. Recommended preparation: graduate standing in a WSU biomedical-based program, and an advanced undergraduate or graduate statistics course. (Crosslisted course offered as NEUROSCI 564, GLANHLTH 564, MBIOS 564, PHIL 564, VET MICR 564, VET PATH 564, VET PH 564).

590 Seminar 1 May be repeated for credit; cumulative maximum 7 hours. Presented by advanced graduate students and faculty (both in INP and around WSU) on their research areas. (Crosslisted course offered as NEUROSCI 590, VET PH 590.) 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. 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.

702 Masters in Special Problems, Directed Study, and/or Examinations 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: Admitted to the Veterinary Science PhD program. 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

gradschool.wsu.edu/individual-interdisciplinary-doctoral-degree/
324 French Administration Bldg.
509-335-6424

Program Chair and Director, Lisa Gloss; Program Coordinator, Alec Brown.

Individual Interdisciplinary Doctoral Program

Graduate study leading to the Individual Interdisciplinary Doctor of Philosophy degree is offered as an interdepartmental curriculum by graduate faculty integratively from across WSU. The interdisciplinary nature of the research must span three distinct disciplines, typically drawing on faculty expertise from three different departments. The objectives of the program are to provide a mechanism for graduate students to develop and pursue an individually tailored doctoral degree.

Admission to the IIDP is highly selective. Students must be extremely motivated and have demonstrated a strong ability to conduct interdisciplinary research. Applicants must have a bachelor's degree and a master's degree from an accredited university with a 3.0 GPA for bachelor's work and 3.5 GPA for master's work.

Any faculty member who is recognized as a graduate faculty in his/her home department may participate in training students in the Individual Interdisciplinary Doctoral Program. When admitted, the student's home department becomes the IIDP program, and the department chair is the Dean of the Graduate School.

Before completing an application to the IIDP, the students must identify members of their dissertation committee, consisting of a major advisor and at least four additional faculty members, from at least three academic units. This dissertation committee oversees the development of the student's doctoral project and helps the student to produce high quality doctoral research, with rigorous interdisciplinary methodology and approach.

The program offers flexibility for students with diverse backgrounds and prepares students to be effective researchers, engaging teachers, and innovative thinkers, under the mentorship of leading teachers and researchers in various fields. Students will develop knowledge and understanding of appropriate concepts, methods, and materials of the three disciplines in their research while creatively integrating this knowledge into their interdisciplinary scholarship.

Policies and procedures of the Graduate School apply to all admissions. Interested students may direct their inquiries to Alec Brown at alec.brown@wsu.edu.

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.

501 Research Communication 2 Written and oral research communication for a variety of audiences; use of active exercises, brief presentations, and interactive assignments to emphasize communication skill development and application.

580 Leadership Development V 1-3 Course

Prerequisite: By permission only. Meetings and workshops designed to develop professional and leadership skills for doctoral students.

585 Preparing to Teach Online 3 Theory and

instructional strategies for graduate students interested in teaching online in higher education.

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 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 Course

Prerequisite: INTERDIS 591 or admission to the IIDP program. Assists IIDP students in the preparation of their program proposal, which serves as the qualifying examination for continuation in the IIDP. The IIDP Graduate Committee will review and evaluate the proposal. S, F grading.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for

credit. Course Prerequisite: Admitted to the IIDP PhD program. 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 Kinesiology and Educational Psychology

education.wsu.edu/college/kep

Cleveland 351

509-335-9117

Chair and Associate Professor, K. Carbonneau; Professors, O. Adesope, A. Cox, P. Erdman, B. French, B. McNeill, M. Trevisan, S. Ullrich-French; Associate Professors, R. Catena, C. Connolly, C. Gotch, K. Hildenbrand, Z. Strong; Assistant Professors, S. Dai, R. Danielson, S. Prashad; Teaching Assistant Professor, A. McMahon; Teaching Associate Professors, K. Holmstrom, P. Morgan; Scholar Associate Professor, K. Pietz; Scholar Assistant Professors, T. Goetz, S. Landis; Research Associate Professor, B. Austin.

The department offers courses of study leading to a Bachelor of Science in Sports Medicine, and Bachelor of Science in Kinesiology; and an undergraduate minor in Strength and Conditioning. Masters degrees offered are Master of Arts in Educational Psychology, Master of Science in Kinesiology, and Masters in Athletic Training. The Doctor of Philosophy is offered in Educational Psychology. The Ph.D. in Counseling Psychology is in teach-out status with no new applicants being accepted.

The Department of Kinesiology and Educational 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 (LPRC) is home to an array of educational and psychological research projects and houses the three laboratories described below. The LPRC provides leadership, training, consultation, and state-of-the-art solutions to challenging educational research questions at the university, state, national, and international levels. The Psychometric Laboratory is home to an array of educational and psychological measurement projects. The MERIT Laboratory is home to multimedia learning research focused on improving multimedia instruction, learning, and performance, with consideration of both cognition and affect perspectives. The Large Scale Data (LSD) Laboratory is home to research on large-scale data with expertise in big-data analytics and quantitative methods.

The Exercise Physiology and Performance Laboratory (EPPL) provides research, teaching, and exercise testing opportunities to WSU students, faculty, and the Pullman community. The Gait and Posture Biomechanics Laboratory research is focused on (1) the development of a clinical assessment tool to detect fall-risk in pregnant patients, (2) quantifying and reducing the risk of falls for pregnant workers, and (3) improving balance to help sport and exercise performance. The Psychology of Physical Activity Laboratory includes research about optimizing physical activity experiences, motivation for long-term physical activity, and the psychological benefits of physical activity. The Concussion and Sports Medicine Laboratory conducts research (a) to understand how head injuries (traumatic brain injury) affect the patient and develop research-based tool for the medical community to evaluate patients post traumatic injury, (b) to evaluate the role neck strength plays in the incidence of concussion, (c) on the biomechanical impacts magnitudes that occur in youth sports, and (d) on the effectiveness of current education in concussion awareness. The Cognitive Motor Neuroscience Laboratory examines the neural processes underlying motor behavior in clinical and typical populations across the lifespan using behavioral, neuroimaging (EEG), and computational approaches. All the labs provide service and research opportunities for students and the WSU community.

Application for Graduate Study

Students who plan to work toward an advanced degree should contact the Office of Graduate Education in the College of Education. Individuals applying for admission to do graduate work must complete an application to the WSU Graduate School, and submit the following materials to the College of Education Office of Graduate Education: Degree Program 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 the Graduate Record Examination (GRE) scores can be submitted to support an application but are optional. Interested students should directly contact the Office of Graduate Education for specific requirements of

each program area.

For those students interested in pursuing the Master's in Athletic Training degree, this is part of a 5-year comprehensive program which includes the undergraduate degree in Sports Medicine. All application questions should be directed to the Athletic Training Program Clinical Coordinator. See the website for specific information, requirements, and contact information.

Educational Psychology is the study of how humans learn and retain knowledge, primarily in educational settings like classrooms. This includes emotional, social, and cognitive learning processes. Areas of focus might include teaching, testing and assessment methods, psychometrics, classroom or learning environments, and learning, social, and behavioral problems that may impede learning, technology in learning, etc. Graduates work as professors, education specialists, learning analysts, program evaluators, and find positions in research institutions, school systems, the testing industry, government agencies, and private industry. Our program offers two degree options with a specialization in Educational Psychology; the Master of Arts (M.A.) and the Doctor of Philosophy (Ph.D.). Students pursuing a master's degree can expect to complete the program in two years and doctoral students can expect to finish in three to five years beyond the master's degree.

Student Learning Outcomes

The learning outcomes on which students are rated include:

- Ability to think critically, evaluate, understand, apply, and communicate scientific research
- Ability to evaluate and apply research designs
- Ability to evaluate and apply statistical and measurement principles to their area of research
- Be aware and evaluate how diversity issues and protected populations influence research
- Development of professional identity appropriate for future career plans

Bachelor of Science in Kinesiology

The Kinesiology major leads to the Bachelor of Science in Kinesiology degree. The Kinesiology major is 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, elective core courses, and in UCORE courses used as prerequisites for departmental courses. All letter-graded courses specifically required for each major must be taken for a letter grade (i.e., not pass, fail). In order to apply for admission in Kinesiology, students must have 24 semester credits completed, earn a grade of C or better in Human Anatomy (KINES 262) and Motor Development (KINES 199), and have a minimum cumulative GPA of 2.75 including the semester of application. Meeting the minimum requirements does not guarantee admittance. Applications are accepted in September (1st to 30th) and February (1st to 28th).

Student Learning Outcomes

Graduates with a degree in Kinesiology will be able to:

- Identify the central body of knowledge in kinesiology and use scientific literacy, quantitative reasoning and discipline knowledge to analyze

contemporary issues.

- Be continuous, collaborative learners who further their own professional development and use their abilities to contribute to the profession.
- Demonstrate leadership, ethical reasoning, and social responsibility to improve quality of life for others and ensure equitable access for diverse groups by creating appropriate environments to initiate and maintain a physically active, healthy lifestyle.
- Communicate effectively to a broad range of audiences using appropriate traditional and emerging technological media.
- Demonstrate honesty, integrity, and accountability.

Practical application of theory and knowledge in the Kinesiology major is obtained through enrollment in practicum hours (KINES 390) during the third year 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 and further education in Kinesiology.

Master of Science in Kinesiology

Kinesiology is the study of human movement. The Master of Science degree in Kinesiology provides advanced education in human movement and foundational research skills that can be applied to its understanding. Our faculty and research labs specialize in areas such as biomechanics, exercise physiology, motor control, and physical activity psychology. Students pursuing a master's degree can expect to complete the program in two years. There are thesis and non-thesis options. Graduating students may choose to become researchers, technicians, educators, or practitioners in general kinesiology or in a specialized sub-discipline.

Student Learning Outcomes

The learning outcomes on which students are rated include:

- Ability to think critically, evaluate, understand, apply, and communicate scientific research.
- Demonstrate advanced kinesiology knowledge in chosen area of focus.
- Ability to understand and apply research principles.
- Awareness and understanding of how diversity issues, special and protected populations influence research and practice.
- Development of professional identity appropriate for future career plans.

Bachelor of Science in Sports Medicine and Master's in Athletic Training

This is part of a 5-year accredited comprehensive program which includes the BS in Sports Medicine and the accredited program for a Master's in Athletic Training degree. This is a competitive admission program. 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. Additional policies and procedures are outlined in the Athletic Training Program Handbook. 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 master'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.

Student Learning Outcomes

Successful graduates will become proficient in the following knowledge and skill areas in accordance with professional guidelines as articulated by CAATE. Students will:

- Provide acute care of injuries and illnesses to address planning, examination, immediate emergent or musculoskeletal management, transportation, and education to clients.
- Be proficient in using knowledge of basic science and research methodology to interpret evidence-based research related to athletic training to answer questions and guide clinical practice.
- Be prepared, capable, and experienced in working as part of an inter-professional healthcare team.
- Develop advanced understanding of issues related to athletic training curriculum development, implementation and administration.
- Demonstrate attitudes, behaviors, and practices that support personal well-being and life-long learning.
- Become proficient in prevention and health promotion to include general prevention principles, fitness and wellness principles.
- Be able to integrate aspects of physical and mental health, cultural competence, ethics, and patient and community values to improve the patients' outcome.
- Exemplify leadership, professional engagement and advocacy to strengthen the profession of athletic training.

Undergraduate Minors

The Department of Kinesiology and Educational Psychology offers an undergraduate minor in Strength and Conditioning. Courses for the minor may not be taken pass, fail. The strength and conditioning minor combines field experiences working in a collegiate D1 training environment and coursework on the scientific knowledge to implement safe and effective strength training and conditioning programs for a diverse range of abilities. The primary goal in programming is targeted performance improvements, which also includes informed decisions about nutrition and injury prevention, and referral to other professionals when appropriate. Students interested in declaring a minor in Strength and Conditioning should contact the department.

Schedules of Studies

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

KINESIOLOGY (120 CREDITS)

The Kinesiology 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. Kinesiology provides a foundation for personal training certification, health and fitness club employment, teaching, coaching, physical therapy, and sports medicine.

Because of the high demand for this program, students must meet minimum admission requirements, as listed below, in order to apply to the Kinesiology 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 September 1st to 30th, and February 1st to 28th, with admission effective the following term. Candidates must complete formal admission procedures and be admitted to the Kinesiology major prior to taking any 300- or 400-level courses. The following minimum criteria must be met for consideration for admission:

Minimum Admission Criteria

1. Completion of at least 24 semester credits of coursework.
 2. A cumulative GPA of 2.75.
 3. A grade of C or better in each of the following courses: KINES 199 and KINES 262.
 4. A written statement (maximum of two pages) describing relevant work experience/involvement in extracurricular activities related to Kinesiology.
- A grade of C or better must be obtained in all departmental core courses, cognate courses, and in UCORE courses used as prerequisites for departmental courses listed on this schedule of studies. All letter-graded courses specifically required for this major must be taken for a letter grade (i.e., not pass, fail).

First Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
KINES 138	1
KINES 199	3
PSYCH 105 [SSCI]	3
Cognate ¹	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 140 [BSCI]	3
HISTORY 105 [ROOT]	3
KINES 201	3
KINES 262	4
STAT 212 [QUAN] or PSYCH 311 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 102, 106, or 107	4
KINES 261	3
KINES 264	3
KINES 266	3
SOC 245	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 101 [PSCI] or 105 [PSCI]	4
Communication [COMM]	3
KINES 162 or PHYSICS 101 and 111	3 or 4

Cognate ¹	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 251	4
KINES 311	3
KINES 362	3
Cognate ¹	6

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
KINES 312 [M]	3
KINES 380	3
KINES 390	1
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
KINES 313	3
KINES 461 [M]	3
KINES 484 [CAPS]	3
Cognate ¹	5 - 7

<i>Second Term</i>	<i>Credits</i>
KINES 485 ²	12 or 10

¹ Cognate (17 - 19 credits): Choose from ANTH 205, 405, ATH T 263, 267, BIOLOGY 107 (if not used to fulfill major requirement), 220, 315 (if not used to fulfill major requirement), 490, CES 222, 308, CHEM 102, 106, 345, COM 225, 478, H D 101, 220, 306, 307, 308, 405, KINES 305, 411, 412, 413, 414, 490, 499, MATH 106, 108, 140, 171, MBIOS 101, 301, 303, 305, PHIL 365, PHYSICS 102, PSYCH 230, 265, 320, 321, 324, 333, 350, 361, 363, 470, SOC 101, 250, 334, 356, SPMGT 101 (if not used to fulfill UCORE Diversity [DIVR] requirement), or as approved by advisor. Must include sufficient 300-400-level courses to meet the University requirement of 40 upper-division credits.

² Minimum 10 credits required.

SPORTS MEDICINE (120 CREDITS)

The Bachelor of Science in Sports Medicine comprises the first 4 years of a 5-year Master's in Athletic Training (MAT) Program. All 5 years of the accelerated program must be completed at Washington State University. The Commission on Accreditation of Athletic Training Education (CAATE) requires all students to graduate from a Master's Level Athletic Training (AT) program in order to be eligible to sit for the Board of Certification Exam (BOC), which allows a student to become a certified athletic trainer.

Admission into the undergraduate degree and application to the Master's in Athletic Training program will take place in the Fall of the second (sophomore) year with pre-admittance status to the MAT program. To be eligible to apply for admission to the program, students must have completed both KINES 262 and ATH T 267 with a C or better grade, have a minimum cumulative GPA of 3.00, and have completed 20 hours of observation in the athletic training clinic. Admission is competitive and meeting the requirements does not guarantee admission. Contact the department for additional information on the application process.

Students who are accepted into the Master's in Athletic Training (MAT) program begin graduate coursework in their 4th year. Applicants who are selected will be required to maintain a 3.0 GPA (B average), achieve a B- or better in all required sports medicine/athletic training classes, and show progressive clinical development to remain in the athletic training program.

First Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
KINES 138	1
KINES 199	3
PSYCH 105 [SSCI]	3
STATS 212 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 140 [BSCI]	3
H D 205 [COMM]	4
HISTORY 105 [ROOT]	3
KINES 262	4

Second Year

<i>First Term</i>	<i>Credits</i>
ATH T 267	3
BIOLOGY 102, 106, or 107	4
KINES 264	3
PHIL 365 [HUM]	3

<i>Second Term</i>	<i>Credits</i>
ATH T 263	2
ATH T 290	2
CHEM 101 [PSCI]	4
KINES 162	3
KINES 311	3
KINES 361	3
Complete Writing Portfolio	3

Third Year

<i>First Term</i>	<i>Credits</i>
ATH T 305	3
ATH T 370	3
ATH T 591 or KINES 390	2
BIOLOGY 251	4
KINES 362	3

<i>Second Term</i>	<i>Credits</i>
ATH T 371 [M]	3
ATH T 591 or KINES 390	2
KINES 313	3
KINES 380	3
KINES 461 [M]	3
KINES 484 [CAPS]	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
ATH T 450 [M]	3
ATH T 530 or ATH T 499 ¹	3
ATH T 535 or Electives	3
ATH T 592 or Electives ²	3

<i>Second Term</i>	<i>Credits</i>
ATH T 464	3
ATH T 531 or Electives	3
ATH T 560 ²	0 - 3
ATH T 592 or Electives ²	3
KINES 411	3

¹ ATH T 499 topic must be approved by advisor.

² ATH T 560 and 592 coursework required for Master's in Athletic Training (MAT) degree.

Additional coursework required for MAT:

ATH T 565, 575, 585, 590, 593, 595, 598, 599; exit interview.

Minors

Strength and Conditioning

The minor in Strength and Conditioning requires 31 credits of course work and practical experience. The minor is designed for students with an interest in pursuing a profession as a strength and conditioning coach, personal trainer, coach, or athletic trainer. To be eligible for admission to the minor in Strength and Conditioning, a student must have earned at least 60 credits, have a minimum cumulative GPA of at least 2.75 and be admitted to a major. Graded courses in the minor may not be taken pass/fail. Admission is competitive and requires an application process. The minor requires KINES 262, 264, and 311 as prerequisite coursework. Required courses include KINES 305, 362, 380, and 411. In addition, students will have vocational practicum experiences with KINES 412, 413, and 414 under the supervision of approved strength and conditioning experts. Each practicum is 120-150 hours per term, with a required total of 400 hours for the completion of the minor. Credits for the minor must include 9 credits of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Certificates

Leadership in Coaching Certificate

The Leadership in Coaching Certificate serves a fundamental and professional need to help prepare competent, ethical, and positive coaches for recreation and sport settings. Coaches play an important role in many communities and proper coaching technique, procedure, attitude and behavior are essential for effective and successful coaching of any sport or activity. Preparing coaching professionals fulfills a job segment for sport and recreation activities that include working with agencies such as school districts, parks and recreation, YMCA, Boys and Girls Club, Sky Hawks Sport Camps, specialized sport camps and clubs, etc. The intent of the certificate coursework is to provide coaching specific knowledge through analyzing and understanding sport industry trends, fitness and wellness concepts, coaching administration, leadership principles in physical activity and participating in supervised coaching practical.

Admittance: Any current WSU student in good academic standing will be admitted into the program. Prerequisites for KINES 390 will be waived for any current student admitted into the certificate program who is not currently majoring in Kinesiology.

Any non-degree seeking student who currently holds a BS or BA degree from an accredited institution can also apply for admittance into

the certificate program. Any prerequisites for the courses within the certificate program will be waived for non-degree seeking students.

The Leadership in Coaching Certificate requires 15 credits. Required coursework includes SPMGT 101 or KINES 201; SPMGT 290; KINES 315; and KINES 399. Three additional required credits are earned in practical/applied coaching experience working with sports and recreational teams under the supervision of qualified coaches and leaders* through KINES 390 and/or SPMGT 394*.

*ASEP Certification and National Alliance for Youth Sport (NAYS) Certification

Description of Courses

ATHLETIC TRAINING

ATH T

263 Emergency Response 2 (1-2) Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. First aid and safety procedures, including CPR for the Professional Rescuer, AED training and prevention training.

267 Techniques in Athletic Injuries 3 Course Prerequisite: Limited enrollment to those with fewer than 60 credits. Applied clinical approach to basic skills commonly used in the field of athletic training.

290 Pre-Clinical Education 2 (1-2) Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. Experience with the profession of athletic training, and the WSU Athletic Training Program.

305 Nutrition Related to Fitness and Sport 3 Course Prerequisite: BIOLOGY 140 with a C or better, or 333 with a C or better; admitted to the major in Kinesiology or Sports Medicine. Current and evidence-based knowledge regarding the application and compliance of sound nutritional and diet considerations within special active populations. (Crosslisted course offered as KINES 305, ATH T 305.)

370 Injury Pathologies of the Lower Extremity 3 Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. Analyze and differentiate the varying pathological aspects of athletic injuries of the lower extremity including common signs and symptoms.

371 [M] Injury Pathologies of the Upper Extremity 3 Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. Analyze and differentiate the varying pathological aspects of athletic injuries of the upper extremity including common signs and symptoms.

450 [M] Evidence-Based Practice in Athletic Training 3 Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. Exploration and application of evidence-based practice through the conduct of scientific inquiry and application of credible evidence.

464 Rehabilitation in Athletic Training 3 Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. Advanced injury rehabilitation theory and techniques in athletic training.

- 490 Athletic Training Instructional Practicum V 1-3** May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. Instructional practicum credit for students participating in classroom instructional and leadership experiences, which are profession related and under the supervision of a faculty member; 1 credit equals 45 hours. S, F grading.
- 496 Special Topics in Athletic Training 3** Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. Special topics seminar related to the evidence-based practice of sports-related injuries.
- 499 Special Problems V 1-4** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. 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 Evaluation of Lower Extremity Injuries in Athletic Training 3** Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. In-depth study of the lower extremities including physical examination, injury recognition, treatment, taping, bracing, and rehabilitation.
- 531 Evaluation of Upper Extremity Injuries in Athletic Training 3** Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. In-depth study of the upper extremities including physical examination, injury recognition, treatment, taping, bracing, and rehabilitation.
- 535 Therapeutic Modalities in Athletic Training 3** Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. Advanced theory and techniques of modality use in athletic training.
- 560 Psychosocial Issues in Athletic Training 3** Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. Advanced look at psychology and its application in working with an athletic population.
- 565 Clinical Application of Rehabilitation in Athletic Training 3** Course Prerequisite: Admitted to the MAT program. Advanced application of therapeutic exercise techniques in athletic training.
- 575 Pharmacology in Athletic Training 3** Course Prerequisite: Admitted to the MAT program. Etiology, pathogenesis, clinical manifestations of common human dysfunction; athletic training implications for prevention and therapeutic approaches including pharmacologic therapies.
- 585 General Medical Conditions in Athletic Training 3** Course Prerequisite: Admitted to the MAT program. Current medical issues pertaining to athletic training including physiological considerations, common illnesses, and special concerns.
- 590 Organization and Administration in Athletic Training 3** Course Prerequisite: Admitted to the MAT program. The organization and administration of athletic training programs.
- 591 Athletic Training Clinical Internship I 2** May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. Beginning techniques in management of sport injury/illness under supervision.
- 592 Athletic Training Clinical Internship II 3 (1-6)** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to the major in Sports Medicine or MAT program. Intermediate techniques in management of sport injury/illness under supervision of a licensed athletic trainer.
- 593 Athletic Training Clinical Internship III 5 (2-9)** May be repeated for credit; cumulative maximum 10 hours. Course Prerequisite: Admitted to the MAT program. Intermediate techniques in management of sport injury/illness under supervision of a licensed athletic trainer.
- 595 Leadership and Communication in Athletic Training 3** Course Prerequisite: Admitted to the MAT program. Application of leadership, management, intercultural, and interprofessional communication within the athletic training discipline.
- 598 Professional Preparation in Athletic Training 3** Course Prerequisite: Admitted to the MAT program. Application of theory analysis and theory critique as applied to student's phenomenon of interest.
- 599 Current Topics in Athletic Training 3** Course Prerequisite: Admitted to the MAT program. Focus on current issues, transition to practice and athletic training across health care systems/delivery within a global context.
- 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.
- 505 Reverence for Life 1** Evaluates and presents cross-disciplinary research regarding the human-animal relationship.
- 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 511. History, philosophy and theoretical foundations; the group counselor, members, and issues in group counseling. Cooperative: Open to UI degree-seeking students.
- 519 Family Therapy 3** Course Prerequisite: COUN PSY 511; COUN PSY 512. Introduces family therapy, its respective theories and models to clinical practice, assessment, and research.
- 520 Substance Abuse Counseling and Interventions 3** Course Prerequisite: COUN PSY 511; COUN PSY 512. Substance abuse issues, theory, and counseling techniques and interventions.
- 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.
- 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: COUN PSY 512; COUN PSY 515; COUN PSY 527; ED RES 565; ED PSYCH 568. 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. Course Prerequisite: Admitted to the Counseling Psychology PhD program. 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

- 400 Quantitative Reasoning in Education** 3 Course
Prerequisite: MATH 220 or STAT 360. Introductory course for data-driven decisions using quantitative reasoning.
- 401 Classroom Assessment, Elementary** V 2-3 Course
Prerequisite: TCH LRN 301. Principles and practice of high-quality classroom assessment in the elementary schools.
- 404 Large-Scale Synthesis of Social Science Data** 3 Practical and methodological understandings of and ability to analyze and synthesize large-scale data; presentation and communication of results from synthesized large-scale data.
- 468 Classroom Assessment, Secondary** 3 Course
Prerequisite: TCH LRN 317; TCH LRN 464; TCH LRN 465; for candidates admitted to teacher education (secondary education). 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** 3 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.
- 507 Introduction to Qualitative Research** 3 Introductory qualitative course for graduate students in behavioral sciences interested in diverse social and cultural contexts; prepares students for advanced qualitative track, ED PSYCH 564/ED RES 564. Recommended preparation: ED PSYCH 505.
- 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.
- 522 Embodied and Embedded Cognition** 3 History, theory, and empirical research related to a framework in which behaviors, thoughts, and perceptions are grounded in bodily states (embodied) and shaped by environmental context (embedded).
- 542 Cross-cultural Research in Counseling and Assessment** 3 Cross-cultural research methods, concepts, and findings in counseling and assessment. (Formerly COUN PSY 542.)
- 568 Quasi-Experimental Design** 3 Course Prerequisite: ED PSYCH 505 or ED RES 563; 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 Theoretical Foundations and Fundamental Issues in Program Evaluation** 3 Course Prerequisite: ED PSYCH 570. Examine the history of the field, the ideas and practices of theorists who formed the field and how their work has influenced program evaluation.
- 572 Introduction to Systematic Literature Reviews and Meta-Analyses** 3 Course Prerequisite: ED PSYCH 505 or 508. 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. (Crosslisted course offered as ED PSYCH 573, KINES 514.)
- 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.
- 575 Multilevel Modeling** 3 Course Prerequisite: ED PSYCH 565. Introduction to multilevel modeling techniques; examines the use of these techniques in the social sciences. Recommended preparation: ED PSYCH 569.
- 576 Factor Analytic Procedures** 3 Course Prerequisite: ED PSYCH 565. Introduction to factor analytic techniques; examines the use of factor analysis in the social sciences. Recommended preparation: ED PSYCH 569.
- 577 Item Response Theory** 3 Course Prerequisite: ED PSYCH 511. Introduction to item response theory and its use in the social sciences.
- 578 Advanced Item Response Theory** 3 Course Prerequisite: ED PSYCH 577. Introduction to advanced topics in item response theory, including missing responses in IRT, Bayesian estimation, nonparametric IRT models, multidimensional IRT models and related topics, measurement invariance, and cognitive diagnostic models.
- 579 Large-Scale Surveys in Education** 3 Course Prerequisite: ED RES 565. Introduction to topics in large-scale surveys, including complex sampling designs; survey operations and data collection; achievement calibration and scaling; procedures and construct validation of context variables; data accessibility and management; data analysis approaches, etc. Recommended preparation: ED PSYCH 569 - Seminar in Quantitative Techniques in Education.
- 597 Educational Psychology Internship** 3 Development and application of structured strategies of investigative research for professional presentations and publications; capstone course for the Applied Educational Research Methods Certificate.
- 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. Course Prerequisite: Admitted to the Educational Psychology PhD program. 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: 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.
- 564 Qualitative Research** 3 Course Prerequisite: ED RES 563. Theoretical underpinnings of qualitative research; familiarity with published qualitative research in education; practical research skills.
- 565 Quantitative Research** 3 Course Prerequisite: ED PSYCH 508; ED RES 563. Statistical literacy in educational research; parametric and non-parametric methods.

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.

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 Overview of various disciplines of kinesiology, associated degrees, and careers; provides strategies for academic and professional development, including advising procedures. S, F grading.

162 Foundations of Physics for Sport and Exercise 3 Course Prerequisite: MATH 103 with a C or better, or ALEKS math placement score of 40% or higher, or credit for or concurrent enrollment in MATH 105, 106, 108, 140, 171, 201, 202, STAT 205, or 212. Basic concepts of physics, including general motion, linear and angular acceleration, contact, stress-strain, gravity, energy, heat, torque, fluids, levers, optics and electrical fields; emphasis on the relationship between these concepts and the physiology and practice of sport and physical activity.

199 Human Motor Development 3 Course Prerequisite: A minimum ALEKS math placement score of 40%, or MATH 103 with a C or better, or credit for or concurrent enrollment in MATH 105, 106, 108, 140, 171, 201, 202, STAT 205, or 212. Development and performance of human motor patterns; understanding of motor development; observation and analysis of foundations of movement.

201 [HUM] Exploring Meaning in Sport and Movement 3 Introduction to the major theoretical perspectives in the philosophy of sport and movement.

261 Health and Wellness 3 Course Prerequisite: Sophomore standing. Knowledge of the multi-dimensional aspects of wellness and concepts necessary for a positive lifestyle through self-assessment.

262 Human Anatomy 4 (3-3) Course Prerequisite: A minimum ALEKS math placement score of 40%, or MATH 103 with a C or better, or credit for or concurrent enrollment in MATH 105, 106, 108, 140, 171, 201, 202, STAT 205, or 212. 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.

264 Fitness Concepts 3 (2-3) Course Prerequisite: BIOLOGY 315 with a C or better, or KINES 262 with a C or better. Physiological, mechanical, and health-related basis of fitness practices.

266 Prevention and Management of Activity-Related Injuries 3 Course Prerequisite: BIOLOGY 315 with a C or better, or KINES 262 with a C or better. Prevention and management strategies for common activity-related injuries and illnesses for the non-health care provider.

270 Examination for Lower Extremity in Athletic Training 3 Course Prerequisite: KINES 262 with a C or better; KINES 263 with a C or better; KINES 267 with a C or better; instructor permission. 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: KINES 270 with a C or better. In-depth study of the upper extremities including physical examination, injury recognition, treatment, taping, bracing and rehabilitation.

275 Athletic Training Modalities 3 Course Prerequisite: KINES 270 with a C or better. Advanced theory and techniques of modality use in athletic training.

291 Athletic Training Clinical Internship I 2 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: KINES 262 with a C or better; KINES 263 with a C or better; KINES 267 with a C or better; instructor permission. 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: BIOLOGY 140 with a C or better, or 333 with a C or better; admitted to the major in Kinesiology or Sports Medicine. Current and evidence-based knowledge regarding the application and compliance of sound nutritional and diet considerations within special active populations. (Crosslisted course offered as KINES 305, ATH T 305.)

311 Strength Training 3 Course Prerequisite: BIOLOGY 315 with a C or better, or KINES 262 with a C or better; KINES 264 with a C or better; admitted to the major in Kinesiology or Sports Medicine. Basic information and guidelines for enhancement of athletic performance, injury prevention, rehabilitation and general fitness.

312 [M] Research in Kinesiology 3 Course Prerequisite: PSYCH 311 with a C or better, STAT 212 with a C or better, or STAT 401 with a C or better; admitted to the major in Kinesiology. Key research methods used in kinesiology with an emphasis on reading, evaluating and applying research evidence.

313 Psychological Aspects of Physical Movement 3 Course Prerequisite: PSYCH 105 with a C or better, or SOC 101 with a C or better; admitted to the major in Kinesiology or Sports Medicine. Social and psychological factors related to participation and performance in physical activity (e.g., sport, exercise, recreation, rehabilitation).

315 Leadership in Recreation and Sport Activities 3 Course Prerequisite: SPMGT 101 or KINES 201; SPMGT 290 or concurrent enrollment. Foundational methods, theories, and models for positive youth development through play, recreation activity, and sport; focus on effective game leading and group facilitation strategies.

360 Motor Learning 3 Course Prerequisite: Admitted to the major in Kinesiology, Sports Medicine, or MAT program. Investigates how humans learn motor skills, ranging from activities of daily living to the performance of elite athletes.

362 Qualitative Biomechanics 3 Course Prerequisite: C or better in BIOLOGY 315 or KINES 262; admitted to the major in Kinesiology or Sports Medicine. Qualitative analysis of human movement in everyday activities; introduction to physics principles and how they contribute to functional movements.

364 Athletic Training Rehabilitation 3 Course Prerequisite: KINES 365 with a C or better. Advanced injury rehabilitation theory and techniques in athletic training.

365 General Medical Aspects in Athletic Training 3 Course Prerequisite: KINES 271 with a C or better; KINES 275 with a C or better. Current medical issues pertaining to athletic training including sport pharmacology, physiological considerations, common illnesses and special concerns.

380 Introduction to Exercise Physiology 3 Course Prerequisite: BIOLOGY 251 with a C or better; admitted to the major in Kinesiology or Sports Medicine. Introduction to exercise physiology as it relates to sport, physical training, and performance.

390 Kinesiology Practicum or Research V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: KINES 264 with a C or better; admitted to the major in Kinesiology. 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. S, F grading.

392 Athletic Training Clinical Internship II 2 (1-3) May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: KINES 271 with a C or better; KINES 275 with a C or better. 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.

- 399 Coaching Principles 3** Course Prerequisite: KINES 201 or concurrent enrollment or SPMGT 101 or concurrent enrollment; SPMGT 290 or concurrent enrollment. Coaching principles, strategies, administrative duties, and leadership; preparation for certification in the American Sport Education Program (ASEP) and the National Youth Sport Coaches Association (NYSCA) certifications for youth sport coaching.
- 411 Advanced Strength Training 3** Course Prerequisite: BIOLOGY 315 with a C or better or KINES 262 with a C or better; KINES 264 with a C or better; KINES 311 with a C or better. 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: BIOLOGY 315 or KINES 262 each with a C or better; KINES 264 with a C or better; KINES 311 with a C or better; KINES 411 with a C or better or concurrent enrollment; admitted Strength and Conditioning minor; current CPR/First Aid. Clinical experience within the Strength and Conditioning minor, focusing on the basics of lifting and spotting techniques.
- 413 Strength Training Practicum II 3** (1-8) Course Prerequisite: KINES 411 with a C or better; KINES 412 with a C or better; admitted to the Strength and Conditioning minor; current CPR/First Aid certification. Clinical experience within the Strength and Conditioning minor, focusing on plyometrics and power techniques for clients needing alterations in workouts.
- 414 Strength Training Practicum III 3** (1-8) Course Prerequisite: KINES 413 with a C or better; admitted to the Strength and Conditioning minor; current CPR/First Aid certification. Clinical experience within the Strength and Conditioning minor focusing on preparation for the NSCA certification exam.
- 461 [M] Motor Learning and Control 3** Course Prerequisite: BIOLOGY 251 with a C or better; BIOLOGY 315 with a C or better, or KINES 262 with a C or better; admitted to the major in Kinesiology or Sports Medicine; completion of writing portfolio. Motor learning and motor control areas; neural mechanisms, practice, feedback, retention, and transfer application of theoretical concepts.
- 469 [M] Athletic Training Organization and Administration 3** Course Prerequisite: KINES 364 with C or better. The organization and administration of athletic training programs.
- 483 Fitness Education Methods 3** (2-3) Course Prerequisite: TCH LRN 464 with C or better, or concurrent enrollment; TCH LRN 465 with C or better, or concurrent enrollment; admitted to the major in elementary or secondary education; junior standing. Basic principles, theory, and practices of public school physical education teaching methods for K-12 public school pre-service teachers.
- 484 [CAPS] Exercise Prescription and Medical Conditions 3** Course Prerequisite: BIOLOGY 251 with a C or better; BIOLOGY 315 with a C or better, or KINES 262 with a C or better; admitted to the major in Kinesiology or Sports Medicine; junior standing. An integrated culmination of the knowledge, understanding, and skills for teaching movement activities to individuals with medical conditions.
- 485 Kinesiology Internship V** 10-12 Course Prerequisite: Admitted to the major in Kinesiology; completed with a C or better all course work for the Kinesiology major; completion of all UCORE requirements. Supervised practicum in fitness or health agency or business. KINES 485 cannot be taken concurrently with other coursework. Students must comply with all internship policies and procedures. 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: KINES 364 with a C or better. 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; cumulative maximum 6 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.
- 513 Advanced Psychology of Physical Activity 3** Advanced exploration of foundational topics in sport and exercise psychology.
- 514 Motivation Theories 3** Antecedents, consequences, and processes of motivated behavior examined from theoretical, empirical, and applied perspectives. (Crosslisted course offered as ED PSYCH 573, KINES 514.)
- 515 Etiology of Obesity 3** In-depth analysis and study of the latest research on causes and contributors to obesity.
- 525 Aging Across the Lifespan 3** Examination of aspects of aging as a process across the lifespan including physical, mental, and emotional changes that occur throughout the process.
- 536 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.
- 545 Leadership Philosophy, Programming, and Marketing Physical Activity 3** Planning, development, and assessment of recreation, physical activity, and sport based programming; implementation of health and physical activity marketing techniques with emphasis in leadership and practical application.
- 550 Life Course Physical Activity 3** Explores the impacts of physical activity on health and quality of life at specific life course phases.
- 560 Neuromuscular Physiology 3** Understand and solve problems related to the design and function of the human system that produces voluntary movement.
- 561 Motor Control Theory 3** The mechanisms and principles governing motor control and learning, as well as the research methods commonly used in motor behavior.
- 562 Biomechanical Measurement Techniques 3** The daily operational use and maintenance of biomechanics lab equipment; the processing and analysis of biomechanics lab data.
- 563 Balance, Gait and Running 3** The biomechanical analysis and literature of balance, gait and running.
- 564 Movement Disorders 3** Course Prerequisite: Enrolled in Kinesiology graduate program. Examination of the history, neuropathology, assessment, and intervention procedures of movement disorders.
- 580 Applied Experiences in Exercise Physiology 3** Systematic review of human physiological responses to exercise; review of current evaluative methods for cardiorespiratory function, body composition, energy expenditure, and human athletic performance.
- 584 Exercise Prescription 3** Designed to provide principles of testing and prescription based on current practices in movement education for healthy individuals and special populations.
- 590 Kinesiology Seminar 1** May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By instructor permission. Experience in presentation and discussion of scientific data broadly within kinesiology. S, F grading.
- 596 Kinesiology Graduate Topics V** 1-3 May be repeated for credit; cumulative maximum 6 hours. Special graduate topics in Kinesiology.
- 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.

KINESIOLOGY ACTIVITY

KIN ACTV

100 Special Topics 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

101 Beginning Conditioning 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

102 Beginning Racquetball 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

103 Intermediate Racquetball 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

106 Self Defense 1 May be repeated for credit; cumulative maximum 4 hours. S, F grading.

107 Judo 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

108 Karate 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

109 Beginning Golf 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

110 Intermediate Golf 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

111 Advanced Golf 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

112 Beginning Weight Training 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

113 Intermediate Weight Training 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

114 Beginning Tumbling 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

115 Jogging 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

118 Yoga 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

119 Cardio Dance 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

120 Beginning Ballet 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

121 Intermediate Ballet 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

122 Beginning Jazz Dance 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

123 Intermediate Jazz Dance 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

124 Beginning Tennis 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

125 Intermediate Tennis 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

126 Modern Dance 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

127 Water Aerobics 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

128 Beginning Swimming 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

129 Conditioning Swimming 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

130 Beginning Volleyball 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

131 Intermediate Volleyball 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

132 Beginning Soccer 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

133 Intermediate Soccer 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

134 Ultimate Frisbee 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

135 Beginning Fencing 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

136 Intermediate Fencing 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

137 Beginning Bowling 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

139 Intermediate Bowling 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

140 Fly Fishing 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

141 Introduction to Olympic Lifting 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

142 Introduction to Rugby 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

144 Adventure Cycling 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

146 Basketball for Beginners 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

147 Basketball 3 on 3 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

156 Fitness Boxing 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

158 Tai Chi 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

160 Barre 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

168 Zumba 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

170 Women's Self Defense 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

172 Meditation 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

174 Pilates 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

178 Wrestling 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

School of Languages, Cultures, and Race

slcr.wsu.edu
Thompson 110
509-335-4135

School Director and Professor, C. Lugo-Lugo; Professors, M. Bloodworth-Lugo, J. Grenier-Winther (Vancouver), L. Guerrero, D. Leonard, V. Navarro-Daniels; Associate Professors, M. Hubert, X. Liu, R. Ong, J. Streamas; Assistant Professors, S. Ginsburg, A. Ramírez; Career Track Professor, S. Davis; Career Track Associate Professors, J. Bonzo, W. Cao, C. Gulam (Vancouver), K. Niimi, M. Pieracci (Tri Cities), M. Previto; Career Track Assistant Professors, R. Abo, J. Arellano-Serratos (Tri Cities), K. Jennings, S. Lopez-Lopez, M. Siloeni; Lecturers, M. Black, J. Pérez, C. Shull, R. Wyse; Adjunct Instructors, M. Lee López (Vancouver) Associate Director of Humanities and Social Sciences programs, and Academic Advisor for Comparative Ethnic Studies, A. Chow; Academic Advisor for Foreign Languages and Cultures, L. Heustis; Academic Advisor for Humanities, A. Rocha; Academic Advisor for Social Sciences, D. Spencer-Curtis; Academic Coordinator, S. Alvarez.

The School of Languages, Cultures, and Race (SLCR) cultivates deeper understandings of linguistic, cultural, national, citizenship, and racial perspectives in a global context as explored through

an interdisciplinary approach grounded on the humanities and social sciences. Located in historic Thompson Hall, the School stands as a bridge between the past and the future through its degrees: American studies and culture, comparative ethnic studies, foreign languages and cultures, humanities, and social sciences. Foreign languages have been offered at WSU since 1890 and Thompson remains the site for one of the first dedicated language learning centers in the nation (established in 1911). The interdisciplinary degrees in Humanities and Social Sciences date back to 1911. At the same time, the School includes the contemporary and transdisciplinary envisioning of culture and race studies that American Studies and Culture, and Comparative Ethnic studies embody. Together, these programs collaborate in finding innovative responses to the challenges of our ever-changing societies.

The School fosters critical literacy, intercultural engagement, and the pursuit of global social justice through grounded, holistic engagement in interdisciplinary inquiry and programs. Language studies in context, the study of transnational cultural and race matters, and integrative approaches to linguistic, social, and cultural phenomena provide students with the skills, experiences, and perspectives necessary to thrive in an increasingly diverse and heterogeneous global society. The school interests are centered on the following:

- Critical analysis of culture and its products around the globe.
- The effects of popular culture and media on social articulations of race and ethnicity.
- Social and cultural production of languages.
- Social and cultural influence of languages.
- Intersectional and interdisciplinary scholarship in the humanities and the social sciences.
- Innovative approaches in teaching and scholarly production.

Above all, the school encourages its constituencies to make a difference by learning about and demonstrating a commitment to issues in our changing world through undergraduate and graduate education, scholarship, and outreach.

The School offers Bachelor of Arts degree programs in Comparative Ethnic Studies, Foreign Languages and Cultures (Chinese Language and Culture, French, Japanese, and Spanish), Humanities (including an International Studies track with major concentration areas in Latin American Area Studies, Germanic Area Studies, French and Francophone Area Studies, and European Area Studies; and other tracks in Linguistics), and Social Sciences (with an option in Personnel Psychology/ Human Resources, available at WSU-Vancouver only.) The Humanities and Social Sciences degrees are not identified with a specific subject-matter field on the diploma. Additional or second majors in Language for the Professions are available in French, German, Japanese, and Spanish.

The School offers undergraduate minors in language (Chinese, French, German, Japanese, and Spanish) and cultural minors in American Indian Studies, Film Studies, French Area Studies, German Area Studies, Global Studies, Latin American Area Studies, Popular Culture, and Russian Area Studies. Language certificates in Arabic, Italian, Korean, and 'Core Competencies in Spanish Language and Culture' are available as well.

The School offers two graduate degree programs:

a Master of Arts program in Hispanic Studies, and Master of Arts and Doctor of Philosophy program in American Studies and Culture.

Facilities

The School is supported by the Language Learning Resource Center (LLRC) located in the historic Thompson Hall since 1911. It provides individual foreign language students with access to 12 Windows 7 PC's, as well as two HD TVs with VCR & Blu-Ray DVD players, a dedicated computer with a high-speed duplex scanner plus a flat-bed scanner and editing software (Photoshop, Adobe Acrobat Professional, etc.) LLRC also provides foreign language courses with class access to 18 Windows 7 Enterprise computers. The upper mezzanine level (balcony) holds 9 Windows 7 computers and a 55" HD-TV with a dedicated HD-DVD & Blu-Ray player. In addition, the lab/classroom in Thompson 28 (ground floor) holds 15 Windows 7 computers and an HD LCD Projector.

UNDERGRADUATE STUDIES

Bachelor of Arts in Comparative Ethnic Studies

The Comparative Ethnic Studies program (CES) within the SLCR 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. Comparative Ethnic Studies embraces interdisciplinary, comparative, and transnational approaches to studying race relations and the intersectionality of race, gender, class, citizenship, 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 36 hours in CES, as outlined in the program of studies. CES also offers a minor in Comparative Ethnic Studies. Courses for the minor may not be taken pass/fail. Students interested in declaring a major or minor in CES should contact the College of Arts and Sciences Advising Center at Daggy 201, 509-335-8731, or the School.

Student Learning Outcomes

Upon completion of the BA in Comparative Ethnic Studies, students will be able to:

- Recognize and summarize impact and intersections of race, class, gender, and sexuality.
- Identify and articulate one's social location in a complex, structurally unequal, and often contradictory world.
- Display familiarity with multiple perspectives, employ other interpretations, and consider a range of human experiences in analysis.
- Identify and assess social norms and assumptions and envision alternative social norms and practices.
- Ask critical questions and formulates a relevant research plan; access information tools to get relevant answers.
- Articulate and utilize the basic tools and texts of the interdisciplinary.
- Examine the influence of historical context on the formation of local, national, and global political and social narratives.

- Engage in active and critical verbal and/or written discussion of issues from scholarly sources.

Bachelor of Arts in Foreign Languages and Cultures

The Bachelor of Arts in Foreign Languages and Cultures provides WSU students with the linguistic proficiency and intercultural competence that will allow them to become true and effective global leaders. The degree offers several major programs of study: Chinese Language and Culture, French, Japanese, and Spanish, with teaching options in French, Japanese, and Spanish, as well as Language for the Profession Second Majors in French, German, Japanese, and Spanish. Language minors are available in Chinese, French, German, Japanese, and Spanish. Cultural minors are also possible in French Area Studies, German Area Studies, Global Studies, Latin American Area Studies and Russian Area Studies. Two year programs of study leading to Language Certificates in Arabic, Italian, Korean, and 'Core Competencies in Spanish Language and Culture' are available. Students interested in declaring a major or minor or obtaining a certificate should contact the College of Arts and Sciences Advising Center at Daggy 201, 509-335-8731, or the School.

Student Learning Outcomes for European Languages (French and Spanish programs) 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 timeframes 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.

Student Learning Outcomes for Asian Languages (Chinese and Japanese programs) Majors:

The program outcomes promote linguistic proficiency and intercultural competence:

- Linguistic Proficiency: Students can demonstrate an Intermediate High 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 with ease and confidence a substantial number of communicative tasks and social situations that require an exchange of basic information related to their home, work, school, recreation, and particular interests. They can also speak about topics related to current issues and matters of public and community interest using connected discourse of paragraph length. They can generally be understood by native speakers who are unaccustomed to dealing with non-natives.
- Writing: Students are able to meet all practical writing needs and write narrative, descriptive, and expository passages related to work and/or school experiences. They can express their ideas in all major timeframes using proper vocabulary, grammar, and writing styles when writing about everyday events and situations. Their writing is generally comprehensible to natives not used to the writing of non-natives.
- Listening: Students are able to understand simple sentence-length speech in basic personal and social contexts with ease and confidence. They can derive substantial meaning or main points from some connected texts.
- Reading: Students are able to understand fully and with ease short, non-complex texts that convey basic information and deal with personal and social topics as well as some connected texts featuring description and narration. They can derive substantial meaning and main points and understand supporting details from more advanced, connected texts.
- Intercultural Competence: Students can demonstrate knowledge and understanding of the target 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 events/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.

Language 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. Teacher training is available in the language programs of French and Spanish.

Bachelor of Arts in Humanities

This degree promotes an integrative, cross-disciplinary approach and allows students to work as full partners in the design of their program of studies. It is appropriate 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 where disciplines in the humanities and/or the arts are the primary components. The Bachelor of Arts in Humanities also offers additional program options in International Area Studies, and Linguistics (See Dept. of English). These degrees are not identified with a specific subject-matter field on the diploma but it will be reflected in the transcript. Students interested in being admitted to this major should contact the College of Arts and Sciences Advising Center at Daggy 201, 509-335-8731, or the School.

Learning Goals

The stated learning goals specify knowledge and skill appropriate to the humanities degree but may vary depending on the focus of the degree, as chosen by the student. In addition, the student's University experience in terms of assignments, course selection, classroom participation, internships, performances, community services, and service learning activities are considered, and outcomes are 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.

- To expose students to a thorough and integrated study of humanities, cultures, histories, languages, arts, and other related disciplines, as appropriate to the student's interest and the program of studies pursued, that will allow them to develop a diverse and transdisciplinary perspective and understanding.
- To expose students to a diversity of ways to integrate and synthesize knowledge from multiple sources.
- To help students develop means of expressing concepts, propositions, and beliefs in coherent, concise and technically correct forms appropriate to their disciplinary standards and professional goals.
- To help students think, react, and work in imaginative ways stimulated by a higher degree of disciplinary synergies that will promote transdisciplinary innovation, and divergent thinking.

Student Learning Outcomes

A student completing the General Studies - Humanities degree programs will be able to:

- Integrate learned skills and knowledge derived from their concentrations or areas of study, demonstrating depth, breadth, and the development of a transdisciplinary perspective in the humanities.
- Demonstrate proficiency in using disciplinary-appropriate methods for research, critical analysis, creative work or professional performance.

- Communicate conclusions, interpretations, and implications clearly, concisely, and effectively, both orally and in writing for different types of audiences.
- Articulate and apply values, principles, and ideals derived from an individual as well as integrated understanding of their areas of study that demonstrate awareness of current modes of expression and thought.

Bachelor of Arts in Social Sciences

This degree promotes an integrative approach and allows students to work as full partners in the design of their program of studies. It is appropriate 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, where disciplines in the social sciences or related areas such as administrative studies or communications are primary components in the design of this degree. At WSU-Vancouver only the Bachelor of Arts in Social Sciences also offers an option in Personnel Psychology/ Human Resources. The degree is not identified with a specific subject-matter field on the diploma but it will be reflected in the transcript. Students interested in being admitted to this major should contact the College of Arts and Sciences Advising Center at Daggy 201, 509-335-8731, or the School.

Learning Goals

The stated learning goals specify knowledge and skill appropriate to the focus of the degree, based on the disciplines that conform the program of studies chosen by the student. In addition, the student's University experience in terms of assignments, course selection, classroom participation, internships, performances, community services, and service learning activities are considered, and outcomes are 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.

- To expose students to a thorough and integrated study of social sciences and related disciplines identified by the student's interests that will allow them to develop a diverse and transdisciplinary perspective and understanding.
- To expose students to a diversity of ways to integrate and synthesize knowledge from multiple sources.
- To help students develop means of expressing concepts, propositions, and beliefs in coherent, concise and technically correct forms appropriate to their professional goals.
- To help students think, react, and work in imaginative ways that will promote transdisciplinary innovation, and divergent thinking.

Student Learning Outcomes

A student completing the Bachelor of Arts in Social Sciences degree program will be able to:

- Integrate learned skills and knowledge using multi-disciplinary perspectives from their concentrations or areas of study in the social sciences and related disciplines, demonstrating depth and breadth.
- Demonstrate proficiency in using disciplinary-appropriate methods for critical analysis, and applied research, as well as engagement in professional performance.

- Communicate conclusions, interpretations, and implications clearly, concisely, and effectively, both orally and in writing for different types of audiences.
- Articulate and apply values, principles, and ideals derived from an individual as well as integrated understanding of their areas of study that demonstrate awareness of current societal challenges.

Additional Majors in Language for the Professions

Students who are admitted to a major may seek an additional major focusing on the professional application of a specific language. This additional major does not lead to a degree. These additional majors - French for the Professions, German for the Professions, Japanese for the Professions, and Spanish for the Professions - offer skills-based, proficiency-oriented learning that prepares students to communicate in the target language in professional settings. The unique combination of applied foreign language instruction and in-depth study of the culture(s) in which the target language is spoken trains students to achieve a level of proficiency in the language that enables them to identify and analyze cultural traits and concepts relevant to those countries and communities. The distinctive focus of this curriculum, i.e. on both language proficiency and intercultural proficiency, provides students entering today's increasingly global and diverse workplace with the communication skills necessary to work effectively within, between, and across different language communities. This will enhance marketability and options for employment and allow students to become effective global leaders and entrepreneurs.

Learning Goals

- To support and enhance the University's stated goal of promoting global leadership, the School is in the unique position to provide WSU students with the communication skills and intercultural competence that will allow them to become engaged participants on a global scale in their chosen field.
- Linguistic proficiency: Depending on the target language, students can demonstrate an Intermediate Mid-High level of proficiency (as defined in ACTFL Proficiency Guidelines) in the target language in speaking, writing, listening and reading.
- Intercultural competence: Students will demonstrate knowledge and understanding of other cultures and their norms as they relate to professional dealings.

Student Learning Outcomes

- Upon completion of this program, students will be able to:
- Recognize and describe the cultural forces (history, social values, economic practices, and politics) that shape the professional practices in the target culture.
 - Analyze and critique professional behaviors and practices (i.e., through the history of specific companies, case studies, or current events) within their disciplinary context, including conducting basic research tasks.
 - Examine one's own behaviors and norms in the professional world by contrasting and comparing them with those of the target culture.
 - Identify and value diversity as well as the place of the self as an identity culturally situated in the global context.

GRADUATE STUDIES

Complete details on preparation for graduate study and graduate programs are available from the graduate studies advisor and on the school's website: slcr.wsu.edu.

Graduate Program in American Studies and Culture

The American Studies and Culture M.A. and Ph.D. degrees at Washington State University offer interdisciplinary research training that aims to map structural inequalities and resistance movements in a U.S. and a global context. Alumni go on to academic positions in a variety of institutions, bringing a critical, intersectional lens to the study of American cultural and social formations. With a core faculty in the fields of cultural, ethnic, gender, and citizenship studies, students drawn to the program have a strong interest in the scholarly study of and challenge to social inequalities, whether manifested in popular culture, immigration policies, gender-racial discrimination, or other contemporary or historical loci. The Program offers a broad array of intellectual possibilities for developing critical interventions in borderlands studies, the study of colonialism and empire, race and ethnic studies, gender, indigenous studies, sports studies, digital culture and media, film and television studies, and disability studies.

Mission

The Graduate Program in American Studies and Culture seeks to prepare professional educators to engage in critical scholarship and public dialogue about culture locally, nationally, and globally, with deep understanding that is situated historically and in the contemporary period.

Program Goals

- To train students in the field of American studies and culture for a broad, critical, and interdisciplinary knowledge of cultural formations, historically, in the contemporary period, and in global context.
- To equip students to engage in scholarly and public dialogue about American culture.
- To prepare graduates to be effective teachers in the field of American Studies and Culture and an interdisciplinary sub-specialization of their choice.

Student Learning Outcomes

- By the end of this program, students will be able to:
- Demonstrate broad, critical, and interdisciplinary knowledge of American culture, (i.e., historically, in the contemporary period, in global context).
 - Synthesize knowledge from several disciplinary perspectives.
 - Think critically about limits of disciplinary knowledge domains.
 - Analyze documentary (primary source) evidence from written, visual, and oral genres.
 - Identify and employ primary and secondary source materials located through library and online scholarly research tools.
 - Design and complete original research in the discipline and an interdisciplinary area of specialization.
 - Write clear, publishable analytic prose scholarship.
 - Contribute critically to professional and to public conversations.

- Teach undergraduate curriculum effectively. Admission is competitive and qualifying graduate students can be financially supported by teaching assistantships.

Schedules of Studies

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

CHINESE LANGUAGE AND CULTURE (120 CREDITS)

A minimum of 34 credits 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. CHINESE 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 school 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.

Students are admitted to the Chinese major upon making their intentions known to the School of Languages, Cultures and Race. However, no course in which a C- or lower grade is earned will be counted toward the major. 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 credits required for the major, a minimum of 15 must be taken in residence with 6 of these credits 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 CHINESE 105, 205, 305, and 405 may not be applied toward the major.

All majors must complete an exit proficiency examination during the semester in which they complete the last language course of their major. There is a fee charged for the exam.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHINESE 101, 102, 203 or Elective	4
ENGLISH 101 [WRTG]	3
FOR LANG 101, 110, 120, 130, or 220	3
Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Credits</i>
CHINESE 102, 203 or Elective ¹	4
CHINESE 111, 120, 121, or 131	3
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ²	4
CHINESE 203 or Elective ¹	4
Social Sciences [SSCI]	3
Electives ³	4

<i>Second Term</i>	<i>Credits</i>
CHINESE 204 or 307	3
CHINESE 311 [M], 320 [M], 321[M], or 330 [M]	3
Humanities [HUM]	3
Physical Sciences [PSCI] with lab ²	4
Electives ³	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CHINESE 306, 307, or 308	3
CHINESE 361, 363, 364, or 450	3
Chinese Area Studies Elective ⁴	3
Diversity [DIVR]	3
Elective ³	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
CHINESE 306, 307, or 308	3
300-400-level Electives ³	3
Electives ³	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
CHINESE 306, 307, or 308	3
Chinese Area Studies Elective ⁴	3
300-400-level Electives ³	9

<i>Second Term</i>	<i>Credits</i>
CHINESE 361, 363, 364, or 450	3
Chinese Area Studies Elective ⁴	3
Integrative Capstone [CAPS]	3
300-400-level Electives ³	6
Exit Proficiency Exam	

¹ Student must meet proficiency requirement to enroll in CHINESE 204. Study abroad in an immersion program in China or Taiwan is strongly recommended.

² To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

³ 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. Electives should include sufficient 300-400 level coursework to meet University requirement of 40 upper division credits.

⁴ Chinese Area Studies (9 credits): Approved courses include ASIA 302 [M], 314, 315 [M], 476 [M], CES 314 [M], 315 [M], and POL S 333, or as approved by advisor. University requirements include a total of two [M] courses.

COMPARATIVE ETHNIC STUDIES (120 CREDITS)

The BA in Comparative Ethnic Studies offers a unique opportunity to study the social, economic, and political forces that have shaped the historic experience of diverse ethnic communities in the

United States over the past 500 years and that continue to determine our future. CES embraces interdisciplinary, comparative, and transnational approaches to studying race relations and the intersectionality of race, gender, class, sexuality, and globalization. The program offers a major and two minors; it is preparatory for careers and future study in teaching, social work, law school, community development and nonprofit work.

Students must complete a minimum of 36 credits in the major, as outlined in the program of studies. An overall 2.0 major GPA is required. A list of approved CES Sub-core and CES Electives are outlined below. Students must also satisfy the UCORE, College of Arts and Sciences graduation requirements, and take at least 40 of the total 120 semester credits in 300 – 400 level courses. Students are admitted to the Comparative Ethnic Studies major upon making their intentions known to the School of Languages, Cultures, and Race.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CES 201	3
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN]	3 or 4

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
HISTORY 105 [ROOT]	3
Social Sciences [SSCI]	3
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
CES Elective ²	3
Foreign Language and/or Electives	6
Humanities [HUM]	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
CES Elective ²	3
Foreign Language and/or Electives	6
Physical Sciences [PSCI] with lab ¹	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CES 301 [M]	3
300-400-level CES Elective ²	3
CES Sub-core ³	6
Electives	4

<i>Second Term</i>	<i>Credits</i>
CES Sub-core ³	3
300-400-level CES Electives ²	6
300-400-level Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level CES Elective ²	3
Electives	12

<i>Second Term</i>	<i>Credits</i>
CES 489 [CAPS]	3
300-400-level Electives	12

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² CES Electives: 18 credits including 12 credits of 300-400-level course work. CES Electives and sub-core must include course work to meet the University requirement of 2 [M] courses. Approved courses include AMER ST 475; CES 111, 131, 151, 171, 209, 220, 240, 244, 254, 255, 260, 271, 280, 308, 313, 314 [M], 325, 331, 332 [M], 335, 336, 338, 353 [M], 357, 358 [M], 373 [M], 379, 380, 405, 406, 407, 413, 426, 440, 444, 446, 454, 465, 470, 491 [M]; CES 372/ANTH 312; CES /WGSS 411.

³ CES Sub-core courses are (9 Credits): CES 301 [M], 325, 440, 446, and 491 [M]. CES Sub-core and Electives must include coursework to meet University requirement of 2 [M] courses.

FRENCH (120 CREDITS)

A minimum of 34 credits 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. FRENCH 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 school 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.

Students are admitted to the French major upon making their intentions known to the School of Languages, Cultures and Race. However, no course in which a C- or lower grade is earned will be counted toward the major. 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 credits required for the major, a minimum of 15 must be taken in residence with 6 of these credits 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 FRENCH 105, 205, 305, and 405 may not be applied toward the major.

All majors must complete an exit proficiency examination during the semester in which they complete the last language course of their major. There is a fee charged for the exam.

First Year

<i>First Term</i>	<i>Credits</i>
FOR LANG 101 [DIVR], 110 [DIVR], 120 [DIVR], or 220 [DIVR]	3
FRENCH 101, 102, 203, or Elective ¹	4

FRENCH 105 or Elective	1
HISTORY 105 [ROOT]	3
SLCR Culture Course ²	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 101 [WRTG]	3
FRENCH 102, 203, or Elective ¹	4
FRENCH 105 or Elective	1
Quantitative Reasoning [QUAN]	3
SLCR Culture Course ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
FRENCH 203 or Elective ¹	4
FRENCH 205 or Elective	1
Social Sciences [SSCI]	3
Electives ⁴	3

<i>Second Term</i>	<i>Credits</i>
FRENCH 110 [HUM] or 120 [HUM]	3
FRENCH 204	4
FRENCH 205 or Elective	1
Physical Sciences [PSCI] with lab ³	4
Electives ⁴	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
FRENCH 305 or Elective	1
FRENCH 306, 307, or 308 [M]	3
FRENCH 361 [COMM]	3
Electives ⁴	9

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
FRENCH 305 or Elective	1
FRENCH 306, 307, or 308 [M]	3
FRENCH 320 [HUM]	3
Electives ⁴	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
FRENCH 306, 307, or 308 [M]	3
FRENCH 310 or 410 [CAPS]	3
FRENCH 405 or Elective	1
Electives ⁴	9

<i>Second Term</i>	<i>Credits</i>
FRENCH 350 or 450 [M]	3
FRENCH 405 or Elective	1
FRENCH 408 [M]	3
FRENCH 420 [CAPS]	3
Electives ⁴	6
Exit Proficiency Exam	

¹ Student must meet proficiency requirement to enroll in FRENCH 204.

² SLCR Culture Course (6 credits): Choose from CHINESE 111, 120, 121, 131; GERMAN 110, 120; SPANISH 110, 111, 120, 121; JAPANESE 120, or 123.

³ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

⁴ 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. Electives should include sufficient 300-400 level coursework to meet University requirement of 40 upper division credits.

FRENCH - SECONDARY EDUCATION (120 CREDITS)

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 Teaching and Learning regarding the education requirements and with an advisor in French regarding the French requirements.

To be admitted to the French Teaching option, a student must have earned at least a 2.50 cumulative GPA. A grade of C or better is required in all French courses to fulfill the requirement of this degree.

FRENCH 101 and 102 do not count toward the major, but students must complete these courses or show equivalent proficiency to enroll in FRENCH 203.

Departmental advanced placement credits: 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 school for details.

No course in which a C- or lower grade is earned will be counted towards the major. 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.

Teaching majors are strongly encouraged to spend at least a summer abroad, living in the target culture and enhancing their fluency. Many accredited study abroad programs are available. Students should work with their advisors in the selection of a program or if wanting to consider alternate options to the study abroad requirement

Of the 32 FRENCH credits required for the teaching major, a minimum of 15 must be taken in residence with 6 of these credits at the 400 level. A maximum of 12 credits per semester or 18 credits per academic or calendar year earned in a study abroad program may be applied toward the teaching major. Credits for FRENCH 105, 205, 305, and 405 may not be applied toward the major or minor.

All teaching majors must complete an exit proficiency examination during the semester in which they complete the last language course of their major. There is a fee charged for the exam.

First Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 101 [WRTG]	3
FOR LANG 101 [DIVR] or 110 [DIVR]	3
FRENCH 120 [HUM]	3
FRENCH 203 ¹	4
FRENCH 205 or Elective ²	1

<i>Second Term</i>	<i>Credits</i>
ENGLISH 201 [WRTG]	3
FRENCH 204	4
FRENCH 205 or Elective ²	1
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
FRENCH 306, 307, or 308 [M]	3

Social Sciences [SSCI]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
FRENCH 306, 307, or 308 [M]	3
FRENCH 310, 320 [M], 350, or 361	3
Physical Sciences [PSCI] with lab ³	4
TCH LRN 301	3

Apply for certification into the Secondary Teacher Certificate Program Complete Writing Portfolio

<i>Third Term</i>	<i>Credits</i>
TCH LRN 317 Initial Practicum Experience (Summer)	2

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
FOR LANG 440	3
FRENCH 306, 307, or 308 [M]	3
FRENCH 310, 320 [M], 350, or 361	3

<i>Second Term</i>	<i>Credits</i>
FRENCH 408 [M]	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	3

<i>Third Term</i>	<i>Credits</i>
FOR LANG 380, 480, or 495 (Summer abroad or internship in Francophone country) ⁴	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
ED PSYCH 468	3
FRENCH 420 [CAPS]	3
TCH LRN 467	3
TCH LRN 469	3
TCH LRN 470	3

Complete FL proficiency Exit Exam
Pass Designated World Language WEST-E and American Council on the Teaching of Foreign Languages (ACTFL) at the advance-low level

<i>Second Term</i>	<i>Credits</i>
TCH LRN 415 Student Teaching	16

¹ Student must meet proficiency requirement to enroll in FRENCH 203.

² FRENCH 205 is not required for degree. Students who do not take FRENCH 205 may need elective credits to meet University graduation requirement of 120 credits.

³ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

⁴ The summer abroad or internship in Francophone country requirement may be satisfied by taking two additional upper division WSU FRENCH courses not used to fulfill other major requirements.

HUMANITIES - INTERNATIONAL AREA STUDIES MAJOR (120 CREDITS)

S. Davis, Coordinator

The BA in Humanities - International Area Studies major 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 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 School of Languages, Cultures, and Race, at <https://slcr.wsu.edu/>.

JAPANESE (120 CREDITS)

A minimum of 34 credits 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 school 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.

Students are admitted to the Japanese major upon making their intentions known to the School of Languages, Cultures and Race. However, no course in which a C- or lower grade is earned will be counted toward the major. 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 credits required for the major, a minimum of 15 must be taken in residence with 6 of these credits 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, 405 may not be applied toward the major.

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

All majors must complete an exit proficiency examination during the semester in which they complete the last language course of their major. There is a fee charged for the exam.

First Year

<i>First Term</i>		<i>Credits</i>
Biological Sciences [BSCI] with lab ¹		4
ENGLISH 101 [WRTG]		3
FOR LANG 101, 110, 120, 130, or 220		3
JAPANESE 101, 102, 203, or Elective ²		4
JAPANESE 105 or Elective		1

<i>Second Term</i>		<i>Credits</i>
HISTORY 105 [ROOT]		3
JAPANESE 102, 203, or Elective ²		4
JAPANESE 111, 120, 123, or 131		3
Quantitative Reasoning [QUAN]		3
Electives ³		3

Second Year

<i>First Term</i>		<i>Credits</i>
JAPANESE 203 or Elective ²		4
JAPANESE 205 or Elective		1
Physical Sciences [PSCI] with lab ¹		4
Social Sciences [SSCI]		3
Electives ³		3

<i>Second Term</i>		<i>Credits</i>
Arts [ARTS]		3
Communication [COMM] or Written Communication [WRTG]		3
Humanities [HUM]		3
JAPANESE 204		4
JAPANESE 205 or Elective		1
Complete Writing Portfolio		

Third Year

<i>First Term</i>		<i>Credits</i>
Area Studies Courses ⁴		3
ASIA 330 [M], CHINESE 311 [M], JAPANESE 320 [M], or JAPANESE 322 [DIVR] ⁵		3
JAPANESE 306, 307, 308, or 361		3
Electives ³		6

<i>Second Term</i>		<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]		3
ASIA 330 [M], CHINESE 311 [M], JAPANESE 320 [M], or JAPANESE 322 [DIVR] ⁵		3
FOR LANG 440 if teaching major or Electives		4
JAPANESE 305 or Elective		1
JAPANESE 306, 307, 308, or 361		3

Fourth Year

<i>First Term</i>		<i>Credits</i>
ASIA 330 [M], CHINESE 311 [M], JAPANESE 320 [M], or JAPANESE 322 [DIVR] ⁵		3
FOR LANG 441 if teaching major or 300-400-level Electives ⁶		3
JAPANESE 305 or Elective		1
JAPANESE 306, 307, 308, or 361		3
Electives ⁶		6

<i>Second Term</i>		<i>Credits</i>
Area Studies Courses ⁴		3
Integrative Capstone [CAPS]		3
Electives ⁶		9
Language Proficiency Exam		

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² Student must meet proficiency requirement to enroll in JAPANESE 204.

³ 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. Electives should include sufficient 300-400 level coursework to meet University requirement of 40 upper division credits.

⁴ Area Studies courses: Students must take 6 credits in Japanese-related courses from CES 313, 314, 315, 411, and 413; ASIA 275, 374, 387, 477, and 479; FINE ART 302; PHIL 314 and 315; or as approved by advisor.

⁵ Students who do not take JAPANESE 322 must take another course to fulfill University Diversity [DIVR] requirement.

⁶ Electives may need to include up to 6 credits of major coursework at the 400-level to meet the major requirement. Approved courses are JAPANESE courses and Area Studies courses, or as approved by advisor. The University requires a minimum of 40 credits of 300-400-level coursework.

SOCIAL SCIENCES MAJOR - PERSONNEL PSYCHOLOGY/HUMAN RESOURCES OPTION (VANCOUVER-ONLY) (120 CREDITS)

The Personnel Psychology/Human Resources (PP/HR) option for the BA in Social Sciences - Social Sciences major 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>Credits</i>
Biological Sciences [BSCI] with lab ¹		4
ENGLISH 101 [WRTG]		3
Humanities [HUM]		3
Quantitative Reasoning [QUAN]		3
Social Sciences [SSCI]		3

<i>Second Term</i>		<i>Credits</i>
Arts [ARTS]		3
Communication [COMM] or Written Communication [WRTG]		3
HISTORY 105 [ROOT]		3
Physical Sciences [PSCI] with lab ¹		4

Second Year

<i>First Term</i>		<i>Credits</i>
PSYCH 306		3
Foreign Language, if necessary, and/or Electives		12

<i>Second Term</i>		<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]		3
Diversity [DIVR]		3
PSYCH 308		3
Foreign Language, if necessary, and/or Electives		6
Complete Writing Portfolio		

Third Year

<i>First Term</i>	<i>Credits</i>
H D 406	3
MGMT 301	3
PSYCH 311	4
Area 1 Electives ²	3
Electives	3
<i>Second Term</i>	<i>Credits</i>
Area 1 Electives ²	3
Area 2 Electives ³	3
Area 3 Electives ⁴	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
Area 1 Electives ²	3
Area 2 Electives ³	3
Area 3 Electives ⁴	3
Electives	6
<i>Second Term</i>	<i>Credits</i>
Integrative Capstone [CAPS]	3
Area 3 Electives ⁴	3
Electives	9

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² Area 1 electives: PSYCH 309, 350, 412, 470, or 495.

³ Area 2 electives: H D 301, 350, 385, 403, or 430.

⁴ Area 3 electives: I BUS 453 [M], MGMT 401 [M], 450, 455, 456 [M], 485 [M], 487, 496. Must include two [M] courses.

SOCIAL SCIENCES OR HUMANITIES MAJOR - PLAN A OPTION (120 CREDITS)

A. Chow, 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 UCOREs and any additional requirements of the College of Arts and Sciences.

Students are admitted to the General Humanities major (Gen H) or General Social Sciences major (Gen S) upon making their intentions known to the School of Languages, Cultures, and Race.

Plan A—Primary/Secondary Concentration

Primary concentration: a minimum of 24 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 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.

Per Academic Regulation 54, students may not be admitted in or awarded an additional major or minor if it carries the same name as one of the areas of study or options, concentrations or sub-plans within a major. In addition, students pursuing a Business major or minor may not also be admitted in an option, concentration or subplan of Administrative Studies.

For a list of approved Plan A areas, please contact the Liberal Arts General Studies office.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4
Social Sciences [SSCI]	3
Foreign Language, if necessary, or Elective	3 or 4

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Primary Concentration	3
Secondary Concentration	3
Foreign Language, if necessary, and/or Elective	6
<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
Primary Concentration	3
Secondary Concentration	3
Electives	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
300-400-level Primary Concentration ²	3
Primary Concentration	3
Secondary Concentration	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
300-400-level Primary Concentration ²	3
300-400-level Secondary Concentration ²	3
Integrative Capstone [CAPS]	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level Primary Concentration ²	6
300-400-level Secondary Concentration ²	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
300-400-level Primary Concentration ²	3
Electives ²	12

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² Students must take a total of 40 credits of upper-division (300-400 level). 21 upper-division credits must be taken within the designated concentration areas. The UCORE requirements include 3 upper-division credits. The remaining 16 credits 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 credits, must have a [M] designation. Only 6 credits of internship or P, F credits are allowed to count towards major requirements.

SOCIAL SCIENCES OR HUMANITIES MAJOR - PLAN B OPTION (120 CREDITS)

A. Chow, Coordinator

Humanities: A combination of humanities courses totaling at least 39 credits involving three academic areas with a minimum of 9 credits in each of the three areas. At least 21 of the 39 credits must be at the 300-400-level and the GPA for the 39 credits must be a 2.0 minimum. Students are admitted to the General Humanities major (Gen H) upon making their intentions known to the School of Languages, Cultures, and Race, and receive a Bachelor of Arts in Humanities.

Social Sciences: A combination of social sciences courses totaling at least 39 credits involving three academic areas with a minimum of 9 credits in each of the three areas. At least 21 of the 39 credits must be at the 300-400-level and the GPA for the 39 credits must be a 2.0 minimum. Students are admitted to the General Social Sciences major (Gen S) upon making their intentions known to the School of Languages, Cultures, and Race, and receive a Bachelor of Arts in Social Sciences.

Per Academic Regulation 54, students may not be admitted in or awarded an additional major or minor if it carries the same name as one of the areas of study or options, concentrations or sub-plans within a major. In addition, students pursuing a Business major or minor may not also be admitted in an option, concentration or subplan of Administrative Studies.

For a list of approved Plan B areas, please contact the Liberal Arts General Studies office.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] with lab ¹	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
ENGLISH 101 [WRTG]	3
Physical Sciences [PSCI] with lab ¹	4
Social Sciences [SSCI]	3
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Area 1	3
Area 2	3
Foreign Language, if necessary, and/or Electives	7

<i>Second Term</i>	<i>Credits</i>
Area 1	3
Area 3	3
Diversity [DIVR]	3
Foreign Language, if necessary, and/or Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
300-400-level Area 1 ²	3
Area 2	3
Area 3	3
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
300-400-level Area 2 ²	3
300-400-level Area 3 ²	3
Integrative Capstone [CAPS]	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400 Any Area ²	9
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
300-400 Any Area ²	3
Electives ²	12

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² Students must take a total of 40 credits of upper-division (300-400 level). 21 upper-division credits must be taken within the designated concentration areas. The UCORE requirements include 3 upper-division credits. The remaining 16 credits 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 credits, must have a [M] designation. Only 6 credits of internship or P, F credits are allowed to count towards major requirements.

SPANISH (120 CREDITS)

A minimum of 34 credits 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. SPANISH 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 school 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.

Students are admitted to the Spanish major upon making their intentions known to the School of Languages, Cultures and Race. However, no course in which a C- or lower grade is earned will be

counted toward the major. 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 credits required for the major, a minimum of 15 must be taken in residence with 6 of these credits 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 SPANISH 105, 205, 305, and 405 may not be applied toward the major.

All majors must complete an exit proficiency examination during the semester in which they complete the last language course of their major. There is a fee charged for the exam.

First Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 101 [WRTG]	3
FOR LANG 101, 110, 120, 130, or 220	3
MATH 103 (if needed) or Electives ¹	3
SPANISH 101, 102, 203 or Elective ²	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
SPANISH 102, 203 or Elective ²	4
SPANISH 105 or Elective	1

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
Communication [COMM] or Written Communication [WRTG]	3
Social Sciences [SSCI]	3
SPANISH 203 or Elective ²	4
SPANISH 205 or Elective	1
Electives ¹	3

<i>Second Term</i>	<i>Credits</i>
Humanities [HUM]	3
Physical Sciences [PSCI] with lab ³	4
SPANISH 204	4
SPANISH 205 or Elective	1
Electives ¹	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
SPANISH 306	3
SPANISH 307	3
SPANISH Film/Literature/Culture Elective ⁴	3
Electives or FOR LANG 440 if teaching major ¹	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
SPANISH 305 or elective	1
SPANISH 308	3
SPANISH Film/Literature/Culture Elective ⁴	3
300-400-level Electives ¹	5

Fourth Year

<i>First Term</i>	<i>Credits</i>
SPANISH 407	3
SPANISH 450 [M], 451 [M], 452 [M], or 453 [M]	3
Electives ¹	9

<i>Second Term</i>	<i>Credits</i>
Integrative Capstone [CAPS]	3
SPANISH 305 or elective	1
SPANISH 408 [M]	3
SPANISH 450 [M], 451 [M], 452 [M], or 453 [M]	3
300-400-level Electives ¹	4
Exit Proficiency Exam	

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.

² Student must meet proficiency requirement to enroll in SPANISH 204.

³ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

⁴ Approved SPANISH Film/Literature/Culture Electives include (two courses): SPANISH 310, 311, 320, 321, 350, 351, 361, 362, 363, 364, 365, or as approved by advisor.

SPANISH - SECONDARY EDUCATION (120 CREDITS)

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 Teaching and Learning regarding the education requirements and with an advisor in SPANISH regarding the Spanish requirements.

To be admitted to the Spanish Teaching option, a student must have earned at least a 2.50 cumulative GPA. A grade of C or better is required in all SPANISH courses to fulfill the requirement of this degree.

SPANISH 101 and 102 do not count toward the major, but students must complete these courses or show equivalent proficiency to enroll in SPANISH 203.

Departmental advance placement credits: 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 school for details.

No course in which a C- or lower grade is earned will be counted toward the major. 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.

Teaching majors are strongly encouraged to spend at least a summer abroad, living in the target culture and enhancing their fluency. Many accredited study abroad programs are available. Students should work with their advisors in the selection of a program or if wanting to consider alternate options to the study abroad requirement.

Of the 35 SPANISH credits required for the teaching major, a minimum of 15 must be taken in residence at WSU with 6 of these credits at the 400 level. A maximum of 12 credits per semester or 18 credits per academic or calendar year earned in a study abroad program may be applied toward the teaching major. Credits for SPANISH 105, 205, 305, and 405 may not be applied toward the major.

All teaching majors must complete an exit proficiency examination during the semester in which they complete the last language course of their major. There is a fee charged for the exam.

First Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 101 [WRTG]	3
FOR LANG 101 [DIVR] or 110 [DIVR]	3
SPANISH 120 [HUM]	3
SPANISH 203 ¹	4
SPANISH 205 or Elective ²	1
<i>Second Term</i>	<i>Credits</i>
ENGLISH 201 [WRTG]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
SPANISH 204	4
SPANISH 205 or Elective ²	1

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
Social Sciences [SSCI]	3
SPANISH 306	3
SPANISH 308	3
<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
Physical Sciences [PSCI] with lab ³	4
SPANISH 307	3
SPANISH Film/Literature/Culture Elective ⁴	3
TCH LRN 301	3
Apply for certification into the Secondary Teacher Certificate Program Complete Writing Portfolio	
<i>Third Term</i>	<i>Credits</i>
TCH LRN 317 Initial Practicum Experience (Summer)	2

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
FOR LANG 440	3
SPANISH 407 or 408 [M]	3
SPANISH 450 [M], 451 [M], 452 [M], or 453 [M]	3
SPANISH Film/Literature/Culture Elective ⁴	3
<i>Second Term</i>	<i>Credits</i>
SPANISH 407 or 408 [M]	3
SPANISH 450 [M], 451 [M], 452 [M], or 453 [M]	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
ED PSYCH 468	3

SPANISH 420 [CAPS] or FOR LANG 410 [CAPS]	3
TCH LRN 467	3
TCH LRN 469	3
TCH LRN 470	3
Complete FL proficiency Exit Exam Pass Designated World Language WEST-E and American Council on the Teaching of Foreign Languages (ACTFL) at the advance-low level	
<i>Second Term</i>	<i>Credits</i>
TCH LRN 415 Student Teaching	16

¹ Student must meet proficiency requirement to enroll in SPANISH 203.

² SPANISH 205 is not required for degree. Students who do not take SPANISH 205 may need elective credits to meet University graduation requirement of 120 credits.

³ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

⁴ SPANISH Film/Literature/Culture Electives: Approved courses include SPANISH 310, 311, 320, 321, 350, 351, 361, 362, 363, 364, 365, or as approved by advisor.

Additional Majors

Additional Major – French for the Professions

Students who are admitted in a major may seek an additional major in French for the Professions. This additional major does not lead to a degree. The additional major requires 38 credits, as follows: 1) Language Foundation (14 credits) -- FRENCH 101, 102, 203, and 261. Note that most students entering WSU will have already fulfilled the equivalent of the 101 and 102 courses, if they choose to pursue the same foreign language for this major; 2) Intermediate Language (6 credits) -- Two courses from FRENCH 306, 307, or 308; 3) Language for Specific Purposes (6 credits) -- FRENCH 320 [HUM] and 361 [COMM]; and 4) Upper-level Experience (12 credits) -- FRENCH 420 [CAPS]; two Writing in the Major courses (see school); and FOR LANG 495, Internship / Service Learning / Undergraduate Research / Study Abroad (for 8 weeks minimum). No course in which a C- or lower grade is earned will be counted toward the additional major. No course taken pass/fail may 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. The STAMP 4S (Standards-based Measurement of Proficiency) web-based assessment of foreign language proficiency in reading, writing, speaking, and listening and will be taken during the semester in which the student is completing the final course for the major taught in the target language.

Additional Major – German for the Professions

Students who are admitted in a major may seek an additional major in German for the Professions. This additional major does not lead to a degree. The additional major requires 39 credits, as follows: 1)

Language Foundation (15 credits) -- GERMAN 101, 102, 203, and 204. Note that most students entering WSU will have already fulfilled the equivalent of the 101 and 102 courses, if they choose to pursue the same foreign language for this major; 2) Intermediate Language (6 credits) -- GERMAN 307 and 308; 3) Language for Specific Purposes (6 credits) -- GERMAN 320 and 361 [COMM]; and 4) Upper-level Experience (12 credits) -- GERMAN 420 [CAPS]; two Writing in the Major courses (see school); and FOR LANG 495, Internship / Service Learning / Undergraduate Research / Study Abroad (for 8 weeks minimum). No course in which a C- or lower grade is earned will be counted toward the additional major. No course taken pass/fail may 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. The STAMP 4S (Standards-based Measurement of Proficiency) web-based assessment of foreign language proficiency in reading, writing, speaking, and listening and will be taken during the semester in which the student is completing the final course for the major taught in the target language.

Additional Major – Japanese for the Professions

Students who are admitted in a major may seek an additional major in Japanese for the Professions. This additional major does not lead to a degree. The additional major requires 37 credits, as follows: 1) Language Foundation (16 credits) -- JAPANESE 101, 102, 203, and 204; 2) Intermediate Language (9 credits) -- JAPANESE 306, 307, and 308; 3) Language for Specific Purposes (3 credits) -- JAPANESE 361; 4) Lower-level Culture/Literature course taught in English (3 credits) -- one from JAPANESE 111, 120, 123, and 131; 5) Upper-level Culture/Literature courses taught in English (6 credits) -- two from CHINESE 311, JAPANESE 320, JAPANESE 322, and ASIA 330; and 6) two Writing in the Major courses (see school). No course in which a C- or lower grade is earned will be counted toward the additional major. No course taken pass/fail may 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. The STAMP 4S (Standards-based Measurement of Proficiency) web-based assessment of foreign language proficiency in reading, writing, speaking, and listening and will be taken during the semester in which the student is completing the final course for the major taught in the target language.

Additional Major – Spanish for the Professions

Students who are admitted in a major may seek an additional major in Spanish for the Professions. This additional major does not lead to a degree. The additional major requires 38 credits, as follows: 1) Language Foundation (14 credits) -- SPANISH 101, 102, 203, and 261. Note that most students entering WSU will have already fulfilled the equivalent of the 101 and 102 courses, if they choose to pursue the same foreign language for this major; 2) Intermediate Language (6 credits) -- Two courses from SPANISH 306, 307, or 308; 3) Language for

Specific Purposes (6 credits) -- SPANISH 320 or 321 [DIVR]; and 361, 362, 363, 364, or 365; and 4) Upper-level Experience (12 credits) -- Integrative Capstone [CAPS]; two Writing in the Major courses (see school); and FOR LANG 495, Internship / Service Learning / Undergraduate Research / Study Abroad (for 8 weeks minimum). No course in which a C- or lower grade is earned will be counted toward the additional major. No course taken pass/fail may 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. The STAMP 4S (Standards-based Measurement of Proficiency) web-based assessment of foreign language proficiency in reading, writing, speaking, and listening and will be taken during the semester in which the student is completing the final course for the major taught in the target language.

Minors

American Indian Studies

The minor in American Indian Studies requires 18 semester hours which shall include a required 9 hour core (3 of the following 4 courses: ANTH 320, CES 171, HISTORY 308, or HISTORY 410) and 9 hours of electives (ANTH 327, 331, 334, 535, CES 372, 373, 379, 470, 475, FINE ART 301, HISTORY 410, or MUS 265). At least 9 of the credits must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses, 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.

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. The remaining 9 credits must be 300-400-level course work in the target language, of which 3 credits must be taken in residence at WSU, while the remaining 6 credits must be taken either in residence at WSU or through WSU-approved education abroad, educational exchange courses, or equivalent transfer coursework. 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, 305, 405 may not count towards the minor. For courses taken in Study Abroad Programs or as other transfer credits, please check with your advisor. All Chinese, French, German, Japanese, and Spanish language minors must also complete an exit proficiency examination interview during the semester in which they complete the last language course of their minor. There is a fee charged for the exam

Comparative Ethnic Studies

For the minor in Comparative Ethnic Studies (CES), students must complete either CES 101 or 201, as well as an additional 15 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.

Film Studies

The Film Studies Minor introduces students to the critical study of cinema and media studies. It explores how cinema both reflects and influences the facts, ideas, and activities of any given society, and how film allows us to travel to most places in the world and become familiar with diverse cultures, traditions, and ways of thinking. The film studies minor also teaches students how to discern the cinematic and narrative features that are used in cinematography and how culture can influence them. The study of film encourages critical thinking, respect for cultural diversity, and detailed knowledge of film as a text of facts and ideas.

The minor's program of studies is designed by the student in collaboration with the coordinator and / or the advisor. 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 COM 471, ENGLISH 150, 339, FOR LANG 110, 410, MUS 266, PHIL 210, and SOC 372 or 373. An additional 9 elective credits geared toward social, cultural, or applied skills are required. Approved courses include CES 222, 338, 358 [M], 379, CHINESE/ASIA/JAPANESE 111, CHINESE 311 [M], COM 210, COMJOUR 360, 390, 466, CRM J/POL S 381, DTC 335, 338, DTC/ENGLISH 336, 354, 355, DTC/AMER ST/ENGLISH 475, ENGLISH 205, 316, 340, 342, ENGLISH/FINE ART 337, FINE ART 333, 363, 380, 381, 385, 434, 435, FRENCH 110, 310, 410, GERMAN 110, 310, HISTORY 400, MUS 162, RUSSIAN 410, SOC 373, SPANISH 110, 111, 310, 311, and WGSS 340. No more than two courses with the same subject (or content, as in cross-listed courses) may be applied towards the minor. All core courses must be taken at WSU. After consultation with the film studies coordinator or advisor, two elective courses may be transferred to the film studies minor from accredited study abroad and other university/college programs. A maximum of 3 internship credits may count towards the minor's electives.

Learning Goals

- To enhance knowledge of the history and practice of film production
- To analyze the nature, history, and function of film in an interdisciplinary manner that broadens and enhances critical thought
- To enhance the perception of and respect for the diversity of cultures in this country and around the world as exposed through this medium
- To enhance technical understanding of how film and related-media work
- To enhance understanding of the societal and cultural roles and impact of film and other media
- To enhance media literacy skills

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 school 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.

French for Design and Merchandising

The minor in French for Design and Merchandising requires a minimum of 16 credits, 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. Required courses for the foundation of the target language include FRENCH 203 and FRENCH 204 or 261 (7-8 credits). An additional 3 courses (9 credits) must be selected from the following: FRENCH 361, FRENCH 362, and FRENCH 306 or FRENCH 320, or equivalent (if taken abroad). All courses must be passed with a grade of C or better. Courses counting towards this minor may not be counted toward a major in International Area Studies (i.e., French and Francophone Area Studies). FRENCH 105, 205, and 305 may not count towards this minor. For courses/course equivalencies taken in Study Abroad Programs or as other transfer credits, please check with your advisor. An exit proficiency examination is required and will be taken during the semester in which the student is completing the final target language course for the semester.

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 school 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.

Global and Ethnic Narrative Traditions

A systematic approach to the study of a variety of regional myths, and global, ethnic, and racial narrative traditions in their original context as well as in more contemporary reinterpretations through literature and film and other cultural arenas, with the aim to challenge and resituate dominant views about race and ethnicity, gender, social classes, and different political practices. When we consider how contemporary writers, filmmakers, poets, playwrights, painters, music composers, and other cultural producers use the forms and elements of these storytelling practices we can more effectively analyze how these narratives have the power to articulate political ideas as well as social and cultural transformations. In this manner, the program develops our students' critical thinking and encourages them to re-interpret the place of the self as an identity culturally situated. Narratives to be studied address specific topics related to gender (representations of women, men, homosexuality, etc.), age (representations of childhood, youth, the elderly, etc.), history (representations of war, revolutions, dictatorships, democratization, etc.), culture and society (gendered roles, race, nature, religion, social classes, immigration, etc.), to mention a few.

Completion of the minor requires 18 credits including a required core (6 credits) and 12 credits of electives. At least 9 credits of approved coursework must be taken at the 300-400 level. No courses taken Pass/Fail will count towards the 18-credit requirement.

Required courses (6 credits): Two course from CES/ENGLISH 220 or FOR LANG 130; FOR LANG 110 or 410; FOR LANG 120.

Elective courses (12 credits): Four courses from three categories below.

Category 1 - Literature and Mythology, 2 courses from: ASIA/CHINESE/JAPANESE 131, CES 313/ENGLISH 311, CES/ENGLISH 314, CES 331/ENGLISH 321, CES 332/ENGLISH 322, CES 353/ENGLISH 345, CES 373/ENGLISH 341, FOR LANG 370, 371, 373, one from FRENCH 350 or 430, one from GERMAN 350 or 450 or 451 or 452, one from SPANISH 350 or 351 or 430 or 450 or 451 or 452.

Category 2 - Culture and Film, one course from: ASIA/CHINESE/JAPANESE 111, ASIA/CHINESE 330, ASIA/JAPANESE 122, 123, CES 254, CHINESE 120, 121, 311, FRENCH 110, 120, 310, 320, 410, 420, GERMAN 110, 120, 310, 320, SPANISH 110, 111, 120, 121, 310, 311, 320, 321, 420.

Category 3 - History and Society, one course from: CES 111, 131, 151, 171, 255, CES 211/HISTORY 201, CES/HISTORY 235.

15 of the credits must be taken at WSU. A grade of C or better must be earned in each of the courses applied to the minor. No course may be repeated for credit. No more than 6 credits may apply toward completion of a different minor. Other courses may be added to the list of acceptable electives. To discuss any course equivalencies, please contact the minor coordinator.

Global Studies

Global studies examine economic, political, social, cultural, and scientific practices in a transnational and cross-cultural perspective. The Global Studies minor is designed to provide students with an integrated exposure to globally related scholarship across the disciplines, and 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.

In order to be admitted to the minor, students must have completed at least 60 credits with a 2.0 GPA or above. To earn the minor, students must complete a minimum of 18-19 credits: 1 core course in each student learning outcome category (12-13 credits), and 2 course electives (6 credits) in any of the thematic categories listed in the program of studies, but targeting two different learning outcomes. At least 9 credits of approved coursework must be taken at the 300-400 level, and no courses taken Pass/Fail will count towards the 18-19 credit requirement. Six credits of approved transfer work may be counted towards the minor; the remaining 12-13 credits must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. No more than two courses with the same subject (or content, as in cross-listed courses) can be applied to the minor. Some courses may be substituted with the approval of the Global Studies Minor advisor. Additional courses may be included within the minor as developed in the university curriculum.

Student Learning Outcomes: The minor gives students a competitive edge in the global job market. Students earning the minor will be prepared to 1) understand connections that can be made from historical, cultural, economic, and political contexts that shape society and reflect global systems; 2) demonstrate knowledge of and be sensitive to others' differing identities and values across cultures; 3) apply intercultural communication skills to interact effectively with individuals and in groups; and 4) interact respectfully and responsibly across boundaries in diverse environments.

Program of Studies:

Core Courses: Choose one from ANTH 203, CES 244, ECONS 101, 198, POL S 103, or SOC 415. Choose one from ANTH 316, FINE ART 202, or POL S 428. Choose one from: COM 105, COMSOC 321, or FOR LANG 120. PLUS, complete one semester of foreign language study at WSU beyond the WSU admissions requirement. Foreign language courses taken at WSU to fulfill the admissions requirement are not eligible to be applied to the minor.

Electives: Six credits required. Choose two courses targeting two different learning outcomes (SLOs):

SLO 1 Connections among contexts: ANTH 260, CES 380, CROP SCI 360, ENGLISH 373, FINE ART 301, HISTORY 494 or 495 or approved upper-level World History course, HONORS 370, 380, 390, I BUS 380 or 470, POL S 429, SOC 334 or 430, SOE 390.

SLO 2 Knowledge about identities and values: ANTH 301 or 404, BIOLOGY 407, ENTOM 150, FOR LANG 110, HUMANITY 350, MUS 163 or 265, POL S 435, SOE 110.

SLO 3 Communication skills: Additional semester of same foreign language as used for the Core requirement or additional foreign language course taught in the foreign language at WSU.

SLO 4 Respectful interaction: ANTH 418, BIOLOGY 110, COMSOC 421, HISTORY 491, SOE 312.

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 school 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.

Popular Culture

For the minor in Popular Culture students must complete a minimum of 21 credit hours, 9 of which must be upper-division course work and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Required core courses (12 credit hours): AMER ST 216, CES 101 or 201, 260, and 325. Electives (9 credit hours): AMER ST 475, CES 209, 222, 308, 336, 338, 357, 358, 379, or 413.

Certificates

American Indian Studies

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 3 of the following 4 courses: ANTH 320, CES 171, HISTORY 308, or HISTORY 410. The remaining 9 hours are chosen from the following elective courses: ANTH

327, 331, 334, 535, CES 372, 373, 379, 470, 475, FINE ART 301, HISTORY 410, or 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.

Core Competencies in Spanish Language and Culture

WSU's online Core Competencies in Spanish Language and Culture certificate program is the study of Spanish language and culture from the novice through intermediate language level. The Spanish-speaking world is a diverse cultural landscape covering nationalities from Europe, the Caribbean, Central America, South America, and beyond and is very valuable in today's global economy.

The program leverages ever-expanding technology in online learning developed by one of the leading textbook publishers in the discipline.

The certificate program can be its own stand-alone program or it can allow students entry into a Spanish minor or major at WSU. Core Competencies is perfect for businesses or individuals with the need to learn the Spanish language and to gain insight into Hispanic cultures. The University undergraduate certificate fee will apply.

Required Courses: Spanish 101, Spanish 102, Spanish 203, Spanish 204 (16 total credits). Students must pass all classes with a C or better.

Proficiency Exam Requirement

Students who earn this certificate are also required to take an exit proficiency exam at the end of the academic term in which they complete the last course of the certificate. Students must pass the STAMP exam at the intermediate level in order to earn the certificate. This exam requires a fee.

Italian Language Certificate

The Italian Language Certificate comprises four in-depth courses of basic communication skills in Italian by developing competency in basic to low-intermediate skills of speaking, listening, reading, writing, and culture. To earn this certificate, students must complete a total of 16 hours by taking each of these courses: ITALIAN 101, 102, 203, and 204. This certificate is designed for non-native speakers of Italian and is offered at the level of attaining a basic expertise and knowledge in Italian language skills and culture.

No more than 4 hours earned at other institutions may apply towards the certificate and no more than 4 hours may be pass/fail. Courses earned at another institution or by AP credit will be determined by the school regarding course equivalencies and allowance in the certificate. All courses must be earned with a grade of C or better. The University undergraduate certificate fee will apply.

Proficiency Exam Requirement

Students who earn this certificate are also required to take an exit proficiency exam at the end of the academic term in which they complete the last course of the certificate. Students must pass the STAMP exam at the intermediate level in order to earn the certificate. This exam requires a fee.

Description of Courses

AMERICAN STUDIES

AMER ST

216 Introduction to American Cultural Studies 3 Introduction to the interdisciplinary study of American cultures and the field of American studies. (Crosslisted course offered as AMER ST 216, CES 216, ENGLISH 216, HISTORY 216, WGSS 216.)

471 Race, Popular Culture, and Post-Civil Rights America 3 Sports, television, film, music, and other examples of popular culture are examined as a site of resistance. (Crosslisted course offered as AMER ST 471, CES 461.)

472 Race, Justice, and Food Ecosystems 3 Course Prerequisite: Junior standing. Examines racial inequalities and injustice alongside of movements of change, highlighting the importance of food in a modern world. (Crosslisted course offered as AMER ST 472, CES 462.)

473 Art as Resistance 3 Course Prerequisite: Junior standing. Highlights artists and movements often erased within dominant narratives about art, and within galleries and museums. (Crosslisted course offered as AMER ST 473, CES 463.)

474 Racial Justice Movements 3 Course Prerequisite: Junior standing. Examines racial justice movements since the 1960s, exploring the lessons, tactics, histories, and significance of movements across multiple communities. (Crosslisted course offered as AMER ST 474, CES 464.)

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.

511 U.S. Presence and Intervention in the Pacific Rim 3 Modern and contemporary relations between the United States and the nations and peoples of Asia and the Pacific; effects of war, technology, and globalization on those relations.

512 Applied Linguistics in Contemporary American Culture 3 Linguistic theory from its historical foundations to current applications.

515 The Neoliberal University 3 Critically considers the pedagogical, professional, institutional, and social effects of neoliberalism on higher education.

520 Colonization, Globalization and Decolonization 3 Topics in the critical study of colonialism, neo-colonialism, imperialism, globalization and resistance to these forces.

524 Critical Studies in Popular Culture 3 Interdisciplinary approaches to historical and contemporary trends and issues in US popular culture.

526 Contemporary Theories of Race and Ethnicity 3 Major theoretical readings and key recent texts in U.S. and transnational ethnic studies scholarship.

528 Cultural Studies 3 Basic theory and core methods of the field of cultural studies through a cross discipline approach.

529 Cultural Politics of the Body 3 An interdisciplinary investigation of the historical, sociopolitical, biotechnical, and economic materialities of the human body within and across an array of identity categories.

553 Latino/a and Latin American Literatures and Cultures 3 Autobiographies, journals, and memoirs of Latino/a authors as a means of exploring the past and envisioning the future.

555 U.S. Interventions in Latin America 3 The hegemonic presence of the United States in Latin America, including strategies ranging from military invasion to subtle indoctrination through popular culture.

560 Critical Studies in Race and Popular Culture 3 Foundational and contemporary texts in popular culture studies that address the significance of race in our understanding and consumption of popular culture.

580 Immigration and Citizenship 3 Current research around the historic, social, economic, and political conditions that have influenced the flow of immigrants, their status as citizens, and their national/international identity.

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.)

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. Course Prerequisite: Admitted to the American Studies PhD program. 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.

ARABIC

ARABIC

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: ARABIC 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.

203 Third Semester 4 (3-2) Course Prerequisite: ARABIC 102 with a grade of C or better. Further development of speaking, listening, reading, and writing. Not open to native speakers except with permission.

204 Fourth Semester 4 (3-2) Course Prerequisite: ARABIC 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.

Cross-Disciplinary Arts and Sciences

CAS

310 [HUM] [M] Special Topics in the Humanities 3 A cross-disciplinary exploration of methods, topics, concerns, or themes pertinent to the disciplines and traditions of the Humanities.

311 [SSCI] [M] Special Topics in Social Sciences: Cross-disciplinary Studies 3 Course Prerequisite: Junior standing. Research, writing, and exploration of topics in the social sciences from an interdisciplinary perspective.

400 End-of-Program Evaluation Portfolio 1 Course Prerequisite: Senior standing. Evaluation of crossdisciplinary educational experience resulting in written and symbolic portfolio format. S, F grading.

410 [CAPS] Interdisciplinary Approaches to the University 3 Course Prerequisite: Junior standing. An interdisciplinary approach to the history, politics, everyday realities, economics, and cultural representations of America's colleges and universities.

497 Internship V 2-16 May be repeated for credit; cumulative maximum 16 hours. Course Prerequisite: Junior standing. Supervised student experiential activities as paid or unpaid intern in business, education, health, non-profit, industry, or other organizations.

COMPARATIVE ETHNIC STUDIES

CES

101 [DIVR] Race and Racism in the United States 3 Overview of race, ethnicity, and racism within social, cultural, and historical structures and systems 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 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.

207 Race/Ethnic Dynamics and the Corporate World 3 Social, cultural, and institutional processes that attach meaning to notions of race and racial differences, especially in U.S.-based corporations.

209 [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).

216 Introduction to American Cultural Studies 3 Introduction to the interdisciplinary study of American cultures and the field of American studies. (Crosslisted course offered as AMER ST 216, CES 216, ENGLISH 216, HISTORY 216, WGSS 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).

222 Race in Sport Films 3 (2-2) Examination of racial politics through critical discussions of sport film.

235 [HUM] 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 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 [SSCI] 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 Latina/o Diasporic Communities in the U.S. 3 Exploration of historical movements, settlement, and interactions within the United States of different Latina/o groups.

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).

291 [DIVR] Anti-Semitism 3 Historical, social, theological, and ideological dimensions of anti-Semitism.

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.

308 [SSCI] Cultural Politics of Sport 3 A critical examination of US sports through class, race, gender, sexuality, nationalism and criminality.

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 [DIVR] [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 [SSCI] 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 360. HISTORY 360 formerly offered as 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.
- 353 [M] Contemporary Latina/o Literatures** 3 Latina/o literature, narrative, novel, autobiography, poetry, short story, and drama. (Crosslisted course offered as CES 353, ENGLISH 345).
- 357 Latinas/os and U.S. Popular Culture** 3 Examination of the participation and representation of Latina/o bodies in different aspects of U.S. 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: ANTH 101, 214, CES 101, or 171. Exploration of roles and activities of women in indigenous societies; how traditional gender roles have developed and changed.
- 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).
- 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).
- 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.
- 411 Asian Pacific American Women** 3 Course Prerequisite: CES or WGSS 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, WGSS 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.
- 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.
- 436 Black Masculinities** 3 Historical, political and cultural constructions of images of black manhood and the effects on black male subjectivity.
- 440 [CAPS] Global Social Justice** 3 Course Prerequisite: Junior standing. Examination of social justice issues in the United States and transnationally.
- 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 Latinas in U.S. Culture and Society** 3 Course Prerequisite: Junior standing. Intersections of race, class, gender and sexual orientation in the experience of a marginalized group - Chicanas.
- 461 Race, Popular Culture, and Post-Civil Rights America** 3 Sports, television, film, music, and other examples of popular culture are examined as a site of resistance. (Crosslisted course offered as AMER ST 471, CES 461.)
- 462 Race, Justice, and Food Ecosystems** 3 Course Prerequisite: Junior standing. Examines racial inequalities and injustice alongside of movements of change, highlighting the importance of food in a modern world. (Crosslisted course offered as AMER ST 472, CES 462).
- 463 Art as Resistance** 3 Course Prerequisite: Junior standing. Highlights artists and movements often erased within dominant narratives about art, and within galleries and museums. (Crosslisted course offered as AMER ST 473, CES 463.)
- 464 Racial Justice Movements** 3 Course Prerequisite: Junior standing. Examines racial justice movements since the 1960s, exploring the lessons, tactics, histories, and significance of movements across multiple communities. (Crosslisted course offered as AMER ST 474, CES 464.)
- 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.

- 489 [CAPS] Everyday Struggles for Justice and Equality** 3 Course Prerequisite: CES 201; junior standing. Investigation of everyday realities of racism, sexism, and heterosexism; applied research; communication of findings through new and/or creative media.
- 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.
- 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 Course Prerequisite: CHINESE 101 with a grade of C or better, or WSU language placement exam score of 2 or higher. Continuation of CHINESE 101. Not open to native speakers except with permission. 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 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 [HUM] 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 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: CHINESE 102 with a grade of C or better, or WSU language placement exam score of 3 or higher. 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, or WSU language placement exam score of 5 or higher. 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 4 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 Course Prerequisite: CHINESE 204 with a C or better, or WSU language placement exam score of 5 or higher. English-Chinese expressions, development of skills to increase reading speed and fluency. Cooperative: Open to UI degree-seeking students.
- 307 Intermediate Speaking and Listening** 3 Course Prerequisite: CHINESE 204 with a C or better, or WSU language placement exam score of 5 or higher. Early advanced training in speaking, reading and writing on abstract topics in Chinese; continued development of listening comprehension skills. Taught in Chinese. Cooperative: Open to UI degree-seeking students.
- 308 Intermediate Grammar and Writing** 3 Course Prerequisite: CHINESE 204 with a C or better, or WSU language placement exam score of 5 or higher. Writing practice in the language and active review of grammar. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.
- 311 [M] 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).
- 322 [DIVR] Ecology in East Asian Cultures** 3 Major ecological issues in East Asia through cultural representations, and analysis of their implications to the U.S. (Crosslisted course offered as ASIA 322, CHINESE 322, HUMANITY 322, JAPANESE 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 306, 307, or 308 with a 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 306, 307, or 308 with a 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 306, 307, or 308 with a 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 [HUM] 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.
- 110 [DIVR] Introduction to Global Film 3** Taught in English. An introduction to the study of global film, situating stories and cinematic features within cultural contexts.
- 120 [HUM] 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 [HUM] 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 Global Issues, Regional Realities 3** Introduction to the study of interconnections of global and local issues and themes; universalizing and particularizing tendencies in contemporary societies. 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. 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.
- 370 Aztec, Mayan, and Incan Mythology 3** A critical cultural journey through stories, myths, and other beliefs attributed to the three main indigenous groups conquered by Spaniards; taught in English.
- 371 Norse Mythology 3** Scandinavian/ Germanic mythology: the pantheon, the myths, and the people; stories of the Norsemen who have had a broad influence on the English world and language.
- 372 South Asian Mythology 3** Literary, cultural, traditional, and religious aspects of South Asia myths, folktales, and legends.
- 373 Chinese Mythology 3** Examination of distinctive mythical stories in oral, literature, and classical tradition and their impact on modern Chinese culture, values, social customs, religious beliefs, philosophical ideas, and political and historical insights. Taught in English.
- 380 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. 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 [CAPS] Advanced Topics in Global Cinema 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: One [HUM]; one [ARTS]; junior standing. Taught in English. Analysis of cinematography and culture in film to reveal how societies respond to contemporary issues in a global context.
- 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.
- 441 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. Credit not granted for both FOR LANG 441 and 541.
- 480 Special Topics: Study Abroad V 1-6** May be repeated for credit; cumulative maximum 6 hours. 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. Credit not granted for both FOR LANG 441 and 541.
- 560 Seminar in Scholarly Methodology 3** 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, or WSU language placement exam score of 2 or higher. 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.

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. S, F grading.

203 Third Semester 4 Course Prerequisite: FRENCH 102 with a C or better, or WSU language placement exam score of 3 or higher. Grammar review and further development of speaking, listening, reading, and writing skills. Not open to native speakers except with permission.

204 Fourth Semester 4 Course Prerequisite: FRENCH 203 with a C or better, or WSU language placement exam score of 5 or higher. Continued practice in spoken and written language; selected texts in a cultural context. Not open to native speakers except with permission.

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. S, F grading.

305 Intermediate Conversation II 1 May be repeated for credit; cumulative maximum 4 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. S, F grading.

306 Intermediate Reading and Translation 3 Course Prerequisite: FRENCH 204 with a C or better, or WSU language placement exam score of 5 or higher. Vocabulary building, contrastive English-French expressions, development of skills to increase reading speed and fluency.

307 Intermediate Speaking and Listening 3 Course Prerequisite: FRENCH 204 with a C or better, or WSU language placement exam score of 5 or higher. Systematic development of speaking and listening proficiency; emphasis on pronunciation and phonetics. Not open to native speakers except with permission.

308 [M] Intermediate Grammar and Writing 3 Course Prerequisite: FRENCH 204 with a C or better, or WSU language placement exam score of 5 or higher. Writing practice in the language and active review of grammar. Not open to native speakers except with permission.

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 [HUM] [M] French/Francophone Culture 3 Course Prerequisite: FRENCH 306, 307, or 308. Contemporary French and Francophone culture studied through history, arts, and current events. Taught in French.

321 L'Art de Vivre in Paris 3 May be repeated for credit. Course Prerequisite: French 204. Summer faculty-led study abroad in Paris; combines lecture and cultural excursions. 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 [COMM] Advanced French for the Professions 3 Course Prerequisite: FRENCH 306, 307, or 308 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.

362 French for Design and Merchandising 3 Course Prerequisite: FRENCH 306, 307, or 308 with a C or better. Exploration of the world of French fashion with emphasis on the development of applicable language skills and cultural knowledge; taught in French.

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: 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. French majors will complete academic work requirements in the target language. 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 [CAPS] 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, or WSU language placement exam score of 2 or higher. Continued development of basic skills in speaking, listening, reading, and writing. Not open to native speakers except with permission.

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 [HUM] Germanic Culture 3 Taught in English. The cultural development of the Germanic peoples to 1990.

180 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. S, F grading.

203 Third Semester 4 Course Prerequisite: GERMAN 102 with a C or better, or WSU language placement exam score of 3 or higher. Further development of speaking, listening, reading, and writing skills. Not open to native speakers except with permission.

204 Fourth Semester 4 Course Prerequisite: GERMAN 203 with a C or better, or WSU language placement exam score of 5 or higher. Continued practice in spoken and written language; selected texts in a cultural context. Not open to native speakers except with permission.

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. S, F grading.

305 Intermediate Conversation II 1 May be repeated for credit; cumulative maximum 4 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 [COMM] Intermediate Speaking and Listening 3 Course Prerequisite: GERMAN 204 with a C or better, or WSU language placement exam score of 5 or higher. Systematic development of speaking and listening proficiency; emphasis on pronunciation and phonetics. Not open to native speakers except with permission.

308 [M] Intermediate Grammar and Writing 3 Course Prerequisite: GERMAN 204 with a C or better, or WSU language placement exam score of 5 or higher. Writing practice in the language and active review of grammar. Not open to native speakers except with permission. 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 [HUM] German Culture 3 Course Prerequisite: GERMAN 307 or GERMAN 308. Introduction to German culture. Taught in German. Cooperative: Open to UI degree-seeking students.

321 Germanic Empires, Peoples, Places 3 Course Prerequisite: GERMAN 204 with a C or better or equivalent proficiency. Introduction to German and/or Austrian culture. Taught on-site as part of a faculty-led study abroad summer program to Germany and/or Austria.

350 Introduction to German Literature 3 Course Prerequisite: GERMAN 307 or GERMAN 308. Survey of masterpieces of German literature. Taught in German.

361 [COMM] German for the Professions 3 Course Prerequisites: GERMAN 307 or 308 with a C or better. Language and intercultural skills necessary for effective oral and written communication in professional settings in German-speaking countries. Taught in German.

380 Special Topics: Study Abroad V 1-6 May be repeated for credit; cumulative maximum 6 hours. 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.

420 [CAPS] Socio-Cultural History of the German Language 3 Course Prerequisite: Junior standing. Historical survey of the German language, observing domestic and foreign societal influences, considering present and future language directions.

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) Course Prerequisite: ITALIAN 101 with a grade of C or better, or WSU language placement exam score of 2 or higher. Continued development of basic skills in speaking, listening, reading and writing. Not open to native speakers except with permission. 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. S, F grading.

203 Third Semester 4 Course Prerequisite: ITALIAN 102 with a C or better, or WSU language placement exam score of 3 or higher. Continuation of ITALIAN 102; grammar review, further development of speaking, reading, and writing skills. Not open to native speakers except with permission. Cooperative: Open to UI degree-seeking students.

204 Fourth Semester 4 Course Prerequisite: ITALIAN 203 with a C or better, or WSU language placement exam score of 5 or higher. Continuation of ITALIAN 203; grammar review; 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 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. 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.
- 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, or WSU language placement exam score of 2 or higher. Continued development of basic skills in speaking, listening, reading, and writing. Not open to native speakers except with permission.
- 105 Elementary Conversation 1 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 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 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 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.

203 Third Semester 4 (3-2) Course Prerequisite: JAPANESE 102 with a grade of C or better, or WSU language placement exam score of 3 or higher. 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, or WSU language placement exam score of 5 or higher. 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 4 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 Course Prerequisite: JAPANESE 204 with a C or better, or WSU language placement exam score of 5 or higher. Vocabulary building, contrastive English-Japanese expressions, development of skills of increase reading speed and fluency. Not open to native speakers except with permission.

307 Intermediate Speaking and Listening 3 Course Prerequisite: JAPANESE 204 with a C or better, or WSU language placement exam score of 5 or higher. Systematic development of speaking and listening proficiency; emphasis on pronunciation and phonetics. Not open to native speakers except with permission.

308 Intermediate Grammar and Writing 3 Course Prerequisite: JAPANESE 204 with a C or better, or WSU language placement exam score of 5 or higher. Writing practice in the language and active review of grammar. Not open to native speakers except with permission.

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).

322 [DIVR] Ecology in East Asian Cultures 3 Major ecological issues in East Asia through cultural representations, and analysis of their implications to the U.S. (Crosslisted course offered as ASIA 322, CHINESE 322, HUMANITY 322, JAPANESE 322).

361 Advanced Japanese for the Professions 3 Course Prerequisite: JAPANESE 306, 307, or 308 with a C or better. 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. S, F grading.

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.

KOREAN

KOREAN

- 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: KOREAN 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.
- 203 Third Semester 4 (3-2)** Course Prerequisite: KOREAN 102 with a grade of C or better. Further development of speaking, listening, reading, and writing. Not open to native speakers except with permission.
- 204 Fourth Semester 4 (3-2)** Course Prerequisite: KOREAN 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.

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. 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. S, F grading.

305 Intermediate Conversation II 1 May be repeated for credit; cumulative maximum 4 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. 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. 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, or WSU language placement exam score of 2 or higher. Continued development of basic skills in speaking, listening, reading, and writing. Not open to native speakers except with permission.

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. S, F grading.

203 Third Semester 4 Course Prerequisite: SPANISH 102 with a C or better, or WSU language placement exam score of 3 or higher. Further development of speaking, listening, reading, and writing skills. Not open to native speakers except with permission.

204 Fourth Semester 4 Course Prerequisite: SPANISH 203 with a C or better, or WSU language placement exam score of 5 or higher. Continued practice in spoken and written language; selected texts in a cultural context. Not open to native speakers except with permission.

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.

- 208 Spanish for Heritage Speakers** 4 Course
Prerequisite: By instructor permission. Formal aspects of basic grammar combined with a strong writing component for language skills reinforcement in writing and speaking. For heritage/native speakers only.
- 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. S, F grading.
- 305 Intermediate Conversation II** 1 May be repeated for credit; cumulative maximum 4 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 Course
Prerequisite: SPANISH 204 with a C or better, or WSU language placement exam score of 5 or higher. Vocabulary building, contrastive English-Spanish expressions, development of skills to increase reading speed and fluency.
- 307 Intermediate Speaking and Listening** 3 Course
Prerequisite: SPANISH 204 with a C or better, or WSU language placement exam score of 5 or higher. Systematic development of speaking and listening proficiency; emphasis on pronunciation and phonetics. Not open to native speakers except with permission.
- 308 Intermediate Grammar and Writing** 3 Course
Prerequisite: SPANISH 204 with a C or better, or WSU language placement exam score of 5 or higher. Writing practice in the language and active review of grammar. Not open to native speakers except with permission.
- 310 [ARTS] Peninsular Spanish Film** 3 Course
Prerequisite: SPANISH 306, 307, or 308. Study of important Spanish films. Taught in Spanish.
- 311 [ARTS] 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 [DIVR] Latin American Cultures** 3 Course
Prerequisite: SPANISH 306, 307, or 308. Study of Latin American culture. Taught in Spanish.
- 350 [ARTS] 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 [ARTS] 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 306, 307, or 308 with a 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 306, 307, or 308 with a 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 306, 307, or 308 with a 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 306, 307, or 308 with a 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 306, 307, or 308 with a 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. 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 [CAPS] [M] Cultural Topics** 3 Course
Prerequisite: Junior standing. Variable content on Peninsular and/or Latin American cultural topics, including US Latino Societies. Taught in English.
- 430 Masterpieces in Spanish Literature** 3 Course
Prerequisite: Junior standing. Taught in English. Variable topic seminar on Spanish literature.
- 450 [CAPS] [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; junior standing. 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. 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.
- 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 Materials Science and Engineering

materials.wsu.edu

French Administration, Room 324
509-335-8231

Professors, A. Bandyopadhyay, S. Bose, A. E. Clark, G. S. Collins, I. Dutta, D. P. Field, Y. Gupta, K. W. Hipps, Y. Lin, U. Mazur, J. McCloy, M. D. McCluskey, M. McLarty, M. S. Mesarovic, M. G. Norton, M. P. Wolcott, C. S. Yoo, J. W. Zhang, W. Zhong; Associate Professors, S. Banerjee, S. Beckman, J. A. Brozik, S. L. Dexheimer, K. Englund, Y. Gu, J. Leachman, Q. Li, L. Scudiero, V. Yadama; Assistant Professors, N. Boddeti, B. Collins, A. Gozen, X. Guo, D. Lee, M. Song, D. Wu, Q. 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). Cooperative: Open to UI degree-seeking students.

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 Theory of Plasticity and its Physical Foundations 3 Phenomenological plasticity and viscoplasticity of polycrystalline metals and alloys, polymers and granular media; deformation mechanisms; dislocation mechanics and interactions; dislocation motion; slip and climb; crystal plasticity; size effects and gradient models. (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). Cooperative: Open to UI degree-seeking students.

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. Cooperative: Open to UI degree-seeking students.

524 Glass Science and Technology 3 Glass composition design, processing, and properties; engineering and technology related to glasses and glass-ceramics; case studies in applied glass science and characterization. (Crosslisted course offered as MSE 524, MATSE 524.) Recommended preparation: Basic knowledge in materials science and manufacturing.

531 Nanoscience and Nanotechnology 3 Overview of nanoscience and nanotechnology and their biomedical, energy, and environmental applications; structures, properties, synthesis of nanoscale materials and fabrication of nanostructured devices. (Crosslisted course offered as MSE 531, MATSE 531, ME 531.) Recommended preparation: Basic knowledge of materials, engineering, chemistry.

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. Course Prerequisite: Admitted to the Materials Science or the Materials Science and Engineering PhD program. 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 and Statistics

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The Department of Mathematics and Statistics 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 six options: actuarial science, applied mathematics, secondary mathematics teaching with certification, secondary mathematics teaching without certification, theoretical mathematics, and statistics. 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. A new, interdisciplinary undergraduate degree in data analytics is also available.

We expect that students graduating with a mathematics degree will be able to: 1) use their mathematics and statistics 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 and statistics, 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 Statistical Science. 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. 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, MS Mathematics – Teaching Option, and a MS in Statistics. A graduate certificate in Teaching College Mathematics is also available.

Preparation for Graduate Study

As preparation for work toward an advanced degree in mathematics or statistics, a student should have completed the equivalent of an undergraduate degree in mathematics, statistics, or a related field. 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 Graduate Coordinator (mathstat.gradinfo@lists.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.

ACTUARIAL SCIENCE OPTION (120 CREDITS)

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 13 core courses and a minimum of 4 additional 300-400-level MATH courses specified by a chosen option. Options include: Actuarial Science, Applied Mathematics, Theoretical Mathematics. Courses required for the major may not be taken pass/fail, and a 2.0 minimum GPA is required.

Admission to the Major Requirements

- Applications for admission to the major 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.
- Applications are evaluated, and admission decided, by a faculty committee.
- Applicants must have a cumulative GPA of at least 2.0.
- The mathematics core consists of MATH 171, 172, and 220. These courses (or their equivalent for transfer students) must be completed before application.
- Students with at least a 2.5 GPA in the mathematics core will be admitted automatically. Those with less than a 2.0 GPA in the mathematics core will normally not be admitted. Others will be considered on a case-by-case basis.

- Appeals related to admission decisions are considered by the department chairperson.
- Students who are denied admission may reapply after completing at least 12 more credits, whereupon decisions are based on grades in mathematics, science, and computer science courses; cumulative GPA and grade patterns; and a personal interview.
- Admitted students whose cumulative GPA or GPA in MATH courses numbered 171 and above falls below 2.0 for two consecutive semesters, or who are academically deficient, are subject to release from the major.
- Applications for readmission are handled in the same manner as admission applications for those previously denied.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] with lab	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
CPT S 121	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 172 or 182	4
MATH 220 or 230	2 or 3

Second Year

<i>First Term</i>	<i>Credits</i>
Humanities [HUM]	3
MATH 273 or 283	2
MATH 301	3
MATH 405	3
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1

<i>Second Term</i>	<i>Credits</i>
ECONS 102 [SSCI]	3
MATH 315	3
STAT 360	3
Electives ¹	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
MATH 300 [M]	3
MATH 420	3
STAT 443	3
Foreign Language, if needed, and/or Electives ¹	6

<i>Second Term</i>	<i>Credits</i>
ENGLISH 402 [WRTG] [M]	3
STAT 412 or 423	3
STAT 446	3
Foreign Language, if needed, and/or Electives ¹	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
MATH 401 [M]	3
MATH 416	3
Electives ¹	9

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
MATH 464 [CAPS]	3

STAT 447	3	MATH 220 or 230	2 or 3
Electives ¹	6	Social Sciences [SSCI]	3
Exit Interview			

¹ Suggested elective courses for students pursuing Actuarial Science Option include ACCTG 230 and 231, FIN 325 and 350, and MATH 448, which provide additional background for actuarial exams. Note: A minor in Business Administration is required to take FIN 325 and 350.

**APPLIED OPTION
(120 CREDITS)**

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 13 core courses and a minimum of 4 additional 300-400-level MATH courses specified by a chosen option. Options include: Actuarial Science, Applied Mathematics, Theoretical Mathematics. Courses required for the major may not be taken pass/fail, and a 2.0 minimum GPA is required.

Admission to the Major Requirements

- Applications for admission to the major 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.
- Applications are evaluated, and admission decided, by a faculty committee.
- Applicants must have a cumulative GPA of at least 2.0.
- The mathematics core consists of MATH 171, 172, and 220. These courses (or their equivalent for transfer students) must be completed before application.
- Students with at least a 2.5 GPA in the mathematics core will be admitted automatically. Those with less than a 2.0 GPA in the mathematics core will normally not be admitted. Others will be considered on a case-by-case basis.
- Appeals related to admission decisions are considered by the department chairperson.
- Students who are denied admission may reapply after completing at least 12 more credits, whereupon decisions are based on grades in mathematics, science, and computer science courses; cumulative GPA and grade patterns; and a personal interview.
- Admitted students whose cumulative GPA or GPA in MATH courses numbered 171 and above falls below 2.0 for two consecutive semesters, or who are academically deficient, are subject to release from the major.
- Applications for readmission are handled in the same manner as admission applications for those previously denied.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] with lab	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
<i>Second Term</i>	<i>Credits</i>
CPT S 121	4
HISTORY 105 [ROOT]	3
MATH 172 or 182	4

Second Year

<i>First Term</i>	<i>Credits</i>
Humanities [HUM]	3
MATH 273 or 283	2
MATH 301	3
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1
Foreign Language, if needed, or Electives	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
MATH 315	3
MATH 398	1
STAT 360	3
Foreign Language, if needed, or Electives	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
MATH 300 [M]	3
MATH 420	3
Applied Mathematics Option Course ¹	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 402 [WRTG] [M]	3
MATH 421 [M]	3
Applied Mathematics Option Course ¹	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
MATH 401 [M]	3
Applied Mathematics Option Course ¹	3
Electives	9

<i>Second Term</i>	<i>Credits</i>
MATH 402 [M]	3
MATH 464 [CAPS]	3
Applied Mathematics Option Course ¹	3
Electives	6
Exit Interview	

¹ Applied Mathematics Required Option Courses:
a) MATH 364 and two of MATH 325, 416, 448, 453, 456, or 466; or b) CPT S 122, MATH 364, 448, and one of MATH 416, 440, or 466; or c) three of MATH 340, 415, 440, 448, and 486.

**SECONDARY TEACHING OPTION WITH
CERTIFICATION
(124 CREDITS)**

Mathematics Major Core Requirements

Courses required for the major may not be taken pass/fail, and a 2.0 minimum GPA is required.

Admission to the Major Requirements

Applications for admission to the major 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.

Applications are evaluated, and admission decided, by a faculty committee.

Applicants must have a cumulative GPA of at least 2.0.

The mathematics core consists of MATH 171, 172, and 220. These courses (or their equivalent for transfer students) must be completed before application.

Students with at least a 2.5 GPA in the mathematics core will be admitted automatically. Those with less than a 2.0 GPA in the mathematics core will normally not be admitted. Others will be considered on a case-by-case basis.

Appeals related to admission decisions are considered by the department chairperson.

Students who are denied admission may reapply after completing at least 12 more credits, whereupon decisions are based on grades in mathematics, science, and computer science courses; cumulative GPA and grade patterns; and a personal interview.

Admitted students whose cumulative GPA or GPA in MATH courses numbered 171 and above falls below 2.0 for two consecutive semesters, or who are academically deficient, are subject to release from the major.

Applications for readmission are handled in the same manner as admission applications for those previously denied.

Teaching and Learning Requirements

Secondary education teacher certification requires a consultation with and advisor from the Department of Teaching and Learning for approval and sequencing of TCH LRN courses.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
HISTORY 105 [ROOT]	3
MATH 172	4
MATH 220	2
PSYCH 105 [SSCI]	3
Foreign Language, if necessary	0-4

Second Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 201 [WRTG] or 301 [WRTG]	3
MATH 216	3
MATH 273	2
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1
Foreign Language, if necessary	0-4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
MATH 301	3
MATH 315	3
MATH 398	1
TCH LRN 301	3
Complete Writing Portfolio	

<i>Third Term</i>	<i>Credits</i>
(Summer) TCH LRN 317	2

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3

MATH 300 [M]	3
MATH 330	3
MATH 403	3
300-400-level MATH Elective	3

<i>Second Term</i>	
Diversity [DIVR]	3
MATH 320	3
STAT 360 or 443	3
300-400-level MATH Elective	3

Fourth Year

<i>First Term</i>	
MATH 401 [M]	3
MATH 431	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

<i>Second Term</i>	
ED PSYCH 468	3
MATH 432 [CAPS]	3
TCH LRN 467 [M]	3
TCH LRN 469	2
TCH LRN 470	3

Fifth Year

<i>First Term</i>	
TCH LRN 415 (Student Teaching)	16
Exit Interview	

**SECONDARY TEACHING OPTION
WITHOUT CERTIFICATION
(120 CREDITS)**

Mathematics Major Core Requirements

Courses required for the major may not be taken pass/fail, and a 2.0 minimum GPA is required.

Admission to the Major Requirements

Applications for admission to the major 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.

Applications are evaluated, and admission decided, by a faculty committee.

Applicants must have a cumulative GPA of at least 2.0.

The mathematics core consists of MATH 171, 172, and 220. These courses (or their equivalent for transfer students) must be completed before application.

Students with at least a 2.5 GPA in the mathematics core will be admitted automatically. Those with less than a 2.0 GPA in the mathematics core will normally not be admitted. Others will be considered on a case-by-case basis.

Appeals related to admission decisions are considered by the department chairperson.

Students who are denied admission may reapply after completing at least 12 more credits, whereupon decisions are based on grades in mathematics, science, and computer science courses; cumulative GPA and grade patterns; and a personal interview.

Admitted students whose cumulative GPA or GPA in MATH courses numbered 171 and above falls below 2.0 for two consecutive semesters, or who are academically deficient, are subject to release from the major.

Applications for readmission are handled in the same manner as admission applications for those previously denied.

First Year

<i>First Term</i>	
Biological Sciences [BSCI] with lab	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	
Arts [ARTS]	3
ENGLISH 101 [WRTG]	3
MATH 172	4
MATH 220	2
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>	
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
ENGLISH 201 [WRTG] or 301 [WRTG]	3
MATH 216	3
MATH 273	2
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1

<i>Second Term</i>	
Diversity [DIVR]	3
MATH 301	3
MATH 315	3
MATH 398	1
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	
MATH 300 [M]	3
MATH 330	3
MATH 403	3
Foreign Language, if necessary, and/or Electives	6

<i>Second Term</i>	
MATH 320 [M]	3
STAT 360 or 443	3
300-400-level MATH Electives ¹	3
Foreign Language, if necessary, and/or Electives	6

Fourth Year

<i>First Term</i>	
MATH 401 [M]	3
MATH 431	3
Electives	9

<i>Second Term</i>	
MATH 432 [CAPS]	3
300-400-level MATH Electives ¹	3
300-400-level Electives	3
Electives	6
Exit Interview	

¹ MATH Elective courses include any 3-credit 300-400-level MATH courses not required to fulfill a major requirement.

**STATISTICS OPTION
(120 CREDITS)**

Mathematics Major Core Requirements

Courses required for the major may not be taken pass/fail, and a 2.0 minimum GPA is required.

Admission to the Major Requirements

Applications for admission to the major 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.

Applications are evaluated, and admission decided, by a faculty committee.

Applicants must have a cumulative GPA of at least 2.0.

The mathematics core consists of MATH 171, 172, and 220. These courses (or their equivalent for transfer students) must be completed before application.

Students with at least a 2.5 GPA in the mathematics core will be admitted automatically. Those with less than a 2.0 GPA in the mathematics core will normally not be admitted. Others will be considered on a case-by-case basis.

Appeals related to admission decisions are considered by the department chairperson.

Students who are denied admission may reapply after completing at least 12 more credits, whereupon decisions are based on grades in mathematics, science, and computer science courses; cumulative GPA and grade patterns; and a personal interview.

Admitted students whose cumulative GPA or GPA in MATH courses numbered 171 and above falls below 2.0 for two consecutive semesters, or who are academically deficient, are subject to release from the major.

Applications for readmission are handled in the same manner as admission applications for those previously denied.

First Year

<i>First Term</i>	
Biological Sciences [BSCI] with lab	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
Social Sciences [SSCI]	3

<i>Second Term</i>	
Arts [ARTS]	3
CPT S 121	4
HISTORY 105 [ROOT]	3
MATH 172 or 182	4
MATH 220 or 230	2-3

Second Year

<i>First Term</i>	
Humanities [HUM]	3
MATH 273 or 283	2-3
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1
STAT 360	3
Electives	3

<i>Second Term</i>	
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Diversity [DIVR]	3
MATH 301	3

STAT 412 or 423	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
MATH 300 [M]	3
MATH 420	3
STAT 436	3
Foreign Language, if needed, and/or Electives	6

<i>Second Term</i>	<i>Credits</i>
ENGLISH 402 [WRTG], or [COMM] [WRTG]	3
STAT 419	3
STAT Option Course ¹	3
Foreign Language, if needed, and/or Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
MATH 401 [M]	3
MATH 416	3
STAT 443	3
STAT Option Course ¹	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
MATH 464 [CAPS]	3
STAT 456	3
STAT Option Course ¹	3
Electives	6
Exit Interview	

¹ Statistics Option (9 credits) Courses must be selected from STAT 380, 410, 422, 446, 447.

THEORETICAL OPTION (120 CREDITS)

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 13 core courses and a minimum of 4 additional 300-400-level MATH courses specified by a chosen option. Options include: Actuarial Science, Applied Mathematics, Theoretical Mathematics. Courses required for the major may not be taken pass/fail, and a 2.0 minimum GPA is required.

Admission to the Major Requirements

- Applications for admission to the major 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.
- Applications are evaluated, and admission decided, by a faculty committee.
- Applicants must have a cumulative GPA of at least 2.0.
- The mathematics core consists of MATH 171, 172, and 220. These courses (or their equivalent for transfer students) must be completed before application.
- Students with at least a 2.5 GPA in the mathematics core will be admitted automatically. Those with less than a 2.0 GPA in the mathematics

core will normally not be admitted. Others will be considered on a case-by-case basis.

- Appeals related to admission decisions are considered by the department chairperson.
- Students who are denied admission may reapply after completing at least 12 more credits, whereupon decisions are based on grades in mathematics, science, and computer science courses; cumulative GPA and grade patterns; and a personal interview.
- Admitted students whose cumulative GPA or GPA in MATH courses numbered 171 and above falls below 2.0 for two consecutive semesters, or who are academically deficient, are subject to release from the major.
- Applications for readmission are handled in the same manner as admission applications for those previously denied.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] with lab	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
CPT S 121	4
HISTORY 105 [ROOT]	3
MATH 172 or 182	4
MATH 220 or 230	2 or 3
Social Sciences [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Foreign Language, if needed, or Electives	4
Humanities [HUM]	3
MATH 273 or 283	2
MATH 301	3
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
MATH 315	3
MATH 398	1
STAT 360	3
Foreign Language, if needed, or Electives	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
MATH 300 [M]	3
MATH 420	3
Theoretical Mathematics Option Course ¹	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 402 [WRTG] [M]	3
MATH 421 [M]	3
Theoretical Mathematics Option Course ¹	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
MATH 401 [M]	3
Theoretical Mathematics Option Course ¹	3
Electives	9

<i>Second Term</i>	<i>Credits</i>
MATH 402 [M]	3
MATH 464 [CAPS]	3
Electives	9
Exit Interview	

¹Theoretical Mathematics Required Option Courses: Three courses from MATH 302, 325, 403, 415, 441, or 453.

Minors

Mathematics

A mathematics minor requires a minimum of 19 hours including MATH 171, 172, and one of 220 or 273. An additional 9 hours from a combination of 300-400-level mathematics credits or STAT 360, 370, 423, 443, 446, and 447 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. MATH 303, 330, 351, 398, 425, and 431 do not count toward the minor.

Statistics

The minor in statistics requires a minimum of 18 credit hours. 9 hours of upper-division work must be 300-400-level and 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. Required courses include STAT 360 or 370, STAT 412, 423 or 430; STAT 443, and 9 additional hours selected from STAT 410, 419, 422 (UIdaho), 428 (UIdaho), 436, 446, 447, and 456. Students majoring in mathematics under the Actuarial Sciences Option must take STAT 456.

Certificates

Certificate in Quantitative Biology

The certificate in Quantitative Biology requires 17 credits. Students must earn a grade of C or higher in each course and no P, F or S, F graded course work may be applied to the certificate.

Requirements: MATH/BIOLOGY 340; 6 credits of mathematics (MATH 172 or higher) and/or statistics (300-400-level), of which 3 credits must be taken in residence at Washington State University; 8 credits of 300-400-level BIOLOGY courses of which 3 credits must be taken in residence at Washington State University.

Description of Courses

MATHEMATICS

MATH

100 Basic Mathematics 2 Course Prerequisite: A minimum ALEKS math placement score of 1%. Review of basic arithmetic and elementary algebra. No credit earned toward degree. S, F grading.

- 101 Intermediate Algebra 3** Fundamental algebraic operations and concepts. No credit earned toward degree.
- 103 Algebra Methods and Introduction to Functions 3** Course Prerequisite: MATH 100 with an S, MATH 101 with a C or better, or a minimum ALEKS math placement score of 40%. 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, 103, or 251, each with a C or better, or STAT 212 with a C or better, or a minimum ALEKS math placement score of 45%. 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 a minimum ALEKS math placement score of 70%. Graphs, properties and applications of polynomial, rational, exponential and logarithmic functions.
- 108 Trigonometry 2** Course Prerequisite: MATH 106 with a C or better. Graphs, properties and applications of trigonometric functions.
- 110 Mathematics Acceleration 1** (0-3) Course Prerequisite: A minimum ALEKS math placement score of 25%. Individualized instruction on mathematical skills to enhance the mathematical background necessary for success in one of MATH 103, 106, or 171. 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 a minimum ALEKS math placement score of 80%. Enrollment not allowed if credit already earned for MATH 171 or 202 except by department consent. Differential and integral calculus with emphasis on life science applications. By department consent, credit may be allowed for two of MATH 140, 171, or 202.
- 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 a minimum ALEKS math placement score of 83%. Enrollment not allowed if credit already earned for MATH 140 or 202 except by department consent. Differential and integral calculus of one variable with associated analytic geometry. By department consent, credit may be allowed for two of MATH 140, 171, or 202.
- 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. Credit not granted for both MATH 172 and 182.
- 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. Credit not granted for both MATH 172 and 182.
- 201 Mathematics for Business and Economics 3** Course Prerequisite: MATH 101 with a C or better, MATH 103 with a C or better, or a minimum ALEKS math placement score of 65%. Mathematical analysis using polynomial, exponential, and logarithmic functions; linear systems, linear programming and mathematics of finance, for business/economic applications and modeling.
- 202 [QUAN] Calculus for Business and Economics 3** Course Prerequisite: MATH 106 with a C or better, MATH 201 with a C or better, or a minimum ALEKS math placement score of 80%. Enrollment not allowed if credit already earned for MATH 140 or 171 except by department consent. Differential calculus of the polynomial, exponential, and logarithmic functions; focus on unconstrained and constrained optimization, single and partial differentiation. By department consent, credit may be allowed for two of MATH 140, 171, or 202.
- 216 Discrete Structures 3** Course Prerequisite: MATH 108 with a C or better, OR MATH 140, 171, 172, 182, or 202 (concurrent enrollment also allowed). Discrete mathematics, trees, graphs, elementary logic, and combinatorics with application to computer science. Recommended preparation: Programming course.
- 220 Introductory Linear Algebra 2** Course Prerequisite: MATH 171 or concurrent enrollment. Enrollment not allowed if credit already earned for MATH 225 or 230. Solving linear systems, matrices, determinants, subspaces, eigenvalues, orthogonality. Credit not granted for more than one of MATH 220, 225, and 230.
- 225 Linear Algebra with Modern Applications 3** Course Prerequisite: MATH 106 or higher. Enrollment not allowed if credit already earned for MATH 220 or 230. Solving linear systems, matrices, determinants, subspaces, eigenvalues, orthogonality, machine learning, AI, computer graphics, and economic models. Credit not granted for more than one of MATH 220, 225, and 230. (Crosslisted course offered as MATH 225, DATA 225.)
- 230 Honors Introductory Linear Algebra 3** Course Prerequisite: MATH 171 or concurrent enrollment. Enrollment not allowed if credit already earned for MATH 220 or 225. An introduction to linear algebra with an emphasis on conceptual development. Credit not granted for more than one of MATH 220, 225, and 230.
- 251 Fundamentals of Elementary Mathematics I 3** (2-2) Course Prerequisite: MATH 101, 103, 105, 106, or 201, each with a C or better, or STAT 212 with a C or better, or a minimum 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. Credit not granted for both MATH 273 and 283.
- 283 Honors Calculus III 2** Course Prerequisite: MATH 182 or by department permission. Multivariable calculus with emphasis on conceptual development and problem solving. Credit not granted for both MATH 273 and 283.
- 300 Mathematical Computing 3** Course Prerequisite: MATH 220, 225, or 230; admitted to the major in Mathematics. Examination of some current computer software for solving mathematical problems. Recommended preparation: MATH 315.
- 301 Introduction to Mathematical Reasoning 3** Course Prerequisite: MATH 220, 225, or 230, each 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 252. 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 or 283, each with a C or better; and MATH 220, 225, or 230, each 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, 225, or 230, each with a C or better; MATH 301. Algebra as a deductive system; number systems; groups, rings, and fields.

- 325 Elementary Combinatorics** 3 Course Prerequisite: MATH 220, 225, or 230, each 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.
- 352 Probability and Data Analysis for Middle School Teachers** 3 Course Prerequisite: MATH 251 and 252; or STAT 360. Probability and statistics in relation to middle school mathematics and real world problems through visualization, hands-on activities, and technology.
- 364 Principles of Optimization** 3 Course Prerequisite: MATH 202, 220, 225, or 230. Algebra of linear inequalities; duality; graphs, transport networks; linear programming; special algorithms; nonlinear programming; selected applications.
- 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 Euclidean and Non-Euclidean Geometry** 3 Course Prerequisite: MATH 301 with a C or better. Geometry as a deductive system of logic; postulational systems; projective and non-Euclidean geometries.
- 405 Introduction to Financial Mathematics** 3 Course Prerequisite: MATH 172 or 182. Introduction to financial mathematics including the basics of annuities, stocks, bonds, and financial derivatives.
- 415 Intermediate Differential Equations** 3 Course Prerequisite: MATH 315. Linear systems; qualitative theory (existence, uniqueness, stability, periodicity); boundary value problems; applications.
- 416 Numerical Simulations for Probabilistic Models** 3 Course Prerequisite: STAT 360; CPT S 121, CPT S 251, or MATH 300. Efficient generation of random variables; statistical analysis and validation techniques; variance reduction; Markov Chain Monte Carlo methods; applications include complex systems, financial models, and Bayesian computation. Credit not granted for both MATH 416 and MATH 516. Required preparation must include probability and statistics and programming experience. Cooperative: Open to UI degree-seeking students.
- 420 Linear Algebra** 3 Course Prerequisite: MATH 220, 225, or 230, each with a C or better; MATH 301 with a C or better. Vector spaces, linear transformations, diagonalizability, normal matrices, inner product spaces, orthogonality, orthogonal projections, least-squares, SVD.
- 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.
- 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).
- 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 531. Cooperative: Open to UI degree-seeking students.
- 432 [CAPS] 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.
- 440 Applied Mathematics I: PDEs** 3 Course Prerequisite: MATH 315. Applied partial differential equations; Fourier series; Bessel functions and Legendre polynomials as harmonics for disks and balls; Laplace, heat, and wave equations; separation of variables and D'Alambert's formula. Credit not granted for both MATH 440 and MATH 540. Required preparation must include differential equations. Cooperative: Open to UI degree-seeking students.
- 441 Applied Mathematics II: Complex Variables** 3 Course Prerequisite: MATH 315. Complex numbers and complex-valued functions of one complex variable; analytic functions and Cauchy-Riemann equations; differentiation and contour integration; Cauchy integral theorem; Taylor and Laurent series; residues; conformal mapping; applications to potential theory. Credit not granted for both MATH 441 and MATH 541. Required preparation must include differential equations. Cooperative: Open to UI degree-seeking students.
- 448 Numerical Analysis** 3 Course Prerequisite: MATH 315 with a C or better; one of CPT S 121, 131, or MATH 300, with a C or better. 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, MATH 548, CPT S 430, CPT S 530). Required preparation must include differential equations and a programming course.
- 453 Graph Theory** 3 Course Prerequisite: MATH 220, 225, or 230. Graphs and their applications, directed graphs, trees, networks, Eulerian and Hamiltonian paths, matrix representations, construction of algorithms. (Crosslisted course offered as MATH 453, MATH 553, CPT S 453, CPT S 553). Required preparation must include linear algebra. Recommended preparation: MATH 301. Cooperative: Open to UI degree-seeking students.
- 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). Credit not granted for more than one of STAT/MATH 456 or STAT 556. Recommended preparation: One 3-credit 400-level STAT or probability course.
- 464 [CAPS] 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. Recommended preparation: MATH 301.
- 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. Cooperative: Open to UI degree-seeking students.

- 486 Mathematical Methods in Natural Sciences** 3 Course Prerequisite: MATH 315. Introduction to mathematical modeling of natural processes; methods include dimensional and scaling analysis, perturbation theory, field theory of continuum mechanics, calculus of variations, and Markov chains; applications to physics, chemistry, biology, and engineering. Credit not granted for both MATH 486 and MATH 586. Required preparation must include differential equations. Cooperative: Open to UI degree-seeking students.
- 490 Topics in Mathematics** V 1-3 May be repeated for credit; cumulative maximum 9 hours. 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 1-3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: By instructor permission. 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. Cooperative: Open to UI degree-seeking students.
- 505 Abstract Algebra** 3 Groups, rings, fields, and homological algebra. Required preparation must include abstract algebra. Cooperative: Open to UI degree-seeking students.
- 507 Advanced Theory of Numbers** 3 May be repeated for credit; cumulative maximum 6 hours. Analytic and algebraic number theory. Cooperative: Open to UI degree-seeking students.
- 508 Advanced Mathematical Methods for Physics and Engineering** 3 Advanced treatment of applications using techniques from fundamental analysis, convexity, analytic function theory, asymptotics, and differential equations. Cooperative: Open to UI degree-seeking students.
- 511 Advanced Linear Algebra** 3 Spectral theory, Schur's theorem, normality, Jordan canonical forms, hermitian matrices, variational inequalities, matrix norms, eigenvalue localization, matrix perturbation theory. Required preparation must include second level undergraduate linear algebra. Cooperative: Open to UI degree-seeking students.
- 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 Numerical Simulations for Probabilistic Models** 3 Efficient generation of random variables; statistical analysis and validation techniques; variance reduction; Markov Chain Monte Carlo methods; applications include complex systems, financial models, and Bayesian computation. Credit not granted for both MATH 416 and MATH 516. Required preparation must include probability and statistics and programming experience. Cooperative: Open to UI degree-seeking students.
- 524 Algebraic Topology** 3 Algebraic techniques (groups, homomorphisms, etc) to study connectivity of spaces; topics include simplicial complexes, homology, relative homology, Meyer-Vietoris sequences, categories and functors, cohomology, and duality in manifolds. Recommended preparation: real analysis and abstract algebra.
- 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.
- 529 Computational Topology** 3 Topological techniques combined with algorithms to find structure in data; simplicial complexes from point clouds, algorithms for homology and persistent homology, mapper and topological data analysis, optimal homology problems. Recommended preparation: mathematical maturity at senior undergraduate level and some experience with computer programming.
- 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 531. Cooperative: Open to UI degree-seeking students.
- 532 Advanced Mathematical Thinking** 3 Course Prerequisite: Graduate standing in mathematics. Current theories about how humans learn to think mathematically at the advanced level. Cooperative: Open to UI degree-seeking students.
- 533 Teaching College Mathematics** 1 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Graduate standing in Mathematics or Statistical Science. 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. Cooperative: Open to UI degree-seeking students.
- 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. 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: STAT 530, 548, 556, or equivalent. Cooperative: Open to UI degree-seeking students.
- 540 Applied Mathematics I: PDEs** 3 Applied partial differential equations; Fourier series; Bessel functions and Legendre polynomials as harmonics on disks and balls; Laplace, heat, and wave equations; separation of variables and D'Alambert's formula. Credit not granted for both MATH 440 and MATH 540. Required preparation must include differential equations. Cooperative: Open to UI degree-seeking students.
- 541 Applied Mathematics II: Complex Variables** 3 Complex numbers and complex-valued functions of one complex variable; analytic functions and Cauchy-Riemann equations; differentiation and contour integration; Cauchy integral theorem; Taylor and Laurent series; residues; conformal mapping; applications to potential theory. Credit not granted for both MATH 441 and MATH 541. Required preparation must include differential equations. Cooperative: Open to UI degree-seeking students.

- 543 Stable Numerical Methods Using Orthogonality** 3 Computational methods for stabilizing difficult and ill-posed differential and integral equations problems by using systems of functions and regularization techniques; applications to forward and inverse problems; techniques include the use of wavelets and orthogonal polynomials. 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, singular value decomposition, and computation of eigenvalues and eigenvectors (Francis's algorithm). (Crosslisted course offered as MATH 544, CPT S 531). Required preparation must include numerical analysis. Cooperative: Open to UI degree-seeking students.
- 545 Numerical Analysis of Parabolic and Hyperbolic PDEs** 3 Numerical solutions of parabolic and hyperbolic partial differential equations with emphasis on finite difference methods; topics include: finite difference; stability, consistency, and convergence; shocks; conservation of forms. Required preparation must include numerical analysis. Cooperative: Open to UI degree-seeking students.
- 546 Numerical Analysis of Elliptic PDEs** 3 Numerical solutions of elliptic partial differential equations with emphasis on finite element methods; finite difference; 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, MATH 548, 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, MATH 553, CPT S 453, CPT S 553). Required preparation must include linear algebra. Recommended preparation: MATH 301. Cooperative: Open to UI degree-seeking students.
- 555 Topics in Combinatorics** 3 May be repeated for credit; cumulative maximum 6 hours. Combinatorics, generating functions, recurrence relations, inclusion-exclusion, coding theory; experimental design, graph theory. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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 Convex and Nonlinear Optimization** 3 Convex sets and functions; operations preserving convexity; linear, quadratic, and conic optimization; duality theory; unconstrained smooth optimization; interior point methods. Required preparation must include advanced multivariate calculus, and a programming language. Recommended preparation: Knowledge in linear optimization and numerical linear algebra. Cooperative: Open to UI degree-seeking students.
- 565 Nonsmooth Analysis and Optimization with Applications** 3 Course Prerequisite: MATH 564. Extended real-valued functions; continuity and convexity; subgradient, conjugate functions and optimality condition; alternating minimization; projected subgradient methods; alternating direction methods of multipliers; applications in statistical learning. Required preparation must include real analysis and command of a programming language. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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-credit 400-level probability course. Cooperative: Open to UI degree-seeking students.
- 569 Statistical Theory II** 3 Course Prerequisite: STAT 548 or MATH 568. Statistical inferences; estimation and testing hypotheses; regression analysis; sequential analysis and nonparametric methods. (Crosslisted course offered as STAT 549, MATH 569). Cooperative: Open to UI degree-seeking students.
- 570 Continuum Mechanics** 3 Unified presentation of principles common to all branches of solid and fluid mechanics; viscous fluids, elasticity, viscoelasticity, and plasticity. (Crosslisted course offered as ME 501, MATH 570.) Cooperative: Open to UI degree-seeking students.
- 571 Mathematical Foundations of Continuum Mechanics II** 3 Course Prerequisite: MATH 570. Continuation of MATH 570. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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). Cooperative: Open to UI degree-seeking students.
- 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 Methods in Natural Sciences** 3 Introduction to mathematical modeling of natural processes; methods include dimensional and scaling analysis, perturbation theory, field theory of continuum mechanics, calculus of variations, and Markov chains; applications to physics, chemistry, biology, and engineering. Credit not granted for both MATH 486 and MATH 586. Required preparation must include differential equations. Cooperative: Open to UI degree-seeking students.

- 587 Topics in Algebra and Linear Algebra V** 1-3 May be repeated for credit. Advanced topics in algebra and linear algebra. Recommended preparation: Two semesters of linear algebra and one semester of abstract algebra.
- 588 Topics in Computational Math V** 1-3 May be repeated for credit. Advanced topics in computational mathematics. Recommended preparation: one semester of numerical analysis.
- 589 Topics in Analysis V** 1-3 Advanced topics in mathematical analysis. Recommended preparation: one semester of graduate analysis.
- 590 Topics in Mathematics Education V** 1-3 May be repeated for credit; cumulative maximum 6 hours. Topics in mathematics education.
- 591 Seminar in Mathematical Biology** 1 May be repeated for credit; cumulative maximum 10 hours. Current research in mathematical biology. S, F grading.
- 592 Seminar in Analysis** 1 May be repeated for credit; cumulative maximum 10 hours. Current research in analysis. S, F grading.
- 593 Seminar in Combinatorics, Linear Algebra, and Number Theory** 1 May be repeated for credit; cumulative maximum 10 hours. Current research in combinatorics, linear algebra, and number theory. S, F grading.
- 594 Mathematics Education Seminar** 1 May be repeated for credit; cumulative maximum 10 hours. Current research in mathematics education. S, F grading.
- 597 Mathematics Instruction Seminar** 1 May be repeated for credit; cumulative maximum 5 hours. Introduction to the teaching of university mathematics. S, F grading.
- 599 Professional Development** 1 Development of application materials for jobs in academia, government, or private industry; practice interviews and oral presentations. 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. Course Prerequisite: Admitted to the Mathematics PhD program. 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 Statistical Thinking** 3 Course Prerequisite: MATH 101 with a C or better, MATH 103 with a C or better, or a minimum ALEKS math placement score of 45%. Scientific explanation; correlations and causality; presenting statistical evidence; graphical and numerical methods; chance and gambling; the bell-shaped distribution.
- 212 [QUAN] Introduction to Statistical Methods** 4 (3-2) Course Prerequisite: MATH 101, 103, 105, or 251, each with a C or better, or credit for MATH 106, 108, 140, 171, 201, 202, or a minimum ALEKS math placement score of 45%. Introduction to descriptive and inferential statistics: t-tests, chi-square tests, one-way ANOVA, simple linear regression and correlation.
- 360 Probability and Statistics** 3 Course Prerequisite: MATH 140, 171, or 202, each with a C or better, or MATH 172 or 182. Probability models, sample spaces, random variables, distributions, moments, comparative experiments, tests, correlation and regression in engineering applications. Credit not granted for both STAT 360 and 370. Cooperative: Open to UI degree-seeking students.
- 370 Introductory Statistics for Engineers** 3 Course Prerequisite: MATH 140, 171, or 202 with a C or better, or MATH 172 or 182. Probability axioms, probability models, random variables, expectation, confidence intervals, hypothesis testing, analysis of variance, control charts. Credit not granted for both STAT 360 and 370.
- 380 [M] Decision Making and Statistics** 3 Course Prerequisite: STAT 360 or 370. Concepts and methods of decision science using simple mathematical, statistical and computer based tools to solve complex problems for sound decision making.
- 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, 202, or graduate standing. 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.
- 419 Introduction to Multivariate Statistics** 3 Course Prerequisite: MATH 220 or 225; one 300-400-level STAT. Introductory course covering multidimensional data, multivariate normal distribution, principal components, factor analysis, clustering, and discriminant analysis.
- 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 granted for both STAT 423 and STAT 523. Credit not normally granted for both STAT 423 and 430. Recommended preparation: One 3-credit 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.
- 435 [M] Statistical Modeling for Data Analytics** 3 (2-2) Course Prerequisite: STAT 360. Multiple linear regression with model selection, dealing with multicollinearity, assessing model assumptions, the LASSO, ridge regression, elastic nets, Loess smoothing, logistic regression, Poisson regression, and the application of the bootstrap to regression modeling.
- 436 Statistical Computing with SAS and R** 3 (2-2) Course Prerequisite: One 300-400-level STAT. Introduction to the SAS and R statistical software packages; covers data entry, variable creation, debugging, graphics, and basic statistical methods.
- 437 High Dimensional Data Learning and Visualization** 3 Course Prerequisite: STAT 435. Data visualization, metric-based clustering, probabilistic and metric-based classification, algebraic and probabilistic dimension reduction, scalable inferential methods, analysis of non-Euclidean data.
- 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.
- 446 Statistical Applications in Insurance** 3 Course Prerequisite: STAT 443. Introduction to the application of mathematics and statistics to the insurance field with a focus on actuarial science.
- 447 Introduction to Time Series Analysis** 3 Course Prerequisite: STAT 412 or concurrent enrollment, or STAT 423 or concurrent enrollment. Introduction to the analysis and application of time series including AR, MA, ARMA, and ARIMA models.

- 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). Credit not granted for more than one of STAT/MATH 456 or STAT 556. Recommended preparation: One 3-credit 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.
- 511 Statistical Methods for Graduate Researchers** 4 (3-2) Fundamentals of experimental design and statistical methods for graduate students in the sciences. Covers t-test for one and two means, ANOVA through completely randomized designs with one and two factors, chi-square tests and regression analysis using R. Recommended preparation: One prior course in statistics. Cannot be used for credit in the Department of Mathematics and Statistics graduate programs. (Crosslisted course offered as STAT 511, AFS 511).
- 512 Analysis of Variance of Designed Experiments** 3 (2-2) Principles of experimental design and analysis and interpretation of data. Required preparation: One 3-credit 400-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. Cooperative: Open to UI degree-seeking students.
- 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. Required preparation: Linear Algebra or Calculus I; one 3-credit 400-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. Required preparation: Linear Algebra or Calculus I; one 3-credit 400-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 granted for both STAT 423 and STAT 523. Credit not normally granted for both STAT 423 and 430. Recommended preparation: One 3-credit 300-level STAT course.
- 530 Predictive Models: Foundations in Data Science** 3 (2-2) Topics in regression and classification using probabilistic and data-based methods to build statistical foundations for data science; lab component allows methods to be implemented using data-based software of student choice. Required preparation: One 3-credit 400-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. Required preparation: Linear Algebra and one 3-hour 400-level statistics 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-credit 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: STAT 530, 548, 556, or equivalent. Cooperative: Open to UI degree-seeking students.
- 544 Applied Stochastic Processes** 3 Foundations of continuous time stochastic processes: Kolmogorov forward/backward equations, master equation; general introduction to stochastic calculus and stochastic differential equations; applications. Recommended preparation: Undergraduate ordinary differential equations. 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-credit 400-level probability course. Cooperative: Open to UI degree-seeking students.
- 549 Statistical Theory II** 3 Course Prerequisite: STAT 548 or MATH 568. Statistical inferences; estimation and testing hypotheses; regression analysis; sequential analysis and nonparametric methods. (Crosslisted course offered as STAT 549, MATH 569). Cooperative: Open to UI degree-seeking students.
- 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). Credit not granted for more than one of STAT/MATH 456 or STAT 556. Recommended preparation: One 3-credit 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). Required preparation: Linear Algebra. 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-credit 400-level statistics 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-credit 400-level statistics or probability course.
- 574 Linear and Nonlinear Mixed Models** 3 Course Prerequisite: STAT 530; STAT 556. The theoretical development and application of linear and nonlinear mixed models covering the theory of linear, generalized linear, and nonlinear mixed models.
- 575 The Theory of Multivariate Analysis** 3 Course Prerequisite: STAT 556. The theoretical development and application of multivariate statistical methods; topics include multivariate distributions, MANOVA, principal components, factor analysis and classification. Required preparation: one course in linear algebra.
- 576 Bayesian Analysis** 3 Course Prerequisite: STAT 556. Statistical principle for combining new evidence with prior beliefs, inference and simulation procedures for accommodating complex data and producing interpretable output. Recommended preparation: STAT 536.
- 577 Statistical Learning Theory** 3 Course Prerequisite: STAT 536. Focus on learning and interpreting from data; both prediction and classification will be discussed for supervised and unsupervised learning.
- 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 530. S, F grading.

591 Seminar in Statistics 1 May be repeated for credit; cumulative maximum 10 hours. Course prerequisite: Graduate student in the Department of Mathematics and Statistics. Current research in statistics. 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. Course Prerequisite: Admitted to the Statistical Science PhD program. 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 Mechanical and Materials Engineering

mme.wsu.edu
Sloan 201
509-335-8654

Director and Professor, J. S. McCloy; Professors, A. Bandyopadhyay, S. Bose, J. L. Ding, P. Dutta, D. P. Field, Q. Li, Y. Lin, K. Matveev, S. Mesarovic, M. G. Norton, C. Pezeshki, L. V. Smith, J. Zhang, W. Zhong; Associate Professors, S. Banerjee, S. P. Beckman, K. R. Chen, B. A. Gozen, J. W. Leachman, J. Liu, D. F. McLarty, N. Perez-Arancibia, M. K. Song, J. P. Swensen; Assistant Professors, M. Luo, K. Qiu, N. Boddeti; Teaching Associate Professor, N. Biswas; Research Professor, A. Du; Bremerton: Clinical Professor, M. J. Pitts; Scholarly Associate Professor, B. Asgharian; Lecturer, P. M. Dodge; Everett: Scholarly Professor, X. Bi; Scholarly Associate Professor, G. N. Taub; Scholarly Assistant Professor, Y. Hu; Lecturer, D. Strong; Tri Cities: Associate Professor, C. Mo; Teaching Associate Professor, M. Saad.

The School of Mechanical and Materials Engineering offers programs in Mechanical Engineering (Pullman, 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, (d) the processing of materials into products useful to people, and (e) developing machines and algorithms for autonomous systems. Employment opportunities for graduates exist in the areas of mechanical design, systems design, equipment development, manufacturing, CAD/CAM, algorithm development, project engineering, production management, applied research, and sales and service.

The program leading to the Bachelor of Science degree in Mechanical Engineering is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

The mission of the mechanical engineering program is to provide a broad education in mechanical engineering that prepares our students for being successful in professional practice and advanced studies. The educational objectives of the undergraduate mechanical engineering program are as follows: (1) Graduates will meet or exceed the expectations of employers of mechanical engineers; (2) Qualified graduates will pursue advanced study if they so desire; and (3) Graduates will pursue leadership positions in their profession and/or communities.

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. Students have an opportunity to complete a sequence of electives in one of three concentrations or follow a general path taking technical electives of their choice. The concentrations include Thermo-fluids, Manufacturing, and Autonomous Systems. By completing a concentration, students will have deeper knowledge in a specific area of mechanical engineering they would like to pursue in their future careers. The undergraduate program culminates in 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.

Student Learning Outcomes

The learning outcomes of the mechanical engineering undergraduate program are the following:

- Ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

• Ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

• Ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

• Ability to communicate effectively with a range of audiences.

• Ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

The School offers courses of study leading to the degrees of Bachelor of Science in Mechanical Engineering (accredited by the Engineering Accreditation Commission of ABET, www.abet.org), 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 program leading to the Bachelor of Science degree in Materials Science and Engineering is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

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; (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 will meet or exceed the expectations of employers of materials engineers; (2) Qualified graduates will pursue advanced study if they so desire; and (3) Graduates will pursue leadership positions in their profession and/or communities.

The School offers courses of study leading to the degrees of Bachelor of Science in Materials Science and Engineering (accredited by the Engineering Accreditation Commission of ABET, www.abet.org) 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).

Student Learning Outcomes

The learning outcomes of the materials science and engineering undergraduate program are the following:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
- Ability to apply advanced science (such as chemistry and physics) and engineering principles to materials systems.
- Integrated understanding of the scientific and engineering principles underlying the above for major elements of the field, viz. structure, properties, processing and performance related to materials systems appropriate to the field.
- Ability to apply and integrate knowledge from each of the above four elements of the field to solve materials selection and design problems.
- Ability to utilize experimental, statistical, and computational methods consistent with the goals of the program.

ADMISSION

Admission to the Mechanical Engineering program or Materials Science and Engineering program is processed by the School. The admission requirements, including requirements for transfer students, are described in the WSU catalog in the schedules of studies for each major. Details for admission can also be obtained by contacting the School directly.

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.

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 (123 CREDITS)

Admission Requirements

To be admitted into Materials Science and Engineering major, students must have 83% or higher ALEKS placement score (MATH) or Completion of Math 106 and 108, 171 or higher calculus course with "C" or better or Calc AP score of 2.

Transferring students must satisfy all of the above admission requirements. Students must earn a 2.6 GPA in transferred major courses and have earned a "C" or better in all transferred courses required for the MSE degree.

Benchmarks to Maintain Major in MSE Status

To keep their status as Materials Science Engineering majors, students must: (1) maintain 2.6 average GPA in major courses required for MSE degree, (2) obtain grade "C" or better in all courses required for MSE degree. No more than one repeat per course is allowed in all ME and MSE courses required for MSE degree.

Major courses required for MSE degree include all ME, MSE, physics, chemistry, and math courses listed in the schedule of studies.

Any further questions should be addressed to the Undergraduate Student Services office located in Sloan 205 or contact an MME academic advisor.

First Year

First Term	Credits
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
ME 116	2
MSE 201	3

Second Term	Credits
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 172	4
MSE 202	3
Technical Elective ¹	3

Second Year

First Term	Credits
Arts [ARTS]	3
MATH 220	2
MATH 273	2
ME 220	1

MSE 316	3
PHYSICS 201	3
PHYSICS 211	1

Second Term	Credits
Humanities [HUM]	3
MATH 315	3
MSE 241	3
MSE 33X ²	3
PHYSICS 202	3
PHYSICS 212	1
Complete Writing Portfolio	

Third Year

First Term	Credits
ECONS 102 [SSCI]	3
MSE 302	3
MSE 321	3
MSE 323	2
MSE 413	3
STAT 370	3

Second Term	Credits
Biological Science [BSCI]	3
MSE 318	3
MSE 320 [M]	3
MSE 33X ²	3
Technical Elective ¹	3

Fourth Year

First Term	Credits
ENGLISH 402 [WRTG] [M]	3
ME 312	3
ME 416 [CAPS]	3
MSE Electives ³	6

Second Term	Credits
Diversity [DIVR]	3
MSE 425; or MSE 488 and ENGR 489	3
MSE Elective ³	3
Technical Elective ¹	3
Complete Exit Survey	

¹ Technical Elective (Minimum of 9 credits, of which 3 must be upper-division or 500 level): Any upper-division CE, CH E, CHEM, CPT S, E E, MATH, ME, MSE, or PHYSICS course not used to fulfill other requirements (excluding ME 416), CE 211, and 215, EE 261, and 262, ME 212 and 216.

² MSE 33X (6 credits): Choose from MSE 331, 332, or 333.

³ MSE Elective (9 credits): Any 300, 400, or 500-level MSE course except MSE 499 not used to fulfill other requirements.

MECHANICAL ENGINEERING (124 CREDITS)

Admission Requirements

To be admitted into the Mechanical Engineering major, students must have earned an 83% or higher ALEKS placement score (MATH), or completed MATH 106 and 108, 171 or higher calculus course with "C" or better, or Calc AP score of 2.

Transferring students must satisfy all of the above admission requirements. Students must earn a 2.6 GPA in transferred major courses and have earned a "C" or better in all transferred courses required for the ME degree.

Students transferring to degree-completion programs in Bremerton and Everett branches must have 2.6 average GPA in the following or equivalent courses, each completed with grade "C" or better: CE 211, CE 215, CHEM 105, CPT S 121 or 131, E E 221, ENGLISH 101, MATH 171, MATH 172, MATH 220, MATH 273, MATH 315, ME 116, ME 212, ME 241, PHYSICS 201 and 211, PHYSICS 202 and 212.

Benchmarks to Maintain Major in ME Status

To keep their status as Mechanical Engineering majors, students must: (1) maintain a 2.6 average GPA in major courses required for ME degree, (2) obtain a grade of C or better in all courses required for the ME degree. No more than one repeat per course is allowed in all ME and MSE courses required for the ME degree.

Major courses required for the ME degree include all ME, MSE, physics, chemistry, and math courses listed in the schedule of studies.

Graduation Requirement

Maintain a minimum 2.6 average GPA in major courses required for the ME degree.

Concentrations for BS in Mechanical Engineering

Students follow a General Path, or seek a concentration in Thermo-fluids, Manufacturing, or Autonomous Systems.

Students are encouraged to consult with their advisor at their campus of residence for approved alternative course sequences as well as allowed substitutions to the schedule studies.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI]	4
ENGR 120	2
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
<i>Second Term</i>	
Biological Sciences [BSCI]	3
ECONS 102 [SSCI]	3
ENGLISH 101 [WRTG]	3
MATH 172	4
ME 116	2

Second Year

<i>First Term</i>	<i>Credits</i>
CE 211	3
CPT S 121, 131, or ME 241	3 or 4
MATH 220	2
MATH 273	2
PHYSICS 201	3
PHYSICS 211	1
STAT 370	3
<i>Second Term</i>	
CE 215	3
MATH 315	3
ME 212	3
ME 216	2
ME 220	1
PHYSICS 202	3
PHYSICS 212	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
E E 261	3
E E 262	1
ME 301	3
ME 303	3
ME 313	3
MSE 201	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 402 [WRTG]	3
ME 304	3
ME 306	2
ME 316	3
ME 348	3
Restricted Elective ¹	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
ME 415 [M]	3
Concentration Courses ^{2,3}	6
Restricted Elective ¹	3

<i>Second Term</i>	<i>Credits</i>
Humanities [HUM]	3
ME 406 [M]	3
ME 416 [CAPS]	3
Concentration Course ^{2,3}	3
Complete Exit Survey	
Complete Fundamentals of Engineering Exam	

¹ Restricted Electives (at least 6 credits): Choose from ME 310 and 311 or ME 312, ME 401, ME 405.

² Concentration Paths (9 credits): General Concentration: Three technical electives which may include the remaining restricted elective. Thermo Fluids Concentration: Must take ME 405, and either ME 312 or 401 from the restrictive electives; two courses from ME 419, 431, 436, and 439; and one additional technical elective. Manufacturing Concentration: Must take ME 312, and either ME 401 or 405 from the restrictive electives; ME 474 and 475; and one more technical elective. Autonomous Systems Concentration (must complete CPT S 121, 131, or ME 241 prior to beginning this concentration): Must take ME 401, and either ME 312 or 405 from the restrictive electives; two courses from CPT S 122 or 132, and ME 481; and one technical elective.

³ Technical Electives for concentrations: Any 400-500-level ME, MSE, or E ECS course not listed as a major requirement, and BIO ENGR 425.

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, 316, 321, 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, 304, 316, 348. 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, or MSE 202 or concurrent enrollment. Mechanical behavior of materials and application to engineering structures.

241 Engineering Computations 3 Course Prerequisite: MATH 273 or concurrent enrollment; 4 credits of PHYSICS 201 or concurrent enrollment, or PHYSICS 201 and 211, or both with concurrent enrollment. Introduction to the computational methods used for solving numerical problems in engineering. (Crosslisted course offered as ME 241, MSE 241.)

301 Fundamentals of Thermodynamics 3 Course Prerequisite: 4 credits of PHYSICS 201 with a grade of C or better, or PHYSICS 201 and 211, both with a 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.

304 Heat Transfer 3 Course Prerequisite: ME 301; ME 303; admitted to the major in Mechanical 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.

- 306 Thermal and Fluids Laboratory 2** (1-3) Course Prerequisite: ME 301; ME 303; STAT 370 or concurrent enrollment; admitted to the major in Mechanical Engineering. Instrumentation, data acquisition, and theory verification in the thermal and fluid sciences.
- 310 Manufacturing Processes 2** Course Prerequisite: MSE 201; admitted to the major in Mechanical Engineering or Materials Science and Engineering. Manufacturing processes, material fabrication, and nontraditional processing.
- 311 Manufacturing Processes Laboratory 1** (0-3) Course Prerequisite: ME 310 or concurrent enrollment; admitted to the major in Mechanical Engineering. Manufacturing processes laboratory in machining, welding, forming; manufacturing project.
- 312 Manufacturing Engineering 3** (2-3) Course Prerequisite: MSE 201; admitted to the major in Mechanical Engineering or Material Science Engineering. Traditional and advanced manufacturing processes for metals, plastics, and ceramics.
- 313 Engineering Analysis 3** (2-3) Course Prerequisite: MATH 315 or concurrent enrollment; CE 215; ME 116; E E 221, CPT S 121, CPT S 131, CPT S 251, ME 241, or MSE 241. Analysis and modeling of engineering problems utilizing numerical and mathematical techniques and computers. Cooperative: Open to UI degree-seeking students.
- 316 Mechanical Component Analysis and Design 3** Course Prerequisite: CE 215; ME 216 or concurrent enrollment; ME 220 or concurrent enrollment; admitted to the major in Mechanical Engineering. Optimal design of machinery; analysis for prevention of machine elements failure.
- 348 Dynamics Systems 3** Course Prerequisite: MATH 315; ME 212; ME 241, CPT S 121, CPT S 131, or E E 221; all with a letter grade C or better; admitted to the major in Mechanical Engineering. Fundamentals of vibration analysis, control systems, system modeling and dynamics analysis.
- 401 Mechatronics 3** (2-3) Course Prerequisite: E E 262; ME 348; admitted to the major in Mechanical Engineering. Integration of mechanical and microprocessor-based systems; control theory implemented with data acquisition systems; sensors; actuators, signal conditioning, programmable logic controllers.
- 405 Thermal Systems Design 3** Course Prerequisite: ME 304; admitted to the major in Mechanical Engineering. Design and analysis of thermofluid systems using principles of thermodynamics, fluid mechanics and heat transfer.
- 406 [M] Experimental Design 3** (1-6) Course Prerequisite: ME 220; ME 304; ME 306; ME 348; admitted to the major in Mechanical Engineering. Designing, conducting, and reporting of experimental investigations involving mechanical equipment.
- 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 Mechanical Behavior of Materials 3** Course Prerequisite: CE 215 and MSE 201; OR MSE 202. 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).
- 415 [M] Engineering Design 3** Course Prerequisite: ME 304 or concurrent enrollment; ME 316 or concurrent enrollment and ME 348 or concurrent enrollment; admitted to the major in Mechanical Engineering. Systems and component design; product development from specifications to manufacturing; team-based CAD design projects; engineering economics; engineering professional skills.
- 416 [CAPS] Mechanical Systems Design 3** (1-6) Course Prerequisite: Major in ME; ME 415; senior standing; OR major in MSE; MSE 320; MSE 413 or concurrent enrollment; one of MSE 331, 332, or 333; OR major in MSE; MSE 202 with a C or better; MSE 318 with a C or better; MSE 413 or concurrent enrollment. 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 304. 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 304; admitted to the major in Mechanical Engineering. 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 301; 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: MATH 315; admitted to a major in engineering or physical sciences; senior standing. 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).
- 462 Introduction to Nuclear Engineering II 3** Fundamentals of nuclear engineering, heat deposition and removal from nuclear reactors, radiation protection, radiation shielding, and licensing, safety, and environmental aspects of nuclear reactor operation.
- 466 Fundamentals of Engineering Examination Review 1** Course prerequisite: Admitted to a major in engineering or computer science. Review of engineering fundamentals and mechanical engineering discipline specific topics to prepare for the Fundamentals of Engineering Examination. S, F grading.
- 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 or 312. Design for manufacture and assembly; modern manufacturing philosophies and practices; lean manufacturing; manufacturing cost and time analysis; quality control. Cooperative: Open to UI degree-seeking students.
- 475 Manufacturing Enterprise Systems -- Automation and Product Realization 3** (2-3) Course Prerequisite: ME 310 and 311, or ME 312. Manufacturing automation and product realization; information technology and electronic data in manufacturing enterprise systems; product life-cycle management (PLM); sustainable and green manufacturing. Field trip to manufacturing industries required.
- 481 Control Systems 3** Course Prerequisite: ME 348. Analysis and design of feedback control systems. Credit not granted for both ME 481 and 581. 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 mechanical engineering.
- 485 Introduction to Robotics and AI 3** Course Prerequisite: CPT S 121, CPT S 131, ME 241, or MSE 241; ME 348; ME 401. An exploration of the Robot Operating System (ROS) and solutions to simple AI problems using existing machine learning frameworks.
- 488 Professional Practice Coop/Internship I V 1-2** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. Practicum for students admitted to the VCEA Professional Practice and Experiential Learning Program; integration of coursework with on-the-job professional experience. (Crosslisted course offered as ENGR 488, BIO ENG 488, CHE 488, CE 488, CPT S 488, E E 488, ME 488, MSE 488, SDC 488). S, F grading.

- 495 Internship in Mechanical Industry V** 3-6 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Admitted to the major in Mechanical 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. (Crosslisted course offered as ME 501, MATH 570.) Cooperative: Open to UI degree-seeking students.
- 502 Sustainability Assessment for Engineering Design 3** Sustainability assessment, including environmental, societal, and economic assessment, in design and planning for entire product life cycle. Cooperative: Open to UI degree-seeking students.
- 503 Systems Design Approaches for Sustainability 3** Sustainability in systems design methodologies; systems modeling and decision-making for sustainability; multidisciplinary design optimization; research topics. Cooperative: Open to UI degree-seeking students.
- 507 Additive Manufacturing 3** Additive manufacturing processes and their applications in ceramic, metallic, polymeric, and composite materials. Recommended preparation: Basic knowledge in materials science and manufacturing. (Crosslisted course offered as MSE 507, ME 507). Cooperative: Open to UI degree-seeking students. Cooperative: Open to UI degree-seeking students.
- 509 MEMS Engineering 3** (2-3) Introduction to the design, fabrication and application of microelectromechanical systems. (Crosslisted course offered as ME 509, MSE 509). Cooperative: Open to UI degree-seeking students.
- 513 Theory of Plasticity and its Physical Foundations 3** Phenomenological plasticity and viscoplasticity of polycrystalline metals and alloys, polymers and granular media; deformation mechanisms; dislocation mechanics and interactions; dislocation motion; slip and climb; crystal plasticity; size effects and gradient models. (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). Cooperative: Open to UI degree-seeking students.
- 515 Convective 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. Cooperative: Open to UI degree-seeking students.
- 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). Cooperative: Open to UI degree-seeking students.
- 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). Cooperative: Open to UI degree-seeking students.
- 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.
- 525 Biomechanics 3** Methods for analysis of rigid body and deformable mechanics; application to biological tissue, especially bone, cartilage, ligaments, tendon and muscle. (Crosslisted course offered as BIO ENG 425/525, ME 525). Credit not granted for more than one of BIO ENG 425, BIO ENG 525, or ME 525.
- 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 Nanoscience and Nanotechnology 3** Overview of nanoscience and nanotechnology and their biomedical, energy, and environmental applications; structures, properties, synthesis of nanoscale materials and fabrication of nanostructured devices. (Crosslisted course offered as MSE 531, MATSE 531, ME 531.) Recommended preparation: Basic knowledge of materials, engineering, chemistry.
- 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). Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 574 Design for Additive Manufacturing 3** Design considerations and techniques to improve the performance for parts and components fabricated by additive manufacturing, including restrictive design considerations and opportunistic design. Recommended preparation: Basic knowledge in materials science and manufacturing.
- 575 Computer Control of Manufacturing Automation Systems 3** CNC Machines: component types; selection and integration; drive methods and feedback control; controller programming. Required preparation: ME 348 or equivalent.
- 579 Advanced Topics in Mechanical Engineering V** 1-3 May be repeated for credit. Cooperative: Open to UI degree-seeking students.

- 581 Control Systems** 3 Analysis and design of feedback control systems. Credit not granted for both ME 481 and 581. Cooperative: Open to UI degree-seeking students.
- 582 Robot Kinematics and Dynamics** 3 Kinematics and dynamics of robotic systems including theoretical and practical treatment of rigid body motion.
- 583 Machine Vision** 3 Theoretical and practical treatment of image formation, camera calibration, stereo vision, image processing algorithms, and vision-based control.
- 598 Seminar** 1 May be repeated for credit. Current research interests. 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.
- 701 Master's Independent Capstone Project and/or Examination** V 1-6 May be repeated for credit. Capstone project or final examination for professional master's degree under the Graduate School. The credits will include a balloted evaluation of the student's completion of the program's capstone/examination requirements by the program's graduate faculty. Students must have graduate degree-seeking status and obtain approval from their major advisor/committee chair before enrolling for 701 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: Admitted to the Mechanical Engineering or Engineering Science PhD program. 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**
- 201 Materials Engineering Fundamentals** 3 Course Prerequisite: CHEM 105 or concurrent enrollment. Introduction to the fundamental concepts of materials engineering.
- 202 Materials Science Fundamentals** 3 Course Prerequisite: CHEM 106 or concurrent enrollment; MSE 201 with a C or better. Introduction to the fundamental concepts of materials science.
- 241 Engineering Computations** 3 Course Prerequisite: MATH 273 or concurrent enrollment; 4 credits of PHYSICS 201 or concurrent enrollment, or PHYSICS 201 and 211, or both with concurrent enrollment. Introduction to the computational methods used for solving numerical problems in engineering. (Crosslisted course offered as ME 241, MSE 241.)
- 302 Electronic Materials** 3 Course Prerequisite: CHEM 105; 4 credits of PHYSICS 202, or PHYSICS 202 and 212 or concurrent enrollment, or PHYSICS 206 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 202 with a C or better. 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.
- 318 Materials Design** 3 Course Prerequisite: ECONS 102; MSE 201 with a C or better; MSE 241; STAT 370. Materials selection and processing design routes to develop new materials for engineering applications.
- 320 [M] Materials Structure - Properties Lab** 3 (1-6) Course Prerequisite: MSE 201; MSE 202 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.
- 331 Metallic Materials** 3 Course Prerequisite: MSE 201. Major alloy systems and manufacturing processes; materials selection.
- 332 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.
- 333 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 Mechanical Behavior of Materials** 3 Course Prerequisite: CE 215 and MSE 201; OR MSE 202. 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; admitted to the major in Materials Science Engineering; senior standing, OR MSE 318; MSE 323; two from MSE 331, 332, or 333; admitted to the major in Materials Science Engineering; senior standing. Research in materials science and engineering.
- 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.
- 488 Professional Practice Coop/Internship I** V 1-2 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. Practicum for students admitted to the VCEA Professional Practice and Experiential Learning Program; integration of coursework with on-the-job professional experience. (Crosslisted course offered as ENGR 488, BIO ENG 488, CHE 488, CE 488, CPT S 488, E E 488, ME 488, MSE 488, SDC 488). 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 Topics in Materials Engineering** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Cooperative: Open to UI degree-seeking students.

- 504 Electrochemical Energy Systems 3** Principles of electrochemical systems and applications in energy storage/conversion devices. Recommended preparation: Basic knowledge of chemistry, physics, and materials.
- 505 Advanced Materials Science 3** Broad baseline in materials science including relationships between structure and properties. (Crosslisted course offered as MSE 505, MATSE 505). Cooperative: Open to UI degree-seeking students.
- 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.)
- 507 Additive Manufacturing 3** Additive manufacturing processes and their applications in ceramic, metallic, polymeric, and composite materials. Recommended preparation: Basic knowledge in materials science and manufacturing. (Crosslisted course offered as MSE 507, ME 507). Cooperative: Open to UI degree-seeking students. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 509 MEMS Engineering 3 (2-3)** Introduction to the design, fabrication and application of microelectromechanical systems. (Crosslisted course offered as ME 509, MSE 509). Cooperative: Open to UI degree-seeking students.
- 513 Theory of Plasticity and its Physical Foundations 3** Phenomenological plasticity and viscoplasticity of polycrystalline metals and alloys, polymers and granular media; deformation mechanisms; dislocation mechanics and interactions; dislocation motion; slip and climb; crystal plasticity; size effects and gradient models. (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). Cooperative: Open to UI degree-seeking students.
- 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. 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). Cooperative: Open to UI degree-seeking students.
- 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). Cooperative: Open to UI degree-seeking students.
- 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). Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 523 Ceramics Processing 3** Fundamentals of ceramic processing science for thin films and bulk ceramics. Cooperative: Open to UI degree-seeking students.
- 524 Glass Science and Technology 3** Glass composition design, processing, and properties; engineering and technology related to glasses and glass-ceramics; case studies in applied glass science and characterization. (Crosslisted course offered as MSE 524, MATSE 524.) Recommended preparation: Basic knowledge in materials science and manufacturing.
- 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 Nanoscience and Nanotechnology 3** Overview of nanoscience and nanotechnology and their biomedical, energy, and environmental applications; structures, properties, synthesis of nanoscale materials and fabrication of nanostructured devices. (Crosslisted course offered as MSE 531, MATSE 531, ME 531.) Recommended preparation: Basic knowledge of materials, engineering, chemistry.
- 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). Cooperative: Open to UI degree-seeking students.
- 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 MSE 543, CE 593). Required preparation must include MSE 402. Cooperative: Open to UI degree-seeking students.
- 544 Natural Fibers 3** Structural aspects and properties of natural fibers including anatomy, ultrastructure, and chemistry. (Crosslisted course offered as CE 594, MSE 544). Cooperative: Open to UI degree-seeking students.
- 545 Polymer and Composite Processing 3** Polymer and composite processing from fundamental principles to practical applications. (Crosslisted course offered as MSE 545, CE 595). Cooperative: Open to UI degree-seeking students.
- 546 Engineered Wood Composites 3** Theory and practice of wood composite materials, manufacture and development. (Crosslisted course offered as CE 596, MSE 546). Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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). Cooperative: Open to UI degree-seeking students.
- 592 Transmission Electron Microscopy 3** Development of the principles and applications of electron optics in microscopy. 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.

701 Master's Independent Capstone Project and /or Examination V 1-6 May be repeated for credit. Capstone project or final examination for professional master's degree under the Graduate School. The credits will include a balloted evaluation of the student's completion of the program's capstone/examination requirements by the program's graduate faculty. Students must have graduate degree-seeking status and obtain approval from their major advisor/committee chair before enrolling for 701 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.

Elson S. Floyd College of Medicine

medicine.wsu.edu/
412 E. Spokane Falls Blvd, Spokane, WA 99202
509-358-7944

Founding Dean, J. Tomkowiak; Vice Dean for Research and Interim Chair, Department of Community and Behavioral Health, J. Roll; Vice Dean of Administration, Accreditation, and Finance (Chief Operating Officer), J. Zimmerman; Special Advisor to the Dean, M. A. Clemens; Senior Associate Dean, Center for Interprofessional Health Education Research & Scholarship (CIPHERS), D. DeWitt; Senior Associate Dean for Admissions and Student Affairs, L. E. Harrison; Senior Associate Dean for Policy and Compliance, J. Hupp; Associate Dean for Curriculum and Interim Associate Dean for Faculty Development, J. Bowen; Associate Dean for Accreditation, Assessment, and Evaluation, D. Cooper; Associate Dean for Graduate Medical Education and Continuing Medical Education, J. Espenschied; Associate Dean for Clinical Education Everett, L. Schecter; Associate Dean for Clinical Education Spokane and Clinical Education Director, Mind, Brain and Behavior, M. Layton; Associate Dean for Clinical Education Tri-Cities, F. Williams; Associate Dean for Clinical Education Vancouver, J. Marcin; Assistant Dean for Student Affairs, L. Burch-Windrem; Assistant Dean for Community Engagement, L. Francis; Assistant Dean for Health Equity and Inclusion, D. Garcia; Assistant Dean for Career Advising and Student Programs, K. Lindquist; Assistant Dean for Research, S. McPherson; Chair and Professor, Department of Translational Medicine and Physiology, K. Roberts; Interim Chair, Department of Medical Education and Clinical Sciences and Clinical Education Director, Family Medicine, J. Haney; Chair and Professor, Nutrition and Exercise Physiology, G. Duncan; Interim Chair and Professor, Department of Speech and Hearing Sciences, A. Meredith.

The Elson S. Floyd College of Medicine is Washington's community-based medical school. Named after the University's late president, Elson S. Floyd, the college was created to expand medical education and health care access in communities

across the state of Washington. Under the direction of Founding Dean Dr. John Tomkowiak, the College of Medicine aims to meet its mission to solve problems in challenging health care environments across the state of Washington, all with a vision of Washingtonians living longer, better. Through a culture based on valuing the individual, we are resourceful, agile, inventive and generous in serving the people of the state and beyond, to develop healthier populations through research, innovation, interprofessional education and patient-centered care.

The College of Medicine administration is located on the WSU Health Sciences Campus in Spokane with clinical campuses in Everett, Spokane, Tri-Cities and Vancouver. Employing a community-based model in which students gain clinical experiences in hospital and health care settings near the four campus locations, the college emphasizes training in the kind of environments where students will ultimately settle to practice as health care professionals. All campuses foster active learning environments, interdisciplinary teaching, research, outreach, and clinical services.

The College consists of the Departments of Translational Medicine and Physiology, Community and Behavioral Health, Medical Education and Clinical Sciences, Nutrition and Exercise Physiology, and Speech and Hearing Sciences.

The Department of Translational Medicine and Physiology is the central hub of foundational, and translational biomedical research at the Elson S. Floyd College of Medicine. Our faculty represent a diverse set of interests, ranging from the neuroscience of sleep to cancer. Their work extends from cell and molecular physiology to behavioral studies, and they employ a full range of model system as well as human subjects. The Department provides research opportunities to graduate students in participating Ph.D. programs and to medical students.

The Department of Community and Behavioral Health focuses on addressing health at the community level through research, patient care and degree programs, all of which align with the University's land-grant mission and extend the College of Medicine's reach. The department enables the college's research enterprise to hone their focus in these areas and emphasize their behavioral health work.

The Department of Medical Education and Clinical Sciences delivers the MD program, training medical students to be insightful and compassionate physicians. It immerses students in a variety of real-world and simulated learning environments that provide them with the clinical and behavioral competencies to be successful in the future practice of medicine. In addition to preparing students to care for individual patients, it readies them to take the lead in addressing community healthcare issues. Students learn to recognize problems in health care delivery, innovate solutions, and mobilize change that improves the health of entire populations. The department also delivers two professional certificates, the Certificate in Healthcare Leadership and the Certificate in Medical Ethics.

The Department of Nutrition and Exercise Physiology focuses on the effects of nutrition and physical activity on human health. The interdisciplinary program combines study in human nutrition, exercise physiology, and biological sciences, along with population, social and

psychological sciences. Opportunities for research and applied, practical experiences are the core of the instructional methods for both undergraduate and graduate students. The academic programs offer degrees at the B.S., M.S. and Ph.D. levels.

The Department of Speech and Hearing Sciences offers programs leading to a Bachelor of Arts in Speech and Hearing Sciences and a Master of Science in Speech and Hearing Sciences in speech-language pathology. Training in speech and hearing sciences through the bachelor's degree prepares students for a range of careers in health professions, education and social services, among others. State and national clinical and educational licensure and certification require completion of the master's degree. Graduate students are prepared as speech-language pathologists to provide direct and consultative services in medical and educational settings. The faculty's research contributes to the evidence base of the profession, ensuring that future generations of professionals are prepared to provide the best possible health care.

Department of Medical Education and Clinical Sciences

medicine.wsu.edu/research/dcp/clinical-sciences/
Spokane Academic Center, Room 401
509-368-6578

Chair, Clinical Education Director, Family Medicine, and Clinical Associate Professor, J. Haney. WSU Spokane: Professors, J. Kennedy, M. G. McDonell, J. Wisor; Associate Professors, N. Chaytor, S. McPherson; Assistant Professors, O. Oluwoye, L. Wood; Clinical Professors, H. F. Andersen, B. Bray, H. Kaya; Clinical Associate Professors, C. Anderson, J. Bowman, T. Chauvin, M. Clemens, D. Conley, D. Cooper, C. Davis, W. Dittman, P. Dygert, J. Espenschied, R. Gersh, J. Haney, C. Heine, B. Hsu, D. Jackson, S. Joseph, A. Kim, A. Kumar, S. Logani, R. Nandagopal, S. Toro-Posada, B. Washington; Clinical Assistant Professors, S. Ahmad, K. Beine, S. Bering, J. Breems, B. Chia, N. R. Chow, A. Corn, L. Deters, L. Fralich, L. Francis, C. Gerhatdt, D. Goshorn, H. Habibi, L. Harrison, S. Hecker, S. Helbling, B. Hjermstad, S. Intzes, K. Janout, E. S. Johnson, T. Julsen, J. Kaczmark, J. Kohring, J. Litvack, L. Manriquez, C. Martin, A. M. McCarthy, R. Miller, C. Moon, R. Muntean, S. Nall, A. Nguyen, R. Rajendra, K. Reed, S. Rooksby, S. Schneider, B. Sestero, S. Siddiqui, L. Sood, J. Troiano, J. M. Walker, S. Weeks, M. Zhang; Research Assistant Professors, K. Hirschak, L. Kreigel, A. Lamp, A. Miguel; Clinical Research Professor, T. May; Associate Instructors, G. Ferguson, G. Kordas, A. Petras; Affiliate Associate Professors, W. Kabasanche; Affiliate Assistant Professor, D. DePriest. WSU Everett Clinical Campus: Associate Chair and Clinical Professor, L. Schecter; Clinical Assistant Professors, R. Beckley, S. Quade, K. Wyrick. WSU Pullman: Clinical Assistant Professor, S. Lampa. Seattle: Associate Professor, P. Johansson; Assistant Professor, A. Fyfe-Johnson, C. Miller, A. Such-Dacey, A. Zamora-Kapoor; Research Assistant Professors, C. Carty, L. Hebert. WSU Spokane Clinical Campus: Associate Chair TBD; Clinical Associate Professors, R. Moon, H. Mroch; Clinical Assistant Professors, E. Burns, L. Gates. WSU Tri-Cities Clinical Campus: Associate Chair and Clinical

Professor, F. Williams; Clinical Assistant Professors, K. Berger, P. Carrera, K. Kakumba. WSU Vancouver Clinical Campus: Associate Chair and Clinical Professor, J. Marcin; Clinical Assistant Professors, R. Green, J. Hartinger, J. Sandhu.

The Department of Medical Education and Clinical Sciences (DMECS) delivers the MD program and administers two professional certificates, the Certificate in Leadership and the Certificate in Medical Ethics for the Elson S. Floyd College of Medicine. The department collaborates across disciplines to prepare tomorrow's physicians as compassionate, community-engaged leaders, innovators and change agents and to conduct research that advances the delivery of care. It unites faculty members in a range of clinical disciplines and specialties. Together with the Dean and Administration, and in collaboration with sister schools, colleges, and departments, the department works to establish educational goals, plan course content, teach and conduct research.

Investigations conducted within the department are numerous and include the following (partial list):

- Population-based interventions to improve health care delivery
- Clinical studies related to the delivery of personalized care
- Transdisciplinary investigations to address challenges that span science, technology, and medicine
- Training medical students in research methods to improve clinical care
- Medical education studies that lead to innovations in physician training

The MD program is accredited by Northwest Commission on Colleges and Universities and by the Liaison Committee on Medical Education.

Washington State Licensure Requirements

Licensure requirements vary by state. To obtain a medical license in Washington state applicants are required to have graduated from an accredited or approved medical school and completed adequate time in residency training. Applicants must pass all three steps of the United States Medical Licensing Examination. A list of additional requirements for licensure is available from the Washington State Department of Health website: www.doh.wa.gov.

College of Medicine Program Core Competencies

The College of Medicine program incorporates core competencies that our faculty commits to teaching, and our students are expected to learn, which will be evaluated to ensure that all graduating students attain the appropriate level of mastery to succeed in their careers.

Core Competencies

All competencies must be achieved at a level sufficient for entry into graduate medical education, enabling students to lead, innovate, and solve problems in challenging health care environments.

Medical and Scientific Knowledge

- Demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral concepts in caring for healthy, ill patients and the community.

Patient Care and Health Promotion

- Provide evidence-based care that is compassionate, culturally appropriate, and effective for illness prevention, health promotion, treatment of disease, and improvement in quality of life, including appropriate end-of-life care.

Professionalism and Self-Awareness

- Demonstrate commitment to professional services, adherence to ethical principles, and awareness of one's own interests, personal biases, vulnerabilities, and limitation of knowledge.

Practice-Based and Life-Long Learning

- Demonstrate the ability to appraise, assimilate, innovate, and incorporate scientific evidence to evaluate and improve patient care practices based on continuous self-evaluation and life-long learning.

Systems-Based and Inter-Professional Practice

- Demonstrate awareness of and responsiveness to the larger context of health care and the ability to call on system resources, including other health care professionals, to provide optimal care.

Interpersonal and Communication Skills

- Demonstrate effective information exchange and collaboration with patients, their families, peers, and other health professionals to enhance their care.

Schedules of Studies

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

DOCTOR OF MEDICINE (MD) CURRICULUM (178 CREDITS)

SPECIFICATION OF DEGREE REQUIREMENTS FOR GRADUATION WITH THE MD DEGREE

The requirements for the MD degree are established by the Elson S Floyd College of Medicine Faculty Senate. Those requirements are as follows:

The degree of Doctor of Medicine is awarded by the Washington State University Board of Regents upon a student's successful completion of the graduation requirements, including recommendation of the chair of the Student Evaluation, Promotion & Awards Committee (SEPAC) to the Dean of the ESFCOM. To graduate with the Doctor of Medicine degree, ESFCOM students must meet the following:

1. Be at least 21 years of age at the time the degree is awarded.
2. Pass all required first year Foundations of Medical Science courses (MED FMS 501, MED FMS 502, and MED FMS 503).
3. Pass all required second year Foundations of Medical Science (MED FMS 511, MED FMS 512, and MED FMS 513).
4. Pass all components of the Longitudinal Integrated Clerkships (MED CLIN 521, MED CLIN 522, MED CLIN 523, and MED CLIN 524).
5. Pass one sub internship clinical rotation (MED CLIN 531, MED CLIN 532, MED CLIN 533, MED CLIN 534, MED CLIN 535, or MED CLIN 536).
6. Pass the clinical rotation in Emergency Medicine (MED CLIN 537) and pass either the clinical rotation in Rural Medicine (MED CLIN 538) or the clinical rotation in Underserved Medicine (MED CLIN 539).

7. Pass 24 additional elective credits (MED CLIN 531-699).

8. Take and pass United States Medical Licensing Exams (USMLE) Step 1, Step 2(CS) Clinical Skills, Step 2(CK) Clinical Knowledge within the allotted number of attempts for each.

9. Complete the ESFCOM Leadership in Medicine and Healthcare Certificate.

10. Pass all Foundations of Scholarship and Discovery courses (MEDSCHLR 500, MEDSCHLR 520, and MEDSCHLR 540).

11. Complete all requirements within six consecutive academic years.

12. Receive the SEPAC's and Dean of the ESFCOM recommendations for graduation and receipt of the MD degree.

Students must be in compliance with these conditions throughout the MD program and in order to complete the MD degree:

1. Medical Health Requirements and Immunizations: MD degree candidates must be in compliance with health requirements at all times. Entering medical students must complete certain health-related forms, immunizations, and tests before beginning studies at the ESFCOM and, for some of these, annually thereafter.

2. Data Security and Privacy (HIPAA) Training: MD degree candidates must remain in compliance with Elson S. Floyd College of Medicine's HIPAA training requirement and information security requirements.

3. Demonstrate consistent evidence of professionalism as assessed by the SEPAC. Satisfaction of Technical Standards: To graduate, students must meet the requirements set forth in the College of Medicine Technical, Non-Academic Standards. These Technical Standards include: Observation, Communication, Motor, Intellectual (Conceptual, Integrative and Quantitative Abilities), Behavioral/Social, and Task Completion.

Degrees will be conferred once a year on Commencement Day in the spring. Students completing requirements for a degree prior to their scheduled degree conferral date will be conferred the degree on the official Commencement Day, but may request that the SEPAC Committee provides a written confirmation that the student has met all graduation requirements.

Note on licensure: Meeting the graduation requirements for the MD degree at Elson S Floyd College of Medicine does not guarantee eligibility for state licensure. Some states have specialized curricular requirements for licensure, and students are advised to check with the Medical Board in states of possible residency for licensure requirements.

These requirements may be changed at any time to ensure that all graduates meet the required qualifications of a practicing physician.

First Year

<i>First Term</i>	<i>Credits</i>
MED FMS 501	14
MED LMH 501	1
<i>Second Term</i>	<i>Credits</i>
MED FMS 502	13
MED LMH 502	1
MEDSCHLR 500	1
<i>Third Term</i>	<i>Credits</i>
MED FMS 503	12

MED LMH 503	1
MEDSCHLR 500	1
<i>Fourth Term</i>	
MEDSCHLR 520 ¹	3
Second Year	
<i>First Term</i>	
MED FMS 511	13
MED LMH 511	1
MEDSCHLR 540 ¹	1
<i>Second Term</i>	
MED FMS 512	13
MED LMH 512	1
MEDSCHLR 540 ¹	1
<i>Third Term</i>	
MED FMS 513	11
MED LMH 513	1
MEDSCHLR 540 ¹	1
<i>Fourth Term</i>	
MED CLIN 521	8
Third Year	
<i>First Term</i>	
MED CLIN 522	14
MED LMH 521	1
<i>Second Term</i>	
MED CLIN 523	14
MED LMH 522	1
<i>Third Term</i>	
Clinical Rotation ²	4
MED CLIN 524	10
MED LMH 523	1
<i>Fourth Term</i>	
Clinical Rotations ²	8
Fourth Year	
<i>First Term</i>	
Clinical Rotations ²	12
MED LMH 531	1
<i>Second Term</i>	
Clinical Rotations ²	8-12
MED LMH 532	1
<i>Third Term</i>	
Clinical Rotation ²	4
MED LMH 533	1

¹ The listed pathway is one example of the sequencing of MEDSCHLR courses for 520 and 540. MEDSCHLR 520 must be completed by the end of the final assessment week of the Longitudinal Integrated Clerkship (Year 3). MED SCHLR 540 must be completed by the end of Fall term of their fourth year (extensions past Winter term require approval). The timing of enrollment in these courses is at the student's discretion.

² The Clinical Rotations must include one course from the series MED CLIN 531-536, and MED CLIN 537, and either MED CLIN 538 or MED CLIN 539, and 24 credits from MED CLIN 531-699. The students have 10 4-week time slots to complete these 36 credits. Students are required to take no fewer than 8 credits of MED CLIN courses in the 4th year, First Term and Second Term and no fewer than 4 credits of MED CLIN courses in 4th year, Third Term.

Certificates

Certificate in Medical Ethics

The Certificate in Medical Ethics, in the Elson S. Floyd College of Medicine, is designed to prepare medical clinicians and ethics committee members to perform competent clinical ethics case consultation in a hospital, long-term care, or clinic setting. The Certificate consists of 12 credits divided between four courses, which are meant to be taken in sets of two concurrent 3-credits courses over one academic year. One course per concurrent set is taken entirely on-line, and the second is a seminar-style course taken both on-line and through live interactive discussion either in-person or via web-conferencing. Fall semester courses consist of MED ETH 500 Conceptual Foundations of Bioethics and MED ETH 510 Seminar in Conceptual Foundations of Bioethics. These courses take students through basic tools of moral reasoning, including basic concepts in logic (fallacies, validity and soundness, etc.); descriptive and normative reasoning, positive and negative rights, basic approaches to morality (deontology and consequentialism, pluralism, etc.) and definitions of equality, and justice. Spring Semester courses consist of MED ETH 530 The Practice of Clinical Ethics and MED ETH 540 Seminar in Clinical Ethics: Methods, Process, Skills & Traits. These courses delve into the practical aspects of case analysis and the practice of ethics consultation in the clinical setting, with particular focus on the traditional range of topics in this emerging field of study (informed consent; surrogate decision making; professional rights of conscience; concepts of welfare and quality of life, etc.). During the seminar portion of this concurrent set of courses, students are taught the basic tools of chart writing, information gathering, and conflict resolution techniques essential to the conduct of ethics case consultation in a clinical setting.

Healthcare Leadership

Academic Requirements:

Pre-clerkship Curriculum: Students must successfully complete all required courses in the pre-clerkship curriculum (6 credits), MED LMH 501, 502, 503, 511, 512, and 513. Clinical Curriculum: Students must successfully complete all required courses in the clinical clerkships (6 credits), MED LMH 521, 522, 523, 531, 532, and 533.

Additional Requirements:

ESFCOM Year 4: Capstone Leadership Paper/Project: Students are required to complete a 10-page paper during the 4th year (with a mentor/advisor). The paper must focus on lessons learned during the leadership certificate courses, medical school clerkships, research and/or healthcare-related volunteer activities.

If combined with a student's scholarly project, the leadership portion must comprise a related, additional 10-page analysis - i.e. this has to be a separate paper or portion of the scholarly project. Students wishing to combine their leadership capstone paper with their scholarly project must receive formal approval signed off by both the Assistant Dean for Medical Student Scholarship and the Leadership in Medicine and Healthcare Course Director.

Description of Courses

MEDICAL CLINICAL TRAINING

MED CLIN

521 Longitudinal Integrated Clerkship I 8 Course Prerequisite: MED FMS 513. Covers the seven core disciplines in medicine: family medicine, internal medicine, general surgery, pediatrics, psychiatry, obstetrics and gynecology, and neurology; clinical experiences will be interleaved throughout the entire sequence of LIC courses and will focus on working with a small number of preceptors in each discipline for a continuity experience between teacher and learner.

522 Longitudinal Integrated Clerkship II 14 Course Prerequisite: MED CLIN 521. Covers the seven core disciplines in medicine: family medicine, internal medicine, general surgery, pediatrics, psychiatry, obstetrics and gynecology, and neurology; clinical experiences will be interleaved throughout the entire sequence of LIC courses and will focus on working with a small number of preceptors in each discipline for a continuity experience between teacher and learner.

523 Longitudinal Integrated Clerkship III 14 Course Prerequisite: MED CLIN 522. Covers the seven core disciplines in medicine: family medicine, internal medicine, general surgery, pediatrics, psychiatry, obstetrics and gynecology, and neurology; clinical experiences will be interleaved throughout the entire sequence of LIC courses and will focus on working with a small number of preceptors in each discipline for a continuity experience between teacher and learner.

524 Longitudinal Integrated Clerkship IV 10 Course Prerequisite: MED CLIN 523. Covers the seven core disciplines in medicine: family medicine, internal medicine, general surgery, pediatrics, psychiatry, obstetrics and gynecology, and neurology; clinical experiences will be interleaved throughout the entire sequence of LIC courses and will focus on working with a small number of preceptors in each discipline for a continuity experience between teacher and learner.

530 Virtual - Clinical Cases 2 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. A self-directed online course involving review of cases selected by faculty in a specified specialty.

531 Family Medicine - Subinternship 4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge and skills in the evaluation and management of acute and chronic medical conditions treated by family physicians. May include attendance at medical conferences.

532 Internal Medicine - Subinternship 4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and range of medical problems evaluated and managed in a hospital or ambulatory setting.

- 533 Surgery - Subinternship** 4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems related to common surgical issues in various surgical specialties.
- 534 Pediatrics - Subinternship** 4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524 and at least 2 credits of MED CLIN 568; exceptions granted by the Associate Dean for Curriculum or designee. Knowledge and skills in caring for pediatric patients admitted to the hospital or ambulatory setting; exposure to the wide range of medical diagnoses that lead to the admission of pediatric patients.
- 535 Psychiatry - Subinternship** 4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and attitudes necessary to diagnose and treat a wide range of routine psychiatric, medical, and behavioral problems; exposure to the breadth of undifferentiated patient complaints presenting in both acute and chronic treatment settings.
- 536 Obstetrics and Gynecology - Subinternship** 4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of women's health issues with concentration on common obstetrical and gynecological conditions; introduction to serious, less common conditions.
- 537 Emergency Medicine - Emergency Medicine** 4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems treated by emergency physicians; breadth of undifferentiated patient complaints presenting in an acute setting.
- 538 Core - Rural Medicine** 4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Caring for patients in communities with limited medical facilities; issues related to referrals and transfers to tertiary care centers for more complex medical problems and care coordination with local resources.
- 539 Core - Underserved Medicine** 4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. The health care issues of underserved populations and the complexities of providing for their medical needs in challenging social situations; disparities in the American health care system and challenges under-resourced patients face in meeting their medical needs.
- 540 Virtual - Advanced Multi-Specialty Clinical Cases** 2 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. A self-directed online course involving review of selected clinical cases and clinical skills modules across specialties.
- 541 Clinical Rotation - Radiology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Medical imaging modalities and imaging-guided treatments, including patient preparation, risks, costs, and accuracies.
- 542 Clinical Rotation - Dermatology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Disorders of the skin, mucous membranes, hair, and nails, including common skin problems such as acne, atopic dermatitis, contact dermatitis, psoriasis, cutaneous infections, benign skin lesions, and malignant lesions.
- 543 Clinical Rotation - Physical Medicine and Rehabilitation** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Diagnosis and treatment of patients with acute or chronic pathology of the neuromusculoskeletal systems.
- 544 Internal Medicine - Nephrology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Breadth of nephrologic disorders as related to acute kidney injury, chronic kidney disease, hematuria, proteinuria, hyperparathyroidism, hypertension, electrolyte disorders, metabolic/acid-base disorders, and poisoning.
- 545 Internal Medicine - Critical Care** 4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Breadth of complex patient conditions presenting acutely and throughout an intensive care stay.
- 546 Surgery - Vascular Surgery** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Etiologies, pathophysiology, evaluation, treatment, and follow-up care of commonly encountered vascular diseases; participation in supervised patient care and learning activities in various environments.
- 547 Internal Medicine - Cardiology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Cardiac problems and pathology, including, but not limited to, angina and other forms of chest pain, ischemic heart disease, chronic heart failure, other myocardial diseases and arrhythmias.
- 548 Surgery - Orthopaedic Surgery** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the conservative and operative diagnostic and treatment approaches in managing common orthopaedic problems including acute and chronic spine and extremity presentations.
- 549 Internal Medicine - Hematology and Oncology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Acute inpatient and chronic outpatient medical conditions treated by hematology-oncology physicians; treatment options including chemotherapy, immunotherapy, surgery, and radiation therapy.
- 550 Virtual - Residency Preparation Clinical Cases** 2 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. A self-directed online course extending knowledge, skills, and professional attitudes required to address the range of problems that interns encounter.
- 551 Clinical Rotation - Pathology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Anatomic and clinical pathology including surgical pathology, cytopathology, hematopathology, and laboratory medicine.
- 552 Internal Medicine - Gastroenterology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Breadth of digestive system problems and pathology; utility of various diagnostic methods available, including physical diagnosis, laboratory testing, imaging, and endoscopy.
- 553 Pediatrics - Subspecialties** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Identifying and caring for pediatric patients in need of sub-specialty care, with emphasis on medications and interventions.
- 554 Virtual - Telemedicine: Principles of Practice** 2 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Knowledge and skills for the practice of telemedicine through a mock telemedicine practice.
- 555 Clinical Rotation - Telemedicine** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; MED CLIN 554 or by permission of the Associate Dean for Curriculum or designee. Knowledge, skills, and range of medical problems encountered in telehealth practice.
- 556 Virtual - Basic Medical Spanish** 2 Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Self-directed learning for proficiency in medical Spanish.
- 557 Clinical Rotation - Medical Spanish** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 556; exceptions granted by the Associate Dean for Curriculum or designee. Effective communication in a clinical setting where the majority of patients are Spanish speaking.

- 558 Virtual - Medical Humanities** 2 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MED CLIN 524. The intersection of medicine and the humanities as explored through visual arts, film, literature, personal essays, and new media.
- 559 Virtual - Technical Writing in Medicine** 2 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MED CLIN 524. Writing for a variety of needs in the profession of medicine.
- 560 Family Medicine - Ambulatory** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required to address the range of problems that practitioners of family medicine encounter in the ambulatory setting.
- 561 Internal Medicine - Ambulatory** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required to address the range of problems that practitioners of internal medicine encounter in the ambulatory setting.
- 562 Obstetrics and Gynecology - Ambulatory** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required for the practice of gynecology in the ambulatory setting.
- 563 Pediatrics - Ambulatory** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required to address the range of problems that practitioners of pediatrics encounter in the ambulatory setting.
- 564 Psychiatry - Subspecialties** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required to address the range of problems that practitioners of psychiatry encounter in psychiatric settings.
- 565 Surgery - Ambulatory** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required for the practice of surgery in the ambulatory or inpatient setting.
- 566 Internal Medicine - Inpatient** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required to address the range of problems that practitioners of adult hospital medicine encounter.
- 567 Obstetrics and Gynecology - Inpatient** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required for the practice of gynecology.
- 568 Pediatrics - Hospital Medicine** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required to address the range of problems that practitioners of pediatric hospital medicine encounter.
- 570 Away Rotation - North America** V 2-4 May be repeated for credit; cumulative maximum 16 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Extension of knowledge, skills, and professional attitudes required for the practice of a specialty or subspecialty in medicine or surgery or a career pathway not available through ESFCOM in North America.
- 571 Away Rotation - International** V 2-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Extension of knowledge, skills, and professional attitudes required for the delivery of health care in international settings.
- 572 Clinical Rotation - Addiction Medicine** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required to address the range of problems that practitioners in the area of addiction medicine encounter.
- 573 Clinical Rotation - Anesthesiology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required for the practice of anesthesia in both inpatient and outpatient settings.
- 574 Science - Clinical Bioethics** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Introduction to the knowledge, skills, and range of problems that clinical bioethics committees encounter in clinical settings.
- 575 Clinical Rotation - Geriatrics** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required for the practice of geriatrics.
- 576 Internal Medicine - Internal Medicine Subspecialties** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Deep exposure to internal medicine subspecialty disciplines and to the care of patients with more complicated, challenging, or rare conditions not routinely managed in primary care practice.
- 577 Surgery - Subspecialties** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required for the practice of medicine with a focus on disorders commonly encountered by specialists in surgery.
- 578 Surgery - General Surgery** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required for the practice of medicine with a focus on disorders commonly encountered by a general, thoracic, vascular, trauma, or acute care surgeon.
- 579 Science - Medical Informatics** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Extension of knowledge, skills, and professional attitudes required for the application of medical informatics principles to the practice of medicine.
- 580 Clinical Rotation - Neurology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required to address the range of problems that practitioners encounter in neurology.
- 581 Obstetrics and Gynecology - Subspecialties** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the knowledge, skills, and professional attitudes of practitioners of subspecialties of obstetrics and gynecology.
- 582 Science - Quality Improvement and Patient Safety** 2 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Completion of, and application of principles related to, the Institute for Healthcare Improvement Open School's Basic Certificate in Quality and Safety.
- 583 Science - Evidence-Based Medicine** 2 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Application of the principles of Evidence-Based Medicine to a student-selected case.
- 584 Clinical Rotation - Ophthalmology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required for the practice of medicine with a focus on ophthalmologic disorders.
- 585 Clinical Rotation - Hospice and Palliative Medicine** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the knowledge, skills, and range of problems that practitioners in hospice and palliative care encounter.

- 586 Surgery - Neurological Surgery** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the range of medical problems that neurosurgeons encounter.
- 587 Clinical Rotation - Public Health** V 2-4 Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Introduction to the knowledge, skills, and range of problems that public health officers encounter.
- 588 Clinical Rotation - Radiation Oncology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to knowledge, skills, and range of problems encountered by practitioners in the area of radiation oncology.
- 589 Clinical Rotation - Transition to Residency** V 2-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MED CLIN 524. Deeper knowledge and skills required to begin residency in a core medical or surgical specialty.
- 590 Science - Medical Education** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; exceptions granted by the Associate Dean for Curriculum or designee. Theories of learning as applied to medical education; specific areas and objectives formulated by the student and preceptor/mentor.
- 591 Surgery - Otolaryngology (Head and Neck Surgery)** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the range of medical problems that head and neck surgeons encounter.
- 592 Surgery - Plastic Surgery** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the range of medical problems that plastic and reconstructive surgeons encounter.
- 593 Surgery - Thoracic and Cardiac Surgery** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the range of medical problems that cardiothoracic surgeons encounter.
- 594 Surgery - Urology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the range of medical problems that urologic surgeons encounter.
- 595 Surgery - Surgery Critical Care** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the range of medical and surgical issues encountered by surgical intensivists.
- 596 Surgery - Pediatric Surgical Specialties** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required for the practice of medicine with a focus on pediatric disorders.
- 597 Virtual - Virtual Clerkship** V 2-4 May be repeated for credit; cumulative maximum 24 hours. Course Prerequisite: MED CLIN 524. A case-based virtual clerkship emphasizing core skills needed to practice in the discipline.
- 598 Science - Research Experience** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By department permission. In-depth research experience including data-gathering, statistical analyses, and writing research results in preparation for publication.
- 599 Special Projects** V 2-4 May be repeated for credit; cumulative maximum 20 hours. Course Prerequisite: By department permission. Laboratory research, clinical research, or comprehensive review of selected subjects.
- 601 Internal Medicine - Infectious Diseases** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems that infectious diseases physicians diagnose and treat, both in the inpatient and outpatient setting.
- 602 Internal Medicine - Pulmonology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems that pulmonologists diagnose and treat.
- 603 Internal Medicine - Endocrinology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems that endocrinologists treat.
- 604 Internal Medicine - Allergy and Immunology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems that physicians practicing allergy and immunology treat.
- 605 Internal Medicine - Rheumatology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems that rheumatologists treat.
- 606 Internal Medicine - Adult Congenital Heart Disease** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems that cardiologists treat for adult patients with congenital heart diseases.
- 607 Internal Medicine - Heart Failure and Transplant Cardiology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems that cardiologists treat for patients with advanced heart failure.
- 608 Internal Medicine - Electrophysiology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems that electrophysiologists treat.
- 609 Pediatrics - Dermatology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Extension of knowledge, skills, and professional attitudes required for the practice of medicine with a focus on pediatric skin disorders as well as cutaneous manifestations of systemic diseases in children.
- 610 Pediatrics - Medical Genetics and Genomics** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems encountered in the practice of medical genetics.
- 611 Pediatrics - Cardiology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of pediatric cardiology.
- 612 Pediatrics - Hematology and Oncology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of pediatric hematology-oncology.
- 613 Pediatrics - Infectious Diseases** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of pediatric infectious disease.
- 614 Pediatrics - Gastroenterology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of pediatric gastroenterology.
- 615 Pediatrics - Development-Behavioral Pediatrics** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of developmental pediatrics.
- 616 Pediatrics - Adolescent Medicine** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of adolescent medicine.
- 617 Pediatrics - Critical Care** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of pediatric critical care medicine.

- 618 Pediatrics - Neonatal-Perinatal Medicine** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of neonatal-perinatal care and in the neonatal intensive care unit.
- 619 Pediatrics - Neurology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of pediatric neurology.
- 620 Pediatrics - Pulmonology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of pediatric pulmonology.
- 621 Pediatrics - Emergency Medicine** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of pediatric emergency medicine.
- 622 Pediatrics - Rheumatology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of pediatric rheumatology.
- 623 Pediatrics - Endocrinology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of pediatric endocrinology.
- 624 Pediatrics - Diabetology** 2 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the care of the child with diabetes.
- 625 Pediatrics - Child Abuse** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics, with a focus on the range of problems commonly encountered in the practice of child abuse pediatrics, as well as an emphasis on the interprofessional elements of care.
- 626 Psychiatry - Ambulatory** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes that practitioners of psychiatry encounter in outpatient settings.
- 627 Psychiatry - Inpatient** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes that practitioners of psychiatry encounter in inpatient settings.
- 628 Obstetrics and Gynecology - Maternal-Fetal Medicine** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the range of medical and obstetrical problems that maternal-fetal medicine specialists encounter.
- 629 Obstetrics and Gynecology - Gynecologic Oncology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the range of medical problems that gynecologic oncologists encounter.
- 630 Obstetrics and Gynecology - Reproductive Endocrinology and Infertility** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the range of medical problems that reproductive endocrinologists encounter.
- 631 Obstetrics and Gynecology - Urogynecology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the range of medical problems that urogynecologists encounter.
- 632 Obstetrics and Gynecology - Reproductive Health** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Introduction to the range of challenges around reproductive healthcare and specifically contraception.
- 633 Clinical Rotation - Global Health** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Social, economic, and medical factors affecting patients within a global context; ethical challenges tied to various global health practices and endeavors.
- 634 Clinical Rotation - Sleep Medicine** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of medical problems that physicians practicing sleep medicine encounter.
- 635 Clinical Rotation - Pain Medicine** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Evaluation and management of patients with acute and chronic pain from a wide variety of both benign and malignant conditions.
- 636 Clinical Rotation - Sports Medicine** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and range of problems that practitioners in the area of sports medicine encounter.
- 637 Clinical Rotation - Interventional Radiology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of interventional radiology.
- 638 Surgery - Interdisciplinary Medical-Surgical Pediatric Care** 4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524. Knowledge, skills, and professional attitudes required for the practice of pediatrics with a focus on the range of problems commonly encountered by subspecialists in specific disciplines.

MEDICAL ETHICS

MED ETH

- 500 Conceptual Foundations of Bioethics** 3 Course Prerequisite: Admission to the Medical Ethics Certificate Program. Basic tools of moral reasoning, including basic concepts in logic (fallacies, validity, and soundness, etc.); descriptive and normative reasoning, positive and negative rights, basic approaches to morality (deontology and consequentialism, pluralism, etc.) and definitions of equality and justice.
- 510 Seminar in Conceptual Bioethics** 3 Course Prerequisite: Admission to the Medical Ethics Certificate Program. The traditional range of bioethics topics (informed consent; surrogate decision-making; professional rights of conscience; concepts of welfare and quality of life, etc.); basic tools of moral reasoning to analyze these topics.
- 530 The Practice of Clinical Ethics** 3 Course Prerequisite: MED ETH 500; admission to the Medical Ethics Certificate Program Core competencies for healthcare ethics consultation and the skills, knowledge, and background necessary for the effective application of ethics to clinical cases; classic cases that have formed the cannon for bioethics, skills in negotiation, and conflict resolution, as well as communication, note taking and charting skills.
- 540 Seminar in Clinical Ethics: Methods, Process, Skills & Traits** 3 Course Prerequisite: Admission to the Medical Ethics Certificate Program. Investigates the history of clinical ethics including the evolution of medical ethics committees; introduction to significant medical legislation and the canon of case law in clinical ethics; moral reasoning, mediation, and negotiation skills will be honed around sensitive, often controversial issues; several opportunities offered to practice core skills and culminates in a clinical ethics simulation.

FOUNDATIONS OF MEDICAL SCIENCE

MED FMS

501 Foundations of Medical Science I 14 (5-18) Course Prerequisite: Admission to the MD Degree Program. Foundational anatomy, histology, and introductory pathology; physical exam, population health, clinical skills and ethics. S, F grading.

502 Foundations of Medical Science II 13 (7-12) Course Prerequisite: MED FMS 501. Foundational cell and molecular sciences, hematology and oncology; clinical skills. S, F grading.

503 Foundations of Medical Science III 12 (7-10) Course Prerequisite: MED FMS 502. Foundational microbiology, infectious disease, and cardiovascular systems; clinical skills. S, F grading.

509 Special Topics in Medicine V 1-4 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By permission only. S, F grading.

511 Foundations of Medical Science IV 13 (7-12) Course Prerequisite: MED FMS 503. Foundational cardiovascular, respiratory, gastrointestinal, and renal systems; nutritional sciences; clinical skills. S, F grading.

512 Foundations of Medical Science V 13 (7-12) Course Prerequisite: MED FMS 511. Foundational nervous system, psychiatry, and behavioral sciences; endocrine system; human reproduction; clinical skills. S, F grading.

513 Foundations of Medical Science VI 11 (5-12) Course Prerequisite: MED FMS 512. Foundational rheumatology; skin system; musculoskeletal system; clinical immunology; clinical skills. S, F grading.

514 Community Organizing for Health Equity 1 Course Prerequisite: By permission only. Development of community organizing skills for social justice through participatory exercises, discussion, and short lectures. S, F grading.

LEADERSHIP IN MEDICINE AND HEALTHCARE

MED LMH

501 Understanding Yourself as a Physician Leader 1 Course Prerequisite: Admission to the MD Degree Program. Physicians as professionals with a leadership role; basic leadership principles and styles. S, F grading.

502 Leadership of Teams 1 Course Prerequisite: MED LMH 501. Leadership in teams in the context of inter-professional practice. S, F grading.

503 Physicians as Leaders, Scientists, and Advocates 1 Course Prerequisite: MED LMH 502. Leadership in the context of physicians as leaders and advocates in a complex system of healthcare delivery; discovery (research) driven by a different set of stakeholders and political agendas that affect our current payment and delivery systems. S, F grading.

511 Leadership and Management in Healthcare: Microsystem to Macrosystem 1 Course Prerequisite: MED LMH 503. Management and leadership skills in healthcare; progression from basic theoretical models to case examples; understanding of current US health economics and how US insurance systems work; how systems are managed and led in both public and private sectors. S, F grading.

512 Improving Healthcare through Leadership, Advocacy, and Innovation: Person to Profession 1 Course Prerequisite: MED LMH 511. Identification and analysis of physician participation in leadership, advocacy, and innovation from the patient level to the national level in both public and private sectors. S, F grading.

513 Information Management in Healthcare: Clinical Information Systems 1 Course Prerequisite: MED LMH 512. Leadership skills as related to healthcare information management, including clinical information systems. S, F grading.

521 Quality and Safety in Healthcare: Medical Errors 1 Course Prerequisite: MED LMH 513. Quality in healthcare, including safety and quality metrics, measurement and reporting of quality, analysis of patient safety and medical errors, including root cause analysis; physician disclosure and the difference between errors and malpractice. S, F grading.

522 Continuous Quality Improvement in Healthcare 1 Course Prerequisite: MED LMH 521. Waste analysis in healthcare and continuous quality improvement (CQI) strategies; application of CQI and 'LEAN management' models in healthcare settings. S, F grading.

523 Value-based Care 1 Course Prerequisite: MED LMH 522. Introduction to principles and practice of value-based care. S, F grading.

531 Personal Leadership Development I 1 Course Prerequisite: MED LMH 523. Development of capstone project proposal and plan; exploration of personal leadership development plan; includes application of knowledge and experience from coursework, clerkships and/or healthcare-related volunteer activities. H, S, F grading.

532 Personal Leadership Development II 1 Course Prerequisite: MED LMH 531. Literature review for capstone project; identification of leadership opportunities for personal leadership development plan; includes application of knowledge and experience from coursework, clerkships and/or healthcare-related volunteer activities. H, S, F grading.

533 Personal Leadership Development III 1 Course Prerequisite: MED LMH 532. Completion and presentation of capstone project; creation of coalitions and synthesis as part of personal leadership development plan; includes application of knowledge and experience from coursework, clerkships and/or healthcare-related volunteer activities. H, S, F grading.

Medical Scholarship

MEDSCHLR

500 Foundations of Scholarship and Discovery I 1 May be repeated for credit; cumulative maximum 2 hours. Exploration of scholarship and scientific research in the field of medicine. S, F grading.

520 Foundations of Scholarship and Discovery II V 1-3 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: MEDSCHLR 500. Individual exploration and refinement of scholarly pursuits. S, F grading.

540 Foundations of Scholarship and Discovery III V 1-3 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: MEDSCHLR 500. Individual exploration and refinement of scholarly pursuits, culminating in a final project report. S, F grading.

Department of Translational Medicine and Physiology

medicine.wsu.edu/research/dcp/biomedical-sciences/
P.O. Box 1495, Spokane, WA 99210
509-368-6791

Chair and Professor, K. Roberts; Professors, M. G. Frank, J. Wisor; Associate Professors, L. Kapas, W. Li, J. Sun, E. Szentirmai; Clinical Associate Professors, T. Chauvin, C. J. Davis; Assistant Professors, J. Gerstner, D. Hansen, K. Honn, Y. Lee, Y. Liu, L. Peixoto; Clinical Assistant Professor, W. Vanderheyden; Research Assistant Professor, C. Hayworth; Scholarly Assistant Professors, K. Courtney, B. Satterfield.

The Department of Translational Medicine and Physiology is the central hub of foundational, and translational biomedical research at the Elson S. Floyd College of Medicine. Our faculty represent a diverse set of interests, ranging from the neuroscience of sleep to cancer. Their work extends from cell and molecular physiology to behavioral studies, and they employ a full range of model system as well as human subjects.

The Department provides research opportunities to graduate students in participating Ph.D. programs and to medical students.

Our mission is to promote and support basic and translational research in biomedical sciences at the highest level. To this end, we recruit talented and collaborative scientists to our faculty and provide them with state-of-the-art laboratories and core facilities. We strive for discovery in the function of basic physiologic systems and their associated disease states with an intent to translate our findings to improve human health.

Description of Courses

Translational Medicine and Physiology

TMP

550 Biochemistry for the Health Sciences

3 Course Prerequisite: Admitted to a WSU graduate program in Health Sciences. Human health and health-related principles taught at the biochemical level, including intermediary metabolism, proteins, medical nutrition, and gene expression. (Formerly offered as BIOMED 550.)

Department of Military Science

rotc.wsu.edu
Avery 405
509-335-2591

Department Chair and Professor, LTC Matthew R. Sheftic; Military Science MS1 Instructor, CPT Michelle M. Kelly; Military Science MS2 Instructor, SFC Marcin Radwan; Military Science MS3 Instructor, CPT Michael Eckstein; Assistant PMS/Instructors, MAJ Anthony Catalano, CPT Tyler Hash, SFC Patrick Valkovic, SFC Benjamin Adair, SSG Ismael Perez.

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 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 and upon completion of basic courses.

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 skills applicable in both military and civilian occupations. During the summer, usually between the junior and senior year of academic study, cadets must attend Advanced Camp at Fort Knox, KY. This is a 43-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). Contracted cadets receive a monthly stipend of \$420 per month. High school juniors may apply for a four-year Army ROTC scholarship beginning June 12th after their junior year, with a deadline of January 10th of their senior year of high school. Students at WSU may apply for campus-

based scholarships if they meet GPA, medical and physical requirements.

High school students may also join ROTC by enlisting into the Army National Guard or Army Reserves and simultaneously serving as a cadet in the Simultaneous Membership Program (SMP) while enjoying all of the financial benefits that accompany the program. Additionally, special scholarships are available for SMP Cadets who pursue a commission into the Army Reserves through Guaranteed Reserve Forces Duty (GRFD) scholarship. Prospective cadets interested in the SMP Program should also inquire about the tremendous benefits of yet another type of scholarship called the Minuteman Scholarship.

Upon successful completion of the advanced course and graduation from WSU, cadets are commissioned as U.S. Army officers and serve in the Active Duty Army, the Army Reserves, or the Army National Guard. For more information, please contact Mr. Timothy A. Tate at (509)-308-9676 or tim-tate@wsu.edu.

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

smb.wsu.edu
Biotechnology-Life Sciences 102
509-335-1276

Director and Regents Professor, M. Griswold; Senior Associate Director and Professor, M. Konkel; Associate Director for Graduate Program and Associate Professor, J. Watts; Associate Director for Undergraduate Programs and Associate Professor, E. Offerdahl; Associate Director for Alumni Relations and Clinical Associate Professor, P. Mixer; Director of PSM Program and Clinical Professor, N. McCabe; Assistant Director for Undergraduate Laboratories and Clinical Associate Professor, C. Helmick; Regents Professor, M. Smerdon; Professors, J. Alderete, R. Brosemer, T. Hassold, P. Hunt, M. Klotz (Tri-Cities), J. Oatley, J. Wyrick, L. Xun; Associate Professors, C. Cooper (Vancouver), W. Davis, L. Gloss, A. Goodman, C. Haseltine, C. Her, S. Roberts, E. Shelden, S. Sylvester (Vancouver); Assistant Professors, R. Driskell, W. Winuthayanon; Clinical Professor, M. Sanchez-Lanier; Clinical Assistant Professors, J. Hinz, M. Rolfsmeier; Instructor, J. Arneson.

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-genetic 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 and Doctor of Philosophy in Molecular Biosciences. The School also offers a Professional Science Master's degree in Molecular Biosciences that can be earned either on the Pullman Campus or through WSU Global Campus. In addition the school offers a combined undergraduate degree in Genetics and Cell Biology and PSM in Molecular Biosciences.

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 to 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 oral and written communication skills necessary to effectively communicate key scientific findings in the molecular biosciences to both non-scientific 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, PRE-PHYSICIAN ASSISTANT 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 advised by a faculty member or professional advisor in the School and additionally work with a professional specialist from the Health Professions Student Center.

Students from all three SMB undergraduate majors have been successfully admitted to professional programs in human medicine, veterinary medicine, physician assistant, pharmacy, 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-PharmD program offered in cooperation with the WSU College of Pharmacy and Pharmaceutical Sciences. Pre-veterinary medicine students can elect to pursue any SMB major, and high-achieving students should consider the 7-year Honors Fast track B.S. Microbiology to DVM program. Students interested in either of these fast track programs should contact the School for more information.

BIOCHEMISTRY

Biochemistry is an interdisciplinary science that applies the methods and theories of chemistry to understand chemical reactions in living organisms. Biochemists seek to understand life at all levels, from individual molecules inside cells to complex interactions within ecosystems. An

undergraduate major in biochemistry will prepare you for a variety of careers including biotechnology, drug design, science policy, bioinformatics, forensics, genetic counseling, health professions, science communication, and so many more! Biochemistry majors will be able to apply the principles of biochemistry, biophysics, and molecular biology to answer questions in a wide range of research areas including protein biochemistry, molecular biology of gene regulation, enzymatic reaction mechanisms, signal transduction, DNA repair, reproductive biology, DNA-protein interactions, plant and natural product biochemistry, and structural biology including nuclear magnetic resonance (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 interrelated sciences that are fundamental to all fields of modern biology. Undergraduates who major in genetics and cell biology will be well versed in aspects of the rapidly emerging fields of genomics, epigenetics, proteomics, bioinformatics and molecular signaling. The program affords students the opportunity to learn from and interact with scientists whose diverse research programs include the genetics of cancer and development, chromosome abnormalities, DNA repair mechanisms, stem cell biology and the biology of reproduction. Our faculty work with a diverse group of model organisms including *C. elegans*, *Drosophila*, zebrafish, mice and rats, as well as using cell culture, plants, and microbial experimental systems. Graduates of the degree will be prepared to work in careers that traditionally may not have required science training including: science communication, forensics, law enforcement, community outreach science organizations and science policy development. In addition, students will be trained for positions as researchers in biotechnology companies, within healthcare and in academic institutions. This degree also prepares students for entry into graduate programs leading to Master's, Professional Science Master's and PhD degrees in a variety of disciplines including the broad areas of molecular biology, molecular genetics and cell biology. In addition, students will also be well prepared to enter the professions of medicine, dentistry, veterinary medicine, physician assistant, genetic counseling and education.

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 bioremediation, molecular

genetics, molecular basis of cell-cell interactions and pathogen virulence, microbial differentiation, cellular immunology and the regulation of the immune response.

The Microbiology degree program offers options in either molecular biology or medical technology, leading to the Bachelor of Science degree in Microbiology. An additional year in an accredited school of clinical laboratory sciences is required after graduation for those interested in becoming certified clinical laboratory scientists.

ADMISSION TO THE MAJOR REQUIREMENTS:

A student may be admitted to a School of Molecular Biosciences major (biochemistry, genetics and cell biology, or microbiology) upon making their intention known to the department. Please reference the schedule of studies for additional information on maintaining good standing for each major.

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.

STUDENT LEARNING OUTCOMES

For the Biochemistry, Genetics and Cell Biology, and Microbiology Degree Programs:

Before Graduating with a degree from SMB, a student will achieve these learning outcomes:

Global

- Be competitive for professional and graduate studies and/or employment.

Knowledge

- Identify the modern foundational knowledge underlying Biochemistry, Cell Biology, Genetics, and Microbiology.
- Recognize relevant ethical concepts related to scientific publication and research conduct.

Skills

- Perform basic laboratory techniques used in molecular bioscience research (e.g. light microscopy, gel electrophoresis, PCR, and protein analysis).
- Design, perform, and quantitatively/qualitatively evaluate the results of laboratory experiments.
- Locate, retrieve, and evaluate scientific information, especially primary literature, with regards to its adequacy, value, and logic.
- Prepare oral and written reports in standard scientific formats.

Attitudes

- Decide that studying the molecular biosciences is rewarding and relevant to everyday life experiences.
- Appreciate the importance of the ethical implications of scientific issues in society.

Schedules of Studies

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

BIOCHEMISTRY - BIOPHYSICS OPTION (120 CREDITS)

A student may be admitted to a School of Molecular Biosciences Biochemistry major upon making their

intention known to the department. To remain in good standing, a student must meet the following two requirements:

- Complete BIOLOGY 106, BIOLOGY 107, CHEM 105 and CHEM 106, MBIOS 301, MBIOS 303, MBIOS 305, or transfer equivalents, with a minimum grade of C.

- After 30 credits, maintain a minimum cumulative GPA of at least 2.5.

A Biochemistry major who falls below the minimum requirements will be released from the program according to Academic Regulation 53.

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>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 106 (accelerated) or Elective ¹	3
MATH 108 (accelerated) or Elective ¹	2

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 345	4
MATH 172	4
MBIOS 201 [COMM]	3
MBIOS 301	4

<i>Second Term</i>	<i>Credits</i>
CHEM 348	4
MBIOS 303	4
PHYSICS 201	3
PHYSICS 211	1
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Humanities [HUM]	3
PHYSICS 202	3
PHYSICS 212	1
MBIOS 305	3

<i>Second Term</i>	<i>Credits</i>
CHEM 347	3
Diversity [DIVR]	3
MBIOS 304	3
MBIOS 401	3
MBIOS 465	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
CHEM 220	2
CHEM 222	2
MBIOS 413	3
MBIOS 466 or PHYSICS 466	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
MBIOS 414	3
MBIOS 454 [M]	3

MBIOS 494 [M] [CAPS]	3
Electives	9
Exit Survey	

¹ If required - consult advisor.

BIOCHEMISTRY - MOLECULAR BIOLOGY OPTION (120 CREDITS)

A student may be admitted to a School of Molecular Biosciences Biochemistry major upon making their intention known to the department. To remain in good standing, a student must meet the following two requirements:

- Complete BIOLOGY 106, BIOLOGY 107, CHEM 105 and CHEM 106, MBIOS 301, MBIOS 303, MBIOS 305, or transfer equivalents, with a minimum grade of C.

- After 30 credits, maintain a minimum cumulative GPA of at least 2.5.

A Biochemistry major who falls below the minimum requirements will be released from the program according to Academic Regulation 53.

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>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG] or Elective	3
MATH 106 (accelerated) or Elective ¹	3
MATH 108 (accelerated) or Elective ¹	2

<i>Second Term</i>	<i>Credits</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>Credits</i>
CHEM 345	4
MBIOS 201 [COMM]	3
MBIOS 301	4
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1

<i>Second Term</i>	<i>Credits</i>
CHEM 348	4
MBIOS 303	4
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Humanities [HUM]	3
MBIOS 305	3
STAT 212 or 412	3 or 4
Electives	3

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
MBIOS 304	3
MBIOS 401	3

MBIOS 465	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
MBIOS 404	3
MBIOS 413	3
Electives	8

<i>Second Term</i>	<i>Credits</i>
MBIOS 414	3
MBIOS 454 [M]	3
MBIOS 494 [M] [CAPS]	3
Lecture Elective ²	3
Electives	3
Exit Survey	

¹ If required - consult advisor.

² Lecture elective: select one from MBIOS 410, 423, 426, 440, 442, 450, 466, 478; PHYSICS 466.

BIOCHEMISTRY - ACCELERATED PRE-PHARMACY OPTION (133 CREDITS)

This option has been established for admission of highly academically qualified students to the Doctor of Pharmacy (PharmD) program in the Washington State University College of Pharmacy. The program of study consists of three years of undergraduate coursework that fulfills the pre-pharmacy Biochemistry requirements followed by the four-year PharmD Program. Satisfactory completion of this 7-year curriculum leads to the Bachelor of Science (B.S.) in Biochemistry and Doctor of Pharmacy (PharmD) degrees.

Early admission to the PharmD program requires approval of the WSU Pharmacy Admissions Committee.

Admission requirements for the Biochemistry - Accelerated Pre-Pharmacy option include:

- Completion of BIOLOGY 106, BIOLOGY 107, CHEM 105, and CHEM 106 or 116 with a minimum grade of C

- A minimum cumulative GPA of 2.50

- A minimum of 24 credits at WSU

Students must complete a minimum of 90 undergraduate credits including 30 credits of upper-division coursework, and 30 credits (1st year) of the PharmD coursework, as specified, to earn the Bachelor of Science in Biochemistry.

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. Completed core requirements may not be used to satisfy lecture or lab electives.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ECONS 101 [SSCI]	3
ENGLISH 101 [WRTG]	3
PSYCH 105	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

<i>Third Term</i>	<i>Credits</i>
(Summer) PHYSICS 101 or 201	3
(Summer) PHYSICS 111 or 211	1

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 345	4
Communication [COMM]	3
MBIOS 301	4
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1

<i>Second Term</i>	<i>Credits</i>
CHEM 348	4
MBIOS 303	4
MBIOS 304	3
PHIL 103 [HUM] or 365 [HUM]	3
Complete Writing Portfolio	

<i>Third Term</i>	<i>Credits</i>
(Summer) MBIOS 305	3

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 315	4
MBIOS 413	3
MBIOS 454 [M]	3
STAT 212 or 412	3 or 4

<i>Second Term</i>	<i>Credits</i>
ENGLISH 302 or 402	3
MBIOS 401	3
MBIOS 414	3
MBIOS 494 [M] [CAPS]	3
NEUROSCI 425	3
NEUROSCI 426	1

<i>Third Term</i>	<i>Credits</i>
(Summer) Diversity [DIVR]	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
PHARMACY and PHARDSCI coursework ¹	15

<i>Second Term</i>	<i>Credits</i>
PHARDSCI 519 ²	3
Additional PHARMACY and PHARDSCI coursework ¹	12
Exit Survey	

¹ Additional (required) first-year PharmD courses satisfy the Biochemistry elective requirement of the B.S. in Biochemistry. Students must complete a minimum of 30 semester hours of credit in 500-level PHARMACY and PHARDSCI courses, while pursuing the subsequent PharmD degree in order to complete the requirements for the accelerated bachelor's degree.

² Satisfies the Laboratory Elective for the B.S. in Biochemistry.

GENETICS AND CELL BIOLOGY – MOLECULAR BIOLOGY OPTION (120 CREDITS)

A student may be admitted to a School of Molecular Biosciences Genetics and Cell Biology major upon making their intention known to the department. To remain in good standing, a student must meet the following two requirements:

• Complete BIOLOGY 106, BIOLOGY 107, CHEM 105 and CHEM 106, MBIOS 301, MBIOS 303, MBIOS 305, or transfer equivalents, with a minimum grade of C.

• After 30 credits, maintain a minimum cumulative GPA of at least 2.5.

A Genetics and Cell Biology major who falls below the minimum requirements will be released from the program according to Academic Regulation 53.

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. Completed core requirements may not be used to satisfy lecture or lab electives.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 106 (accelerated) or Elective ¹	3
MATH 108 (accelerated) or Elective ¹	2

<i>Second Term</i>	<i>Credits</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>Credits</i>
CHEM 345 ²	4
Humanities [HUM]	3
MBIOS 301	4
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
MBIOS 303	4
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
MBIOS 201 [COMM]	3
MBIOS 304	3
MBIOS 305	3
STAT 212 or 412	3 or 4
Electives	3

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
Lecture Elective ³	3
MBIOS 401	3
Electives	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
MBIOS 404	3
MBIOS 423	3
MBIOS 478	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
MBIOS 402 [M]	3
MBIOS 442 or BIOLOGY 476	3
MBIOS 494 [M] [CAPS]	3

Electives	8
Exit Survey	

¹ If required - consult advisor.

² CHEM 345 and 348 recommended for professional or graduate degrees.

³ Lecture elective: select one from BIOLOGY 420, 475, 476; MBIOS 410, 413, 426, 440, 442, 450, 503.

MICROBIOLOGY – HONORS ACCELERATED PRE-VETERINARY OPTION (120 CREDITS)

This option has been established for admission of highly academically qualified students to the Doctor of Veterinary Medicine (D.V.M.) program at the Washington State University College of Veterinary Medicine (CVM). The program of study consists of three years of undergraduate coursework that fulfills the pre-veterinary microbiology requirements followed by the four-year D.V.M. Program. Satisfactory completion of this 7-year curriculum leads to the Bachelor of Science (B.S.) in Microbiology and Doctor of Veterinary Medicine (D.V.M.) degrees.

All students who qualify for admission to the WSU Honors College are eligible to apply for pre-admission to the College of Veterinary Medicine after one year of Honors pre-veterinary microbiology curriculum. Interested applicants should identify themselves to the Honors College as soon as they decide to enroll at the University because the number of available seats in the B.S./D.V.M. Program is limited. Early admission to the D.V.M. Program requires approval of the CVM Admissions Committee. Accepted students are pre-admitted directly to the D.V.M. program. To maintain pre-admission into the D.V.M. Program, accepted students must achieve an overall grade point average of 3.50 or better in all undergraduate coursework.

Students may be admitted to the Microbiology – Accelerated Pre-Veterinary option after completing a minimum of 30 semester credits in residence at WSU with a 2.5 cumulative GPA, and a grade of C or better in each of the following courses: BIOLOGY 106; BIOLOGY 107; CHEM 105; CHEM 106 or 116. Completion of the degree requires completion of Honors curriculum; a minimum of 90 undergraduate credits including 30 upper-division credits; and one year of DVM coursework.

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. Completed core requirements may not be used to satisfy lecture or lab electives.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106	4
CHEM 105	4
ENGLISH 298	4
Foreign Language (if needed) ¹	0-4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 106 or 116 ²	4
HONORS 270	3
Foreign Language (if needed) or Elective ¹	2-4

<i>Third Term</i> (Summer) MATH 140 or 171	<i>Credits</i> 4	⁶ Additional D.V.M. courses required in the first year of the D.V.M. program to satisfy the Microbiology elective requirement for the B.S. in Microbiology. Students must complete a minimum of 30 credits in 500-level (professional or graduate) courses, while pursuing the subsequent D.V.M. degree in order to complete the requirements for this accelerated bachelor's degree.	PHYSICS 111 or 211 STAT 212 or 412 Electives	1 3 or 4 3
Second Year				
<i>First Term</i> CHEM 345 HONORS 280 M BIOS 301 STAT 212	<i>Credits</i> 4 3 4 4	⁷ VET MED 534 satisfies the Immunology requirement (M BIOS 440) for the B.S. in Microbiology.	<i>Second Term</i> Diversity [DIVR] M BIOS 410 M BIOS 450 PHYSICS 102 or 202 PHYSICS 112 or 212 Electives	<i>Credits</i> 3 3 3 3 1 3
<i>Second Term</i> HONORS 290 ² M BIOS 303 M BIOS 304 PHYSICS 101 or 201 PHYSICS 111 or 211 Complete Writing Portfolio	<i>Credits</i> 3 4 3 3 1		Fourth Year	
<i>Third Term</i> (Summer) M BIOS 305	<i>Credits</i> 3		<i>First Term</i> BIOLOGY 418 M BIOS 404 M BIOS 430 [M] M BIOS 440 Electives	<i>Credits</i> 4 3 3 3 3
Third Year				
<i>First Term</i> HONORS 370 HONORS 380 HONORS 398 ³ M BIOS 404 M BIOS 494 [CAPS] [M] PHYSICS 102 or 202 PHYSICS 112 or 212	<i>Credits</i> 3 3 0 or 1 3 3 3 1	A student may be admitted to a School of Molecular Biosciences Microbiology major upon making their intention known to the department. To remain in good standing, a student must meet the following two requirements: • Complete BIOLOGY 106, BIOLOGY 107, CHEM 105 and CHEM 106, M BIOS 301, M BIOS 303, M BIOS 305, or transfer equivalents, with a minimum grade of C. • After 30 credits, maintain a minimum cumulative GPA of at least 2.5.	<i>Second Term</i> M BIOS 411 [M] M BIOS 442 M BIOS 494 [M] [CAPS] Electives Exit Survey	<i>Credits</i> 3 3 3 5
<i>Second Term</i> HONORS 390 HONORS 450 M BIOS 410 M BIOS 411 [M] M BIOS 450	<i>Credits</i> 3 1 3 3 3	A Microbiology major who falls below the minimum requirements will be released from the program according to Academic Regulation 53. A grade of C or better is required in all M BIOS courses taken to meet graduation requirements. None of these courses may be taken pass/fail. Completed core requirements may not be used to satisfy lecture or lab electives.	¹ If required - consult advisor. ² CHEM 345 and 348 recommended for professional or graduate degrees.	
Fourth Year				
<i>First Term</i> VET MED 511 ⁴ VET MED 535 ⁵ Additional DVM coursework ⁶	<i>Credits</i> 5 3 7		MICROBIOLOGY – MOLECULAR BIOLOGY OPTION (120 CREDITS)	
<i>Second Term</i> VET MED 534 ⁷ Additional DVM coursework ⁶ Exit Survey	<i>Credits</i> 5 10	First Year	A student may be admitted to a School of Molecular Biosciences Microbiology major upon making their intention known to the department. To remain in good standing, a student must meet the following two requirements: • Complete BIOLOGY 106, BIOLOGY 107, CHEM 105 and CHEM 106, M BIOS 301, M BIOS 303, M BIOS 305, or transfer equivalents, with a minimum grade of C. • After 30 credits, maintain a minimum cumulative GPA of at least 2.5. A Microbiology major who falls below the minimum requirements will be released from the program according to Academic Regulation 53. A grade of C or better is required in all M BIOS courses taken to meet graduation requirements. None of these courses may be taken pass/fail. Completed core requirements may not be used to satisfy lecture or lab electives.	
First Year				
<i>First Term</i> BIOLOGY 106 [BSCI] or 107 [BSCI] CHEM 105 [PSCI] ENGLISH 101 [WRTG] MATH 106 (accelerated) or Elective ¹ MATH 108 (accelerated) or Elective ¹	<i>Credits</i> 4 4 3 3 2	<i>Second Term</i> BIOLOGY 106 or 107 CHEM 106 HISTORY 105 [ROOT] MATH 140 [QUAN] or 171 [QUAN]	<i>First Term</i> BIOLOGY 106 [BSCI] or 107 [BSCI] CHEM 105 [PSCI] ENGLISH 101 [WRTG] MATH 106 (accelerated) or Elective ¹ MATH 108 (accelerated) or Elective ¹	<i>Credits</i> 4 4 3 3 2
Second Year				
<i>First Term</i> Arts [ARTS] CHEM 345 ² Humanities [HUM] M BIOS 301	<i>Credits</i> 3 4 3 4	<i>Second Term</i> M BIOS 303 M BIOS 305 Social Sciences [SSCI] Electives Complete Writing Portfolio	<i>Second Term</i> BIOLOGY 106 [BSCI] or 107 [BSCI] CHEM 105 [PSCI] ENGLISH 101 [WRTG] MATH 106 (accelerated) or Elective ¹ MATH 108 (accelerated) or Elective ¹	<i>Credits</i> 4 4 3 3 3
Third Year				
<i>First Term</i> Communication [COMM] or Written Communication [WRTG] M BIOS 304 PHYSICS 101 or 201	<i>Credits</i> 3 3 3		<i>Second Term</i> BIOLOGY 106 or 107 CHEM 106 HISTORY 105 [ROOT] MATH 140 [QUAN] or 171 [QUAN]	<i>Credits</i> 4 4 3 4
Footnotes:				
¹ The Foreign Language requirement may be satisfied in one of the following ways: 1) Satisfactory completion of the STAMP test 2) Satisfactory completion of a foreign language 204-level course 3) Completion of a minor in a foreign language 4) Earning the Honors College Certificate of Global Competencies 5) Students with a native language that is not English and who come to the United States after 8th grade can be exempted from the foreign language requirement with approval of an Honors advisor				
² Students who complete CHEM 116 fulfill the Honors College HONORS 290 requirement and another 3-credit course can be substituted.				
³ HONORS 398 is an optional thesis-preparation course.				
⁴ VET MED 511 satisfies the Laboratory Elective for the B.S. in Microbiology.				
⁵ VET MED 535 satisfies the Virology requirement (M BIOS 442) for the B.S. in Microbiology				

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 345 ²	4
Humanities [HUM]	3
MBIOS 301	4
<i>Second Term</i>	<i>Credits</i>
MBIOS 303	4
MBIOS 305	3
Social Sciences [SSCI]	3
Electives	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
MBIOS 201 [COMM]	3
MBIOS 304	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
STAT 212 or 412	3 or 4
Electives	2
<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
MBIOS 410	3
MBIOS 450	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Lecture Elective ³	3
MBIOS 404	3
MBIOS 430 [M] or 411 [M]	3
MBIOS 440	3
Electives	3
<i>Second Term</i>	<i>Credits</i>
MBIOS 442	3
MBIOS 494 [M] [CAPS]	3
Electives	9
Exit Survey	

¹ If required - consult advisor.² CHEM 345 and 348 recommended for professional or graduate degrees.³ Lecture elective: select one from MBIOS 342, 401, 413, 426, 446; BIOLOGY 418, ENTOM 343, FS 416.**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 credits under the genetics and cell biology degree

program at the 300-400-level, including MBIOS 301, 401, and 478. Additional credits may be selected from MBIOS 402, 404, 423, and no more than one from ANIM SCI 330, BIOLOGY 321, 335, CROPSCI/HORT 445, NEUROSCI 305, or PHIL 365. 9 credits 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 or 333, 440 or 444, 445, one of PSYCH 311, STAT 212, 360, 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.

138 Molecular Biosciences Seminar 1 Introduction to the field of molecular biosciences: careers, current events, research opportunities at WSU, scientific and research ethics. S, F grading.

201 [COMM] Introduction to Communication in the Molecular Life Sciences 3 (1-4) Course Prerequisite: BIOLOGY 106 with a C or better or BIOLOGY 107 with a C or better. Analysis of primary literature and an introduction to scientific communication skills in the molecular life sciences. (Crosslisted course offered as NEUROSCI 201, MBIOS 201). Recommended preparation: Pre-admitted or admitted major in Biochemistry, Genetics & Cell Biology, Microbiology, or Neuroscience.

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 or concurrent enrollment. 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 for graduate students: Introductory genetics and biochemistry coursework.
- 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. Cooperative: Open to UI degree-seeking students.
- 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 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; 4 credits of PHYSICS 102 or 202, or PHYSICS 102 and 112 or concurrent enrollment, or PHYSICS 202 and 212 or concurrent enrollment. Biochemical reactions and processes, molecular recognition, coupled reactions, enzyme catalysis, analysis of macromolecular structure by electrophoresis, sedimentation, viscosity, and spectroscopy.
- 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.
- 480 Methods of Teaching Secondary Science I 3** Course Prerequisite: Junior standing. Application of learning and theory and philosophy and structure of science in teaching middle and secondary school science courses. (Crosslisted course offered as BIOLOGY 430, MBIOS 480, TCH LRN 430).
- 481 Methods of Teaching Secondary Science II 3** Course Prerequisite: BIOLOGY 430, MBIOS 480, or TCH LRN 430; junior standing. Integration of assessment, curricular, and technological tools into instruction that aligns with learning theory and the philosophy/structure of science. (Crosslisted course offered as BIOLOGY 431, MBIOS 481, TCH LRN 431).
- 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: Admitted to the 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. Course Prerequisite: Minimum 1 credit MBIOS 499. Continued laboratory research; requires oral or poster presentation at a WSU event or external meeting.
- 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 for graduate students: Introductory genetics and biochemistry coursework.
- 503 Advanced Molecular Biology I 3** DNA replication, gene expression and regulation, including chromatin structure, DNA repair, recombination, genomic editing, and epigenetic regulation.
- 505 Cell Biology of Disease 3** 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.
- 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.
- 525 Advanced Topics in Genetics V 1-3** May be repeated for credit; cumulative maximum 4 hours. Recent genetics research in selected areas. Recommended preparation: MBIOS 503 or an equivalent course providing a basic understanding of molecular biology or molecular genetics.
- 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 V 1-3** May be repeated for credit; cumulative maximum 3 hours. Selected topics in cell biology using current literature. Recommended preparation: MBIOS 401 or an equivalent course providing a basic understanding of a typical eukaryotic cell.
- 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. Cooperative: Open to UI degree-seeking students.
- 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; cumulative maximum 2 hours. Selected topics in immunology and virology using the current literature. Recommended preparation: Concurrent enrollment with MBIOS 540 or 542. Cooperative: Open to UI degree-seeking students.
- 550 Microbial Physiology 3** Basic microbial physiology and its relevance to the processes of applied microbiology. Credit not granted for both MBIOS 450 and 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).
- 563 Deconstruction of Research 3** Course Prerequisite: Graduate standing in a WSU biomedical based graduate program. Nature and development of scientific investigation through oral and written avenues, and methods of critical analyses applied to questions of biomedical interest. (Crosslisted course offered as NEUROSCI 563, GLANHLTH 563, MBIOS 563, VET MICR 563, VET PATH 563, VET PH 563).
- 564 Topics in Biomedical Experimentation V 1-3** May be repeated for credit; cumulative maximum 6 hours. Examination of the philosophy of experimental design and practical application and analysis of various experimental approaches in biomedical research. Recommended preparation: graduate standing in a WSU biomedical-based program, and an advanced undergraduate or graduate statistics course. (Crosslisted course offered as NEUROSCI 564, GLANHLTH 564, MBIOS 564, PHIL 564, VET MICR 564, VET PATH 564, VET PH 564).
- 568 Advanced Topics in Molecular Biosciences V 1-3** May be repeated for credit. 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 MPS 574, CHE 574, MBIOS 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 1** 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.
- 585 Molecular Biotechniques 2** Background and application of classical and current techniques involved in cloning, characterization, modification, and expression of genes.
- 586 Molecular Biotechniques Laboratory 1 (0-3)** Laboratory exploration of classical and current techniques involved in cloning, characterization, modification, and expression of genes. Recommended preparation: MBIOS 585 or concurrent enrollment.
- 593 Research Proposal 2** May be repeated for credit; cumulative maximum 4 hours. Written proposal and oral defense of research project in the area of molecular biosciences. 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.
- 701 Master's Independent Capstone Project and /or Examination V 1-6** May be repeated for credit. Capstone project or final examination for professional master's degree under the Graduate School. The credits will include a balloted evaluation of the student's completion of the program's capstone/examination requirements by the program's graduate faculty. Students must have graduate degree-seeking status and obtain approval from their major advisor/committee chair before enrolling for 701 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: Admitted to the Molecular Biosciences PhD program. 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.
509-335-7619

Chair and Professor, M. M. Neff; Professors, J. A. Browse, R. S. Brueggeman, I. C. Burke, A. B. Cousins, A. Dhingra, D. R. Gang, K. S. Gill, S. H. Hulbert, M. L. Kahn, A. Kalyanaraman, C. H. Kang, M. Knoblauch, N. R. Knowles, B. M. Lange, N. G. Lewis, T. W. Okita,

H. Pappu, J. Peters, B. W. Poovaiah, E. Roalson, M. Tegeger; Associate Professors, J. W. Busch, A. H. Carter, H. A. Hellmann, H. Kirchhoff, A. J. McCubbin, M. Pumphrey, S. Roje, A. Smertenko, J. J. Wyrick; Assistant Professors, S. P. Ficklin, M. Friesen, C. Gleason, H. H. Kunz, K. Sanguinet, K. Tanaka, Z. Zhang; Adjunct Professors, K. G. Campbell, W. Chen, D. W. Crowder, P. A. Okubara, C. M. Steber, L. S. Thomashow.

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.

The Objectives and Outcomes of the Program

To enable students to develop as successful professionals in a collaborative, interdisciplinary environment as preparation for highly competitive positions in industry, government, and academia, the program aims to provide a variety of experiences that help students to:

- Achieve mastery of knowledge in the general field of molecular plant sciences and the highest level of expertise in a specific, defined area of this field
- Develop the expertise to use molecular technology to solve novel and emerging problems related to plant and agricultural sciences
- Present research to local, regional, national, and international audiences through publications in professional journals and conference papers given in a range of venues and to a diverse type of audience
- Participate in professional organizations, becoming members, attending meetings, and taking leadership roles where appropriate
- Broaden their professional foundations through activities such as teaching, internships, fellowships, and grant applications
- To prepare students to be effective and innovative researchers in the field of molecular plant sciences, the program aims to provide a variety of experiences that help students to:
 - Become independent, self-motivated researchers with the ability to recognize problems in their field of expertise and formulate solutions to the problems
 - Develop a comprehensive knowledge of previous and current research in their field of expertise and be able to demonstrate that knowledge capably in a review of the literature
 - Generate viable questions within their field of expertise and pose problems or hypotheses related to those questions
 - Apply sound research methods to problems in molecular plant sciences and describe the methods effectively
 - Perform statistical analyses of research data and present the results in a way that makes clear sense of the data
 - Discuss the solution to the research problem or the support or lack of support for the hypothesis in a way that effectively documents the contribution of the research to the area of study

To enhance visibility of the doctoral program in molecular plant sciences nationally and internationally, the program aims to:

- Attract and retain high-quality students
- Provide effective mentoring that encourages students to graduate in a timely manner
- Place graduates in positions in academia, industry, and government
- To attract, retain, and support nationally-recognized research-active faculty actively involved in the molecular plant sciences graduate program

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.

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 MPS 574, CHE 574, MBIOS 574). Recommended preparation: MBIOS 513.

587 Advanced Topics in Plant Biochemistry 1 Methods of plant phenotyping.

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. Course Prerequisite: Admitted to the Molecular Plant Science PhD program. 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

music.wsu.edu
Kimbrough 260
509-335-3898

Director of the School of Music and Associate Professor, D. Luethi; Regents Professor, G. Yasimitsky; Professors, K. McCarthy, D. Turnbull; Associate Professors, T. Bennefield, S. Blasco, R. Boden, D. Pham, S. Scott, J. Wieck, H. A. Young; Assistant Professors, C. Dickey, F. Menchetti, M. Myers, C. Rodrigues, D. Singleton, J. Wilson; Clinical Associate Professor, B. Edwards, M. King, S. Miller, M. Parkhurst; Clinical Assistant Professors, A. Agulay, A. Miller, Y. Roh, D. Snider, J. Svendsen, S. Tegar.

The School of Music prepares students for careers in music with degrees in performance, composition, and music education. It is accredited by the National Association of Schools of Music.

The School of Music at Washington State University prepares its students to be successful, innovative, and employable musicians in a 21st-century career field.

Acting as local and global ambassadors, our students and faculty embrace the WSU land-grant mission by promoting musical curiosity, cultural awareness, and critical engagement through artistic creation, pedagogy, and scholarship.

We serve diverse communities across the wide reach of the WSU institution, through a musical practice that is fundamental to emotional wellness, constructive dialogue, and self-reflection.

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 repertory. 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 repertory.

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 admitted as majors in any of the music education options must also be admitted 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 credits of performance studies to complete a degree than listed in this schedule of studies.

To be admitted as a major pursuing any degree in music, students must meet the following criteria:

Completion of 24 credits; cumulative GPA of 2.0; completion of 10 credits 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 may not continue 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 advancing 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 UCOREs plus those for the College of Arts and Sciences.

Student Learning outcomes

- **Critical, Creative and Musical Reasoning:** This includes learning to analyze and interpret music, to express the composer's intention, the character of the music and to convey the emotion of the work.
- **Quantitative and Symbolic Reasoning:** This involves taking the abstract symbols on the page and making musical sense of them, interpreting the rhythmic and pitch elements of the music and making expressive choices based on the notation on the page.
- **Information Literacy:** Musicians must understand the historical and cultural aspects of the music that they are performing to present a musically and artistically convincing performance. Also, students must become familiar with a wide range of important works from the musical canon.
- **Communication:** A musical performance is not successful unless there is communication with the audience.
- **Diversity:** To perform music of different styles and genres, it is essential to understand diverse cultures and musical views. This is related to information literacy.
- **Integration of Learning:** For a musical performance to be truly successful, all of these Learning Outcomes—creative thinking, symbolic reasoning, information literacy, communication and diversity must be integrated by the performer.

Schedules of Studies

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

BACHELOR OF ARTS IN MUSIC (120 CREDITS)

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, 50 credits are in music and 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. Other requirements include: achieve a cumulative 2.5 GPA and a grade of C or better in all music

classes; senior qualifying exam; piano proficiency exam or grade of C or better in MUS 182.

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
ENGLISH 101 [WRTG]	3
MUS 164	1
MUS 181 ²	0 or 1
MUS 251 ³	3
MUS 252 ³	1
MUS Ensemble ⁴	1
Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
Arts [ARTS] (Non-MUS)	3
HISTORY 105 [ROOT]	3
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>Credits</i>
Applied MUS ¹	2
Biological Sciences [BSCI] with lab ⁶	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>Credits</i>
Applied MUS ¹	2
MUS 353 ⁵	3
MUS 354 ⁷	1
MUS 359 [HUM] [M] ⁷	3
MUS Ensemble ⁴	1
Physical Sciences [PSCI] with lab ⁶	4
Complete Writing Portfolio	
Pass Piano Proficiency	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR] (Non-MUS)	3
MUS 360 [HUM] [M] ⁸	3
MUS Ensemble ⁴	1
Foreign Language and/or Non-MUS Electives ⁹	8

<i>Second Term</i>	<i>Credits</i>
MUS 461 [CAPS] ⁷	3
MUS Ensemble ⁴	1
PHIL 103	3
Foreign Language and/or Non-MUS Electives ⁹	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level Music Electives	4
Non-MUS Electives ⁹	11
Senior Qualifying Exam	

<i>Second Term</i>	<i>Credits</i>
300-400-level Music Electives	6
Non-MUS Electives ⁹	10

¹ Applied MUS (8 credits required): Approved courses include MUS 301-318, 320, 401-418, and 420.

² Class piano credits not required in degree.

³ Fall only.

⁴ Music Ensemble: 6 credits required from MUSIC 428-444 with a minimum of 2 credits choral (MUSIC 429, 430, 431) and 2 credits instrumental (MUSIC 434, 436, 437, 438)

⁵ Spring only.

⁶ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

⁷ Spring only.

⁸ Fall only.

⁹ Students must complete a minimum of 38 credits of 200-level or above electives outside of MUS and UCORE requirements. At least 5 credits must be at the 300-400 level. Please consult with advisor for elective selection.

MUSIC BUSINESS (120 CREDITS)

This major offers professional preparation in music with specialization in the music industry. The curriculum is designed to prepare students in entrepreneurship, arts management, fine arts marketing and promotion, recording studio management, music publishing and copyright, venue management, and retail operations.

Requirements include: senior qualifying exam; piano proficiency exam; achieve a cumulative 2.5 GPA and a grade of C or better in all music classes; a half senior recital.

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
Arts [ARTS] (Non-MUS)	3
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>Credits</i>
Applied MUS ¹	2
HISTORY 105 [ROOT]	3
MUS 164	1
MUS 182 ²	0 or 1
MUS 253 ⁵	3
MUS 254 ⁵	1
MUS Ensemble ⁴	1
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
Business minor course	3
Communication [COMM] or Written Communication [WRTG]	3
MUS 351 ³	3
MUS 352 ³	1
MUS 470	2
MUS Ensemble ⁴	1
Social Sciences [SSCI]	3

Music

<i>Second Term</i>	
Applied MUS ¹	2
Business minor course	3
MUS 281 ²	0 or 1
MUS 353 ⁵	3
MUS 354 ⁵	1
MUS 359 [HUM] [M] ⁵	3
MUS Ensemble ⁴	1
Non-MUS Elective ⁶	3
Complete Writing Portfolio	
Pass Piano Proficiency	

Third Year

<i>First Term</i>	
Applied MUS ¹	2
Biological Sciences [BSCI] with lab ⁷	4
Diversity [DIVR] (Non-MUS)	3
MUS 360 [M] ³	3
MUS 428 or 435	1
MUS 482	1
300-400-level MUS Electives	2
<i>Second Term</i>	
Applied MUS ¹	2
Business minor course	3
MUS 319	2
MUS 428 or 435	1
MUS 461 [CAPS] ⁵	3
Physical Sciences [PSCI] with lab ⁷	4
300-400-level MUS Electives	2

Fourth Year

<i>First Term</i>	
Applied MUS ¹	2
Business minor courses	6
MUS Ensemble ⁴	1
300-400-level MUS Electives	4
Foreign Language, if needed	0 - 4
Senior Qualifying Exam	
<i>Second Term</i>	
Applied MUS ¹	2
Business minor course	3
MUS Ensemble ⁴	1
Non-MUS Electives ⁶	3
300-400-level MUS Electives	4
Foreign Language, if needed	0 - 4
Senior Half Recital	

¹ Applied Music: 16 credits required with a minimum of 4 credits at the 400 level. Approved courses include MUS 304-318, 320, 404-418, and 420.

² Class piano credits not required.

³ Fall only.

⁴ Music Ensembles: 6 credits required from MUS 428, 429, 430, 431, 433, 434, 435, 436, 437, 438, 439, 440, 441, 444.

⁵ Spring only.

⁶ Students must complete a minimum of 4 credits of electives outside of MUS and UCORE requirements. Additional credits may be needed to meet the University requirement of 120 total credits. Please consult with advisor for elective selection.

⁷ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

MUSIC COMPOSITION (120 CREDITS)

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; achieve a cumulative 2.5 GPA and a grade of C or better in all music classes; senior recital.

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

<i>First Term</i>	
Applied MUS ¹	2
ENGLISH 101 [WRTG]	3
MUS 164	1
MUS 181 ²	0 or 1
MUS 251 ³	3
MUS 252 ³	1
MUS Ensemble ⁴	1
Foreign Language, if needed, or Non-MUS Electives ⁵	3-4
<i>Second Term</i>	
Applied MUS ¹	2
HISTORY 105 [ROOT]	3
MUS 182 ²	0 or 1
MUS 253 ⁶	3
MUS 254 ⁶	1
MUS Ensemble ⁴	1
Quantitative Reasoning [QUAN]	3
Foreign Language, if needed	0-4

Second Year

<i>First Term</i>	
Applied MUS ¹	2
Biological Sciences [BSCI] with lab ⁷	4
Communication [COMM] or Written Communication [WRTG]	3
MUS 256	2
MUS 281 ²	0 or 1
MUS 351 ³	3
MUS 352 ³	1
MUS Ensemble ⁴	1
<i>Second Term</i>	
Applied MUS ¹	2
MUS 256	2
MUS 353 ⁶	3
MUS 354 ⁶	1
MUS 359 [HUM] [M] ⁸	3
MUS Ensemble ⁴	1
Physical Sciences [PSCI] with lab ⁷	4
Complete Writing Portfolio	1
Pass Piano Proficiency	1

Third Year

<i>First Term</i>	
Applied MUS ¹	2
MUS 256	2
MUS 360 [HUM] [M] ³	3
MUS Electives	4
MUS Ensemble ⁴	1
Social Sciences [SSCI]	3
<i>Second Term</i>	
Applied MUS 202 or 302	2
Arts [ARTS] (Non-MUS)	3

MUS 451 ^{8,9}	2
MUS 456	4
MUS 461 [CAPS] ⁶	3
MUS 483	1
MUS Ensemble ⁴	1

Fourth Year

<i>First Term</i>	
Applied MUS 202 or 302	2
Diversity [DIVR] (Non-MUS)	3
MUS 455 ³	2
MUS 456	4
MUS 482 ³	1
MUS Electives	3
MUS Ensemble ⁴	1
Senior Qualifying Exam	
<i>Second Term</i>	
MUS 452 ^{6,9}	2
MUS 456	4
MUS Electives	4
MUS Ensemble ⁴	1
Non-MUS Electives ⁵	3
Senior Full Recital	

¹ Applied Music: 10 credits required in one musical instrument (MUSIC 304-318, 320, 404-418, 420); 8 credits must be at the 300-400 level.

² Class piano credits not required.

³ Fall only.

⁴ Music Ensembles: 8 credits required from MUS 428, 429, 430, 431, 433, 434, 435, 436, 437, 438, 439, 440, 441, 444, with a minimum of 1 credit choral (MUSIC 429, 430, 431, 433, or 439).

⁵ Students must complete a minimum of 6 credits of electives outside of MUS and UCORE requirements. Please consult with advisor for elective selection.

⁶ Spring only.

⁷ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

⁸ Spring only.

⁹ Course taught alternate years.

MUSIC EDUCATION - CHORAL/GENERAL ENDORSEMENT OPTION (132 CREDITS)

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 be admitted into 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 Ensembles: a minimum of 1 credit of ensemble during each of 7 semesters, including at least one credit of MUS 428, 433, or 439 and a minimum of 4 credits in vocal performing groups (MUS 429, 430, 431).

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
ENGLISH 101 [WRTG]	3
Foreign Language, if needed	0-4
MUS 164	1
MUS 181 ²	0 or 1
MUS 251 ³	3
MUS 252 ³	1
MUS Ensemble ⁴	1
Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
ENGLISH 201 [WRTG] ⁵	3
Foreign Language, if needed	0-4
HISTORY 105 [ROOT]	3
MUS 182 ²	0 or 1
MUS 190	1
MUS 253 ⁶	3
MUS 254 ⁶	1
MUS Ensemble ⁴	1

Second Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
MUS 281 ²	0 or 1
MUS 351 ³	3
MUS 352 ³	1
MUS 491 ³	2
MUS Ensemble ⁴	1
Social Sciences [SSCI]	3
TCH LRN 301	3

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
MUS 353 ⁶	3
MUS 354 ⁶	1
MUS 359 [HUM] [M] ⁶	3
MUS 490 ⁶	3
MUS Ensemble ⁴	1
TCH LRN 317	2
Complete Writing Portfolio	
Pass Piano Proficiency	
May Field Experience	
Admitted into Major, Admitted into TCH LRN	

Third Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
Biological Sciences [BSCI] with lab ⁷	4
Diversity [DIVR] (Non-MUS)	3
MUS 360 [HUM] [M] ³	3
MUS 482 ³	1
MUS 488 ^{3,8}	2
MUS Ensemble ⁴	1

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
Arts [ARTS] (Non-MUS)	3
MUS 461 [CAPS] ⁶	3

MUS 483 ⁶	1
MUS 489 ^{6,8}	2
MUS Ensemble ⁴	1
Physical Sciences [PSCI] with lab ⁷	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
MUS 428, 433, or 439	1
MUS 455	2
MUS 480 ³	3
TCH LRN 464	3
TCH LRN 465	3
Senior Qualifying Exam	

<i>Second Term</i>	<i>Credits</i>
ED PSYCH 468	3
MUS 282	1
TCH LRN 467 [M]	3
TCH LRN 469	2
TCH LRN 470	3
Senior Half Recital	

Fifth Year

<i>First Term</i>	<i>Credits</i>
MUS 497	4
TCH LRN 415	12

¹ Applied Music: 14 credits required with a minimum of 2 credits at the 400 level. Approved courses include MUS 301-318, 320, 401-418, 420.

² Class piano credits not required in degree.

³ Fall only.

⁴ Music Ensemble: 6 credits of MUS 428-444 with a minimum of 4 credits choral (MUS 429, 430, 431).

⁵ One from ENGLISH 201, 301, 302, or 402 is required for admission to the Teacher Education Program. Students who take ENGLISH 302 will need to take an additional [WRTG] or [COMM] course.

⁶ Spring only.

⁷ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

⁸ Course taught alternate years.

MUSIC EDUCATION - CHORAL/ INSTRUMENTAL/GENERAL ENDORSEMENT OPTION (140 CREDITS)

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 be admitted into 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, 433, or 439 for vocalists. Within the 7 semesters/credits, a minimum of 2 credits in choral ensembles (MUS 429, 430, or 431) and 2 credits in instrumental ensembles (MUS 434, 436, 437, or 438).

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
ENGLISH 101 [WRTG]	3
Foreign Language, if needed	0-4
MUS 164	1
MUS 181 ²	0 or 1
MUS 251 ³	3
MUS 252 ³	1
MUS Ensemble ⁴	1
Quantitative Reasoning [QUAN]	3 or 4

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
ENGLISH 201 [WRTG] ⁵	3
Foreign Language, if needed	0-4
HISTORY 105 [ROOT]	3
MUS 182 ²	0 or 1
MUS 190	1
MUS 253 ⁶	3
MUS 254 ⁶	1
MUS Ensemble ⁴	1

Second Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
Arts [ARTS] (Non-MUS)	3
MUS 281 ²	0 or 1
MUS 351 ³	3
MUS 352 ³	1
MUS 491 ³	2
MUS 492 ^{3,7}	1
MUS 494 ^{3,7}	1
MUS Ensemble ⁴	1
TCH LRN 301	3

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
MUS 353 ⁶	3
MUS 354 ⁶	1
MUS 359 [HUM] [M] ⁶	3
MUS 490 ⁶	3
MUS 493 ^{6,7,8}	1
MUS 495 ^{6,7,8}	1
MUS Ensemble ⁴	1
TCH LRN 317	2
Complete Writing Portfolio	
Pass Piano Proficiency	
May Field Experience	
Admitted into Major, Admitted into TCH LRN	

Third Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
Biological Sciences [BSCI] with lab ⁹	4
MUS 360 [HUM] [M] ³	3
MUS 482 ³	1
MUS 484 ^{3,7}	1
MUS 486 ^{3,7}	1
MUS 488 ^{3,7}	2
MUS Ensemble ⁴	1
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
MUS 461 [CAPS] ⁶	3
MUS 483 ⁶	1
MUS 485 ^{6,7}	1
MUS 487 ^{6,7}	1
MUS 489 ^{6,7}	2
MUS Ensemble ⁴	1
Physical Sciences [PSCI] with lab ⁹	4
Senior Qualifying Exam	

Fourth Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
Diversity [DIVR] (Non-MUS)	3
MUS 435	1
MUS 455	2
MUS 480 ³	3
TCH LRN 464	3
TCH LRN 465	3
Senior Half-Recital	

<i>Second Term</i>	<i>Credits</i>
ED PSYCH 468	3
MUS 282	1
TCH LRN 467	3
TCH LRN 469	2
TCH LRN 470	3

Fifth Year

<i>First Term</i>	<i>Credits</i>
MUS 497	4
TCH LRN 415	12

¹ Applied Music: 14 credits required with a minimum of 2 credits at the 400 level. Approved courses include MUS 301-318, 320, 401-418, 420.

² Class piano credits not required in degree.

³ Fall only.

⁴ Music Ensemble: 6 credits required from MUSIC 428-444 with a minimum of 2 credits choral (MUSIC 429, 430, 431) and 2 credits instrumental (MUSIC 434, 436, 437, 438)

⁵ One from ENGLISH 201, 301, 302, or 402 is required for admission to the Teacher Education Program. Students who take ENGLISH 302 will need to take an additional [WRTG] or [COMM] course.

⁶ Spring only.

⁷ Course taught alternate years.

⁸ Students are not required to take the second-level techniques course of their major instrument.

⁹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

MUSIC EDUCATION - ELECTIVE STUDIES IN EDUCATION OPTION (120 CREDITS)

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 be admitted into 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. Approved Performing Ensembles: See degree requirements for applicable (desired) endorsement.

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.

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
Biological Sciences [BSCI] with lab ²	4
ENGLISH 101 [WRTG]	3

MUS 164	1
MUS 181 ³	0 or 1
MUS 251 ⁴	3
MUS 252 ⁴	1
MUS Ensemble ⁵	1

Second Term *Credits*

Applied MUS ¹	2
HISTORY 105 [ROOT]	3
MUS 182 ³	0 or 1
MUS 190	1
MUS 253 ⁶	3
MUS 254 ⁶	1
MUS Ensemble ⁵	1
Physical Sciences [PSCI] with lab ²	4
Quantitative Reasoning [QUAN]	3

Second Year

First Term *Credits*

Applied MUS ¹	2
MUS 103 or 319	2
MUS 281	0 or 1
MUS 351 ⁴	3
MUS 352 ⁴	1
MUS 491 ⁴	2
MUS Ensemble ⁵	1
TCH LRN 301	3

Second Term *Credits*

Applied MUS ¹	2
MUS 353 ⁶	3
MUS 354 ⁶	1
MUS 359 [HUM] [M] ⁶	3
MUS 490 ⁶	3
MUS Ensemble ⁵	1
TCH LRN 317	2
Complete Writing Portfolio	
Pass Piano Proficiency	
May Field Experience	
Admitted into Major, Admitted into TCH LRN	

Third Year

First Term *Credits*

Applied MUS ¹	2
Diversity [DIVR] (Non-MUS)	3
ENGLISH 201 [WRTG] ⁷	3
MUS 258 ⁴	2
MUS 360 [HUM] [M] ⁴	3
MUS 455 ⁴	2
MUS Ensemble ⁵	1

Second Term *Credits*

Applied MUS ¹	2
Arts [ARTS] (Non-MUS)	3
MUS 428 or 435	1
MUS 461 [CAPS] ⁶	3
MUS Electives	3
Social Sciences [SSCI]	3

Fourth Year

First Term *Credits*

Applied MUS ¹	2
Foreign Language, if needed	0-4
MUS Endorsement Electives ⁸	4
MUS Ensemble ⁵	1
TCH LRN 464	3
TCH LRN 465	3
Senior Qualifying Exam	
Reserve Credit for MA recommended	

<i>Second Term</i>	<i>Credits</i>
ED PSYCH 468	3
Foreign Language, if needed	0-4
MUS 482 or 483	1
MUS Endorsement Electives ⁸	4
TCH LRN 467 [M]	3
TCH LRN 470	3
Senior Half-Recital	
Reserve Credit for MA recommended	

¹ Applied Music: 14 credits required with a minimum of 2 credits at the 400 level. Approved courses include MUS 301-318, 320, 401-418, 420.

² To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

³ Class piano credits not required in degree.

⁴ Fall only.

⁵ Music ensemble: 6 credits required from MUS 428-444 with a minimum of 2 credits choral (MUS 429, 430, 431), and 2 credits instrumental (MUS 434, 436, 437, 438).

⁶ Spring only.

⁷ One from ENGLISH 201, 301, 302, or 402 is required for admission to the Teacher Education Program. Students who take ENGLISH 302 will need to take an additional [WRTG] or [COMM] course.

⁸ MUS Endorsement Electives (8 credits required including at least 1 term MUS 480): Approved courses include MUS 480, 482, 483, 487, 489, 493, and 494.

**MUSIC EDUCATION - INSTRUMENTAL/
GENERAL ENDORSEMENT OPTION
(136 CREDITS)**

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 be admitted into 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 credit of MUS 435 for instrumentalists, as well as a minimum of 4 credits in instrumental performing groups including 2 credits drawn from: MUS 434, 436, 437, or 438.

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year	
<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
ENGLISH 101 [WRTG]	3
Foreign Language, if needed	0-4
MUS 164	1
MUS 181 ²	0 or 1
MUS 251 ³	3
MUS 252 ³	1
MUS Ensemble ⁴	1
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
Foreign Language, if needed	0-4
HISTORY 105 [ROOT]	3
MUS 182 ²	0 or 1
MUS 190	1
MUS 253 ⁵	3
MUS 254 ⁵	1
MUS Ensemble ⁴	1
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
ENGLISH 201 [WRTG] ⁶	3
MUS 281	0 or 1
MUS 351 ³	3
MUS 352 ³	1
MUS 491 ³	2
MUS 492 ^{3,7}	1
MUS 494 ^{3,7}	1
MUS Ensemble ⁴	1
TCH LRN 301	3

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
MUS 353 ⁵	3
MUS 354 ⁵	1
MUS 359 [HUM] [M] ⁵	3
MUS 483 ⁵	1
MUS 490 ⁵	3
MUS 493 ^{5,7,8}	1
MUS 495 ^{5,7,8}	1
MUS Ensemble ⁴	1
TCH LRN 317	2
Complete Writing Portfolio	
Pass Piano Proficiency	
May Field Experience	
Admitted into Major, Admitted into TCH LRN	

Third Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
Biological Sciences [BSCI] with lab ⁹	4
Diversity [DIVR] (Non-MUS)	3
MUS 360 [HUM] [M] ³	3
MUS 435	1
MUS 482 ³	1
MUS 484 ^{3,7}	1
MUS 486 ^{3,7}	1
MUS Ensemble ⁴	1

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
Arts [ARTS] (Non-MUS)	3
MUS 461 [CAPS] ⁵	3
MUS 485 ^{5,7,8}	1
MUS 487 ^{5,7,8}	1

MUS Ensemble ⁴	1
Physical Sciences [PSCI] with lab ⁹	4
Senior Qualifying Exam	

Fourth Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	2
MUS 455 ³	2
MUS 480 ³	3
Music Ensemble ⁴	1
TCH LRN 464	3
TCH LRN 465	3
Senior-Half Recital	

<i>Second Term</i>	<i>Credits</i>
ED PSYCH 468	3
TCH LRN 467 [M]	3
TCH LRN 469	2
TCH LRN 470	3

Fifth Year

<i>First Term</i>	<i>Credits</i>
MUS 497	4
TCH LRN 415	12

¹ Applied Music: 14 credits required with a minimum of 2 credits at the 400 level. Approved courses include MUS 301-318, 320, 401-418, 420.

² Class piano credits not required in degree.

³ Fall only.

⁴ Music Ensemble: 7 credits required from MUS 428-444 with a minimum of 4 credits in instrumental performing groups, including 2 credits drawn from: MUS 434, 436, 437, or 438.

⁵ Spring only.

⁶ One from ENGLISH 201, 301, 302, or 402 is required for admission to the Teacher Education Program. Students who take ENGLISH 302 will need to take an additional [WRTG] or [COMM] course.

⁷ Course taught alternate years.

⁸ Students are not required to take the second-level techniques course of their major instrument.

⁹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

**MUSIC PERFORMANCE - BRASS,
PERCUSSION, STRINGS, WINDS OPTION
(120 CREDITS)**

Requirements include: junior and senior qualifying exams; piano proficiency exam; achieve a cumulative 2.5 GPA and a grade of C or better in all music classes; junior and senior recitals.

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Arts [ARTS] (Non-MUS)	3
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>Credits</i>
Applied MUS ¹	4

HISTORY 105 [ROOT]	3	include MUS 304-318, 320, 404-418, and 420.
MUS 164	1	² Class piano credits not required.
MUS 182 ²	0 or 1	³ Fall only.
MUS 253 ⁵	3	⁴ Music Ensembles: 6 credits required from MUS 428, 429, 430, 431, 433, 434, 435, 436, 437, 438, 439, 440, 441, 444.
MUS 254 ⁵	1	⁵ Spring only.
MUS Ensemble ⁴	1	⁶ Two credits of pedagogy are required in respective area: string (487), wind/percussion (493) or brass (494).
Quantitative Reasoning [QUAN]	3	⁷ Students must complete a minimum of 4 credits of electives outside of MUS and UCORE requirements. Additional credits may be needed to meet the University requirement of 120 total credits. Please consult with advisor for elective selection.

Second Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	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>Credits</i>
Applied MUS	4
MUS 281 ²	0 or 1
MUS 353 ⁵	3
MUS 354 ⁵	1
MUS 359 [HUM] [M] ⁵	3
MUS 487, 493, or 494 ⁶	2
MUS Ensemble ⁴	1
Non-MUS Electives ⁷	1
Complete Writing Portfolio	
Pass Piano Proficiency	

Third Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Biological Sciences [BSCI] with lab ⁵	4
Diversity [DIVR] (Non-MUS)	3
MUS 360 [HUM] [M] ³	3
MUS 435	1
300-400-level MUS Electives	2
Junior Qualifying Exam	

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 319	2
MUS 435	1
MUS 461 [CAPS] ⁵	3
Physical Sciences [PSCI] with lab ⁸	4
300-400-level MUS Electives	2
Junior Recital	

Fourth Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 455 ³	2
MUS 465 ³⁹	2
MUS 482 ³	1
MUS Ensemble ⁴	1
300-400-level MUS Electives	4
Foreign Language, if needed	0-4
Senior Qualifying Exam	

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS Ensemble ⁴	1
Non-MUS Electives ⁷	3
300-400-level MUS Electives	4
Foreign Language, if needed	0-4
Senior Full Recital	

¹ Applied MUS 32 credits required with a minimum of 4 credits at the 400 level. Approved courses

Third Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Biological Sciences [BSCI] with lab ⁵	4
Diversity [DIVR] (Non-MUS)	3
MUS 360 [HUM] [M] ²	3
MUS 435	1
MUS 465 ^{2,6}	2
Junior Qualifying Exam	

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 441	1
MUS 461 [CAPS] ⁴	3
MUS 482 or 483	1
Physical Sciences [PSCI] with lab ⁵	4
300-400-level MUS Electives	2
Junior Recital	

Fourth Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Arts [ARTS] (Non-MUS)	3
Foreign Language, if needed, or Non-MUS Electives ³	3-4
MUS 319	2
MUS 441	1
300-400-level MUS Electives	1
Accompaniment Recital	
Senior Qualifying Examination	

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
Foreign Language, if needed	0-4
Large Ensemble - MUS 429, 430, 431, 434, 436, 437, or 438	1
MUS 451 ^{4,6}	2
300-400-level MUS Electives	5
Senior Full Recital	

¹ Applied Music: 32 credits required with a minimum of 2 credits at the 400 level. Approved courses include MUS 301, 302, 401, and 402.

² Fall only.

³ Students must complete a minimum of 6 credits of electives outside of MUS and UCORE requirements. Please consult with advisor for elective selection.

⁴ Spring only.

⁵ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

⁶ Course taught alternate years.

MUSIC PERFORMANCE - KEYBOARD WITH ELECTIVE STUDIES IN PEDAGOGY OPTION (120 CREDITS)

Requirements include: Accompany a junior, senior, or graduate recital; piano proficiency exam; junior and senior qualifying exams; junior recital; senior recital; achieve a cumulative 2.5 GPA and a grade of C or better in all music classes.

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
ENGLISH 101 [WRTG]	3
MUS 251 ²	3

MUS 252 ²	1	MUS 451 ^{3,6}	2	MUS Ensemble 428-431, 433-441, or 444 ³	1
MUS 441	1	Music Electives	3	Non-MUS Electives ⁷	3
Quantitative Reasoning [QUAN]	3	Senior Full Recital		Complete Writing Portfolio	
<i>Second Term</i>		<i>Credits</i>		Pass Piano Proficiency	
Applied MUS ¹	4	¹ Applied Music: 32 credits required with a minimum of 2 credits at the 400 level. Approved courses include MUS 301, 302, 401, and 402.			
HISTORY 105 [ROOT]	3	² Fall only.			
MUS 164	1	³ Spring only.			
MUS 253 ³	3	⁴ Students must complete a minimum of 6 credits of electives outside of MUS and UCORE requirements. Please consult with advisor for elective selection.			
MUS 254 ³	1	⁵ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.			
MUS 441	1	⁶ Course taught alternate years.			
Foreign Language, if needed, or Non-MUS Electives ⁴	3-4				
Second Year					
<i>First Term</i>		<i>Credits</i>			
Applied MUS ¹	4	MUSIC PERFORMANCE - PERCUSSION, SAXOPHONE, STRING BASS, TRUMPET, GUITAR, AND KEYBOARD (JAZZ STUDIES) (120 CREDITS)			
Communication [COMM] or Written Communication [WRTG]	3	This option with an emphasis in jazz is available to students whose major instruments are percussion, saxophone, string bass, trumpet, guitar, or keyboard. Requirements include: junior and senior qualifying exams; piano proficiency exam; achieve a cumulative 2.5 GPA and a grade of C or better in all music classes; junior and senior recitals. Only 9 credits of MUS courses can be used to fulfill UCORE requirements.			
MUS 351 ²	3				
MUS 352 ²	1				
MUS 441	1				
Social Sciences [SSCI]	3				
<i>Second Term</i>		<i>Credits</i>			
Applied MUS ¹	4				
MUS 353 ³	3				
MUS 354 ³	1				
MUS 359 [HUM] [M] ³	3				
MUS 441	1				
MUS 498	2				
Complete Writing Portfolio					
Pass Piano Proficiency					
Third Year					
<i>First Term</i>		<i>Credits</i>		<i>First Term</i>	
Applied MUS ¹	4			<i>Credits</i>	
Biological Sciences [BSCI] with lab ⁸	4			Applied MUS ¹	
Jazz Ensemble - MUS 438, 439, or 440 ³	1			4	
MUS 258 ²	2			Diversity [DIVR] (Non-MUS)	
MUS 360 [HUM] [M] ²	3			3	
MUS 457 ^{2,6}	2			Jazz Ensemble - MUS 438, 439, or 440 ³	
Junior Qualifying Exam				1	
<i>Second Term</i>		<i>Credits</i>		MUS 362	
Applied MUS ¹	4			3	
Jazz Ensemble - MUS 438, 439, or 440 ³	1			MUS 482 ²	
MUS 319	2			1	
MUS 458 ^{5,6}	2			Foreign Language, if needed	
MUS 461 [CAPS] ⁵	3			0-4	
Physical Sciences [PSCI] with lab ⁸	4			Senior Qualifying Exam	
Junior Recital					
Fourth Year					
<i>First Term</i>		<i>Credits</i>		<i>Second Term</i>	
Applied MUS ¹	4			<i>Credits</i>	
Arts [ARTS] (Non-MUS)	3			Applied MUS ¹	
ENGLISH 101 [WRTG]	3			4	
MUS 251 ²	3			Jazz Ensemble - MUS 438, 439, or 440 ³	
MUS 252 ²	1			1	
MUS Ensemble 428-431, 433-441, or 444 ³	1			MUS 483	
<i>Second Term</i>		<i>Credits</i>		MUS Electives	
Applied MUS ¹	4			4	
HISTORY 105 [ROOT]	3			Foreign Language, if needed, or Non-MUS Electives ⁷	
MUS 164	1			3-4	
MUS 181 ⁴	0-1			Senior Full Recital	
MUS 253 ⁵	3				
MUS 254 ⁵	1				
MUS Ensemble 428-431, 433-441, or 444 ³	1				
Quantitative Reasoning [QUAN]	3				
Requirements:					
¹ Applied MUS courses (32 credits required with a minimum of 4 credits at the 400-level): MUS 202, 205, 209, 213, 218, 220, 302, 305, 309, 313, 318, 320, 402, 405, 409, 413, 418, and 420.					
² Fall only.					
³ Music Ensembles: a minimum of one credit per semester.					
⁴ Class piano credits not required in degree.					
⁵ Spring only.					
⁶ Course taught alternate years.					
⁷ Students must complete a minimum of 6 credits of electives outside of MUS and UCORE requirements. Please consult with advisor for elective selection.					
⁸ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.					
MUSIC PERFORMANCE - VOICE OPTION (120 CREDITS)					
Requirements include: junior and senior qualifying exams; piano proficiency exam; achieve a cumulative 2.5 GPA and a grade of C or better in all music classes; junior and senior recitals. Only 9 credits of MUS courses can be used to fulfill UCORE requirements.					

First Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Diversity [DIVR] (Non-MUS)	3
ENGLISH 101 [WRTG]	3
MUS 181 ²	0 or 1
MUS 251 ³	3
MUS 252 ³	1
MUS 429, 430, or 431	1

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
HISTORY 105 [ROOT]	3
MUS 164	1
MUS 182 ²	0 or 1
MUS 253 ⁴	3
MUS 254 ⁴	1
MUS 429, 430, or 431	1
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Communication [COMM] or Written Communication [WRTG]	3
MUS 351 ³	3
MUS 352 ³	1
MUS 371 ^{3,5}	2
MUS 429, 430, or 431	1

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 281 ²	0 or 1
MUS 353 ⁴	3
MUS 354 ⁴	1
MUS 359 [HUM] [M] ⁴	3
MUS 372 ^{4,5}	2
MUS 429, 430, or 431	1
Complete Writing Portfolio	
Pass Piano Proficiency	

Third Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Biological Sciences [BSCI] with lab ⁶	4
MUS 360 [HUM] [M] ³	3
MUS 428, 433, or 439	1
MUS 429, 430, or 431	1
MUS 491 ³	2
Junior Qualifying Exam	

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
Arts [ARTS] (Non-MUS)	3
MUS 428	1
MUS 429, 430, or 431	1
MUS 461 [CAPS] ⁴	3
MUS 483 ⁴	1
Physical Sciences [PSCI] with lab ⁶	4
Junior Recital	

Fourth Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 429, 430, or 431	1
MUS 465 ^{3,5}	2
Foreign Language, if needed, and/or Non-MUS Electives ⁷	7
Senior Qualifying Exam	

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 429, 430, or 431	1
Social Sciences [SSCI]	3
Foreign Language, if needed, and/or Non-MUS Electives	7
Senior Full Recital	

¹ Applied Music: 32 credits of MUS 303 and 403 required with a minimum of 4 credits of MUS 403.
² Class piano credits not required.
³ Fall only.
⁴ Spring only.
⁵ Course taught alternate years.
⁶ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.
⁷ Students must complete a minimum of 6 credits of electives outside of MUS and UCORE requirements. Please consult with advisor for elective selection.

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.

Music Technology

The minor in Music Technology is designed to offer a foundation for music recording, production, and performance. Students will be able to: 1) navigate, set up, and operate common hardware and software configurations found in professional recording studios; 2) set up and operate equipment for live sound reinforcement; and 3) make use of MIDI, sequencing, notation, and other technologies relevant to music performance and composition in a variety of genres and styles. Completion of the minor requires a minimum GPA of 2.0. Additionally, students must earn a C or better grade and a minimum GPA of 2.5 in all music courses. Nine hours of upper-division work must be taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. Required courses include: MUS 153 (151 or 251 may substitute), 164, 264, 364, and 464. An

additional 9 credits must be chosen from: MUS 201-220 (maximum 2 credits), MUS 256, 435, 452, 496, 499; DTC 201, 208, 336; FINE ART 333, 435.

Description of Courses

MUSIC

MUS

102 Piano 2 (0-6) May be repeated for credit.

103 Voice 2 (0-6)

120 [ARTS] Class Guitar 3 Class instruction on basic guitar; repertoire will be selected from classical, jazz, rock, pop, fusion, and world music.

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.

163 [ARTS] World Music 3 Exploration of music from a global perspective through demonstrations, performances, lectures and discussion.

164 Introduction to Music Technology 1 Course Prerequisite: MUS 151; MUS 251 or concurrent enrollment. 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.

190 Foundations of Music Education 1 Methods and materials for becoming an effective music educator; includes observations and classroom teaching.

201 Organ 2 (0-6) May be repeated for credit. By audition only.

202 Piano 2 (0-6) May be repeated for credit. By audition only.

203 Voice 2 (0-6) May be repeated for credit. Recommended preparation: 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** (0-6) 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** (0-6) May be repeated for credit.
- 220 Guitar 2** (0-6) May be repeated for credit. Course Prerequisite: MUS 120. Reading and interpreting music on the guitar.
- 251 Materials and Structures of Music I 3** Course Prerequisite: By examination only. See music.wsu.edu for placement exam information. 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** (0-6) May be repeated for credit; cumulative maximum 8 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.
- 264 Music Technology I 2** Course Prerequisite: MUS 164. MIDI hardware/software and related technologies used in music production. Sequencing, orchestration, virtual instruments, sample control, interactivity, performance.
- 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 MUS 265, CES 271).
- 266 [ARTS] Film Music 3** The evolution of film music; discussions/lectures will address aesthetics of film music and how they influence perception, communication, and drama.
- 267 [DIVR] Black American Music: Roots to Fruit 3** A critical survey of key musical and societal forces contributing to today's African American musicscape; listening, analysis, and critique.
- 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.
- 282 Class Piano IV 1** (0-3) May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: MUS 281 or Piano Proficiency Exam. Advanced skills, particularly for music education majors; score reading, transposition, sight-reading, and reduction of scores; ensemble skills.
- 301 Organ V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 302 Piano V 2** (0-6) to 4 (0-12) May be repeated for credit.
- 303 Voice V 2** (0-6) to 4 (0-12) May be repeated for credit. Recommended preparation: Concurrent enrollment in MUS 431 or 432.
- 304 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** (0-6) to 4 (0-12) 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** (0-6) to 4 (0-12) 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 Guitar V 2** (0-6) to 4 (0-12) May be repeated for credit. Guitar.
- 351 Materials and Structures of Music III 3** Course Prerequisite: MUS 164 with a C or better; 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. History and style of western art music from Antiquity to 1650; introduction to and selected topics in ethnomusicology.
- 360 [HUM] [M] History of Music: 1650 - 1850 3** Course Prerequisite: MUS 359 with a C or better. History and style of western art music from 1650 to 1850; selected topics in ethnomusicology.
- 361 [HUM] Music and Social Justice 0** A critical investigation of music's role in social justice issues and the influence of social justice issues on the education and creative output of musicians.
- 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, WGSS 363.)
- 364 Audio Engineering I 3** Course Prerequisite: MUS 164. Software, equipment, and techniques used in studio recording and live sound reinforcement; includes both theoretical foundations and practical application.
- 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: MUS 153; admitted to the major in Elementary Education. 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 (0-6) to 4 (0-12) May be repeated for credit.
- 403 Voice** V 2 (0-6) to 4 (0-12) May be repeated for credit. Recommended preparation: Concurrent enrollment in MUS 431 or 432.
- 404 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 (0-6) to 4 (0-12) 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 (0-6) to 4 (0-12) May be repeated for credit.
- 420 Guitar** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 428 [ARTS] Opera Workshop** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see music.wsu.edu for details. Public performance may be required. Credit not granted for both MUS 428 and MUS 528.
- 429 [ARTS] Tenor/Bass Choir** 1 (0-4) May be repeated for credit; cumulative maximum 12 hours. Vocal ensemble whose membership sings tenor or bass; no audition required; all students welcome; placement assessments will be administered first week of classes.
- 430 [ARTS] Treble Choir** 1 (0-4) May be repeated for credit; cumulative maximum 12 hours. Vocal ensemble whose membership sings soprano or alto; no audition required; all students welcome; placement assessments will be administered first week of classes.
- 431 [ARTS] Concert Choir** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see music.wsu.edu 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] Madrigal/Chamber Singers** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see music.wsu.edu 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 music.wsu.edu 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] Symphonic Wind Ensemble** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see music.wsu.edu 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 music.wsu.edu 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 music.wsu.edu 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 music.wsu.edu 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 Techniques** 2 Course Prerequisite: MUS 264. Composition and performance using computer-controlled digital, analog, and sampling synthesis; topics include sequencing, waveform editing, signal processing, spatialization, and performance.
- 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.
- 461 [CAPS] The Musician in Society: Philosophies and Practices, 1850 - Present** 3 Course Prerequisite: MUS 360 with a C or better; admitted to the major in Music; junior standing. History and style of western art music from the late romantic period to the present, combining theories of history, theory, ethnomusicology, performance, pedagogy, and advocacy.
- 464 Audio Engineering II** 3 Course Prerequisite: MUS 364. Continued training in software, equipment, and techniques used in studio recording and live sound reinforcement; theory and practical application.
- 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: Admitted to the 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.
- 484 Woodwind Techniques I** 1 (0-2) Course Prerequisite: MUS 190. Performance and pedagogy of woodwind instruments for music educators.
- 485 Woodwind Techniques II** 1 (0-2) Course Prerequisite: MUS 190; MUS 484. Second level of performance and pedagogy of woodwind instruments for music educators.
- 486 String Techniques I** 1 (0-2) Course Prerequisite: MUS 190. Performance and pedagogy of string instruments for music educators.
- 487 String Techniques II** 1 (0-2) Course Prerequisite: MUS 190; MUS 486. Second level of performance and pedagogy of string instruments for music educators.
- 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** 3 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.
- 492 Brass Techniques I** 1 (0-2) Course Prerequisite: MUS 190. Performance and pedagogy of brass instruments for music educators.
- 493 Brass Techniques II** 1 (0-2) Course Prerequisite: MUS 190; MUS 492. Second level of performance and pedagogy of brass instruments for music educators.
- 494 Percussion Techniques I** 1 (0-2) Course Prerequisite: MUS 190. Performance and pedagogy of percussion instruments for music educators.
- 495 Percussion Techniques II** 1 (0-2) Course Prerequisite: MUS 190; MUS 494. Second level of performance and pedagogy of percussion instruments for music educators.
- 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. 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 (0-6) to 4 (0-12) May be repeated for credit.
- 503 Voice** V 2 (0-6) to 4 (0-12) May be repeated for credit. Recommended preparation: Concurrent enrollment in MUS 431 or 432.
- 504 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 (0-6) to 4 (0-12) 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 Guitar** V 2 (0-6) to 4 (0-12) May be repeated for credit.
- 522 Graduate Recital** 2 Private screening and public performance as required within each performance emphasis.
- 528 [ARTS] Opera Workshop** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see music.wsu.edu for details. Public performance may be required. Credit not granted for both MUS 428 and MUS 528.
- 531 [ARTS] Concert Choir** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see music.wsu.edu 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 [ARTS] Madrigal/Chamber Singers** 1 (0-4) May be repeated for credit. Course Prerequisite: By audition only; see music.wsu.edu 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 [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.
- 535 Chamber Ensembles** 1 May be repeated for credit. Course Prerequisite: By audition only; see music.wsu.edu for details. Public performance may be required. Credit not granted for both MUS 435 and MUS 535.
- 537 [ARTS] Symphonic Wind Ensemble** 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 [ARTS] Jazz-Lab Band** 1 (0-4) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By audition only; see music.wsu.edu for details. Jazz big band. Public performances each semester. Credit not granted for both MUS 438 and MUS 538.
- 539 [ARTS] Vocal Jazz Ensemble** 1 (0-4) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By audition only; see music.wsu.edu 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 music.wsu.edu 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 (1-4)** 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, band, 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 3** 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.

597 Performance Studies for Distance Learners 2 (0-6) May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admitted to the Online Masters of Arts in Music program; graduate advisor permission; instructor permission. Participation in video conference-based lessons or completion of performance-based projects, i.e., a recording project or concert presented in the online student's home community submitted as a video/audio recording.

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 Naval Science

www.uidaho.edu/navyrotc/
2nd Floor, Hays Hall; University of Idaho
208-885-6333

The Navy-Marine Corps Officer Education Program, administered and taught by the NROTC staff at the University of Idaho, is open to qualified persons 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 end of the sophomore year. During the four years, students take up to 24 credits of professional courses taught by the NROTC staff officers. In addition to professional courses, NROTC students must participate in close order drill and physical training each semester. Following graduation and commissioning, new officers are offered a broad variety of duty assignments including duty on

surface ships, nuclear submarines, information warfare, naval aviation, and special operations units in the Navy; law, ground or aviation assignments in the Marine Corps.

College Program

Application for this non-scholarship program is made through the Department of Naval Science. Students receive their uniforms and naval science textbooks at no cost. At the end of their sophomore year, students are eligible to be selected for Advanced Standing and will begin receiving a monthly stipend of \$350 per month, which will increase to \$400 per month as seniors. College Program students may be nominated by the Professor of Naval Science for a two- or three-year scholarship as first-year or sophomore students 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 to meet commissioning requirements.

Scholarship Program

Naval Science (Navy or Marine-Option) Scholarship students' benefits include tuition, fees, a \$750 book allowance, and a monthly stipend of up to \$400. Application for this program is normally made during the early fall of the students' senior year of high school. Initial selections are based on college entrance examination scores (SAT or ACT), high school academic performance, and extra-curricular activities. Some exceptions exist for students who cannot take the SAT or ACT.

A student on scholarship participates in at least three summer training cruises of three to six weeks duration. During the first summer, students are introduced to the Surface Warfare, Submarine, Marine Corps, and Aviation communities. The second and third summers are spent aboard ships, within air crews, or at special operations training facilities and often include travel to foreign ports. During summer cruises, the students receive Active Duty E-5 pay, in addition to room and board.

Marine Corps Option

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 Officer Candidate School, Quantico, Virginia during the summer following their junior year.

Minors

Naval Science

NAV SCI 101, 102, 201, 202; four to six courses from the following: NAV SCI 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.

Description of Courses

NAVAL SCIENCE

NAV SCI

101 Introduction to the Naval Science 3
Introduction to the Naval Service: customs, traditions, structure, career paths, basic leadership, ethics and character development, duties of a junior officer, ships/aircraft of the U.S. Navy Fleet.

103 Introduction to Naval Science Laboratory 1 Practical instruction for introduction to Naval Science. S, F grading.

104 Seapower and Maritime Affairs 3 An overview of U.S. naval history; seapower and maritime affairs beginning with the Continental Navy to present-day naval history.

121 Introduction to Naval Science Laboratory 1 Practical instruction for introduction to first-year Naval Science Students.

122 Introduction to Naval Science Laboratory 2 Practical instruction for introduction to first-year Naval Science Students.

200 Seminar V 1-16 May be repeated for credit.

203 Workshop V 1-16 May be repeated for credit.

204 Special Topics V 1-16 May be repeated for credit.

205 Navigation 3 Theory, principles, and procedures of terrestrial and electronic navigation, and rules of the nautical road.

206 Naval Leadership and Management 3
Theories of management and management resources, motivational theories, and leadership.

221 Introduction to Naval Science Laboratory 3 Practical instruction for introduction to sophomore Naval Science Students.

222 Introduction to Naval Science Laboratory 4 Practical instruction for introduction to sophomore Naval Science Students.

299 Directed Study V 1-16 May be repeated for credit.

303 Ships Systems I 3 Introduction to Naval shipboard engineering systems; propulsion systems; nuclear, gas turbine, and conventional; auxiliary systems and shipboard damage control; basic concepts in ship design.

304 Ships Systems II 3 Naval weapons; theory and process of detection (radar and sonar), evaluation; delivery, guidance, and explosives; integration of weapons systems with command, control, and communications systems.

311 Evolution of Warfare 3 Evolution of war through tactics; strategy from Sun Tzu to J.F.C. Fuller. Recommended preparation: NAV SCI 101, NAV SCI 104.

321 Introduction to Naval Science Laboratory 5 Practical instruction for introduction to junior Naval Science Students.

322 Introduction to Naval Science Laboratory 6 Practical instruction for introduction to junior Naval Science Students.

402 Naval Leadership and Ethics 3 An intellectual exploration of Western moral traditions and ethical philosophy within a military context. Topics will include military leadership, core values, professional ethics, and conduct of warfare with applications appropriate for future Navy and Marine Corps officers. Recommended preparation: NAV SCI 206.

403 Workshop V 1-16 May be repeated for credit.

404 Special Topics V 1-16 May be repeated for credit.

406 Naval Operations 3 Course Prerequisite: NAV SCI 205. Naval operations and tactics, relative motion, and Maneuvering Boards.

412 Fundamentals of Maneuver Warfare 3
Amphibious doctrine from Gallipoli to the Mayaguez. Recommended preparation: NAV SCI 311.

421 Introduction to Naval Science Laboratory 7 Practical instruction for introduction to senior Naval Science Students.

422 Introduction to Naval Science Laboratory 8 Practical instruction for introduction to senior Naval Science Students.

423 Introduction to Naval Science Laboratory 9 Practical instruction for introduction to senior Naval Science Students.

424 Introduction to Naval Science Laboratory 10 Practical instruction for introduction to senior Naval Science Students.

Program in Neuroscience

ipn.vetmed.wsu.edu/neuroscience/
Veterinary and Biomedical Research Bldg (VBR) 207
509-335-6624

Director, Chair, and Professor, S. Hentges; Associate Director of Graduate Program and Professor, S. Appleyard; Associate Director of Undergraduate Program and Associate Professor, S. Gizerian; Regents Professor, J. M. Krueger; Professors, G. Belenky (Spokane), M. Chandra, R. M. Craft, M. Frank (Spokane), R. Fuchs, J. Hinson, M. Morgan (Vancouver), C. Portfors (Vancouver), R. Quock, R. C. Ritter, M. Schmitter-Edgecombe, H. Van Dongen (Spokane), G. Wayman, P. Whitney; Associate Professors, R. L. Brown, T. Brown, A. Coffin (Vancouver), C. Davis (Spokane), A. Dimitrov (Vancouver), W. Dong, D. Jackson (Spokane), L. Kapas (Spokane), M. Layton (Spokane), D. Lin, R. McLaughlin, S. McPherson (Spokane) P. Meighan, J. Peters, D. Rossi, L. Sprunger, E. Szentirmai (Spokane), B. Tanner, M. Varnum, A. Vasavada, J. Wisor (Spokane); Assistant Professors, R. Catena, K. Delevich, J. Gerstner (Spokane), A. Henricks, K. Honn, L. Peixoto (Spokane), E. Qualls-Creekmore, B. Satterfield (Spokane); Additional Graduate Faculty, C. Burgoyne, S. Demirel, B. Fortune, H. Shen, B. Sorg, D. Stenkamp, L. Wang.

Neuroscience is the study of how the nervous system impacts physiology, behavior, and health. It seeks to answer questions at the molecular, cellular, systems, behavioral, cognitive, and societal levels through application of a wide array of approaches and techniques. Neuroscience research is critical not only to improving learning and performance, but also addresses some of the most vexing problems that prevent good health, as well as impacts the very nature on how we view ourselves as sentient beings. WSU has a neuroscience faculty engaged in numerous focuses with particular strengths in the areas of energy homeostasis, sleep, circadian biology, addiction, emotions and well-being, sensory processes, neuronal function, electrophysiology, and movement. The Program sponsors Bachelor of Science, Master of Science, and Doctor of Philosophy degrees, in addition to minors at the undergraduate level.

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.

Student Learning Outcomes for BS Neuroscience majors

Knowledge:

- Demonstrate knowledge of, and recognize the relationships between, the structure and function of molecules and tissues involved in neurobiological systems at all levels: molecular, cellular, and organismal.
- Recognize the impact that science has on culture, and vice versa.

Skills:

- Perform basic laboratory techniques used in neuroscience research and understand and apply principles of laboratory safety.
- Locate and retrieve scientific information and read, understand, and critically evaluate primary literature.
- Prepare oral and written reports in a standard scientific format.

- Apply the scientific process, including designing, conducting, and evaluating experiments and testing of hypotheses.
- Use mathematics and statistics to evaluate scientific evidence and interpret graphs and tables.

Attitudes:

- Recognize that all areas of science are integrated and interconnected.
- Appreciate scientific knowledge as something that is not static, but constantly expanding through the ongoing work of researchers.
- Value ethical conduct in science.
- Recognize that the best decision-making and policies are based on evidence.

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. Transfer students are strongly encouraged to enroll in math and chemistry classes at the appropriate level to meet the program requirements prior to transferring. Inquiries should be directed to the Associate Director of Undergraduate Program.

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, industry, and government service. Students work closely with faculty members who are internationally known for their research accomplishments in energy homeostasis, sleep, circadian biology, addiction, emotions and well-being, sensory processes, neuronal function, electrophysiology, and movement. Upon graduation, students with a doctoral degree are credible international experts in the area of their thesis research. They will have developed cutting edge technical research skills, be capable of independently organizing and writing publishable research manuscripts, know the fundamentals on how to write competitive research proposals, have a breadth of knowledge that enables them to critically evaluate neuroscience research, and finally, develop insights that help them identify areas ripe for future investigation. These skills are not only appropriate for basic research, but the ability to organize a set

of sophisticated goals, identify a plan to accomplish those goals, and then successfully complete the plan are skills transferable to many jobs. Our graduates have gone on to excellent positions in tier-one research universities, teaching colleges, industry (e.g., biotechnology, pharmaceutical, and medical device), as well as professional schools (e.g., medical, veterinary, optometry).

To be eligible for admission, candidates must meet general Washington State University requirements outlined at the Graduate School website: <http://gradschool.wsu.edu/> in effect at the time of their admission, as well as the current graduate neuroscience program requirements.

Applicants to the Ph.D. or M.S. program are required to have a Bachelor's degree from an accredited higher education institution. Applicants must have a minimum grade point average of 3.0 (A=4.0). 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.

Application documents must include the following:

- College transcripts (unofficial acceptable for initial review—upon admittance official transcripts are required)
- Three (3) letters of reference
- Resume or curriculum vita
- Personal statement describing why you are interested in studying neuroscience (clearly define which faculty mentor (minimum of 3) you are interested in working with and explain why). If admitted to WSU you will have the ability to refine your choice of faculty mentors while doing lab rotations. Included in the personal statement describe an achievement that you are proud of and discuss how you reached your goal, and any obstacles you had to overcome to reach it. Conversely, tell us about a time when you didn't achieve a goal and what you learned from the experience (maximum word length is 350 words).
- Writing Statement: Describe a major finding in neuroscience and/or biomedicine over the past five (5) years, and explain why you think it was important (maximum word length is 350 words for statement). Be sure to cite references used after the writing statement. An additional maximum length of 350 words is given for the cite references.

- Turning in a document over the maximum word length may cause your application to be disqualified from consideration.
- TOEFL scores (minimum score 100) required for applicants whose native language is not English

Inquiries should be directed to the Program in Neuroscience, Department of Integrative Physiology and Neuroscience; 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. 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.

Schedules of Studies

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

BIOMEDICAL BUSINESS OPTION (120 CREDITS)

Students may be admitted to the Neuroscience - Biomedical Business Option upon making their intention known to the department and enrollment in or credit for MATH 106 (or higher). To maintain admission to the major, students who have completed a minimum of 30 credits at WSU must maintain a 3.0 minimum GPA overall, and a 3.0 minimum GPA in BIOLOGY 107, CHEM 105, CHEM 106 or 116, MATH 140 or 171, NEUROSCI 301, NEUROSCI 302, PHYSICS 101/111 or 201/211 or 205, and PHYSICS 102/112 or 202/212 or 206 or CHEM 345. Students must receive a grade of C or better in these courses and may repeat a maximum of three of these courses to maintain admission to the major.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 140 [QUAN] or 171 [QUAN]	4
NEUROSCI 105 [BSCI]	3
PSYCH 105 [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 106	4
Communication [COMM] or Written Communication [WRTG] ¹	3
HISTORY 105 [ROOT]	3

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106	4
CHEM 345	4
NEUROSCI 301 ²	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
Diversity [DIVR]	3
NEUROSCI 302	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Neuroscience Elective ³	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY/MBIOS 301	4
Humanities [HUM]	3
Behavior Course ⁴	3
Statistics Course ⁵	3 or 4

<i>Second Term</i>	<i>Credits</i>
ENTRP 490	3
MBIOS 303	4
NEUROSCI 404	4
Biomedical Business Elective ⁶	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
ENTRP 426	3
ENTRP 485	3
NEUROSCI 430 [M]	4
Electives ⁷	6
<i>Second Term</i>	<i>Credits</i>
ENTRP 486	3
NEUROSCI 403 [M]	3
NEUROSCI 490 [CAPS]	3
Electives ⁷	6

¹ NEUROSCI/MBIOS 201 is recommended.

² PSYCH 372 may be taken in place of NEUROSCI 301 with department permission.

³ Neuroscience Electives (minimum 3 credits): Approved courses include BIOLOGY 307, 315, 321, 333, 340, 352, 353, 354, 438, 456; MATH 340; MBIOS 304, 305, 401, 404, 413; NEUROSCI 305, 333, 409, 425, 426; PHYSICS 466; PSYCH 265, 312, 333, 350, 361, 372, 384, 464, 470, 490, 491; VET PH 308. Other courses may be allowed by department consent. Courses may not be used to fulfill more than one requirement. Please see your advisor.

⁴ Choose one course from: NEUROSCI 305, 333, or 409. Other courses may be allowed by department consent.

⁵ Choose one course from: PSYCH 311, STAT 212, 360, 370, or 412.

⁶ Biomedical Business Electives (minimum 3 credits): Approved courses include ENTRP 489, MGTOP 301, MGTOP 401, MGTOP 483. Other courses may be allowed by department consent. Please see your advisor.

⁷ Elective choices should include 300-400 level coursework to meet the University minimum requirement of 40 upper-division credits.

COMPUTATIONAL BREADTH OF FIELD OPTION (124 CREDITS)

Students may be admitted to the Neuroscience - Computational Breadth of Field Option upon making their intention known to the department and enrollment in or credit for MATH 106 (or higher). To maintain admission to the major, students who have completed a minimum of 30 credits at WSU must maintain a 3.0 minimum GPA overall, and a minimum 3.0 cumulative GPA in BIOLOGY 107, CHEM 105, CHEM 106 or 116, MATH 171, MATH 172, NEUROSCI 301, NEUROSCI 302, and PHYSICS 201/211 or 205. Students must receive a grade of C or better in these courses and may repeat a maximum of three of these courses to maintain admission to the major.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI]	4
CHEM 106	4

CPT S 121	4
MATH 172	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106	4
MATH 273	2
NEUROSCI 301 ¹	3
PHYSICS 201	3
PHYSICS 211	1
PSYCH 105 [SSCI]	3
<i>Second Term</i>	<i>Credits</i>
CHEM 345	4
CPT S 122	4
Humanities [HUM]	3
NEUROSCI 302	3
PHYSICS 202	3
PHYSICS 212	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
E E 214	4
MATH 216	3
MATH 220	2
MBIOS / BIOLOGY 301	4
<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG] ²	3
MATH 315	3
NEUROSCI 404	4
Computational Neuroscience Electives ³	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
E E 261	3
E E 262	1
NEUROSCI 425	3
NEUROSCI 426	1
NEUROSCI 430 [M]	4
Computational Neuroscience Electives ³	3
<i>Second Term</i>	<i>Credits</i>
BIO ENG 340	4
NEUROSCI 403 [M]	3
NEUROSCI 490 [CAPS]	3
Computational Neuroscience Electives ³	3

¹ PSYCH 372 may be taken in place of NEUROSCI 301 with department permission.

² Professional or Technical Writing is recommended (e.g. ENGLISH 201 or 402)

³ Computational Neuroscience Electives (the Breadth of Field emphasis requires a minimum of 9 credits): At least 3 credits must be 300-400-level E E or CPT S courses. Approved courses include BIOLOGY 315, 321, 340, 438, 456; BIO ENG 481; CPT S 322, 434, 440, 443; E E 311, 321, 324, 341, 451, 464; MBIOS 303, 305, 401, 404, 413, 478; NEUROSCI 305, 333, 409; Psych 470, 490, 491; PHYSICS 466. Courses may not be used to fulfill more than one requirement. Other courses may be allowed by department consent. Please consult your advisor.

COMPUTATIONAL HARDWARE OPTION (124 CREDITS)

Students may be admitted to the Neuroscience - Computational Hardware Option upon making their intention known to the department and enrollment in or credit for MATH 106 (or higher). To maintain admission to the major, students who have completed a minimum of 30 credits at WSU must maintain a 3.0 minimum GPA overall, and a minimum 3.0 cumulative GPA in BIOLOGY 107, CHEM 105, CHEM 106 or 116, MATH 171, MATH 172, NEUROSCI 301, NEUROSCI 302, and PHYSICS 201/211 or 205. Students must receive a grade of C or better in these courses and may repeat a maximum of three of these courses to maintain admission to the major.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI]	4
CHEM 106	4
CPT S 121	4
MATH 172	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106	4
MATH 273	2
NEUROSCI 301 ¹	3
PHYSICS 201	3
PHYSICS 211	1
PSYCH 105 [SSCI]	3
<i>Second Term</i>	<i>Credits</i>
CHEM 345	4
CPT S 122	4
Humanities [HUM]	3
NEUROSCI 302	3
PHYSICS 202	3
PHYSICS 212	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY / MBIOS 301	4
Communication [COMM] or Written Communication [WRTG] ²	3
E E 214	4
MATH 216	3
MATH 220	2
<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
MATH 315	3
NEUROSCI 404	4
Computational Neuroscience Electives ³	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
E E 234	4
E E 261	3
E E 262	1

Neuroscience

NEUROSCI 425	3
NEUROSCI 426	1
NEUROSCI 430 [M]	4

<i>Second Term</i>	<i>Credits</i>
E E 324 [M]	4
NEUROSCI 403 [M]	3
NEUROSCI 490 [CAPS]	3
Computational Neuroscience Electives ³	2

¹ PSYCH 372 may be taken in place of NEUROSCI 301 with department permission.

² Professional or Technical Writing is recommended (e.g. ENGLISH 201 or 402)

³ Computational Neuroscience Electives (the Hardware emphasis requires a minimum of 5 credits): At least 3 credits must be 300-400-level E E or CPT S courses. Approved courses include BIOLOGY 315, 321, 340, 438, 456; BIO ENG 481; CPT S 322, 434, 440, 443; E E 311, 321, 324, 341, 451, 464; MBIOS 303, 305, 401, 404, 413, 478; NEUROSCI 305, 333, 409; Psych 470, 490, 491; PHYSICS 466. Courses may not be used to fulfill more than one requirement. Other courses may be allowed by department consent. Please consult your advisor.

COMPUTATIONAL SOFTWARE OPTION (120 CREDITS)

Students may be admitted to the Neuroscience - Computational Software Option upon making their intention known to the department and enrollment in or credit for MATH 106 (or higher). To maintain admission to the major, students who have completed a minimum of 30 credits at WSU must maintain a 3.0 minimum GPA overall, and a minimum 3.0 cumulative GPA in BIOLOGY 107, CHEM 105, CHEM 106 or 116, MATH 171, MATH 172, NEUROSCI 301, NEUROSCI 302, and PHYSICS 201/211 or 205. Students must receive a grade of C or better in these courses and may repeat a maximum of three of these courses to maintain admission to the major.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI]	4
CHEM 106	4
CPT S 121	4
MATH 172	4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106	4
NEUROSCI 301 ¹	3
PHYSICS 201/211 or 205	4
PSYCH 105 [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
CHEM 345	4
CPT S 122	4

NEUROSCI 302	3
PHYSICS 202/212 or 206	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG] ²	3
E E 214	4
Humanities [HUM]	3
MATH 216	3
MBIOS 301	4

<i>Second Term</i>	<i>Credits</i>
CPT S 223	3
Diversity [DIVR]	3
NEUROSCI 404	4
PSYCH 490	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
CPT S 224	2
CPT S 440	3
NEUROSCI 425	3
NEUROSCI 426	1
NEUROSCI 430 [M]	4

<i>Second Term</i>	<i>Credits</i>
CPT S 322	3
NEUROSCI 403 [M]	3
NEUROSCI 490 [CAPS]	3
Computational Neuroscience Electives ³	6

¹ PSYCH 372 may be taken in place of NEUROSCI 301 with department permission.

² Professional or Technical Writing is recommended (e.g. ENGLISH 201 or 402)

³ Computational Neuroscience Electives (the Software emphasis requires a minimum of 6 credits): At least 3 credits must be 300-400-level E E or CPT S courses. Approved courses include BIOLOGY 315, 321, 340, 438, 456; BIO ENG 481; CPT S 322, 434, 440, 443; E E 311, 321, 324, 341, 451, 464; MBIOS 303, 305, 401, 404, 413, 478; NEUROSCI 305, 333, 409; Psych 470, 490, 491; PHYSICS 466. Courses may not be used to fulfill more than one requirement. Other courses may be allowed by department consent. Please consult your advisor.

GENERAL OPTION (120 CREDITS)

Students may be admitted to the Neuroscience - General Option upon making their intention known to the department and enrollment or credit for MATH 106 (or higher). To maintain admission to the major, students who have completed a minimum of 30 credits at WSU must maintain a 3.0 minimum GPA overall, and a 3.0 minimum cumulative GPA in BIOLOGY 107, CHEM 105, CHEM 106 or 116, MATH 140 or 171, NEUROSCI 301, NEUROSCI 302, PHYSICS 101/111 or 201/211 or 205, and PHYSICS 102/112 or 202/212 or 206 or CHEM 345. Students must receive a grade of C or better in these courses and may repeat a maximum of three of these courses to maintain admission to the major.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 140 [QUAN] or 171 [QUAN]	4
PSYCH 105 [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI]	4
CHEM 106	4
Communication [COMM] or Written Communication [WRTG] ¹	3
HISTORY 105 [ROOT]	3

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106	4
CHEM 345	4
NEUROSCI 301 ²	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
Diversity [DIVR]	3
NEUROSCI 302	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Neuroscience Electives ³	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Behavior Course ⁴	3 or 4
BIOLOGY/MBIOS 301	4
Statistics Course ⁵	3 or 4
Neuroscience Electives ³	5

<i>Second Term</i>	<i>Credits</i>
Humanities [HUM]	3
NEUROSCI 404	4
Electives ⁶	8

Fourth Year

<i>First Term</i>	<i>Credits</i>
NEUROSCI 430 [M]	4
Electives ⁶	11

<i>Second Term</i>	<i>Credits</i>
NEUROSCI 403 [M]	3
NEUROSCI 490 [CAPS]	3
Electives ⁶	9

¹ NEUROSCI/MBIOS 201 is recommended.

² PSYCH 372 may be taken in place of NEUROSCI 301 with department permission.

³ Neuroscience Electives (9 credits): Approved courses include BIOLOGY 307, 315, 321, 333, 340, 352, 353, 354, 438, 456; MATH 340; MBIOS 303, 304, 305, 401, 404, 413; NEUROSCI 305, 333, 409, 425, 426; PHYSICS 466; PSYCH 265, 312, 333, 350, 361, 372, 384, 464, 470, 490, 491; VET PH 308. Other courses may be allowed by department consent. Courses may not be used to fulfill more than one requirement. Please see your advisor.

⁴ Behavior Course: Choose one course from NEUROSCI 305, 333, or 409. Other courses may be allowed by department consent.

⁵ Statistics Course: Choose one course from PSYCH

311, STAT 212, 360, 370, or 412.

⁶ Elective choices should include 300-400 level coursework to meet the University minimum requirement of 40 upper division credits.

HONORS ACCELERATED PRE-VETERINARY OPTION (120 CREDITS)

This option has been established for admission of highly academically qualified students to the Doctor of Veterinary Medicine (D.V.M.) program at the Washington State University College of Veterinary Medicine (CVM). The program of study consists of three years of undergraduate coursework that fulfills the pre-veterinary neuroscience requirements followed by the four-year D.V.M. program. Satisfactory completion of this 7-year curriculum leads to the Bachelor of Science (B.S.) in Neuroscience and Doctor of Veterinary Medicine (D.V.M.).

All students who qualify for admission to the WSU Honors College are eligible to apply for pre-admission to the College of Veterinary Medicine after completion of one year in the pre-veterinary neuroscience curriculum. Interested applicants should identify themselves to the Honors College as soon as they decide to enroll at the University because the number of available seats in the B.S./D.V.M. program is limited. Early admission to the D.V.M. program requires approval of the CVM Admissions Committee. Accepted students are pre-admitted directly to the D.V.M. program. To maintain pre-admission into the D.V.M. program, accepted students must achieve an overall grade point average of 3.5 or better in all undergraduate coursework.

Students may be admitted to the Neuroscience Honors Accelerated Pre-Veterinary Option upon making their intention known to the department and enrollment in, or credit for, MATH 106 (or higher). To maintain admission to the major, students who have completed a minimum of 30 credits at WSU must maintain a 3.0 minimum GPA overall, and a 3.0 minimum cumulative GPA in each of the following courses: BIOLOGY 107; CHEM 105; CHEM 106 or 116; MATH 140 or 171; NEUROSCI 301, NEUROSCI 302; PHYSICS 101/111, 201/211 or 205; and PHYSICS 102/112, 202/212, 206, or CHEM 345. Students must receive a grade of C or better in these courses and may repeat a maximum of three of these courses to maintain admission to the major.

Completion of the degree requires completion of the HONORS Curriculum; a minimum of 90 undergraduate credits, including 30 upper-division credits; and one year of DVM coursework.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 105	4
MATH 140 or 171	4
Foreign Language (if needed) ¹	0-4
<i>Second Term</i>	<i>Credits</i>
CHEM 106 or 116 ²	4
ENGLISH 298	3
HONORS 270 ³	3
PHYSICS 101	3
PHYSICS 111	1
Foreign Language (if needed) ¹	0-4

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106	4
HONORS 280	3
HONORS 290 ²	3
NEUROSCI 301 ⁴	3
PSYCH 105 ³	3

<i>Second Term</i>	<i>Credits</i>
CHEM 345	4
NEUROSCI 302	3
PHYSICS 102	3
PHYSICS 112	1
Behavior Requirement ⁵	3 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY/MBIOS 301	4
HONORS 370	3
HONORS 398 ⁶	0 or 1
MBIOS 303	4
NEUROSCI 430 [M]	4
NEUROSCI 450 ⁷	2

<i>Second Term</i>	<i>Credits</i>
HONORS 380	3
HONORS 390	3
HONORS 450 ⁷	1
NEUROSCI 403 [M]	3
NEUROSCI 490 [CAPS]	3
Statistics Course ⁸	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
VET MED 511	5
Additional D.V.M. Coursework ⁹	10

<i>Second Term</i>	<i>Credits</i>
VET MED 520	5
VET MED 521 ¹⁰	3
Additional D.V.M. Coursework ⁹	7

¹ Students must meet the Honors College Foreign Language requirement.

² Students who complete CHEM 116 fulfill the Honors College HONORS 290 requirement and another 3-credit course can be substituted.

³ If HONORS 270 is taught by a member of the Psychology faculty, students may waive PSYCH 105. If PSYCH 105 is waived, students may need to take additional coursework to meet the 90-credit undergraduate minimum.

⁴ PSYCH 372 may be taken in place of NEUROSCI 301 with department permission.

⁵ Behavior Course: Choose one course from NEUROSCI 305, 333, or 409. Other courses may be allowed by department consent.

⁶ HONORS 398 is an optional thesis-preparation course.

⁷ NEUROSCI 450 is applied to the 3 credit HONORS 450 requirement.

⁸ Statistics Course: Choose one course from PSYCH 311, STAT 212, 360, 370, or 412.

⁹ Additional D.V.M. courses required in the first year of the D.V.M. program to satisfy the Neuroscience elective requirement for the B.S. in Neuroscience.

¹⁰ VET MED 521 satisfies the Neuroanatomy (NEUROSCI 404) requirement for the B.S. in Neuroscience.

PRE-MEDICAL AND PRE-DENTAL OPTION (120 CREDITS)

Students may be admitted to the Neuroscience - Pre-Medical and Pre-Dental Option upon making their intention known to the department and enrollment in or credit for MATH 106 (or higher). To maintain admission to the major, students who have completed a minimum of 30 credits at WSU must maintain a 3.0 minimum GPA overall, and a 3.0 minimum cumulative GPA in BIOLOGY 107, CHEM 105, CHEM 106 or 116, MATH 140 or 171, NEUROSCI 301, NEUROSCI 302, PHYSICS 101/111 or 201/211 or 205, and PHYSICS 102/112 or 202/212 or 206 or CHEM 345. Students must receive a grade of C or better in these courses and may repeat a maximum of three of these courses to maintain admission to the major.

Students are encouraged to take the MCAT after completion of the third year.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 140 [QUAN] or 171 [QUAN]	4
PSYCH 105 [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI]	4
CHEM 106	4
Communication [COMM] or Written Communication [WRTG] ¹	3
HISTORY 105 [ROOT]	3

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106	4
CHEM 345	4
NEUROSCI 301 ²	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 348	4
Diversity [DIVR]	3
NEUROSCI 302	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Behavior Course ³	3 or 4
MBIOS 303	4
Statistics Course ⁴	3 or 4
Neuroscience Electives ⁵	5

<i>Second Term</i>	<i>Credits</i>
BIOLOGY/MBIOS 301	4
Humanities [HUM]	3
NEUROSCI 404	4
Electives ⁶	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
NEUROSCI 430 [M]	4
Electives ⁶	11

<i>Second Term</i>	<i>Credits</i>
NEUROSCI 403 [M]	3
NEUROSCI 490 [CAPS]	3
Electives ⁶	9

¹ NEUROSCI/MBIOS 201 is recommended.

² PSYCH 372 may be taken in place of NEUROSCI 301 with department permission.

³ Behavior Course: Choose one course from NEUROSCI 305, 333, or 409. Other courses may be allowed by department consent.

⁴ Statistics Course: Choose one course from PSYCH 311, STAT 212, 360, 370, or 412.

⁵ Neuroscience Electives (5 credits): Approved courses include BIOLOGY 307, 315, 321, 333, 340, 352, 353, 354, 438, 456; MATH 340; MBIOS 304, 305, 401, 404, 413; NEUROSCI 305, 333, 409, 425, 426; PHYSICS 466; PSYCH 265, 312, 333, 350, 361, 372, 384, 464, 470, 490, 491; VET PH 308. Courses may not be used to fulfill more than one requirement. Other courses may be allowed by department consent. Please see your advisor.

⁶ Electives: Consult your advisor regarding elective courses that may be required or recommended for admission into your future health-professions program.

PRE-VETERINARY OPTION (120 CREDITS)

Students may be admitted to the Neuroscience - Pre-Veterinary Option upon making their intention known to the department and enrollment in or credit for MATH 106 (or higher). To maintain admission to the major, students who have completed a minimum of 30 credits at WSU must maintain 3.0 minimum GPA overall, and a 3.0 minimum cumulative GPA in BIOLOGY 107, CHEM 105, CHEM 106 or 116, MATH 140 or 171, NEUROSCI 301, NEUROSCI 302, PHYSICS 101/111 or 201/211 or 205, and PHYSICS 102/112 or 202/212 or 206 or CHEM 345. Students must receive a grade of C or better in these courses and may repeat a maximum of three of these courses to maintain admission to the major.

Students are encouraged to take the GRE after completion of the third year and apply to Veterinary School by the end of the first term of the fourth year.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 140 [QUAN] or 171 [QUAN]	4
PSYCH 105 [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI]	4
CHEM 106	4
Communication [COMM] or Written Communication [WRTG] ¹	3
HISTORY 105 [ROOT]	3

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106	4
CHEM 345	4
NEUROSCI 301 ²	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1

<i>Second Term</i>	<i>Credits</i>
BIOLOGY/MBIOS 301	4
Diversity [DIVR]	3
NEUROSCI 302	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Behavior Course ³	3 or 4
MBIOS 303	4
Statistics Course ⁴	3 or 4
Neuroscience Electives ⁵	5

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
Humanities [HUM]	3
NEUROSCI 404	4
Electives ⁶	7

Fourth Year

<i>First Term</i>	<i>Credits</i>
NEUROSCI 430 [M]	4
Electives ⁶	12

<i>Second Term</i>	<i>Credits</i>
NEUROSCI 403 [M]	3
NEUROSCI 490 [CAPS]	3
Electives ⁶	9

¹ NEUROSCI/MBIOS 201 is recommended.

² PSYCH 372 may be taken in place of NEUROSCI 301 with department permission.

³ Behavior Course: Choose one course from NEUROSCI 305, 333, or 409. Other courses may be allowed by department consent.

⁴ Statistics Course: Choose one course from PSYCH 311, STAT 212, 360, 370, or 412.

⁵ Neuroscience Electives (5 credits): Approved courses include BIOLOGY 307, 315, 321, 333, 340, 352, 353, 354, 438, 456; MATH 340; MBIOS 301, 304, 305, 401, 404, 413; NEUROSCI 305, 333, 409, 425, 426; PHYSICS 466; PSYCH 265, 312, 333, 350, 361, 372, 384, 464, 470, 490, 491; VET PH 308. Other courses may be allowed by department consent. Courses may not be used to fulfill more than one requirement. Please consult your advisor.

⁶ Elective choices should include 300-400 level coursework to meet the University minimum requirement of 40 upper division credits. Consult your advisor regarding elective courses that may be required or recommended for admission to a DVM program.

Minors

Neuroscience

Students may apply for the minor in Neuroscience once they have completed 60 credits and have a 2.75 GPA. However, they may take minor coursework at any time as long as they meet the prerequisites. The minor in Neuroscience requires 16 credits with at least 13 credits at or above the 300-level. Courses needed to satisfy the minor must include NEUROSCI 301; three credits selected from NEUROSCI 305, 333, or 409; at least six credits selected from the following: NEUROSCI 403, 404,

and 430; and up to four credits of neuroscience related elective coursework. Approved Neuroscience electives include: BIOLOGY 301, 315, 321, 340, 352, 353, 354, 438, 456; MATH 340; MBIOS 301, 304, 305, 401, 404, 413; NEUROSCI 305, 409, 425, 426; PSYCH 265, 312, 333, 350, 361, 372, 384, 464, 470, 490, 491; PHYSICS 466; VET PH 308. 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 Neuroscience minor. Credits for the minor must include a minimum of 9 credits of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Certificates

Certificate in the Business of Biomedicine

The certificate in the Business of Biomedicine prepares students for careers in the dynamic, interdisciplinary world of biomedical business. To complete the certificate, students must complete a minimum of 16 credits consisting of two core courses and three additional electives with a GPA of 2.5 or better. Required core courses are BIOLOGY/MBIOS 301 and MGMT 301. Fulfillment of elective emphasis courses requires completion of one of ACCTG 220, ACCTG 230, FIN 223, or ENTRP 426; AND one of ENTRP 490, COMSTRAT 380, or COMSTRAT 395; AND one of NEUROSCI 302 or MBIOS 303 or another course as approved by your advisor.

Description of Courses

NEUROSCIENCE

NEUROSCI

105 [BSCI] Meet Your Brain 3 Introduction to the brain and nervous system and how they are affected by your environment and everyday activities.

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.

150 [BSCI] Art and the Brain 3 Explore networks involved in sensory perception; learn how art integrates perceptual experiences into works that affect our understanding of ourselves.

201 [COMM] Introduction to Communication in the Molecular Life Sciences 3 (1-4) Course Prerequisite: BIOLOGY 106 with a C or better or BIOLOGY 107 with a C or better. Analysis of primary literature and an introduction to scientific communication skills in the molecular life sciences. (Crosslisted course offered as NEUROSCI 201, MBIOS 201). Recommended preparation: Pre-admitted or admitted major in Biochemistry, Genetics & Cell Biology, Microbiology, or Neuroscience.

- 275 Special Topics: Study Abroad V** 1-15 May be repeated for credit. S, F grading.
- 301 Foundations of Neuroscience I** 3 Course Prerequisite: BIOLOGY 107, CHEM 105, or NEUROSCI 138. Enrollment in NEUROSCI 301 not allowed if credit already earned for PSYCH 372. Structure and function of the nervous system from single neurons to behavior.
- 302 Foundations of Neuroscience II** 3 Course Prerequisite: CHEM 106; BIOLOGY 107; NEUROSCI 301 or PSYCH 372. In-depth concepts, analysis, and discussion of the experimental foundations for understanding nervous system function.
- 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.
- 333 Techniques and Experimental Design in Neuroscience Research** 4 (3-3) Course Prerequisite: NEUROSCI 301 or PSYCH 372; MATH 140, 171, PSYCH 311, STAT 212, 360, 370, or 412. Representative modern neuroscience experiments are explored from a conceptual, technical, and design perspective.
- 403 [M] Cellular Neurobiology** 3 Course Prerequisite: NEUROSCI 302; MBIOS 301; admitted to the major or minor in Neuroscience. Cellular and molecular interactions occurring within the nervous system. Recommended preparation: NEUROSCI 430.
- 404 Neuroanatomy** 4 (3-3) Course Prerequisite: NEUROSCI 302. Fundamental principles of the organization and plans of circuitry of the nervous system.
- 409 Affective Neuroscience** 3 Course Prerequisite: NEUROSCI 302 or PSYCH 372. Brain mechanisms of human and animal emotions. Credit not granted for both NEUROSCI 409 and NEUROSCI 509.
- 425 Foundations of Medical Physiology** 3 Course Prerequisite: BIO ENG 210, MBIOS 301, MBIOS 303, NEUROSCI 301, NEUROSCI 302, or PSYCH 372. Integrated functioning of organ systems, focusing on mechanisms of disease, organ dysfunction, and disturbances to whole-animal homeostasis and health. (Crosslisted course offered as NEUROSCI 425, VET PH 425).
- 426 Foundations of Medical Physiology Lab** 1 (0-3) Course Prerequisite: Concurrent enrollment in NEUROSCI 425. Optional laboratory component of NEUROSCI/VET PH 425. Practical analysis of organ function and health using medical diagnostic equipment and clinical cases. (Crosslisted course offered as NEUROSCI 426, VET PH 426).
- 430 [M] Principles of Neurophysiology** 4 (3-3) Course Prerequisite: NEUROSCI 302; 4 credits of PHYSICS 102 or 202, or PHYSICS 102 and 112, or PHYSICS 202 and 212, or PHYSICS 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: Admitted to the 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 [CAPS] Senior Project** 3 Course Prerequisite: Admitted to the major in Neuroscience; senior standing. Senior capstone course for students majoring in Neuroscience.
- 491 Senior Project-Poster** 1 Course Prerequisite: Admitted to the major in Neuroscience; senior standing. Research project poster or oral presentation. S, F grading.
- 495 Directed Research** V 1-3 May be repeated for credit. Course Prerequisite: Admitted to the 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: Admitted to the 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.
- 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** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Concepts and controversies in neuroscience involving integrative properties of cell systems. Cooperative: Open to UI degree-seeking students.
- 541 Special Topics in Cellular and Molecular Neuroscience** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Concepts and controversies in neuroscience that involve nerve cell function and regulation. Cooperative: Open to UI degree-seeking students.
- 542 Special Topics in Interdisciplinary Neuroscience** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Concepts and controversies in neuroscience that revolve around traditional approaches to nervous system study. Cooperative: Open to UI degree-seeking students.
- 543 Special Topics in Behavioral/Clinical Neuroscience** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Concepts and controversies in neuroscience that involve normal and pathological aspects of behavior. Cooperative: Open to UI degree-seeking students.
- 563 Deconstruction of Research** 3 Course Prerequisite: Graduate standing in a WSU biomedical based graduate program. Nature and development of scientific investigation through oral and written avenues, and methods of critical analyses applied to questions of biomedical interest. (Crosslisted course offered as NEUROSCI 563, GLANHLTH 563, MBIOS 563, VET MICR 563, VET PATH 563, VET PH 563).
- 564 Topics in Biomedical Experimentation** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Examination of the philosophy of experimental design and practical application and analysis of various experimental approaches in biomedical research. Recommended preparation: graduate standing in a WSU biomedical-based program, and an advanced undergraduate or graduate statistics course. (Crosslisted course offered as NEUROSCI 564, GLANHLTH 564, MBIOS 564, PHIL 564, VET MICR 564, VET PATH 564, VET PH 564).
- 590 Seminar** 1 May be repeated for credit; cumulative maximum 7 hours. Presented by advanced graduate students and faculty (both in INP and around WSU) on their research areas. (Crosslisted course offered as NEUROSCI 590, VET PH 590.) S, F grading.
- 592 Research Writing and Seminar** 2 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Graduate student in Neuroscience program. Essentials of oral and written scientific communication.
- 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. Course Prerequisite: Admitted to the Neuroscience PhD program. 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

nursing.wsu.edu
Spokane
509-324-7360

Dean and Professor, M. Koithan; Associate Dean for Academics and Clinical Associate Professor, A. Mason; Associate Dean for Research and Professor, J. Postma; Associate Dean for Faculty Affairs and Professor, D. Smart; Associate Dean and Academic Director-Vancouver and Professor, L. Eddy; Academic Director-Tri-Cities and Clinical Assistant Professor, B. Briggs.

The Washington State University College of Nursing was established in 1968. Since its inception, the College has delivered excellent academic programs, engaged in research and service, and maintained strong partnerships with educational institutions and community healthcare organizations. The College functions as an integrated multi-campus system to develop and implement educational, research, and service initiatives.

UNDERGRADUATE PROGRAMS

The College of Nursing offers two pre-professional baccalaureate programs. The Bachelor of Science in Nursing (BSN) pre-licensure undergraduate program is open to students beginning a nursing career. Students in this program complete approximately four academic years of full-time study. The RN-BSN undergraduate program is open to registered nurses who completed an Associate Degree in nursing and who wish to obtain a bachelor's degree in nursing. Students in this program complete approximately one year of full-time study.

The program of study for both types of students leads to the degree of Bachelor of Science in Nursing (BSN). Undergraduate nursing programs at WSU are approved by the Washington State Nursing Care Quality Assurance Commission and nationally accredited by the Commission on Collegiate Nursing Education.

BSN Students

Students with no previous preparation in nursing may complete pre-nursing course work (first and sophomore years) at Washington State University (Pullman or Tri-Cities campus locations), Eastern Washington University, Whitworth University, or another college or university. Pre-nursing coursework provides the student with a foundation in the natural and social sciences and the humanities. 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 300-400-level courses in the nursing major (junior and senior years) are offered at the College of Nursing in Spokane, Tri-Cities, and Yakima. These courses provide professional preparation in nursing, balancing course work with supervised clinical practice experiences in hospitals, healthcare organizations, and community settings. Upon successful completion of the BSN program, graduates are eligible to take the National Council Licensure Examination (NCLEX®) to become eligible for licensure as Registered Nurses.

RN – BSN Students

Students who are Registered Nurses may apply to the RN – BSN program at any time following the completion of their basic Registered Nursing education. The RN – BSN is offered at Spokane, Tri-Cities, Vancouver, and Yakima WSU campuses. The program builds on pre-licensure RN competencies and is focused on additional pre-professional nursing competencies that include, research, leadership, patient care quality and safety, informatics, and population health. The program is flexible, offering hybrid course delivery. A current, unencumbered Washington State RN License or eligibility for licensure is required. Applicants must be at junior standing (60 semester hours/90 quarter hours), have completed College of Nursing prerequisite courses and WSU's University Common Requirements (UCORE) or equivalent course work. To apply for admission, consultation with a nursing academic advisor is required.

Transfer Students

All students who plan to transfer to nursing at Washington State University from other institutions should discuss their plans early with their academic advisor so that the pre-transfer program of study will be appropriate to nursing degree requirements. The College of Nursing offers pre-enrollment advising at campus locations in Spokane, Tri-Cities, Vancouver, and Yakima for Registered Nurses who plan to obtain the BSN from Washington State University.

Student Learning Outcomes

Program outcomes for our BSN students are: 1) Formulate nursing practice decisions using the foundation of a liberal education and evolving knowledge from nursing science, the biological and behavioral sciences, and the humanities. 2) Apply leadership concepts, skills, and decision-making in the provision of high-quality nursing care, healthcare team coordination, and the oversight and accountability for safe care delivery in a variety of settings. 3) Integrate reliable evidence from multiple credible sources of knowledge including basic and health sciences to inform practice and make clinical judgments. 4) Demonstrate skills in using patient care technologies, information systems, and communication devices that support safety and quality nursing practice. 5) Demonstrate basic understanding of the role of nurses in advocating for patients, communities and populations in discussions related to healthcare policy, finance, and regulations. 6) Use inter- and intra-professional communication and collaborative skills to advocate for safe, evidence-based, high quality patient-centered care. 7) Demonstrate basic understanding of the role of health promotion, and disease/injury prevention in improving population health across the lifespan. 8) Demonstrate the values central to

nursing practice including altruism, autonomy, human dignity, integrity, advocacy, social justice and life-long learning. 9) Provide safe, competent, compassionate, ethical, culturally sensitive, and evidence based nursing care to individuals, families, groups, communities and populations through promotion, maintenance and restoration of health; prevention of illness, and physical, emotional, and spiritual support throughout the life span including end of life, and across the continuum of health care environments.

MASTER OF NURSING (MN) PROGRAM

The Master of Nursing (MN)-Population Health program prepares students for advanced nursing practice in population health with an opportunity to earn Graduate Certificates in nursing education, public health, and organizational leadership. MN students complete practica and capstone projects to demonstrate mastery of essential competencies, including systems leadership, quality and safety, evidence-based practice, informatics, health policy, interprofessional practice, and population health advanced practice. Students may be admitted to the post-baccalaureate Master's in Nursing program after completing a bachelor's degree in nursing, or may enroll in the RN-to-Master's in Nursing program after earning an Associate Degree in Nursing (ADN) and a bachelor's degree in a field related to nursing. Courses are offered in a hybrid format. The MN program is offered at the Spokane, Tri-Cities, Yakima, and Vancouver WSU campuses. Most students complete the program in two to three years.

Student Learning Outcomes

Student learning outcomes for our MN program are 1) integrate scientific findings from nursing, biopsychosocial fields, genetics/genomics, public health, quality improvement, and organizational sciences for the continual improvement of nursing care across diverse settings; 2) implement organizational and system leadership skills to promote high quality, safe patient care that emphasizes ethical and critical decision making and effective working relationships within a systems perspective; 3) articulate multiple elements of quality, including methods, tools, performance measures, and quality standards, and apply these within an organization; 4) apply research outcomes within the practice setting to resolve practice problems, and work as a change agent to disseminate these results; 5) use patient-care technologies to deliver and enhance care, including communications technologies to integrate and coordinate care; 6) intervene at the systems level through policy development, and employ advocacy strategies to influence health and health care; 7) communicate, collaborate, and consult with other health care professionals as a member or leader of inter-professional teams to manage and coordinate care; 8) apply and integrate broad organizational, client-centered culturally appropriate concepts when planning, delivering, managing, and evaluating evidence for clinical prevention and population care, including services to individuals, families, and aggregates/identified populations; and 9) articulate a broadly defined understanding of nursing practice as any form of nursing intervention that influences health care at the direct and indirect care levels for individuals, populations, and systems,

coupled with an advanced level of understanding of nursing and relevant sciences that is integrated into direct and indirect nursing practice.

DOCTOR OF NURSING PRACTICE (DNP) PROGRAM

The Doctor of Nursing Practice (DNP) program prepares students to be leaders in clinical practice and allows graduates to engage in advanced nursing practice. The DNP program provides students with opportunities to work in various health care settings under the guidance of experienced faculty mentors and community experts. An integral part of the program is the completion of the Doctor of Nursing Practice (DNP) Project, which provides students with the knowledge and skills to use evidence and lead innovations in practice. DNP graduates are prepared to translate research and evidence into practice, lead interdisciplinary care teams, measure health-related outcomes, and improve the health of individual patients, groups, populations, and communities. Courses are offered on the Spokane, Tri-Cities, and Vancouver WSU campuses.

Prospective students who have earned the Bachelor of Science in Nursing degree select one of three areas of emphasis in the DNP Program: Family Nurse Practitioner (FNP), Psychiatric Mental Health Nurse Practitioner (PMHNP), or Population Health (PH). Along with completing required didactic coursework, students complete a minimum of 1,000 practicum hours. Graduates of the FNP and PMHNP programs are eligible to complete a national certification examination leading to state licensure as Advanced Registered Nurse Practitioners.

Prospective students who have earned the Master's degree in Nursing can complete their DNP degree and may apply to add an additional specialty (FNP, PMHNP, PH).

Admission to the DNP program is granted based on 1) admission to the WSU Graduate School; 2) undergraduate and, if applicable, graduate GPA 3.0; 3) written interview responses. Eligibility for Graduate School admission includes: 1) Cumulative GPA 3.0; 2) three professional references; 3) written goal statement congruent with program's philosophy and focus. All applicants to the DNP program must be licensed as a registered nurse in Washington state (or, for international students, eligibility for licensure on admission with completion of process before first clinical/practicum course enrollment).

The Graduate Program Office in the College of Nursing provides program information to prospective students and support for current students, including assignment of faculty advisors and support for enrollment and progression.

Student Learning Outcomes

We expect that DNP graduates: 1) Apply biophysical, psychosocial, behavioral, sociopolitical, cultural, economic, and nursing science to improve health care practice and delivery systems (DNP Essentials I, V, and VIII); 2) Analyze organizational structure, functions and resources to improve the delivery of care (DNP Essential II); 3) Translate evidence-based research into practice to improve health care delivery and outcomes for all (DNP Essential III); 4) Use information systems/technology to support and improve patient care and healthcare systems (DNP Essential IV); 5) Advocate for the nursing profession through the

development, implementation and evaluation of healthcare policy (DNP Essential V); 6) Collaborate with other health professionals to improve health care access and health outcomes for individuals and populations (DNP Essential VI); 7) Advocate for ethical policies and practice which prevent illness, promote health and social justice, and reduce disparities for patient populations in urban, rural, and global settings (DNP Essential V, VII); 8) Apply advanced knowledge and skills within an area of specialized nursing practice (DNP Essential VIII).

PH.D. IN NURSING PROGRAM

The Ph.D. in Nursing program prepares nurse scientists who engage in research, scholarship, and discovery to advance the discipline of nursing. Graduates are equipped to become leaders in nursing education and research, critical roles in today's health care environment.

Students complete required coursework over 7 semesters using a hybrid approach to teaching/learning. All students prepare a dissertation research proposal to meet requirements for the preliminary examination, and complete an independent research study. Courses are offered through the Spokane campus.

Students may apply as post-master's PhD (72 credits) or post baccalaureate (86 credits). The post-baccalaureate to Ph.D. program includes a "bridge year" consisting of two semesters of preparatory (Master's level) coursework before beginning the traditional Ph.D. program with the next incoming cohort. Students may attend full-time study or part-time. All Ph.D. students are assigned advisors who will help to individualize their programs of study and refine research interests. BSN-Ph.D. students will also be closely advised during Year 1 by the program director to help them transition successfully to doctoral study. International students are welcome in our Ph.D. program; please see <https://gradschool.wsu.edu/international-requirements>.

Admission to the Ph.D. program is granted based on: 1) admission to the WSU Graduate School; 2) graduate GPA 3.5*; 3) submission of scholarly work; and 4) phone interview responses (*mitigating circumstances resulting in GPA below 3.5 are considered). Eligibility for Graduate School admission includes: 1) Cumulative GPA 3.0; 2) 3 professional references; 3) written goal statement congruent with program's philosophy and focus. All applicants to the Ph.D. program must be licensed as a registered nurse in Washington state (or, for international students, eligibility for licensure on admission with completion of process before first clinical/practicum course enrollment).

The Graduate Program Office in the College of Nursing provides program information to prospective students and support for current students, including assignment of faculty advisors and support for enrollment and progression.

Student Learning Outcomes

We expect graduates of the Ph.D. 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 (121 CREDITS)

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. All pre-licensure applicants are required to have at least 50 hours of volunteer/work health experience and provide a proctored writing sample at interview time.

Part-time schedule of study is available; see advisor.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 101 [PSCI]	4
Diversity [DIVR]	3
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 102 [BSCI], 106 [BSCI], or 107 [BSCI]	4
CHEM 102	4
ENGLISH 101 [WRTG]	3
PSYCH 105 [SSCI]	3
SOC 101 or 102	3

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 251	4
Humanities [HUM]	3
MBIOS 101	4
STAT 212 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 140 or 333	3
BIOLOGY 315	4
Communication [COMM] or Written Communication [WRTG]	3
H D 101	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
NURS 308	3
NURS 311	4
NURS 315	4
NURS 316	2
NURS 317	3
NURS 328	2

<i>Second Term</i>	<i>Credits</i>
NURS 309 [M]	3
NURS 322	2
NURS 323	2
NURS 324	4
NURS 325	5

Fourth Year

<i>First Term</i>	<i>Credits</i>
NURS 408	3
NURS 412	1
NURS 414	3
NURS 415	2
NURS 416	3
NURS 417	2

<i>Second Term</i>	<i>Credits</i>
NURS 409	2
NURS 424	3
NURS 425	2
NURS 426 [M]	2
NURS 427	3
NURS 430 [CAPS]	3

NURSING - REGISTERED NURSES OPTION

Criteria for admission to the RN-BSN Program:

- Current, unencumbered, Washington State RN license or eligibility for licensure is required.
- Applicants must be junior standing (60 semester hours/90 quarter hours), have a direct transferable AA/AS degree, or have a bachelor's degree.
- Must complete College of Nursing prerequisite courses and WSU's University Common Requirements (UCORE) or equivalent course work. Some associate of arts, associate of science, or bachelor's degrees may satisfy these requirements. Check with your academic advisor or compare your completed courses at the Transfer Credit Equivalencies website. Minimum grade for each prerequisite course is 2.0 (Pass/Satisfactory grades and CLEP scores are not accepted).
- Cumulative GPA of 3.0 or higher in all college work.

Bachelor of Science in Nursing (BSN) Option for Registered Nurses: Required courses: NURS 360, 400, 405, 406, 413, 440, 463, 465, 495, Integrated Capstone/upper-division elective.

Description of Courses**NURSING****NURS**

308 Professional Development I: Evidence Based Practice 3 Course Prerequisite: Admitted to the major in Nursing. First of professional development series; focus on nursing and health care research, information management, informatics, and development of nursing research.

309 [M] 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: Admitted to the 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: Admitted to the 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: Admitted to the 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: Admitted to the 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: Admitted to the 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: Admitted to the 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: Admitted to the major in Nursing. Professional values, communication, and functional assessment in care of elders; core knowledge and role development of the gerontological nurse.

360 Contemporary Nursing 3 Course Prerequisite: Admitted to the major in Nursing. Integration of foundational nursing theory into an exploration of historical, ethical/legal, and current issues, to further develop the professional nurse.

392 Therapeutic Touch: A Nursing Modality of Caring and Healing 3 (2-3) Course Prerequisite: Admitted to the 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.

399 RN-BSN EXAM 32 S,F Grading. S, F grading.

400 [M] Nursing Research and Evidence-Based Practice 3 Course Prerequisite: Admitted to the major in Nursing. Develops clinical questions, finds and critically appraises published evidence, and translates research into clinical practice.

405 Nursing Leadership 3 Course Prerequisite: Admitted to the major in Nursing. Explores leadership theory to critically analyze group behaviors and their effects on health care outcomes.

406 Nursing Management of the Healthcare Environment 3 Course Prerequisite: Admitted to the major in Nursing. Critically analyzes management strategies in diverse settings with a focus on quality safety and fiscal accountability of the changing healthcare system.

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.

413 Informatics in Healthcare 3 Course Prerequisite: Admitted to the major in Nursing. Leveraging technology, tools, and data to provide more efficient patient-centered care to improve health outcomes.

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 [M] 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 [CAPS] 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 [M] Population Health Theory** 3 Course Prerequisite: Admitted to the major in Nursing. Synthesizes population-based nursing and public health concepts with a focus on upstream interventions in partnership with the community.
- 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.
- 463 Coordination of Care Across Complex Populations** 3 Course Prerequisite: Admitted to the major in Nursing. Best practices and models of care delivery in coordination of complex health care needs across a variety of populations; shared decision making and professional collaboration are integrated into an understanding of individual- and population-level factors that impact health outcomes.
- 465 Application of Population Health Principles** 3 (0-9) Course Prerequisite: NURS 440 or concurrent enrollment. Application of community, public, and psychiatric mental health nursing concepts to communities, populations, groups, families, and individuals with identified health needs.
- 471 Foundations of Occupational and Environmental Health Practice** 3 Course Prerequisite: Junior standing in any Health Professions program. Fundamentals of occupational and environmental health practice; concepts of prevention, epidemiology, disease prevention and health promotion to explain the underlying causes of occupational illness.
- 474 Presencing: The Core of a Nurse-Patient Relationship** 3 Course Prerequisite: Junior standing. The role of the nurse in the practice of presencing as a primary mechanism of caring and communication.
- 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: Admitted to the 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: Admitted to the 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 Health Professions** 3 Course Prerequisite: Admitted to the major in Nursing; junior standing. Implications for disaster management across the health professions; mental health and ethical issues and concerns related to vulnerable populations.
- 495 [CAPS] Advanced Practicum** 3 Course Prerequisite: Admitted to the 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.
- 501 Psychiatric Assessment, Diagnosis, and Management of Children and Adolescents** 3 Course Prerequisite: NURS 530; NURS 562; admission to PMHNP program. Introduction to assessment, diagnosis, and management of psychiatric illnesses common in children and adolescents.
- 502 Psychiatric Assessment, Diagnosis, and Management of Adults and Geriatrics** 3 Course Prerequisite: NURS 530; NURS 562; admission to PMHNP program. Introduction to assessment, diagnosis, and management of psychiatric illnesses common in adults and geriatrics.
- 503 Scientific Inquiry in Nursing** 2 Course prerequisite: Admission to Nursing graduate program. Scientific inquiry applied to theoretical and philosophical foundations in nursing.
- 504 Evidence-Based Practice** 3 Course prerequisite: Admission to Nursing graduate program. Exploration of evidence-based practice through the conduct of scientific inquiry and application of credible evidence, best practice guidelines, and outcomes management reports.
- 505 Analytical Foundations for Practice Inquiry** 3 Course prerequisite: NURS 503, NURS 504, and admission to Nursing graduate program; or post-master's DNP program. Application of quantitative methods and statistics in current health care to review, describe, and interpret the language of research.

- 508 Diagnostics and Procedures for Primary Care Practice 2** (1-4) Course Prerequisite: NURS 562 or concurrent enrollment; NURS 563 or concurrent enrollment; NURS 581; admission to FNP program. Introduction to the selection and interpretation of diagnostic tests, and performance of minor procedures for primary care practice.
- 509 Clinical Decision Making: Essential Concepts and Diagnostic Reasoning 3** Course Prerequisite: NURS 562 or concurrent enrollment; NURS 563 or concurrent enrollment; NURS 581; admission to the FNP program. A primary care framework for conducting systematic clinical encounters, developing differential diagnoses, and planning care for individuals and families.
- 513 Primary Care I: Health Promotion, Disease Prevention, and Disease Detection Across the Lifespan 3** Course Prerequisite: NURS 508; NURS 509; concurrent enrollment in NURS 514. Primary care approaches to health promotion, disease prevention, risk reduction, and disease detection for individuals and families across the life span.
- 514 Primary Care Practicum 1 2** (0-8) Course Prerequisite: NURS 508; NURS 509; concurrent enrollment in NURS 513. Primary care practicum experience focused on health promotion, disease prevention, and disease detection across the lifespan in primary health care.
- 515 Primary Care II: Acute Health Conditions Across the Lifespan 3** Course Prerequisite: NURS 513; NURS 514; concurrent enrollment in NURS 516. Clinical management and analysis of acute and common conditions presenting in the primary care setting, emphasizing a lifespan approach.
- 516 Primary Care Practicum II 2** (0-8) Course Prerequisite: NURS 513; NURS 514; concurrent enrollment in NURS 515. Primary care practicum experience focused on acute and common conditions in individuals and families across the lifespan.
- 518 Translating Evidence into Practice 3** (2-3) Course prerequisite: NURS 553; NURS 565; NURS 591; admission to Nursing graduate program. Development of advanced skills for appraising and applying evidence in advanced practice.
- 521 Nursing Education: Teaching, Learning, Assessment, and Evaluation 3** Course prerequisite: Admission to Nursing graduate program. Exploration of concepts related to teaching and learning, assessment of diverse learning needs, instructional strategies and design, evaluation of performance outcomes.
- 523 Nursing Education: Curriculum and Accreditation 3** Course prerequisite: Admission to Nursing graduate program. Exploration of curriculum and accreditation history, development, future predictions; 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.
- 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.
- 530 Theory of Psychopharmacology and Safe Prescribing Practices 3** Course Prerequisite: NURS 563; NURS 581. Psychopharmacology across the lifespan for clinical practice including pharmacokinetics, pharmacodynamics, principles of prescribing, client education, and outcome monitoring.
- 531 Culture, Populations, and Family Health Care 3** Course prerequisite: Admission to Nursing graduate program. Diverse health beliefs and practices of clients, families, and members of the interdisciplinary health care team.
- 533 Nursing Education: Delivery Methods for Diversity, Inclusion, and Interprofessional Education 3** Synthesis and application of advanced instructional delivery technologies, and best practices in diversity, inclusion, and interprofessional healthcare education.
- 534 Research Seminar: Grant Development and Critique 3** Seminar focusing on writing a fellowship and/ or grant application and skills for critically reviewing a funded fellowship or grant.
- 535 Philosophy of Nursing Science 3** 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 3** Course prerequisite: Admission to Nursing graduate program. Theory development analysis; theory critique; nursing knowledge examination; impact of theory on nursing science, applied to student's phenomenon of interest.
- 537 Primary Care III: Chronic Health Conditions Across the Lifespan 3** Course Prerequisite: NURS 515; NURS 516; concurrent enrollment in NURS 538. Synthesis of clinical management approaches for care of individuals with chronic and complex conditions across the lifespan.
- 538 Primary Care Practicum III 2** (0-8) Course Prerequisite: NURS 515; NURS 516; concurrent enrollment in NURS 537. Primary care practicum focused on caring for individuals and families with complex and chronic health conditions across the lifespan.
- 540 NP Clinical Practicum V 1-10** May be repeated for credit; cumulative maximum 10 hours. Course Prerequisite: NURS 514 or 547. Primary Care Practicum experience requiring the supervised provision of increasingly complex direct patient care.
- 542 Advanced Pathophysiology, Pharmacology, and Assessment for Population Healthcare Professionals 4** (3-3) Course prerequisite: Admission to Nursing graduate program. Advanced assessment, pharmacology, and pathophysiology used by population health nurses.
- 544 Therapeutic Modalities I: Introduction to Therapies 3** Course Prerequisite: NURS 530; admission to PMHNP program. Initial theoretical training in individual and group therapy applicable across lifespan and cross-culturally.
- 545 Therapeutic Modalities II 3** Course Prerequisite: NURS 544. PMHNP practicum experience with focused training in theory of individual and group therapies applicable across lifespan and cross-culturally.
- 547 Therapeutic Modalities in Practice 3** Course Prerequisite: NURS 545. PMHNP practicum clinical experience focused on development of therapy relationships in two modalities.
- 553 Organizational Systems and Leadership II 3** (2-3) Course Prerequisite: NURS 576 or concurrent enrollment. Integration of principal dimensions of healthcare policy evaluation, and quality improvement in a constantly changing health care environment.
- 554 Epidemiology and Biostatistics for Health Professions 3** Course prerequisite: Admission to Nursing graduate program. 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.
- 555 PMHNP Practicum I 3** (1-8) Course Prerequisite: NURS 501; NURS 530; admission to PMHNP program. Psychiatric mental health practicum experience focused on developing initial competency in the comprehensive PMHNP nursing role across the lifespan.

- 556 Advanced Population Health V** 2-6 Course prerequisite: Admission to Nursing graduate program. Culminating analysis, development, and enactment of advanced practice roles in teaching, practice, or administration of community-based/population-focused nursing.
- 557 DNP Project I** 3 (2-3) Course Prerequisite: NURS 518; NURS 553; NURS 554. Application of knowledge of current nursing science to the development of a proposal for the final DNP project.
- 558 DNP Project II** 3 (1-6) Course Prerequisite: NURS 557 with a grade B or better. Development of program design plan and collection of data for the DNP Project.
- 559 DNP Project III** 3 (1-6) Course Prerequisite: NURS 558 with a grade B or better. Implementation and evaluation of the DNP Project.
- 560 PMHNP Practicum II** 3 (0-12) Course Prerequisite: NURS 501; NURS 502; NURS 555; admission to PMHNP program. Clinical practicum experience focused on ongoing development of proficiency in the comprehensive lifespan PMHNP nursing role.
- 562 Advanced Health Assessment and Differential Diagnoses** 3 (2-3) Course prerequisite: NURS 581 or concurrent enrollment; admission to Nursing graduate program. Applying health assessment and differential diagnostic skills to individuals, families, and populations in rural, urban, and medically under-served areas.
- 563 Advanced Pharmacology** 3 Course prerequisite: Admission to Nursing graduate program. Pharmacology for clinical practice including decision making, prescribing, drug monitoring, and patient education associated with prescriptive authority.
- 564 Family Health and Health Promotion of Populations** 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 Course Prerequisite: NURS 505; NURS 576; admission to Nursing graduate program. 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 Grant Development** 2 Course prerequisite: Admission to Nursing graduate program. Application of core public health functions in community analysis, program development and program evaluation.
- 573 Rational Prescribing** 3 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.
- 576 Organizational Systems and Leadership I** 3 (2-3) Course prerequisite: NURS 503 and NURS 504; or admission as a post-master's DNP or PhD student. Analysis of organizational systems and the advanced nurse clinician's role as a leader for change.
- 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: Admission to Nursing, Nutrition and Exercise Physiology, or Pharmacy graduate programs. 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.
- 581 Advanced Pathophysiology** 3 Course prerequisite: Admission to Nursing graduate program. Etiology, pathogenesis, manifestations, and outcomes of disruption and dysfunction of human physiology.
- 582 PMHNP Internship** 3 Course Prerequisite: NURS 555 or admission to PMHNP program. A culminating internship focusing on the provision of comprehensive psychiatric mental health care to individuals and families across the lifespan.
- 583 DNP Population Health Practicum V** 1-5 May be repeated for credit; cumulative maximum 10 hours. Course Prerequisite: Admission to DNP Population Health programs. Application and integration of theoretical content, research, assessment, and intervention strategies into practice.
- 584 Health Care Law, Policy, and Analysis** 3 Course prerequisite: Admission to Nursing graduate program. Analysis of health care policy and delivery systems including access, disparity, barriers to care, social justice, vulnerability, and health outcomes.
- 585 Faculty Role Seminar** 3 Analysis of current issues related to the faculty role in nursing education.
- 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; NURS 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 Introduction to Mixed Methods and Evaluation** 3 Course Prerequisite: NURS 503, NURS 504, and NURS 554; or admission to post-master's DNP program and NURS 554. Program development, implementation, and outcomes evaluation in healthcare, primarily from a mixed methods and 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.
- 596 Nursing Science: Theory and Science of Nursing II** 3 Course Prerequisite: NURS 536. Analysis and application of concepts, models, and theories for nursing science research with a focus on vulnerable populations.
- 597 Advanced Topics in Nursing V** 1-3 May be repeated for credit; cumulative maximum 6 hours. Course prerequisite: Admission to Nursing graduate program. 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: Admission to Nursing graduate program. Specialized topics within the discipline; content will vary each term.
- 599 Independent Study V** 1-18 May be repeated for credit. Course prerequisite: Admission to Nursing graduate program. S, F grading.
- 700 Master's Research, Thesis, and/or Examination V** 1-18 May be repeated for credit. Course prerequisite: Admission to Nursing graduate program. 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: Admission to Nursing graduate 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.
- 799 Dissertation Seminar** 1 May be repeated for credit. Course prerequisite: Admission to Nursing graduate program. 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: Admitted to the Nursing PhD program. 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 Nutrition and Exercise Physiology

medicine.wsu.edu/nutrition-and-exercise-physiology-degree-program/
665 N. Riverpoint Blvd. #318
509-358-7811

Chair and Professor, G. Duncan; Associate Professors, H. Haverkamp, P. Monsivais; Assistant Professors, O. Amram, F. Carbonero, C. Jarrett, M. Perrigue, P. Solverson; Clinical Associate Professor, A. Davis; Clinical Assistant Professor, L. Heneghen; Teaching Associate Professor, J. Larsen; Teaching Assistant Professor, K. Frederick.

The Department of Nutrition and Exercise Physiology (NEP) offers the only academic program in the state of Washington, and one of few across the nation, which integrates instruction and research in both human nutrition and exercise physiology. The department is also unique in that it is housed within the Elson S. Floyd College of Medicine, facilitating seamless integration with medical education to ensure that future physicians are well grounded in the importance of nutrition and exercise as preventative and therapeutic medicine.

The Bachelor of Science in NEP is a unique, interdisciplinary undergraduate degree in the health sciences that focuses on the effects of nutrition and exercise on the health of individuals and populations. 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 applied nutrition and exercise physiology. The program is accredited by the Committee on Accreditation for the Exercise Sciences (CoAES).

The degree offers an integrative curricular approach in which students gain a unique perspective on how and why the human body responds to various nutritional and exercise stimuli through didactic and experiential assessment of molecular, genetic, clinical, social/psychological, and environmental factors. Students gain experiential learning through laboratories and a senior practicum, followed by a semester-long internship.

At the completion of their undergraduate BS 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 nutrition and exercise sciences; apply knowledge of behavioral and social sciences to nutrition and

activity habits of diverse populations; demonstrate the ability to use, interpret, evaluate, and apply research principles to nutrition and physical activity interventions; demonstrate the application of nutrition recommendations and activity programming for the prevention and 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 NEP curriculum by utilizing problem-solving activities and assignments; perform nutrition and exercise 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; university and worksite wellness programs; exercise and health promotion; and commercial fitness centers, among others. Graduates will be qualified to test for Health Fitness and Specialty Certifications through the American College of Sports Medicine. In addition, graduates may seek admission to graduate programs in nutrition and exercise physiology and other health sciences programs.

Applications are required for entry into the final two years of the BS NEP. To be a qualified applicant, WSU general education requirements, and a specific set of BS NEP prerequisites must be complete. Students must have a cumulative GPA of 2.7 or better, as well as a 3.0 average in all the BS NEP prerequisite courses. No grade less than a C will be accepted in the BS NEP prerequisites. WSU students based in Pullman are best served by working with an academic advisor in the Health Professions Student Center, <https://healthprofessions.wsu.edu/>, or 509-335-4549. Students from colleges or universities other than WSU Pullman will need to contact the Academic Coordinator in the Department of Nutrition and Exercise Physiology to determine appropriate prerequisites: nep@wsu.edu; 509-358-7811.

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 CPD NEP is a professional masters degree and is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND), the accrediting agency for the Academy of Nutrition and Dietetics (AND). Successful completion of this MS program prepares students to test for the Registered Dietitian Nutritionist (RDN) credential.

The department also offers an MS NEP thesis option and the Doctor of Philosophy (PhD) in NEP degrees. These research tracks offer unique opportunities to pursue research interests in nutrition and exercise physiology, applied to clinical, community, and population-level settings.

The research interests of the faculty include nutrition education, clinical nutrition

therapy, sociocultural factors that influence dietary and activity behaviors, clinical and applied exercise physiology and nutrition, health benefits of new crop varieties, community nutrition and activity programming, environmental and policy-level influences on diet and activity, and gene by environment interactions.

Applications for admission to the graduate programs must include: official transcripts for all college-level work, three letters of recommendation, resume, and a purpose statement discussing career goals and research interests. For students whose native language is not English, TOEFL scores above 100 (Internet based) are required.

Schedules of Studies

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

BACHELOR OF SCIENCE IN NUTRITION AND EXERCISE PHYSIOLOGY (126 CREDITS)

A student may be admitted to the nutrition and exercise physiology major upon completing the WSU UCORE courses (or equivalents), B.S. NEP prerequisites, a minimum GPA of 3.0 or better, and successful formal application to the program. Application is due January 31 each year, to start courses in the Fall semester at WSU Spokane.

Completion of the B.S. in Nutrition and Exercise Physiology (NEP) requires a C or higher grade in all NEP courses required for the major and a minimum cumulative GPA of 2.5 in all required 300-400-level NEP courses completed at WSU.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 106 [BSCI]	4
CHEM 101 [PSCI] or 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
STAT 212 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 102 or 106	4
COM 102 [COMM]	3
HISTORY 105 [ROOT]	3
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 333	3
CHEM 345	4
Diversity [DIVR]	3
KINES 262 or BIOLOGY 315	4
PHYSICS 101 and 111 (if needed) ¹	0 or 4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 251 or 353	4
MBIOS 303	4
MBIOS 305	3
PHIL 103 [HUM] or 365 [HUM]	3
PHYSICS 102 and 112 (if needed) ¹	0 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
WSU Spokane	
NEP 320	3
NEP 340	3
NEP 362	3
NEP 400	3
NEP 463	4

<i>Second Term</i>	<i>Credits</i>
WSU Spokane	
NEP 402	3
NEP 427 [M]	3
NEP 435	4
NEP 476	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
WSU Spokane	
NEP 458	3
NEP 477 or 478 ²	3
NEP 479	3
NEP 489	3

<i>Second Term</i>	<i>Credits</i>
WSU Spokane	
NEP 450	3
NEP 480 or 481 ²	3 or 4
NEP 482	3
NEP 495 [CAPS] [M]	3

<i>Third Term</i>	<i>Credits</i>
NEP 490	10

¹ Both PHYSICS 101/111 and PHYSICS 102/112 are required for pre-health professional majors (e.g., pre-med). These courses are not required for admission into NEP, but should be taken by those students wishing to follow the pre-health professions tracks.

² Students completing the Exercise Physiology track must complete NEP 478 and 480. Students completing the Community and Public Health track must complete NEP 477 and 481.

Description of Courses**NUTRITION AND EXERCISE PHYSIOLOGY****NEP**

200 [SSCI] Place and Health 3 Critical review of theories and methods to determine how the natural, built, and social environments shape individual and population-level health.

310 Principles of Strength Training and Conditioning for Health Professions 2 Course Prerequisite: BIOLOGY 251; BIOLOGY 315. Foundations of strength training and conditioning for the general population.

320 Strength Training and Conditioning: Theory and Application 3 (2-3) Course Prerequisite: Admitted to the major in Nutrition and Exercise Physiology, or 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 Essentials of Food Preparation for Health Sciences 3 (2-3) Course Prerequisite: Admitted to the major in Nutrition and Exercise Physiology, or 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 Course Prerequisite: Admitted to the major in Nutrition and Exercise Physiology. Applied sport, clinical, and occupational biomechanics.

400 Macronutrient Metabolism 3 Course Prerequisite: Admitted to the major in Nutrition and Exercise Physiology, or 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.

402 Vitamin and Mineral Metabolism 3 Course Prerequisite: Admitted to the major in Nutrition and Exercise Physiology, or 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 [M] Nutritional Assessment and Lifestyle Counseling 3 (2-3) Course Prerequisite: Concurrent enrollment required in NEP 402 and NEP 435; NEP 340; NEP 400; admitted to the major in 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.

430 Host-Associated Microbiome in Health and Nutrition 3 Course Prerequisite: Junior standing. Current knowledge, methodology, and application of gut microbiome analyses in the context of animal and human health and nutrition. Credit not granted for both NEP 430 and NEP 530.

431 Agriculture, Food, Nutrition and Health Outcomes 3 Course Prerequisite: Junior standing. Integrated overview of challenges and solutions related to human nutrition and health along the farm to fork and soil to societies continuums. Credit not granted for both NEP 431 and NEP 531.

435 Applied Pathophysiology 4 Course Prerequisite: Admitted to the major in Nutrition and Exercise Physiology, or the Master of Science Coordinated Program in Dietetics, Nutrition, and Exercise Physiology. Pathophysiology of disease and implications for dietary and exercise interventions.

450 Management and Facilities 3 Course Prerequisite: Admitted to the major in 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 Throughout the Life Cycle 3 Course Prerequisite: NEP 400; NEP 402; NEP 435; admitted to the major in Nutrition and Exercise Physiology. Physical activity relating to nutritional needs and dietary patterns from infancy through old age and including maternal nutrition.

460 Exercise Physiology for Health Professions 3 Course Prerequisite: BIOLOGY 251; BIOLOGY 315 or KINES 262. Acute and chronic physiological responses to exercise; emphasis is placed upon energy systems, skeletal muscle, nervous system cardiovascular system, respiratory system, and the endocrine system.

463 Exercise Physiology 4 (3-3) Course Prerequisite: Admitted to the major in Nutrition and Exercise Physiology. Advanced undergraduate exercise physiology with emphasis on mechanisms regulating physiological responses to acute and chronic exercise.

476 Exercise Testing and Prescription 3 (2-3) Course Prerequisite: NEP 320; NEP 463; admitted to the major in Nutrition and Exercise Physiology. Principles of exercise testing and prescription based on current practices in physical education, physiology, and rehabilitation.

477 Human Health Behavior and Behavioral Interventions 3 Analysis of health-related behaviors and the social, cultural, and environmental context in which they occur; examines how psychological and behavioral traits shape individual-level patterns of physical activity, diet, and health; explores how behavior change theories are used to develop health interventions for individuals and application in clinical and community settings.

478 Cardiopulmonary Physiology 3 (2-3) Course Prerequisite: NEP 463; admitted to the major in Nutrition and Exercise Physiology. Comprehensive analysis of cardiopulmonary function in healthy humans; students will conduct activities related to cardiopulmonary function during rest and exercise. Required preparation: previous course in Anatomy and Physiology.

479 Nutrition and Exercise Practicum I 3 (1-6) Course Prerequisite: NEP 427; NEP 435; NEP 476; admitted to the major in Nutrition and Exercise Physiology. 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: NEP 435; NEP 463; NEP 476; NEP 478; admitted to the 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.

- 481 Principles of Population Health** 3 Course Prerequisite: NEP 477. Foundation of population health including an understanding of the difference between population and individual health, and the history, role, and practice of public health; epidemiological theories, concepts, and measures; social determinants of health and inequalities in health; population-based approaches to improve health; draws on a wide range of health research, aiming to apply principles and use examples related to obesity, chronic disease, diet, and physical activity.
- 482 Nutrition and Exercise Practicum II** 3 (1-6) Course Prerequisite: NEP 479; admitted to the major in Nutrition and Exercise Physiology. Supervised experience in applying exercise and nutrition assessment techniques for normal and diseased subjects.
- 489 NEP Internship and Professional Development Seminar** 3 Course prerequisite: NEP 463; NEP 476; admitted to the major in Nutrition and Exercise Physiology. Preparatory activities for students to successfully apply for and complete an internship; activities to enhance professional development and group-level and/or one-on-one advising; delivered in a seminar format. S, F grading.
- 490 Exercise and Nutrition Internship** V 1 (0-3) to 15 (0-45) Course Prerequisite: NEP 489; admitted to the major in Nutrition and Exercise Physiology. Supervised offsite exercise field experience to assess normal and diseased populations and develop/apply exercise prescriptions and nutrition recommendations. S, F grading.
- 495 [CAPS] [M] Interprofessional Capstone in Nutrition and Exercise Physiology** 3 Course Prerequisite: Admitted to the major in Nutrition and Exercise Physiology, Nursing, or Speech and Hearing Sciences at WSU Spokane; senior standing. Culminating experience for senior undergraduates in NEP and health science fields; interprofessional approach to address the prevention, diagnosis, and treatment of a variety of health conditions.
- 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) Course Prerequisite: Admission to the Coordinated Program in Dietetics. Review of literature in dietetic education and health promotion including supervised practice in community facilities.
- 505 Graduate Seminar** 1 May be repeated for credit. Course Prerequisite: Admission to NEP Graduate Program. Weekly presentations by experts centered around a theme that addresses current issues and controversies in the broad fields of nutrition and exercise physiology. S, F grading.
- 520 Research Methods in Nutrition and Exercise Physiology** 3 Course Prerequisite: Admission to NEP Graduate Program. Current research designs and methods in nutrition and exercise physiology including behavioral and basic sciences emphasizing chronic disease prevention.
- 521 Advanced Research Methods** 3 Course Prerequisite: NEP 520. Planning, conducting, and managing human research in nutrition and exercise physiology including clinical, behavioral, and population sciences.
- 525 Advanced Human Nutrition** 3 Course Prerequisite: Admission to NEP Graduate Program. Topics in applied human nutrition with an in-depth study of contemporary nutrition research and applications in public health.
- 526 Nutritional Epidemiology** 3 Course Prerequisite: Admission to NEP Graduate Program. The relationship between nutritional status, diet, and disease at the community and population level.
- 530 Host-Associated Microbiome in Health and Nutrition** 3 Current knowledge, methodology, and application of gut microbiome analyses in the context of animal and human health and nutrition. Credit not granted for both NEP 430 and NEP 530.
- 531 Agriculture, Food, Nutrition and Health Outcomes** 3 Integrated overview of challenges and solutions related to human nutrition and health along the farm to fork and soil to societies continuums. Credit not granted for both NEP 431 and NEP 531.
- 537 Medical Nutrition Therapy I** 4 (3-3) Course Prerequisite: Admission to the Coordinated Program in Dietetics. Theory and practical application of medical nutrition therapy for a variety of disease states. Required preparation: previous college-level courses in pathophysiology and nutrition assessment.
- 540 Clinical Supervised Practice** 10 Course Prerequisite: NEP 537; admission to the Coordinated Program in Dietetics. Clinical supervised practical experience for graduate students in coordinated program in dietetics.
- 542 Medical Nutrition Therapy II** 3 Course Prerequisite: NEP 537; admission to the Coordinated Program in Dietetics. Theoretical and practical application of advanced medical nutrition therapy principles to complex disease states.
- 551 Management Practices in Food Service** 5 (1-12) Course Prerequisite: Admission to the Coordinated Program in Dietetics. Advanced principles and supervised experience in food systems, institutional food service management, school food service and community feeding programs.
- 560 Geographic Information Systems in Health and Social Sciences** 3 Utilizing Geographical Information Systems (GIS) and mapping tools to examine and visualize epidemiological and social science data; assess public health, social, and policy issues including obesity, cardiovascular disease, and drug use; explore how this work can be applied to interventions. Required preparation must include a college-level statistics course. (Crosslisted course offered as NEP 560, SOC 560).
- 573 Nutrition in the Community** 2 Course Prerequisite: Admission to NEP Graduate Program. Public health from a nutrition perspective including current issues in nutrition healthcare, overview of existing programs and assessment of program planning.
- 580 Advanced Topics in Exercise Physiology and Nutrition** 3 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: Admission to NEP Graduate Program. In-depth evaluation of current research in the fields of exercise physiology and nutrition; exploration of different topics by different instructors on a rotating basis.
- 582 Advanced Exercise Physiology** 3 (2-3) Systematic study of energy metabolism and acute and chronic adaptations of physical activity at the whole systems level. Recommended preparation: Undergraduate coursework in anatomy and physiology, biochemistry, and exercise physiology.
- 585 Clinical Exercise Physiology** 3 Exercise and nutrition assessment/prescription and program management in rehabilitation for populations in various disease states.
- 586 Physical Activity Epidemiology and Public Health** 3 Course Prerequisite: Admission to NEP Graduate Program. An in-depth evaluation of topics relevant to the study of physical activity and public health globally.
- 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.

701 Master's Independent Capstone Project and /or Examination V 1-6 May be repeated for credit. Capstone project or final examination for professional master's degree under the Graduate School. The credits will include a balloted evaluation of the student's completion of the program's capstone/examination requirements by the program's graduate faculty. Students must have graduate degree-seeking status and obtain approval from their major advisor/committee chair before enrolling for 701 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: Admitted to the Nutrition and Exercise Physiology PhD program. 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 and Molecular Medicine Graduate Program

pharmacy.wsu.edu/ph-d-in-pharmaceutical-sciences/
509-368-6607

Pharmaceutical Sciences and Molecular Medicine Graduate Program Director and Associate Professor, D. Jackson; Professors, S. Ahmed, K.M. Gibson, A. Lazarus, P. Lazarus, M. Leid, K. Meier, M. Paine, J-B Rouillet, S. Tolmachev, J. White, J. Zhu; Associate Professors, G. Chen, S. Daoud, W. Li, S. Marsh, B. Prasad, A. Singh, S. Wang, Z. Wang; Assistant Professors, A. Ahmed, M. Avtandilashvili, Z. Cheng, J. Clarke, T. Denton, S. Natesan, C. Remsberg, J. Sun, G. Tabatadze, B. Wu, H. Zhang.

The mission of the Graduate Program in Pharmaceutical Sciences and Molecular Medicine 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. We utilize multi-disciplinary basic 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. Pharmacology, pharmacotherapeutics, biopharmaceutics, and pharmacogenomics are emphasized in the

curriculum. Students are mentored by world-recognized scientists across a variety of research areas including autoimmune disorders, cancer biology, computer-aided drug design (CADD), drug delivery/nontechnology, drug-diet interactions, drug discovery, molecular therapeutics, neuroscience, pharmacogenomics, toxicity, and translational pharmacology. 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 that includes biology, chemistry (including organic chemistry and biochemistry), mathematics (through calculus), and organ/mammalian physiology course. Students working toward the PhD in Pharmaceutical Science and Molecular Medicine are expected to develop an area of research emphasis that is consistent with the capabilities and interests of the faculty.

A PharmD/PhD combined degree option is available to train clinician scientists. Interested students may apply for PhD admission during the first two years of their progression through the PharmD program.

Student Learning Outcomes

- Demonstrate mastery of knowledge in the general fields of Pharmaceutical Sciences and Molecular Medicine.
- Develop the expertise to use appropriate methodologies to solve novel and emerging problems related to Pharmaceutical Sciences and Molecular Medicine.
- Disseminate research findings to local, regional, national, and international audiences primarily through publication in peer-reviewed journals and presentations at conferences.
- Participate in professional organizations, including becoming members, attending meetings, and taking leadership roles where appropriate.
- Participate in teaching, internships, fellowships, workshops, credentialing, and grant applications to enhance competitiveness for career opportunities as appropriate.
- Develop critical, integrative, and evaluative thinking at the highest levels of rigor.
- Develop advanced written and oral communication skills.
- Become independent, self-motivated researchers with the ability to identify specific problems in their field of expertise and to formulate solutions to these problems.
- Develop a comprehensive knowledge of previous and current research in their field of expertise and be able to demonstrate that knowledge capability in a review of the literature at a level that is potentially publishable.
- Generate innovative questions within their field of expertise and pose hypotheses related to those questions.
- Apply sound methodological approaches to test hypotheses related to specific research questions and describe the methods effectively.
- Perform statistical analyses of research data and present the results in a way that clearly describes the data.

Applications for admission to the graduate program must include: Official GRE scores, official transcripts for all college level work, three letters

of recommendation, and a letter discussing career goals, previous research experience, and research interests. For students whose native language is not English, TOEFL/IELTS scores are required. Inquiries should be emailed to: gradprograms@pharmacy.wsu.edu.

Description of Courses

PHARMACEUTICAL SCIENCES GRADUATE PROGRAM

PHARMSCI

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.

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.

520 Foundations of Molecular Regulation and Cellular Regulation 4 Cellular biology, molecular biology, genetics, and biochemistry used to develop therapeutic approaches for the treatment and prevention of human disease states.

540 Fundamentals of Chronopharmacology 3 Role of the circadian clock in pharmacology as it relates to therapeutic efficacy; special emphasis on anti-cancer drug treatment.

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.

560 Molecular and Cellular Methods in Biomedical Sciences 3 Basic experimental methods and approaches in cell and molecular biology, with an emphasis on practical skills and their appropriate application.

565 Drug Delivery 3 Comprehensive overview of drug delivery at the molecular, cellular, and organ levels; concepts and approaches as applied to multiple diseases.

566 Fundamentals of Toxicology 3 Application of toxicology in the safety evaluation and risk assessment at the molecular, cellular, and organ levels; special emphasis on the concepts and approaches applied to organ system toxicology.

571 Computer-Aided Drug Design 3 (2-2) Course Prerequisite: Graduate standing in the Pharmaceutical Sciences graduate program and permission from the instructor. Principles and applications of ligand-based and structure-based computational methods used in lead optimization in drug discovery and development processes.

572 Fundamentals of Oncology 3 Thorough overview of cancer biology encompassing basic cellular and molecular mechanisms of carcinogenesis and tumor progression, treatment and prevention.

- 573 Principles of Pharmacokinetics and Toxicokinetics** 3 Pharmacokinetic, pharmacodynamic, and toxicokinetic systems; mathematical model development utilizing common kinetic systems.
- 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 Responsible Conduct in Biomedical Research** 3 Training in biomedical research ethics consistent with NIH requirements; introduction to literature searching and analysis, scientific writing, and oral presentations.
- 578 Applied Biostatistics** 3 Research process; techniques for conducting health sciences research and evaluation; critique published health sciences research and collect, utilize, and evaluate primary and secondary data.
- 579 Principles of Pharmacology** 3 Key principles of drug pharmacodynamics, pharmacokinetics, organ system pharmacology, and cutting-edge biomedical research-based drug discovery.
- 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.) 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. Course Prerequisite: Admitted to the Pharmaceutical Sciences PhD program. 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 and Pharmaceutical Sciences

www.pharmacy.wsu.edu
Spokane
509-368-6700

COLLEGE OF PHARMACY AND PHARMACEUTICAL SCIENCES: *Dean and Professor, M. Leid; Associate Dean and Associate Professor, J. Akers; Associate Dean and Professor, A. Lazarus; Associate Dean and Professor, K. Meier; Associate Dean and Associate Professor, J. Robinson; Associate Dean and Associate Professor, A. Stewart.* DEPARTMENT OF PHARMACEUTICAL SCIENCES: *Interim Chair and Professor, K. Meier; Professors, S. Ahmed, M. Paine, J. Zhu; Associate Professors, S. Daoud, D. Jackson, S. Marsh, B. Prasad, S. Wang, Z. Wang; Assistant Professors, A. Ahmed, Z. Cheng, J. Clarke, T. Denton, S. Natesan, C. Remsburg, B. Wu, H. Zhang.* DEPARTMENT OF PHARMACOTHERAPY: *Chair and Professor, J. White; Professors, D. Baker, B. Gates, K. Gibson, T. Levien, J-B Roulet; Associate Professors, J. Akers, R. Crutchley, K. McKeirnan, J. Neumiller, M. Undeberg, M. Willson; Assistant Professors, T. Bertsch, D. Bowers, D. Brand, C. Buchman, J. Clark, M. Giruzzi, N. Giruzzi, A. Kim, L. MacCamy, J. Miller, C. Frazier, N. Rodin, M. Thomas.*

The College of Pharmacy and Pharmaceutical Sciences (CPPS) offers a personalized education for students wishing to pursue a career in pharmacy. The doctor of pharmacy (PharmD) curriculum is a four-year degree. The first three years are delivered at the WSU Health Sciences campus in Spokane, Washington or the Pacific Northwest University of Health Sciences Campus in Yakima, Washington. During the first three years, student pharmacists develop a foundation in biomedical and pharmaceutical sciences, engage in peer-to-peer role play and simulations of clinical scenarios, and eventually work with complicated patient cases and develop confidence in building patient specific plans.

During the fourth professional year, students gain experience in a variety of health care settings, including community, institutional and long-term care settings. The curriculum consists of 6 six-week rotations of advanced experiential training, in which students will be assigned to a variety of geographic locations in Washington, Oregon, California and Idaho. Students have the opportunity rank their preferred geographic locations to complete the majority of rotations.

The college offers an additional degree option, the doctor of pharmacy with research honors. The curriculum for this option includes additional

coursework: a course in responsible conduct of research, and research credits taken in both semesters of the second and third professional years. Interested students may apply for admission to the research honors program in their first year.

The application period each academic year is from July to January. Late admissions applications will be considered until June 1, if there are remaining positions for students. Students should prepare and submit their application one calendar year before they intend to begin the pharmacy program. Although a bachelor's degree is not required for admission, pre-requisites for admission require three years of pre-pharmacy education. PCAT is not required for admission.

The college has holistic application review process. This process considers a range of characteristics beyond academic metrics such as grades and test scores. While we will evaluate grades and prerequisite grade trends, we will also evaluate students on a case-by-case basis by reviewing letters of recommendation, personal statements, and our professional goal statements. After our initial application review, you may be invited to interview. We encourage interviewees to be themselves and share stories throughout the interview to help us better understand you and your motivations.

For additional information regarding the PharmD curriculum, please see the CPPS home page at <https://pharmacy.wsu.edu> or contact the CPPS Office of Student Services at 509-368-6605.

Student Learning Outcomes

Washington State University College of Pharmacy and Pharmaceutical Sciences (CPPS) PharmD Curriculum Outcomes are Standards 1, 2, 3, and 4 of the Accreditation Council for Pharmacy Education (ACPE) Standards 2016. The complete ACPE Standards 2016 are available at <https://acpe-accredit.org/>. The curriculum committee assigns PharmD Curriculum Outcomes to each required course in the curriculum.

PharmD Curriculum Outcomes

Students are trained to provide patient-centered care as part of the integrated health care team. Students learn to serve as the medication expert, working directly with patients to optimize and personalize their medicines to fit patient needs and improve health. Upon graduation from the doctor of pharmacy program, all graduates will demonstrate competency in the following outcomes:

Standard 1: Foundational Knowledge

The graduate is able to develop, integrate, and apply knowledge from the foundational sciences (i.e., biomedical, pharmaceutical, social/behavioral/administrative, and clinical sciences) to evaluate the scientific literature, explain drug action, solve therapeutic problems, and advance population health and patient-centered care.

Standard 2: Essentials for Practice and Care

2.A. Patient-centered care – The graduate is able to provide patient-centered care as the medication expert (collect and interpret evidence, prioritize, formulate assessments and recommendations, implement, monitor and adjust plans, and document activities).

2.B. Medication use systems management – The graduate is able to manage patient healthcare needs using human, financial, technological, and physical

resources to optimize the safety and efficacy of medication use systems.

2.C. Health and wellness – The graduate is able to design prevention, intervention, and educational strategies for individuals and communities to manage chronic disease and improve health and wellness.

2.D. Population-based care – The graduate is able to describe how population-based care influences patient-centered care and the development of practice guidelines and evidence-based best practices.

Standard 3: Approach to Practice and Care

3.A. Problem solving – The graduate is able to identify problems; explore and prioritize potential strategies; and design, implement, and evaluate a viable solution.

3.B. Education – The graduate is able to educate all audiences by determining the most effective and enduring ways to impart information and assess learning.

3.C. Patient advocacy – The graduate is able to represent the patient's best interests.

3.D. Interprofessional collaboration – The graduate is able to actively participate and engage as a healthcare team member by demonstrating mutual respect, understanding, and values to meet patient care needs.

3.E. Cultural sensitivity – The graduate is able to recognize social determinants of health to diminish disparities and inequities in access to quality care.

3.F. Communication – The graduate is able to effectively communicate verbally and nonverbally when interacting with individuals, groups, and organizations.

Standard 4: Personal and Professional Development

4.A. Self-awareness – The graduate is able to examine and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth.

4.B. Leadership – The graduate is able to demonstrate responsibility for creating and achieving shared goals, regardless of position.

4.C. Innovation and entrepreneurship – The graduate is able to engage in innovative activities by using creative thinking to envision better ways of accomplishing professional goals.

4.D. Professionalism – The graduate is able to exhibit behaviors and values that are consistent with the trust given to the profession by patients, other healthcare providers, and society.

Pharmacy Prerequisites for Admission to the Professional Pharmacy Program

(Students transferring from the quarter system will have transferrable credits converted to semester credits upon acceptance into the PharmD program. All transfer credits will be evaluated by WSU Undergraduate Admissions office. Please refer to our information page on PharmCAS for the most up to date information on pre-required coursework and application requirements. The following courses are required for admission and represent acceptable WSU courses.)

- Arts and Humanities Courses – At least one course must be an English Writing/Composition class. Other courses may be selected by choice (12-15 credits)

- Algebra, Pre-Calculus or higher – MATH 106, 140, 171, or 202 (3 or 4 credits)
- Statistics – STAT 212 (4 credits)
- Organic Chemistry – CHEM 345 and 348 (8 credits)
- Microbiology – MBIOS 305 (3 credits)
- Microbiology and Molecular Biology Laboratory – MBIOS 304 (3 credits)
- Human Anatomy with lab – BIOLOGY 315 (4 credits)
- Advanced Human Physiology – BIOLOGY 353 (4 credits)
- Biochemistry – MBIOS 303 (4 credits)

Schedules of Studies

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

DOCTOR OF PHARMACY (PHARMD) CURRICULUM (135 CREDITS)

First Year

First Term	Credits
PHARDSCI 502	4
PHARDSCI 504	1
PHARDSCI 508	3
PHARDSCI 528	3
PHARMACY 506	1
PHARMACY 507	1
PHARMACY 509	1
PHARMACY 516	2

Second Term	Credits
PHARDSCI 510	2
PHARDSCI 512	4
PHARDSCI 518	2
PHARDSCI 519	1
PHARMACY 501	1
PHARMACY 513	1
PHARMACY 514	4
Electives ¹	3 - 0

Third Term	Credits
PHARMACY 533 ²	3

Second Year

First Term	Credits
PHARDSCI 532	4
PHARMACY 530	2
PHARMACY 531	1
PHARMACY 534	4
PHARMACY 536	1
PHARMACY 545	3
Electives ¹	2 - 0

Second Term	Credits
PHARDSCI 542	4
PHARDSCI 547	2
PHARMACY 541	1
PHARMACY 543	1
PHARMACY 544	4
PHARMACY 558	2
PHARMACY 559	2
Electives ¹	3 - 0

Third Term	Credits
PHARMACY 553 ²	3

Third Year

First Term	Credits
PHARMACY 551	2
PHARMACY 554	4
PHARMACY 556	1
PHARMACY 566	3
Electives ¹	2 - 0

Second Term	Credits
PHARMACY 555	4
PHARMACY 557	4
PHARMACY 561	2
PHARMACY 563	2
PHARMACY 564	3
Electives ¹	2 - 0

Fourth Year

First Term	Credits
Advanced Pharmacy Practice Experiences (APPE) ³	15

Second Term	Credits
Advanced Pharmacy Practice Experiences (APPE) ⁴	15

¹ Elective Courses: 12 credits of electives involving a minimum of 4 courses are required throughout the first three years of the curriculum. Select from: ACCTG 550, BA 501–504, 600, COM 561–564, COMHLTH 570–574, COMSTRAT 701, ECON 555, EM 508, 522, 526, 530, 538, 560, 564–570, 580, 585, 590, ENGLISH 402, NURS 478, 492, 498, 499, SHS 201, 202, PHARDSCI 499, 599, PHARMACY 499, 570–580, 588–599, PHARMSCI 512, 520, 540, 560, 565, 572, 573, 575, 577, 578, 579, 581.

² Introductory Pharmacy Practice Experiences (IPPE) courses can be assigned in the summer, fall, or winter session.

³ Advanced Pharmacy Practice Experiences (APPE) courses: PHARMACY 581, 582, 583, 584, 585, 586, 587.

⁴ Advanced Pharmacy Practice Experiences (APPE) courses: PHARMACY 581, 582, 583, 584, 585, 586, 587.

DOCTOR OF PHARMACY WITH RESEARCH HONORS CURRICULUM (143 CREDITS)

The Doctor of Pharmacy with Research Honors major provides students with the opportunity to gain substantial research experience while in pharmacy school. Students interested in pursuing the Research Honors plan should attend informational sessions and consult with the policies for the Research Honors Program, and then apply for entry to this program during the second term of their first year in the PharmD curriculum. Prospective Research Honors students must enroll in PHARMACY or PHARDSCI 499 or 599 in the second term of their first professional year before applying to the Research Honors program. The program requires selection of a research mentor, ongoing research work (PHARDSCI 598; total of at least 8 credits required) during the second and third professional years, completion of PHARMSCI 577 in the first term of the second professional year, presentation of research plans in the second professional year, and submission of a culminating

paper to the Research Honors Program in the third professional year.

First Year

First Term	Credits
PHARDSCI 502	4
PHARDSCI 504	1
PHARDSCI 508	3
PHARDSCI 528	3
PHARMACY 506	1
PHARMACY 507	1
PHARMACY 509	1
PHARMACY 516	2

Second Term	Credits
PHARDSCI 510	2
PHARDSCI 512	4
PHARDSCI 518	2
PHARDSCI 519	1
PHARMACY 501	1
PHARMACY 513	1
PHARMACY 514	4
PHARMACY or PHARDSCI 499 or 599 ¹	1 - 4
Electives ¹	3 - 0

Third Term	Credits
PHARMACY 533 ²	3

Second Year

First Term	Credits
PHARDSCI 532	4
PHARDSCI 598	1 - 4
PHARMACY 530	2
PHARMACY 531	1
PHARMACY 534	4
PHARMACY 536	1
PHARMACY 545	3
PHARMSCI 577	3
Electives ¹	2 - 0

Second Term	Credits
PHARDSCI 542	4
PHARDSCI 547	2
PHARDSCI 598	1 - 4
PHARMACY 541	1
PHARMACY 543	1
PHARMACY 544	4
PHARMACY 558	2
PHARMACY 559	2
Electives ¹	3 - 0

Third Term	Credits
PHARMACY 553 ²	3

Third Year

First Term	Credits
PHARDSCI 598	1 - 4
PHARMACY 551	2
PHARMACY 554	4
PHARMACY 556	1
PHARMACY 566	3
Electives ¹	2 - 0

Second Term	Credits
PHARDSCI 598	1 - 4
PHARMACY 555	4
PHARMACY 557	4
PHARMACY 561	2
PHARMACY 563	2
PHARMACY 564	3
Electives ¹	2 - 0

Fourth Year

First Term	Credits
Advanced Pharmacy Practice Experiences (APPE) ³	15

Second Term	Credits
Advanced Pharmacy Practice Experiences (APPE) ³	15

¹ Elective Courses: 12 credits of electives involving a minimum of 4 courses are required throughout the first three years of the curriculum. Select from: ACCTG 550, BA 501-504, 600, COM 561-564, COMHLTH 570-574, COMSTRAT 701, ECON 555, EM 508, 522, 526, 530, 538, 560, 564-570, 580, 585, 590, ENGLISH 402, NURS 478, 492, 498, 499, SHS 201, 202, PHARDSCI 499, 599, PHARMACY 499, 570-580, 588-599, PHARMSCI 512, 520, 540, 560, 565, 572, 573, 575, 577, 578, 579, 581. PHARMACY 499, 599, PHARDSCI 499, 599, and PHARMSCI 577 are curricular requirements that also count as electives.

² Introductory Pharmacy Practice Experiences (IPPE) courses can be assigned in the summer, fall, or winter session.

³ Advanced Pharmacy Practice Experiences (APPE) courses: 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. H, 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) Laboratory course teaching hands-on physical assessment techniques from a pharmacy perspective, to provide patient-specific care. H, S, F grading.

506 Student Practice and Professional Development I 1 Introduction to the essential skills, attitudes, and values for practicing health care professionals. S, F grading.

507 Introduction to Therapeutic Agents: Top 200 Drugs 1 (0-2) Drugs most frequently prescribed in the US as a basis for pharmacy practice. H, S, F grading.

509 Professional Communications Lab 1 (0-3) Professional communication skills as an essential foundation for career development. H, S, F grading.

513 Introductory Pharmacy Practice Experience I 1 Prepares student pharmacists for community practice experience and service learning activities. S, F grading.

514 Pharmacotherapy I 4 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.

516 Health Care Systems 2 US healthcare system, financing of health care delivery and the role of the pharmacist. H, S, F grading.

530 Point of Care and Clinical Services 2 Providing point of care and clinical services in a pharmacy setting. H, S, F grading.

531 Applied Patient Care II: Clinical Assessment and Documentation 1 (0-3) Clinical assessment and documentation skills necessary for effective pharmaceutical care. H, S, F grading.

533 Introductory Pharmacy Practice Experience II 3 (0-9) Authentic practice situations and service learning with opportunities for discussion and reflection. S, F grading.

534 Pharmacotherapy II 4 Second 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.

536 Student Success and Professional Development II 1 Continuing development of the essential skills, attitudes, and values for practicing health care professionals. S, F grading.

541 Applied Patient Care III: Medication Therapy Management 1 (0-3) Identification of pertinent patient findings, assessment of drug-related problems and clinical problem solving. H, S, F grading.

543 Introductory Pharmacy Practice Experience III 1 Authentic practice situations and service learning with opportunities for discussion and reflection. S, F grading.

544 Pharmacotherapy III 4 Third 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.

545 Pharmacy Management 3 Management principles essential for common practice settings in the profession of pharmacy. H, S, F grading.

551 Applied Patient Care IV: Advanced Medication Therapy Management 2 (1-3) Medication therapy management for complex patients; case-based discussions and human patient simulation. H, S, F grading.

553 Introductory Pharmacy Practice Experience IV 3 (0-9) Authentic practice situations and service learning with opportunities for discussion and reflection. S, F grading.

554 Pharmacotherapy IV 4 Fourth 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.

- 555 Drug Information and Literature Evaluation 4** Evaluation of drug information in pharmaceutical and biomedical literature to provide better patient care. H, S, F grading.
- 556 Student Success and Professional Development III 1** Enhanced development of the essential skills, attitudes, and values for practicing health care professionals. S, F grading.
- 557 Pharmacotherapy V 4** Fifth 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.
- 558 Applied Clinical Pharmacokinetics 2** Clinical applications of pharmacokinetics including theoretical background and application to patient care. H, S, F grading.
- 559 Quality Assurance and Patient Safety 2** Patient safety issues including quality assurance, medication error avoidance and risk management in healthcare systems. H, S, F grading.
- 561 Applied Patient Care V: Integrated Patient Care 2 (1-3)** Integration of pharmaceutical care with an interdisciplinary emphasis using patient cases and human patient simulation. H, S, F grading.
- 563 Introductory Pharmacy Practice Experience V 2** Authentic practice situations and service learning with opportunities for discussion and reflection. S, F grading.
- 564 Pharmacy Law and Regulatory Affairs 3** Legal and ethical pharmacy practice including licensing, patient privacy protection, order fulfillment and contracts. H, S, F grading.
- 566 Therapeutics of Special Populations 3** Special therapeutic needs of unique populations including pediatrics, chronic neurologic disorders, hospice care and immuno-compromised patients. H, S, F grading.
- 570 Pain: Processes and Treatment 2** Course Prerequisite: PHARDSCI 512. Skills, education, and awareness in topics related to pain processes, pharmacological and nonpharmacological treatments, legal processes and resources, and inter-professional communication for improved patient outcomes. S, F grading.
- 571 Creative Problem Solving - Advanced Compounding 2** Course Prerequisite: PHARDSCI 508; PHARDSCI 519. Development of strong problem-solving skills through the application of prior knowledge of pharmaceuticals and compounding, as well as new information gained from pre-class materials and available literature; discuss, propose, develop, and test novel alternative formulations for compounded products in order to address a given problem encountered in compounding pharmacy; evaluate results from in-class experiments to make a conclusive recommendation as to how to address the proposed issue. S, F grading.
- 572 Physical Activity Prescription in the Pharmacy 2** Course Prerequisite: Admission to Pharmacy program. Knowledge and skill set for student pharmacists to apply evidence-based guidelines to recommend and promote physical activity in their patients. S, F grading.
- 573 Family Medicine and Pharmacy 2** Course Prerequisite: PHARMACY 544 or 554. Wide range of both inpatient and outpatient family medicine topics including but not limited to, anticoagulation, diabetes, hypertension, heart failure, polypharmacy, atrial fibrillation, COPD and asthma; serves as a bridge between therapeutic courses and experiential APPE rotations. S, F grading.
- 574 Veterinary Pharmacy 2** Course Prerequisite: PHARMACY 534. Basic pathophysiology of diseases in small and large animals and current treatments likely to be dispensed by community pharmacists. S, F grading.
- 575 Substance Use Disorders 1** Foundational knowledge of substance use disorders and the impact pharmacists have on the disease. S, F grading.
- 577 Diseases, Complications, and Drug Therapy in Obstetrics 2** Course Prerequisite: PHARDSCI 532; admission to Pharmacy program. Medical and pharmacological issues common in obstetrics. H, 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.
- 580 Practical Politics and Pharmacy 2** Course Prerequisite: Admission to Pharmacy program. Study of government and legislation to better assist patients in navigating the political process. S, F grading.
- 581 Acute Care Advanced Practice Experience 5 (0-15)** Course Prerequisite: Admission to Pharmacy program. Advanced practice experience in acute care settings. H, S, F grading.
- 582 Ambulatory Care Advanced Practice Experience 5 (0-15)** Course Prerequisite: Admission to Pharmacy program. Advanced practice experience in ambulatory care settings. H, S, F grading.
- 583 Community Advanced Practice Experience 5 (0-15)** Course Prerequisite: Admission to Pharmacy program. Advanced practice experience in a community pharmacy setting. H, S, F grading.
- 584 Institutional Advanced Practice Experience 5 (0-15)** May be repeated for credit; cumulative maximum 5 hours. Course Prerequisite: Admission to Pharmacy program. Advanced practice experience in an institutional pharmacy setting. H, S, F grading.
- 585 Elective I Advanced Practice Experience 5 (0-15)** Course Prerequisite: Admission to Pharmacy program. Advanced practice experience in acute or ambulatory patient care settings. H, S, F grading.
- 586 Elective II Advanced Practice Experience 5 (0-15)** Course Prerequisite: Admission to Pharmacy program. Advanced practice experience in acute, ambulatory, or non-traditional patient care. H, S, F grading.
- 587 Elective III Advanced Practice Experience 5 (0-15)** Course Prerequisite: Admission to Pharmacy program. Advanced practice experience in various health care settings. H, S, F grading.
- 588 Special Topics V 1-4** May be repeated for credit; cumulative maximum 10 hours. Contemporary issues in pharmacy. Recommended preparation: Completion of one year in the Pharmacy program. H, S, F grading.
- 589 Special Topics V 1-4** May be repeated for credit; cumulative maximum 10 hours. Course Prerequisite: Admission to Pharmacy program. Contemporary issues in pharmacy. S, F grading.
- 590 Advanced Infectious Diseases 2** Course Prerequisite: PHARMACY 554. Advanced therapeutic application of anti-infective agents for the treatment of infectious diseases. S, F grading.
- 591 Advanced Elective in Critical Care 2** Course Prerequisite: PHARMACY 554. Elective course: Explores in greater depth the pharmacology and pharmacotherapy encountered in the critical care setting. S, F grading.
- 592 Mental Health First Aid 2** Skills, education, and awareness in topics related to mental health and the ability to provide assistance and education in mental health crises. S, F grading.
- 593 Residency Preparation 2** Course Prerequisite: PHARMACY 554; PHARMACY 566; admission to Pharmacy program. An introduction to the residency experience and methods to succeed in attaining a pharmacy residency. S, F grading.
- 594 Comprehensive Diabetes Management 3** Course Prerequisite: Admission to Pharmacy program. Multidisciplinary foundation for future health professionals in the principles of diabetes management, using self-paced, modular and internet-based alternative format for delivery. H, S, F grading.
- 595 HIV - Advanced Therapeutics 2** Course Prerequisite: PHARDSCI 510; PHARDSCI 512; PHARMACY 514. Broad range of HIV related topics covered from the origin of HIV through the current status of HIV vaccines. H, S, F grading.
- 596 Entrepreneurship in Pharmacy 1** Course Prerequisite: Admission to Pharmacy program. Entrepreneurship and innovative pharmacy business plan development. S, F grading.

- 597 Advanced Diabetes Management** 2 Course Prerequisite: PHARMACY 554; PHARMACY 566. In-depth experience in the holistic management of patients with diabetes; development of knowledge and ability to assess, manage, educate, and monitor patients with diabetes; opportunity to increase knowledge, skills, and confidence in treating patients with diabetes components of this course include case-based discussions, case-presentations, and greater understanding of diabetes self-management. S, F grading.
- 598 Advances in Clinical Pharmacogenomics** 2 Course Prerequisite: PHARDSCI 510. Broad knowledge of clinically relevant topics and career preparation in pharmacogenomics (PGx). H, S, F grading.
- 599 Special Projects** V 1-4 May be repeated for credit; cumulative maximum 12 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** 4 Integrated autonomic and central nervous system pharmacology. H, S, F grading.
- 504 Pharmacy Calculations** 1 (0-2) The mathematics of prescription preparation and dispensing. H, S, F grading.
- 508 Pharmaceutics I** 3 Principles of dosage from design and drug delivery, with an emphasis on physiochemical principles. H, S, F grading.
- 510 Basic and Clinical Pharmacogenomics** 2 Introduction to the science involving pharmacogenomics and how this knowledge is clinically applied to individualized patient therapy. H, S, F grading.
- 512 Integrated Pharmacology II** 4 Integrated hepatic, gastrointestinal, and endocrine pharmacology. H, S, F grading.
- 518 Pharmaceutics II** 2 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) Laboratory experience in the preparation of medicines. S, F grading.
- 528 Pharmacokinetics** 3 Qualitative and quantitative understanding of the processes of drug absorption, distribution, and elimination. H, S, F grading.
- 532 Integrated Pharmacology III** 4 Integrated cardiovascular, pulmonary, and renal pharmacology. H, S, F grading.

542 Integrated Pharmacology IV 4 Integrated immuno- and anticancer pharmacology. H, S, F grading.

547 Drug Development 2 Principles of drug design from the most initial stage of conception to the final product as a drug. H, S, F grading.

598 Honors Research V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 16 hours. Course Prerequisite: Admission to Pharmacy with Research Honors program. Laboratory or clinical research performed under the guidance of a faculty mentor. S, F grading.

599 Special Projects V 1-4 May be repeated for credit; cumulative maximum 12 hours. Laboratory research, clinical research, or comprehensive review of selected subjects. S, F grading.

Department of Physics and Astronomy

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Chair and Professor, B. Saam; Regents Professors, Y. M. Gupta, M. G. Kuzyk; Professors, S. Bose, G. S. Collins, S. L. Dexheimer, P. Engels, Y. Gu, P. L. Marston, M.D. McCluskey, S. L. Tomsovic; Associate Professors, B. A. Collins, M. Duez, M. Forbes, G. Worthey; Assistant Professors, V. Baldassare, Q. Guan; Scholarly Professor, F. Gittes; Scholarly Associate Professors, M. Allen, N. Cerruti; Teaching Assistant Professor, A. Guy.

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 (ultra-cold atoms, optical pumping, magnetic resonance), 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 telescope at the Jewett Observatory, the 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.

Student Learning Outcomes

A student who has completed the undergraduate program in physics will be able to use scientific reasoning to form and test hypotheses; think independently and critically in acquiring, reproducing, and assessing information from a variety of sources; understand the important concepts in each of the four core areas of physics: mechanics, electricity and magnetism, modern and quantum physics, and thermal and statistical physics; apply these concepts in mathematical models to solve theoretical and real-world problems; design and conduct scientific experiments which test new ideas and theories; present concepts and results clearly, both orally and in writing; and be prepared for graduate study and/or careers in physics and related fields.

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.

APPLIED PHYSICS OPTION (120 CREDITS)

The program of courses below is appropriate for students who wish to enter industry upon graduation. 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. Students who have not had calculus in high school should defer PHYSICS 201/211 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. The schedule of studies below includes the additional lab credit required for graduation by the College of Arts and Sciences.

Admission to the Major requirements

Students may be admitted to the major upon making their intentions known to the department.

Graduation Requirements

A research experience is required of all students as a PHYSICS 489 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.

First Year

First Term	Credits
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
MSE 110	2
PHYSICS 188	1

Second Term	Credits
CHEM 106	4
ENGR 120	2
HISTORY 105 [ROOT]	3
MATH 172	4
PHYSICS 189	1

Second Year

First Term	Credits
ECONS 101 [SSCI]	3
MATH 220	2
MATH 273	2
PHYSICS 201	3
PHYSICS 211	1

Foreign Language, if needed ¹	0-4
Option Elective ²	3

Second Term	Credits
Arts [ARTS]	3
ECONS 102 [SSCI]	3
MATH 315	3
PHYSICS 202	3
PHYSICS 212	1
Foreign Language, if needed ¹	0-4
Option Elective ²	3
Complete Writing Portfolio	

Third Year

First Term	Credits
PHYSICS 303	3
PHYSICS 320	3
PHYSICS 341	3
STAT 360 or 370	3
Option Elective ²	3

Second Term	Credits
Biological Sciences [BSCI]	3
PHYSICS 304	3
PHYSICS 330	3
PHYSICS 342	3
PHYSICS 489	1
Option Elective ²	3

Fourth Year

First Term	Credits
COM 400 [COMM], ENGLISH 301 [WRTG], or ENGLISH 402 [WRTG]	3
Humanities [HUM]	3
PHYSICS 443	3
PHYSICS 450	3
PHYSICS 490 [M]	1
Option Elective ²	3

Second Term	Credits
Diversity [DIVR]	3
Integrative Capstone [CAPS]	3
PHYSICS 415 [M]	3
PHYSICS Electives ³	3
Option Elective ²	3

¹ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

² Option Electives (18 credits): Choose from CE, CPT S, E E, ME, and MSE courses not used to fulfill other requirements.

³ Physics Electives (3 credits): Choose any 300-400-level ASTRONOM or PHYSICS courses not used to fulfill other requirements.

ASTROPHYSICS OPTION (120 CREDITS)

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. Students who have not had calculus in high school should defer PHYSICS 201/211 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. The schedule of studies below includes the additional lab credit required for graduation by the College of Arts and Sciences. Students may be admitted to the physics major upon making their intentions known to the department.

Graduation Requirements

A research experience is required of all students as a PHYSICS 489 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.

First Year

First Term	Credits
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
PHYSICS 188	1
Social Sciences [SSCI]	3

Second Term	Credits
CHEM 106 or 116	4
HISTORY 105 [ROOT]	3
MATH 172	4
PHYSICS 189	1
PHYSICS 201	3
PHYSICS 211	1

Second Year

First Term	Credits
Biological Sciences [BSCI]	3
MATH 220	2
MATH 273	2
PHYSICS 202	3
PHYSICS 212	1
PHYSICS 303	3
Foreign Language, if needed	0-4

Second Term	Credits
Arts [ARTS]	3
ASTRONOM 390	1
MATH 315	3
PHYSICS 304	3
PHYSICS 330	3
Foreign Language, if needed	0-4
Complete Writing Portfolio	

Third Year

First Term	Credits
ASTRONOM 345	3
CPT S 121, E E 221, or MATH 300 [M]	2-4
Humanities [HUM]	3
MATH Elective ¹	3
PHYSICS 320	3
PHYSICS 341	3

<i>Second Term</i>	<i>Credits</i>
ASTRONOM 435 or 436	3
COM 400 [COMM], ENGLISH 301 [WRTG], or ENGLISH 402 [WRTG]	3
MATH Elective ¹	3
PHYSICS 342	3
PHYSICS 410	4
PHYSICS 489	1

Fourth Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Diversity [DIVR]	3
PHYSICS 450	3
PHYSICS 490 [M]	1
Technical Elective ²	3

<i>Second Term</i>	<i>Credits</i>
ASTRONOM 435 or 436	3
Integrative Capstone [CAPS]	3
PHYSICS 415 [M]	3
Technical Elective ²	6

¹ MATH Electives (6 credits): Choose from 300-400-level MATH courses not used to fulfill other requirements.

² Technical Electives (9 credits, at least 6 must be 300-400 level): Choose from ASTRONOM, CHEM, MATH, or PHYSICS courses not used to fulfill other requirements.

**PLANETARY SCIENCES OPTION
(120 CREDITS)**

The option in planetary sciences is an interdisciplinary program between the Department of Physics and Astronomy and the School of the Environment. It is appropriate for students who wish to continue their studies in graduate school or pursue careers immediately upon graduation. The curriculum is applicable to a broad range of disciplines from mathematical physics to applied environmental science. The student gains experience with experimental science, data collection and analysis, and analytical reasoning. A one-semester research experience is a requirement for graduation. A free elective course allows students to fine-tune their education in their senior year.

Students may be admitted to the physics major upon making their intentions known to the department.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
SOE 100 or PHYSICS 188	1

<i>Second Term</i>	<i>Credits</i>
CHEM 106 or 116	4
HISTORY 105 [ROOT]	3
MATH 172 or 182	4
SOE 103 or ASTRONOM 138	3

Second Year

<i>First Term</i>	<i>Credits</i>
CPT S 111	3
MATH 273 or 283	2
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1
SOE 102	4
Foreign Language, if needed	0-4

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI]	3
Diversity [DIVR]	3
MATH 220 or 230	2 or 3
PHYSICS 202	3
PHYSICS 212	1
SOE 210	4
Foreign Language, if needed	0-4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
MATH 315	3
PHYSICS 303	3
Social Sciences [SSCI]	3
SOE 340 [M]	4
STAT 212	4

<i>Second Term</i>	<i>Credits</i>
ASTRONOM 435	3
Humanities [HUM]	3
PHYSICS 304	3
SOE 356	3
SOE 474 [CAPS] [M]	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
ASTRONOM 345	3
ENGLISH 402 [WRTG] or COM 400 [COMM]	3
SOE 350	4
SOE 499 or PHYSICS 499	1

<i>Second Term</i>	<i>Credits</i>
ASTRONOM 450	3
SOE 357	3
SOE 480	3
SOIL SCI 374	3
Elective ¹	3

¹ Free elective (3 credits): Suggested courses are ASTRONOM 436, CHEM 300 or 400 level, DATA 115 or 209, PHYSICS 300 or 400 level, SOE 300 or 400 level, STAT 412.

**STANDARD OPTION
(120 CREDITS)**

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. Students who have not had calculus in high school should defer PHYSICS 201/211 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. The schedule of studies below includes the additional lab credit required for graduation by the College of Arts and Sciences.

Students may be admitted to the physics major upon making their intentions known to the department.

Graduation Requirements

A research experience is required of all students as a PHYSICS 489 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.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
PHYSICS 188	1
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
CHEM 106 or 116	4
HISTORY 105 [ROOT]	3
MATH 172	4
PHYSICS 189	1
PHYSICS 201	3
PHYSICS 211	1

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI]	3
MATH 220	2
MATH 273	2
PHYSICS 202	3
PHYSICS 212	1
PHYSICS 303	3
Foreign Language, if needed ¹	0-4
Complete Writing Portfolio	

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
MATH 315	3
PHYSICS 304	3
PHYSICS 330	3
Foreign Language, if needed ¹	0-4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CPT S 121, E E 221, or MATH 300	2-4
Diversity [DIVR]	3
Humanities [HUM]	3
MATH Elective ²	3
PHYSICS 320	3
PHYSICS 341	3

<i>Second Term</i>	<i>Credits</i>
COM 400 [COMM], ENGLISH 301 [WRTG], or ENGLISH 402 [WRTG]	3
MATH Elective ²	3
PHYSICS 342	3

PHYSICS 410	4
PHYSICS 489	1
Standard Option Elective ³	3

Fourth Year

First Term	Credits
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
PHYSICS 450	3
PHYSICS 490 [M]	1
Standard Option Electives ³	6
Technical Elective ⁴	3
Second Term	Credits
Integrative Capstone [CAPS]	3
PHYSICS 415 [M]	3
Standard Option Electives ³	4 - 6
Technical Elective ⁴	3

¹ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

² MATH Electives (6 credits): Choose from 300-400-level MATH courses not used to fulfill other requirements.

³ Standard Option Electives (13 credits): Choose from 300-400-level ASTRONOM and PHYSICS courses not used to fulfill other requirements.

⁴ Technical Electives (6 credits, at least 3 must be 300-400 level): Choose from ASTRONOM, CHEM, MATH, or PHYSICS courses not used to fulfill other requirements.

Minors

Astronomy

An Astronomy minor requires ASTRONOM 345, 435 and 436; at least two hours from ASTRONOM 390, PHYSICS 490, or 499; and at least 3 hours from ASTRONOM 135, HISTORY 381, or SOE 103. The minor also requires MATH 273 and PHYSICS 303. These courses have as prerequisites MATH 171, 172, 220, and PHYSICS 201/211 and 202/212. These prerequisites are often required as part of physical science major programs (Chemistry, Computer Science, Earth and Environmental Science, Engineering, 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 201/211, 202/212, 303, and 304 plus any two courses (6 credits) from the following list: PHYSICS 320, 330, 341, 342, 410, 415 [M], 443, 450, 461, 463, or 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) Course
Prerequisite: ENGLISH 101 or HISTORY 105. 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 Course
Prerequisite: ENGLISH 101 or HISTORY 105. Formation and dynamics of planetary systems; major planets: interiors, surfaces, atmospheres; minor planets: moons, asteroids, comets; science missions; extrasolar planets.

150 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: 4 credits of PHYSICS 202, or PHYSICS 202 and 212, or PHYSICS 206; MATH 172 or 182. Planets, the sun, stars, and galaxies; current topics in astrophysics and planetary research.

390 [PSCI] The Night Sky 1 (0-3) Course
Prerequisite: Science [BSCI] or [PSCI] 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: 4 credits of PHYSICS 202, or PHYSICS 202 and 212, or PHYSICS 206; MATH 172 or 182. Planets, solar systems, and stars.

436 Astronomy and Astrophysics II 3 Course
Prerequisite: 4 credits of PHYSICS 202, or PHYSICS 202 and 212, or PHYSICS 206; MATH 172 or 182. 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.

511 Astronomical Methods 3 Detectors and telescopes; radio astronomy; interferometry and Fourier methods; data handling; statistics; data mining.

530 Gravitation and Cosmology 3 Special relativity; 4-vectors; introduction to tensors; examples of space-time metrics; black holes; gravitational waves; gravitational lensing; the Robertson-Walker metric; inflationary cosmology; Big Bang nucleosynthesis; cosmic microwave background radiation; structure formation.

581 Advanced Topics in Astronomy 3 May be repeated for credit. Advanced topics of current interest in astronomy. Cooperative: Open to UI degree-seeking students.

PHYSICS

PHYSICS

101 [PSCI] General Physics 3 Course
Prerequisite: PHYSICS 111 or concurrent enrollment; MATH 108 with a grade of C or better, a minimum ALEKS math placement score 75%, 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.

102 General Physics 3 Course
Prerequisite: 4 credits of PHYSICS 101 with a C or better, or PHYSICS 101 and 111 with a C or better; PHYSICS 112 or concurrent enrollment; MATH 108 with a grade of C or better, a minimum ALEKS math score 75%, or passing MATH 140, 171, or 202. Algebra/trigonometry-based physics; topics in electricity, magnetism, optical phenomena, relativity, and quantum theory; oriented toward non-physical science majors.

103 Problem Solving for Physics 101 1 Course
Prerequisite: Concurrent enrollment in PHYSICS 101 and 111. Small class environment for students who desire focused attention on problem solving skills as applied to PHYSICS 101 and 111 materials. S, F grading.

104 Problem Solving for Physics 102 1 Course
Prerequisite: Concurrent enrollment in PHYSICS 102 and 112. Small class environment for students who desire focused attention on problem solving skills as applied to PHYSICS 102 materials. S, F grading.

111 [PSCI] General Physics Lab 1 (0-3) Course
Prerequisite: MATH 108 with a grade of C or better, a minimum ALEKS math placement score 75%, or passing MATH 140, 171, 202, or 206; PHYSICS 101 or concurrent enrollment. Algebra/trigonometry-based physics labs; topics in mechanics, wave phenomena, temperature, and heat; oriented toward non-physical science majors.

112 General Physics Lab II 1 (0-3) Course
Prerequisite: PHYSICS 102 or concurrent enrollment. Algebra/trigonometry-based physics lab; topics in electricity, magnetism, optical phenomena, relativity, and quantum theory; oriented toward non-physical science majors.

137 [PSCI] Physics and Society 3 Course
Prerequisite: Minimum ALEKS math placement score of 45% or MATH 103 or higher with a C or better. Enrollment not allowed if credit already earned for PHYSICS 408. Interactions of physics with society; energy; air and water pollution; recycling; communications and computers; physics and war; physics and art. Credit not allowed for students who have earned credit for PHYSICS 408. Recommended preparation: UCORE [QUAN].

- 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.
- 189 First-Year Seminar II 1** Course Prerequisite: PHYSICS 188. Continuation of PHYSICS 188; faculty will present current research interests and opportunities in physics; questions and discussions. S, F grading.
- 201 [PSCI] Physics for Scientists and Engineers I 3** Course Prerequisite: PHYSICS 211 or concurrent enrollment; MATH 171 with a C or better, or credit for or concurrent enrollment in MATH 172, 182, 273, or 315. Calculus-based physics; topics in motion and dynamics of particles and rigid bodies, vibrations, wave phenomena, and the laws of thermodynamics.
- 202 Physics for Scientists and Engineers II 3** Course Prerequisite: 4 credits of PHYSICS 201 with a C or better, or PHYSICS 201 and 211 with a C or better, or PHYSICS 205 with a C or better; PHYSICS 212 or concurrent enrollment; MATH 172 or 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.
- 203 Problem Solving for Physics 201 1** Course Prerequisite: Concurrent enrollment in PHYSICS 201 and 211. 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 and 212. 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, MATH 273 or concurrent enrollment, or MATH 315 or concurrent enrollment. Calculus-based physics, honors section; mechanics, sound, and thermodynamics.
- 206 Physics for Scientists and Engineers II - Honors 5 (3-5)** Course Prerequisite: 4 credits of PHYSICS 201 with a C or better, or PHYSICS 201 and 211 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.
- 211 [PSCI] Physics Lab for Scientists and Engineers 1 (0-3)** 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; PHYSICS 201 or concurrent enrollment. Calculus-based physics lab; topics in motion and dynamics of particles and rigid bodies, vibrations, wave phenomena, and the laws of thermodynamics.
- 212 Physics Lab for Scientists and Engineers II 1 (0-3)** Course Prerequisite: PHYSICS 202 or concurrent enrollment; 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 labs, topics in electricity, magnetism, electromagnetics, D/C and A/C circuits, optics, reflection, refraction, interference, diffraction, polarization.
- 303 Modern Physics I 3** Course Prerequisite: 4 credits of PHYSICS 202, or PHYSICS 202 and 212 or concurrent enrollment, or PHYSICS 206 or concurrent enrollment; MATH 220 or concurrent enrollment or MATH 230 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; 4 credits of PHYSICS 202, or PHYSICS 202 and 212, or PHYSICS 206. Particle motion in one-, two-, and three-dimensions; motions of systems of particles; rigid body motion; Lagrange's equations.
- 322 [PSCI] Sound Waves and Music 4 (3-3)** Course Prerequisite: MATH 103 or higher with a C or better or a minimum ALEKS math placement score of 45%. Multi-disciplinary introduction to the acoustics of musical sound with a hands-on approach, including human hearing and perception.
- 330 Thermal Physics 3** Course Prerequisite: 4 credits of PHYSICS 202, or PHYSICS 202 and 212, or PHYSICS 206; MATH 273 or 283. 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: 4 credits of PHYSICS 202, or PHYSICS 202 and 212, or PHYSICS 206; MATH 315 or concurrent enrollment. 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 4 (2-6)** Course Prerequisite: 4 credits of PHYSICS 202, or PHYSICS 202 and 212, or PHYSICS 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.
- 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.
- 455 Quantum Technologies and Computation 3** Fundamentals of quantum mechanics required for quantum computing and quantum information science; technologies and platforms that enable quantum applications to computing, simulation, and advance sensing. Credit not granted for both PHYSICS 455 and PHYSICS 555.
- 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.
- 465 Introductory Nuclear Physics 3** Course Prerequisite: PHYSICS 304. Nuclear systematics, apparatus of nuclear research, radioactivity, nuclear-atomic interactions, nuclear reactions and scattering; introductory particle physics. Cooperative: Open to UI degree-seeking students.
- 466 Biological Physics 3** Course Prerequisite: 4 credits of PHYSICS 202, or PHYSICS 202 and 212, or PHYSICS 206; CHEM 106 or 116; MATH 172 or 182. 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.
- 489 Thesis Proposal 1** Research project directed by an approved faculty member in support of completing a thesis proposal for PHYSICS 490. S, F grading.

- 490 [M] Undergraduate Thesis** 1 Course
Prerequisite: PHYSICS 489. 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. Cooperative: Open to UI degree-seeking students.
- 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.
- 555 Quantum Technologies and Computation** 3 Fundamentals of quantum mechanics required for quantum computing and quantum information science; technologies and platforms that enable quantum applications to computing, simulation, and advance sensing. Credit not granted for both PHYSICS 455 and PHYSICS 555.
- 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 in Physics** 3 May be repeated for credit. Topics of current interest in advanced physics. 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. Course Prerequisite: Admitted to the Physics PhD program. 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
ITB 3039
509-335-4852

Professor and Chair, T. D. Murray; Professors, G. A. Chastagner, L. J. duToit, G. G. Grove, S. H. Hulbert, H. R. Pappu, N. Rayapati, Y. Zhao; Associate Professors, A. Amiri, M. L. Friesen, C. Gleason, K. Tanaka; Assistant Professors, S. Harper, C. Mattupalli; Adjunct ARS Plant Pathologists, W. Chen, X. M. Chen, N. Klopfenstein, P. A. Okubara, T. C. Paulitz, D. See, L. S. Thomashow, G. Vandemark, D. M. Weller; Adjunct Plant Pathologists, C. Hagerty, M. Moyer, T. L. Peeper; Professors Emeriti, L. M. Carris, R. J. Cook, L. A. Hadwiger, D. A. Inglis, D. A. Johnson, J. W. Moyer, S. H. Smith.

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, diagnostics, 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 complete

their 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 <https://cahnr.wsu.edu/academics/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, entomology, forestry, genetics, and horticulture. Students who expect to become professional plant pathologists are advised to include fundamental courses in botany, chemistry, genetics, microbiology, physics, and zoology in their undergraduate studies.

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 the 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, statistics, and report writing or advanced composition.

Student Learning Outcomes

To enable students earning the M.S. and Ph.D. in Plant Pathology to understand and apply the scientific method to plant pathological problems, to develop critical thinking and professional skills needed for successful careers in public and private sectors, the program provides training and coursework to help students develop the following skills:

- Understanding, interpretation, and synthesis of scientific literature pertaining to plant pathology and related disciplines
- Formulating hypotheses; developing experimental designs to test these hypotheses; establishing and maintaining experiments
- Collecting data in an objective way and conducting appropriate statistical analyses
- Interpretation and presentation of research results in oral and written formats
- Presentation of research at professional meetings and local commodity meetings

- Publication of research in peer-reviewed scientific journals and other discipline-appropriate outlets such as commodity newsletters

To maintain a leadership role in plant pathology and related disciplines at the state, national and international levels, the program aims to:

- Attract, train, and retain high quality graduate students
- Place students earning the M.S. into positions including extension agents, state and federal plant pathologists, instructors at the community college level, support scientists in public or private sector research programs, and PhD programs
- Place students earning the Ph.D. as leaders of scientific research programs in the public or private sector including industry, and faculty positions at the University level.

Description of Courses

PLANT PATHOLOGY

PL P

150 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.

301 Food Mycology 3 (2-3) Course Prerequisite: MBIOS 101 or concurrent enrollment, or MBIOS 304 and 305, either with concurrent enrollment. Survey of the fungi important in food production, storage, and spoilage. (Crosslisted course offered as FS 301, PL P 301). Cooperative: Open to UI degree-seeking students.

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, CROP SCI 503, PL P 403, PL P 503.) Credit not granted for both CROP SCI 403 and 503, or PL P 403 and 503. 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) Course Prerequisite: Admission to the Master of Science in Agriculture graduate degree program. 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, CROP SCI 503, PL P 403, PL P 503.) Credit not granted for both CROP SCI 403 and 503, or PL P 403 and 503. Recommended preparation: CROP SCI 305; PL P 429. Cooperative: Open to UI degree-seeking students.

511 Viruses and Virus Diseases of Plants 3 Nature of plant viruses, vector-virus relationships and virus diseases of plants. Recommended Preparation: MBIOS 503 or equivalent coursework providing a basic understanding of molecular biology. Cooperative: Open to UI degree-seeking students.

512 Topics in Plant Pathology V 1-3 May be repeated for credit; cumulative maximum 6 hours. Concepts of plant pathogen interactions and disease management.

513 Plant Nematology 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 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 3 The structure, life histories, classification, and economic importance of the fungi. Cooperative: Open to UI degree-seeking students.

525 Field Plant Pathology and Mycology 3 Diverse plant diseases, disease diagnosis and management in fields, orchards, nurseries; interact directly with diverse agricultural stakeholders. Field trip required. Recommended preparation: PL P 429 or PL P 521.

526 Advanced Fungal Biology 4 (2-6) Advanced topics in fungal biology, ecology, systematics, evolution and coevolution via discussions of literature and special laboratory projects. Recommended preparation: Introductory mycology and genetics coursework. 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.

545 Statistical Genomics 3 (2-3) Develop concepts and analytical skills for modern breeding by using Genome-Wide Association Study and genomic prediction in framework of mixed linear models and Bayesian approaches. (Crosslisted course offered as CROP SCI 545, ANIM SCI 545, BIOLOGY 545, HORT 545, PL P 545.) Recommended preparation: BIOLOGY 474; MBIOS 478. 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.

570 Techniques in Plant Pathology 3 (1-6) Laboratory techniques for isolating, cultivating, and identifying the major groups of plant pathogenic organisms. 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. Course Prerequisite: Admitted to the Plant Pathology PhD program. 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

pppa.wsu.edu/
Johnson Twr 801
509-335-2544

POLITICAL SCIENCE: Director and Professor, T. Ridout; Professors, C. Clayton, A. Mazur, T. Preston; Associate Professors, S. Hoard (Career Track), C. Leeb, C. Long, A. Lopez, M. Salamone, S. Stehr, M. Stephan, P. Thiers; Assistant Professors, R. Elgar (Career Track), C. Ellenwood, J. Lewis, M. Ritter (Career Track); Professors Emeriti; M. Cottam, N. Lovrich, D. Nice. **PHILOSOPHY:** Professors, J. K. Campbell, P. Glazebrook, W. Kabasenche (Career Track); Associate Professors, M. Goldsby, S. Noll, M. Stichter; Assistant Professors, M. Fagiano (Career Track), C. Phillips (Career Track); Professors Emeriti, D. M. Holbrook, M. W. Myers, H. S. Silverstein. **PUBLIC AFFAIRS:** Professor, S. Finley; Associate Professors, L. Drapela, K. DuBois, C. Long, A. Lopez, A. Maclean, M. Stephan, P. Thiers.

POLITICAL SCIENCE PROGRAM

<https://pppa.wsu.edu/undergraduate-studies/b-a-in-political-science/>

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 School of Politics, Philosophy, and Public Affairs (PPPA) offers courses of study leading to the degrees of Bachelor of Arts in Political Science, Master of Arts in Political Science (General), Master of Arts in Political Science (with a Graduate Certificate in Global Justice and Security Studies), and Doctor of Philosophy.

The undergraduate programs in 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.

Student Learning Outcomes

More specifically, the school's programs teach students to:

- Be able to use creative thinking, critical thinking and sound reasoning with respect to political and policy-related questions, including the use of the principles of the scientific method to enhance and create knowledge.
- Be able to understand and use qualitative, quantitative, and mixed research methods and be able to recognize the strengths and weaknesses of methods for assessing various political and policy-related questions.
- Be able to demonstrate a comprehensive understanding of political and policy-related subjects, including the relevance of political science to contemporary, real-world problems.
- Be able to identify, evaluate, use responsibly, and share data and information regarding a political or policy-related question.
- Be able to effectively communicate through written, oral, and other media as appropriate for the audience and purpose.
- Be able to understand, respect, and engage with others of similar and diverse cultures, values, and perspectives.

Options within the B.A. in Political Science: General Option, Prelaw Option, and Global Politics Option

General: The General Option in the Political Science B.A. provides diverse training in American politics, comparative and international politics, policy and public administration, and a wide range of elective courses in political science.

No specific major is required to be eligible for law school, but political science is widely recognized as an excellent academic preparation for law school. The CAS Prelaw Advising Center assists all students interested in law school regardless of their intended major.

Pre-Law: The Political Science Prelaw Option is designed to prepare students for law school and eventual careers in law. This curriculum reflects recommendations of the Association of American Law Schools.

Global Politics: This option emphasizes comparative and international politics and includes an international experience that can be fulfilled through study abroad, an international internship, a minor in a foreign language or global studies, or ROTC.

Government is the nation's largest employer. Many public officials are political science graduates. The school advises students concerning training and career opportunities in federal, state, and local governments, the Foreign Service, and related occupations. Its internship programs place students in public agencies, political parties, and similar organizations. The school also encourages and advises students on study abroad as part of preparing for careers in international affairs.

Preparation for Graduate Study

<https://pppa.wsu.edu/graduate-studies/>

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 programs at this institution who contemplate graduate work in this program 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

<https://pppa.wsu.edu/undergraduate-studies/b-a-in-philosophy/>

The Philosophy program in the School of Politics, Philosophy, and Public Affairs 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 that provide excellent intellectual foundations for careers in law, government service, education, ministry, and many other fields. This is reflected in the fact that philosophy majors, on average, perform better than any other major on professional and graduate school admission tests that are required for admission to law school, medical school, business administration programs, and graduate school.

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 critical thinking and communication skills that are in high demand and central to success in all professions.

The School of Politics, Philosophy, and Public Affairs offers programs of study leading to the

Bachelor of Arts in Philosophy (in either the General Option or the Pre-Law Option) and the Graduate Certificate in Bioethics.

Student Learning Outcomes

More specifically, the school’s programs teach students to:

- Be able to use critical and creative thinking skills with respect to philosophical topics, and be able to construct reason-based arguments in support of one’s positions.
- Be able to develop an integrative understanding of the sciences and humanities.
- Be able to identify and clarify key issues and questions in theoretical and real-world contexts.
- Be able to demonstrate a basic understanding of the philosophical canon and critical thinking/logic frameworks.
- Be able to apply critical thinking frameworks and argument analysis to identify, locate, and evaluate sources when doing group work and independent research.
- Be able to effectively communicate through written, oral, and other media as appropriate for the audience and purpose.
- Be able to understand, respect, and engage with others of similar and diverse cultures, values, and perspectives.

Options within the B.A. in Philosophy: General Option and Prelaw Option

General: The General Option provides broad training in philosophy, including an emphasis on the history of philosophical thought.

Pre-Law: The Philosophy Pre-Law Option is designed to prepare students for law school and eventual careers in law. This curriculum emphasizes ethics, political philosophy, and critical thinking, and it reflects recommendations of the Association of American Law Schools. Students choosing other school options are also eligible to attend law school if they meet admission requirements, but philosophy is widely recognized as an excellent academic preparation for law school.

PUBLIC AFFAIRS

<https://cas.vancouver.wsu.edu/public-affairs>

The Public Affairs degree is offered at the undergraduate level exclusively on the WSU Vancouver Campus. The Bachelor of Arts in Public Affairs (BAPA) seeks to develop critical thinking about political and social values and develop the ability to conduct objective analysis of public infrastructures 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. In addition to core courses, students complete a concentration in public policy and politics, public administration and management, or justice studies. The program’s multidisciplinary perspective provides for the blending of theory, methodology, and experience in an academically rigorous degree format.

Student Learning Outcomes

Studying Public Affairs enables students to become ethical, engaged and competent professionals, in public administration, public management and public policy. Graduates from our programs are

well prepared for careers in public service at the local, state, national or global levels, or for pursuing further studies. The program offers an intersection between rigorous academic research and practical application. Our goal is to foster evidence-based reasoning and practice on the part of those working for the public good, including students, community members, legislators, practitioners, scholars, and issue stakeholders.

Students in public affairs are expected to demonstrate learned capacity in the universally required competencies of the Network of Schools of Public Policy, Affairs, and Administration (NASPAA) as appropriate for the student’s level of study (i.e. undergraduate or graduate). NASPAA’s universal required competencies include the following:

- To lead and manage in public governance;
- To participate in and contribute to the policy process;
- To analyze, synthesize, think critically, solve problems and make decisions;
- To articulate and apply a public service perspective; and
- To communicate and interact productively with a diverse and changing workforce and citizenry.

Schedules of Studies

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

PHILOSOPHY - GENERAL OPTION (120 CREDITS)

A student may be admitted to the Philosophy - General option upon making their intention known to the department.

The student must complete thirty (30) credits of coursework in philosophy: 3 credits in an introductory PHIL course (which generally counts toward a UCORE requirement); 3 credits in PHIL 201 to satisfy a logical requirement (which can count toward the [QUAN] requirement); 9 credits toward a breadth requirement (3 credits in each of History, Value Theory, and Metaphysics & Epistemology (M&E)); 6 credits in further study in any of the three main areas; 6 credits in advanced study from 300-400 level PHIL courses; and 3 credits in a capstone [CAPS] course in philosophy.

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>Credits</i>
Arts [ARTS]	3
HISTORY 105 [ROOT]	3
Introductory PHIL Course [HUM] or [WRTG] ¹	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
Communication [COMM], Humanities [HUM], Written Communication [WRTG] ³	3
ENGLISH 101 [WRTG]	3
PHIL 201 [QUAN]	3
Social Sciences [SSCI]	3
Electives ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ⁴	4
Foreign Language, if necessary, or Elective ^{5,2}	4
History of Philosophy Course (Group A) ^{6,7}	3
Value Theory Course (Group B) ^{7,8}	3
Electives ²	2

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Foreign Language, if needed, or Elective ^{2,5,2}	4
Metaphysics and Epistemology Course (Group C) ^{9,2}	3
Physical Sciences [PSCI] with lab ⁴	4
Complete Writing Portfolio	4

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
Further Study Requirement ^{7,10}	6
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
PHIL Integrative Capstone [CAPS]	3
Electives ²	12

Fourth Year

<i>First Term</i>	<i>Credits</i>
Advanced Study Requirement ^{7,11}	3
Electives ²	12

<i>Second Term</i>	<i>Credits</i>
Advanced Study Requirement ^{7,11}	3
Electives ²	12

¹ Introductory PHIL Course (3 credits): Select one from PHIL 101 [HUM], PHIL 103 [HUM], PHIL 200 [WRTG], PHIL 207 [HUM], and PHIL 210 [HUM].

² Electives: Students are encouraged to apply electives toward completion of an additional major. Elective courses must include sufficient 300-400 level coursework to fulfill the University requirement of 40 upper division credits.

³ Students must meet UCORE requirements not satisfied by Introductory Course and applicable course must be from a subject other than PHIL.

⁴ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

⁵ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁶ History of Philosophy Course (Group A) (3 credits): Choose one from PHIL 314 [M], PHIL 315 [M], PHIL 320 [M], PHIL 321, PHIL 322, PHIL 333, PHIL 390, PHIL 420, PHIL 421, and PHIL 437 [M] not used to fulfill other Philosophy major requirements.

⁷ To meet University requirements, students are required to complete at least two [M] courses.

⁸ Value Theory Course (Group B) (3 credits): Choose one from PHIL 220, PHIL 280, PHIL 333, PHIL 360, PHIL 365, PHIL 370, PHIL 390, PHIL 406, PHIL 413, PHIL 425, PHIL 431, PHIL 435, PHIL 437 [M], PHIL 438 [M], PHIL 450, PHIL 460 [M], PHIL 462 [M], PHIL 470, PHIL 472 [M], PHIL 475 not used to fulfill other Philosophy major requirements.

⁹ Metaphysics and Epistemology Course (Group C) (3 credits): Choose one from PHIL 207, PHIL 350,

PHIL 390, PHIL 401, PHIL 406, PHIL 407, PHIL 413, PHIL 425, PHIL 442 [M], PHIL 443 [M], PHIL 446, PHIL 447, PHIL 475 not used to fulfill other Philosophy major requirements.

¹⁰ Further Study Requirement (6 credits): Any course in groups A, B, and C not used to fulfill other requirements.

¹¹ Advanced Study Requirement (6 credits): Any 300-400-level PHIL course not used to fulfill other requirements.

PHILOSOPHY - PRE-LAW OPTION (120 CREDITS)

A student may be admitted to the Philosophy - Pre-Law option upon making their intention known to the department.

The student must complete thirty (30) credits of coursework in Philosophy: 3 credits in PHIL 200; 3 credits in PHIL 201 to satisfy a logical requirement (which can count toward the [QUAN] requirement); 9 credits toward a breadth requirement (3 credits in each of History, Value Theory, and Metaphysics & Epistemology (M&E)); 6 credits in further study in any of the three main areas; 3 credits in PHIL 470; 3 credits in advanced study from 300-400-level PHIL courses, and 3 credits in a capstone [CAPS] course in philosophy. The Pre-Law option also requires that the student take POL S 300.

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>Credits</i>
ENGLISH 101 [WRTG]	3
PHIL 200 [WRTG]	3
Social Sciences [SSCI]	3
Electives ¹	6

<i>Second Term</i>	<i>Credits</i>
HISTORY 105 [ROOT]	3
Humanities [HUM] ²	3
PHIL 201 [QUAN]	3
Electives ¹	6

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
History of Philosophy Course (Group A) ^{4,5}	3
Foreign Language, if needed, and/or Electives ^{6,1}	6
Electives	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Metaphysics and Epistemology Course (Group C) ^{5,7}	3
Physical Sciences [PSCI] with lab ³	4
Foreign Language, if needed, or Electives ^{6,1}	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Diversity [DIVR]	3
POL S 300	3
Value Theory Course (Group B) ^{5,8}	3
Electives ¹	3

<i>Second Term</i>	<i>Credits</i>
Further Study Requirement ^{4,9}	3
PHIL Integrative Capstone [CAPS]	3
Electives ¹	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
PHIL 470	3
Electives ¹	12

<i>Second Term</i>	<i>Credits</i>
Advanced Study Requirements ^{5,10}	3
Electives ¹	12

¹ Electives: Students are encouraged to apply electives toward completion of an additional major. Elective courses must include sufficient 300-400 level coursework to fulfill the University requirement of 40 upper division credits.

² Students must meet UCORE requirements not satisfied by Introductory Course and applicable course must be from a subject other than PHIL.

³ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

⁴ History of Philosophy Course (Group A) (3 credits): Choose one from PHIL 314 [M], PHIL 315 [M], PHIL 320 [M], PHIL 321, PHIL 322, PHIL 333, PHIL 390, PHIL 420, PHIL 421, and PHIL 437 [M] not used to fulfill other Philosophy major requirements.

⁵ To meet University requirements, students are required to complete at least two [M] courses.

⁶ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁷ Metaphysics and Epistemology Course (Group C) (3 credits): Choose one from PHIL 207, PHIL 350, PHIL 390, PHIL 401, PHIL 406, PHIL 407, PHIL 413, PHIL 425, PHIL 442 [M], PHIL 443 [M], PHIL 446, PHIL 447, PHIL 475 not used to fulfill other Philosophy major requirements.

⁸ Value Theory Course (Group B) (3 credits): Choose one from PHIL 220, PHIL 280, PHIL 333, PHIL 360, PHIL 365, PHIL 370, PHIL 390, PHIL 406, PHIL 413, PHIL 425, PHIL 431, PHIL 435, PHIL 437 [M], PHIL 438 [M], PHIL 450, PHIL 460 [M], PHIL 462 [M], PHIL 470, PHIL 472 [M], PHIL 475 not used to fulfill other Philosophy major requirements.

⁹ Further Study Requirement (6 credits): Any course in groups A, B, and C not used to fulfill other requirements.

¹⁰ Advanced Study Requirement (3 credits): Any 300-400-level PHIL course not used to fulfill other requirements.

POLITICAL SCIENCE - GENERAL OPTION (120 CREDITS)

A student may be admitted to the Political Science - General option upon making their intention known to the department.

36 credits in POL S are required, at least 15 of which must be earned at WSU.

First Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3

HISTORY 105 [ROOT]	3
Humanities [HUM]	3
POL S 101 [SSCI]	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
POL S 102	3
Quantitative Reasoning [QUAN]	3
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Biological Sciences [BSCI] with lab ¹	4
POL S 103	3
Foreign Language, if needed, and/or Electives ²	6

<i>Second Term</i>	<i>Credits</i>
Physical Sciences [PSCI] with lab ¹	4
POL S 201	3
Foreign Language, if needed, and/or Electives ²	7
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
POL S Electives ³	9
Electives ⁴	6

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
POL S Electives ³	6
Electives ⁴	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
POL S Elective ³	3
Electives ⁴	12

<i>Second Term</i>	<i>Credits</i>
Integrative Capstone [CAPS]	3
POL S Electives ³	6
Electives ⁴	6

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

³ POL S Electives: 24 credits required. Must include a minimum of 9 credits of 300-400 level coursework and 2 [M] courses.

⁴ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework.

POLITICAL SCIENCE - GLOBAL POLITICS OPTION (120 CREDITS)

A student may be admitted to the Political Science - Global Politics option upon making their intention known to the department.

36 credits in POL S are required, at least 15 of which must be earned at WSU. Consult advisor on International Experience requirement.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
POL S 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3 or 4

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
Physical Sciences [PSCI] with lab ¹	4
POL S 102	3
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Communication [COMM] or Written Communication [WRTG]	3
POL S 103	3
Electives	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Minor Field Elective	3
POL S 201	3
POL S Elective ²	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
300-400-level POL S Electives ²	6
Minor Field Elective or Foreign Language, if applicable	3 or 4
POL S Global Courses ³	6

<i>Second Term</i>	<i>Credits</i>
300-400-level POL S Electives ²	6
Minor Field Elective or Foreign Language, if applicable	3 or 4
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
Integrative Capstone [CAPS]	3
Minor Field Elective, if applicable, or Elective	3
POL S 427	3
300-400-level Electives	6

<i>Second Term</i>	<i>Credits</i>
International Experience ⁴	3
300-400-level Electives, including Minor Field, if applicable	12

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² POL S Electives may need to include [M] courses to fulfill University requirements.

³ POL S Global Courses: Choose from POL S 305, 314, 405 [M], 418, 424 [M], 428, 429, 432 [M], 435, 447 [M], 472 [M], 474, 475, or 476 [M].

⁴ International Experience: Students may satisfy the International Experience requirement by completing a minor in Foreign Language or Global Studies, or by earning at least 3 credit hours while completing one of the following: a) Study abroad (at a WSU-approved program); b) International internship (POL S 497 approved by POL S advisor; either abroad or in U.S.-based internship that includes global activities); or c) Military Science (MIL SCI 402 while enrolled in ROTC).

POLITICAL SCIENCE - PRE-LAW OPTION (120 CREDITS)

A student may be admitted to the Political Science - Pre-Law option upon making their intention known to the department.

30 credits in POL S are required. 15 of the 30 credits of POL S course work must be earned at WSU.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
POL S 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Credits</i>
ECONS 101 [SSCI] or ECONS 102 [SSCI]	3
ENGLISH 101 [WRTG]	3
Physical Sciences [PSCI] with lab ¹	4
POL S 102	3
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CRM J 101 (recommended) or Elective	3
PHIL 201	3
POL S 103	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 201 [WRTG], ENGLISH 301 [WRTG], or PHIL 200 [WRTG]	3
H D 205 [COMM] or COM 102 [COMM]	3 or 4
POL S 201	3
POL S 300	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
300-400-level POL S Elective ²	3
Ethics and Law Course ³	3
POL S 402	3
Foreign Language, if necessary, and/or Electives	5

<i>Second Term</i>	<i>Credits</i>
300-400-level POL S Elective ²	3
POL S 404 [M]	3
Foreign Language, if necessary, and/or Electives	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level POL S Elective ²	3

Diversity [DIVR]	3
300-400-level Electives	9
<i>Second Term</i>	<i>Credits</i>
Integrative Capstone [CAPS]	3
PHIL 470	3
300-400-level Electives	8

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² POL S Electives need to include an additional [M] course to fulfill University requirements.

³ Ethics and Law Course: Choose from B LAW 210, COM 415, CES 440, CRM J 320, 380, or 420, ENGLISH 112, or 364, HISTORY 410, and PHIL 360, 365, 370, 450, or 460.

PUBLIC AFFAIRS (VANCOUVER ONLY) (120 CREDITS)

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 credits in the concentration may be taken pass/fail. At least 40 of the 120 credits for the degree must be at the 300-400-level.

Admission Requirements

For admission to the Public Affairs major, students must have an overall GPA of 2.75 or higher. Once admitted, all students must maintain a minimum overall GPA of 2.75 or they will be released from the major.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Foreign Language, if necessary, or Elective	3
Humanities [HUM]	3
POL S 101 [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
Foreign Language, if necessary, or Elective	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
POL S 300	3
POL S 316	3
Electives	6

<i>Second Term</i>	<i>Credits</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>Credits</i>
Minor Elective ²	3
PA Elective ³	6

SOC 320	3
Electives	3
<i>Second Term</i>	
PA Elective ³	6
POL S 432 [M]	3
SOC 321	4
Electives	2

Fourth Year

<i>First Term</i>	
Integrative Capstone [CAPS]	3
Minor Elective ²	6
PA Elective ³	3
POL S 442 [M]	3
<i>Second Term</i>	
Minor Elective ²	9
300-400-level Electives	3

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² 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.

³ PA Electives – 15 semester hours required in one of three concentration options: 1) Justice Studies: Two courses from CRM J 320, 330, and POL S 402; one course from SOC 360, 361, 362, and 367; and two courses from CRM J 370, 400 [M], 403, 420 [M], 424, 426, 428, 450 [M], 490, POL S 381, 404 [M], 405, SOC 340, and 461; 2) Public Administration & Management: Two courses from POL S 443, 445, and 446; three courses from HISTORY 415, 418, POL S 305, 400, 447 [M], 450 [M], 497 (Washington State Legislative Internship only), and SOC 343; or 3) Public Policy & Politics: Two courses from POL S 416, 417, 420, and 497 (Washington State Legislative Internship only); three courses from HISTORY 409, 415, 418, 419, POL S 305, 314, 317, 400, 404 [M], 410, 427, 430, 436, 448, 450 [M], 455, 497, SOC 332, 340, and 384.

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 360, 365, 370, 460 [M], 462, 470, and 472 [M]. 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 be in upper-division work and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Philosophy

The minor in philosophy consists of 18 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 or 103 and will always include PHIL 201.

Political Science

18 semester hours of political science coursework is required for the minor, 9 of which must be 300-400-level courses. 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 [HUM] 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 [WRTG] Critical Thinking and Writing 3 Application of critical thinking skills to essay writing.

201 [QUAN] Introduction to Formal Logic 3 Course Prerequisite: MATH 101 with a C or better, MATH 103 with a C or better, a minimum 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 [HUM] Philosophy in Film 3 The use of film as philosophical text.

220 [HUM] Philosophy of Food 3 Philosophical issues concerning the nature, production, and distribution of food, including ethical, aesthetic, metaphysical, and/or social/political dimensions of food.

280 [HUM] Islam in Theory and Practice 3 Fundamental principles of Islam, including the relation between faith and practice, and the social, economic, political, and judicial systems in Islam. (Crosslisted course offered as PHIL 280, ASIA 280).

314 [HUM] [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 [HUM] [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 [M] 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.

333 Development of Marxist Thought 3 Marxist theory from the original writing of Marx and Engels to contemporary developments. (Crosslisted course offered as POL S 333, PHIL 333).

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 [HUM] Environmental Ethics 3 Explores the obligations we have regarding non-human parts of the environment and the justification for those obligations.

390 Topics in Philosophy 3 May be repeated for credit; cumulative maximum 6 hours.

401 Advanced Formal 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 [CAPS] Science and Religion 3 Course Prerequisite: 3 credits PHIL; 3 credits [BSCI] or [PSCI]; junior standing. Methodological comparison and philosophical investigation of the relation between religion and natural science and related issues.

- 420 Existentialism and 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: PHIL 101, WGSS 101, or WGSS 120. Feminist philosophy as critique of Western philosophical tradition and as alternate framework for thought. (Crosslisted course offered as PHIL 425, POL S 425, WGSS 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.
- 437 [M] Classical Political Thought** 3 The development of political philosophy from the pre-Socratics to Machiavelli. (Crosslisted course offered as POL S 437, PHIL 437).
- 438 [M] Contemporary Political Theory** 3 The development of political thought since Machiavelli. (Crosslisted course offered as POL S 438, PHIL 438).
- 442 [CAPS] [M] Philosophy of Mind** 3 Course Prerequisite: 3 hours PHIL; junior standing. Theories of mind, self, mental acts, psychological states and artificial intelligence. Cooperative: Open to UI degree-seeking students.
- 443 [M] 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.
- 450 [HUM] Data Analytics Ethics** 3 Course Prerequisite: Junior standing. Ethical issues concerning the collection, use, and dissemination of data.
- 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, WGSS 101, or WGSS 120. Study of gender and feminism and their effect on contemporary ethical theories and issues. (Crosslisted course offered as WGSS 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.
- 475 [CAPS] Zombie Apocalypse** 3 Course Prerequisite: Junior standing. Uses zombies to model responses to global pandemics and critically assesses awareness of pandemic threats in contemporary popular culture.
- 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 Formal 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 [M] 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.
- 564 Topics in Biomedical Experimentation** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Examination of the philosophy of experimental design and practical application and analysis of various experimental approaches in biomedical research. Recommended preparation: graduate standing in a WSU biomedical-based program, and an advanced undergraduate or graduate statistics course. (Crosslisted course offered as NEUROSCI 564, GLANHLTH 564, MBIOS 564, PHIL 564, VET MICR 564, VET PATH 564, VET PH 564).
- 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.

201 Political Research Methods 3 Training in social science research methodologies as applied to political phenomena.

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, WGSS 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. (Crosslisted course offered as POL S 333, PHIL 333).

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) Course Prerequisite: CRM J 101. 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 V 1-3 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 Course Prerequisite: CRM J 101. 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.

425 Philosophy and Feminism 3 Course Prerequisite: PHIL 101, WGSS 101, or WGSS 120. Feminist philosophy as critique of Western philosophical tradition and as alternate framework for thought. (Crosslisted course offered as PHIL 425, POL S 425, WGSS 425.)

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 [CAPS] Issues in Political Psychology 3 Course Prerequisite: POL S 101 or PSYCH 105; junior standing. Application of concepts and methods of political science and psychology to the study of how 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 [CAPS] [M] The Politics of Natural Resource and Environmental Policy 3 Course Prerequisite: Junior standing. Issues and problems of natural resource and environmental policy.

432 [CAPS] [M] Comparative Public Policy 3 Course Prerequisite: Junior standing. Processes of public policy formation and outcomes in post-industrial democracies, and how to study these processes and outcomes with 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 [M] Classical Political Thought 3 The development of political philosophy from the pre-Socratics to Machiavelli. (Crosslisted course offered as POL S 437, PHIL 437).

438 [M] Contemporary Political Theory 3 The development of political thought since Machiavelli. (Crosslisted course offered as POL S 438, PHIL 438).

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 [CAPS] [M] European Politics** 3 Course Prerequisite: Junior standing. Application of concepts and methods in comparative politics to study public policies of European countries and the European Union; utilization of political science methods to understand and compete in a European election simulation.
- 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 The People's Republic of China, 1949 to Present** 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. Course Prerequisite: By department permission. On/off campus internship in federal, state, or local government institutions; nonprofit or public organizations; written assignments and readings required. S, F grading.
- 498 Public Policy Internship** V 3-12 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By permission only. Internship in government institution, nonprofit or public organization, or (by permission) for-profit organization; written assignments and readings required.
- 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 Qualitative Methods in Political Science** 3 Use of qualitative methods in political science and public affairs research.
- 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. Cooperative: Open to UI degree-seeking students.
- 530 Seminar in Global Politics** 3 Core theories and topics in international relations and comparative politics, including conflict, hegemony, democratization, institutions, and more. 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 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. Course Prerequisite: Admitted to the Political Science PhD program. 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.

Pre-Dental Curriculum

healthprofessions.wsu.edu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
health.professions@wsu.edu

Director and Clinical Assistant Professor, Donald Allison, PhD, PA-C

All pre-dental students are assisted with their preparation for application to dental schools through the Health Professions Student Center (HPSC). health.professions@wsu.edu.

Becoming a dentist requires a program of graduate study in dental school as well as undergraduate prerequisite coursework. 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 Health Professions Specialist is able to suggest a schedule of studies to meet the needs of the individual student. Typically the coursework in each of the following areas, will meet the requirements of almost all institutions and prepare students for the Dental Aptitude Test (DAT).

The Health Professions Specialists in the Health Professions Student Center assist all students regardless of major, who have an interest in a health

care profession in meeting their goal. The HPSC will assist students in the selection of appropriate classes and a plan of study to meet the requirements of the dental schools to which they intend to apply.

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 exemplary letters of reference. Most schools also require applicants to appear for a personal interview and demonstrate manual dexterity development.

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 lifelong learning skills (4) write and speak effectively and (5) develop a sense of self in society.

Additional information can be obtained from Lori Eiland, MS, DPT, the Pre-Dental Health Professions Specialist in the Health Professions Student Center, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

Pre-Health Curriculum

healthprofessions.wsu.edu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
health.professions@wsu.edu

Director and Clinical Assistant Professor, Donald Allison, PhD, PA-C

All pre-health students are assisted with their preparation for application to health professions schools through the Health Professions Student Center (HPSC). health.professions@wsu.edu.

Entering a health care professional program requires specific undergraduate preparative coursework. Typically, there are additional requirements that must be met for admission. The Health Professions Specialists in the Health Professions Student Center assist all students, who have an interest in a health care profession in meeting their goal, regardless of academic major.

Health Professions Specialists guide 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 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 lifelong 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 any of the Health Professions Specialists in the Health Professions Student Center, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

Pre-Law Curriculum

prelaw.wsu.edu

Students interested in legal education may prepare for entrance into the law field or law school from any major in any college at the University. The American Bar Association recommends attaining as rich an undergraduate education as possible, and developing skills in reading, writing, critical thinking, oral communication, research, and task management. In most cases, preparing for a career in law requires success on the Law School Admissions Test (LSAT), grade point average, personal statement, letters of recommendation, community involvement and leadership, alongside rigorous course work. While no major is recommended and there are no set requirements for your undergraduate education, the field of Law and Law School Admission is highly competitive and success in these areas depends on careful preparation. Students interested in considering the law field should make an appointment with a pre-law advisor through the Pre-Law Resource Center (502 CUE; email: prelaw@wsu.edu). Students interested in law as an area of study, can pursue one of the three undergraduate programs at the University which offer pre-law curricula: History (301 Wilson Hall), Philosophy (801 Johnson Tower), and Political Science (801 Johnson Tower). Additional information can be obtained from Rachel Christofferson (Washington State University, Smith Center for Undergraduate Education (CUE) 502, Pullman, WA 99164-4551).

Pre-Medical Curriculum

healthprofessions.wsu.edu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
health.professions@wsu.edu

Director and Clinical Assistant Professor, Donald Allison, PhD, PA-C

All pre-medical students are assisted with their preparation for medical school through the Health Professions Student Center (HPSC). health.professions@wsu.edu.

The preparation program at WSU is among the most comprehensive in the nation and offers many opportunities for students to interact and succeed. Because there are many ways to prepare for a career in medicine, Health Professions Student Center is here to help you map out the path that is best for you.

Becoming a physician requires a program of graduate study in medical school as well as undergraduate preparative coursework. Students are free to choose the academic path best suited to their interests and strengths. Professional school admission criteria is focused on core academic

coursework, character, and extracurricular effort, not specific degrees earned. Students will meet with a Pre-Med Specialist every semester who is able to suggest a schedule of studies to meet the needs of the individual student.

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, physicians and other professionals must strongly support the applicant.

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 lifelong learning skills (4) write and speak effectively and (5) develop a sense of self in society.

Additional information can be obtained from Lourdes Giordani, Ph.D., or Lori Eiland, MS, DPT, the Pre-Medical Specialists at the Health Professions Student Center, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

Pre-Nursing Curriculum

healthprofessions.wsu.edu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
health.professions@wsu.edu

Director and Clinical Assistant Professor, Donald Allison, PhD, PA-C

All pre-nursing students are assisted with their preparation for application to nursing school through the Health Professions Student Center (HPSC). health.professions@wsu.edu.

Students interested in nursing must meet the requirements for admission. The requirements for admission to the WSU College of Nursing programs are listed in the WSU Spokane catalog under Nursing. The 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 or other nursing program of student choice. Additional admissions requirements vary based on the nursing program of student interest.

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 lifelong 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 Health Professions Advisors, LeeAnn Tibbals and Bryon Gregory, MS, Health Professions Student Center, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

Pre-Nutrition and Exercise Physiology Curriculum

healthprofessions.wsu.edu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
health.professions@wsu.edu

Director and Clinical Assistant Professor, Donald Allison, PhD, PA-C

All pre-Nutrition and Exercise Physiology students are assisted with their preparation for application to the program in Nutrition and Exercise Physiology through the Health Professions Student Center (HPSC). health.professions@wsu.edu .

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 lifelong 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 Health Professions Advisor, Byron Gregory, MS, Health Professions Student Center, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

Pre-Pharmacy Curriculum

healthprofessions.wsu.edu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
health.professions@wsu.edu

Director and Clinical Assistant Professor, Donald Allison, PhD, PA-C

All pre-pharmacy students are assisted with their preparation for application to pharmacy schools through the Health Professions Student Center (HPSC). health.professions@wsu.edu.

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. While most students attain a bachelor's degree, one is not required for admission to most colleges of pharmacy. Pre-pharmacy students at the WSU Pullman campus typically take 3 years fulfilling their pre-pharmacy requirements if they do not want a bachelor's degree. 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 Health Professions Advisor, Byron Gregory, MS, Health Professions Student Center, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

Pre-Physical Therapy, Pre-Physician Assistant, Pre-Occupational Therapy

healthprofessions.wsu.edu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
health.professions@wsu.edu

Director and Clinical Assistant Professor, Donald Allison, PhD, PA-C

All pre-physical therapy, pre-occupational therapy, or pre-physician assistant students are assisted with their preparation for allied health fields such as physical therapy, occupational therapy, or physician assistant programs through the Health Professions Student Center (HPSC). health.professions@wsu.edu.

Students interested in allied health fields such as physical therapy, occupational therapy, or physician assistant programs must complete undergraduate preparative coursework as well as graduate studies. No specific major is required for admission. Students can prepare from many majors in the University as long as they meet the minimum requirements for admission. Admission to physical therapy, occupational therapy, and physician assistant programs is highly competitive and a strong academic record is a must. Your Health Professions Specialist is able to suggest a plan of study and extracurricular activities that fit your interests, strengths, and career goals. The specialist will help you integrate admission prerequisites with your major and help you prepare to apply for admission into professional programs. Be sure and make an appointment during your first semester at Washington State University with the pre-PT/OT or pre-PA specialist in the HPSC.

Additional information can be obtained from the pre-Physical therapy and pre-Occupational therapy Health Professions Specialist, Lori Eiland, MS, DPT. Additional information on preparation for admission to physician assistant programs can be obtained from the Physician Assistant Health Professions Specialist, Lourdes Giordani, Ph.D., Health Professions Student Center, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

Pre-Speech and Hearing Sciences Curriculum

healthprofessions.wsu.edu
Smith Center for Undergraduate Education
(CUE) 502
509-335-4549
health.professions@wsu.edu

Director and Clinical Assistant Professor, Donald Allison, PhD, PA-C

All pre-Speech and Hearing Sciences students are assisted with their preparation for admission to the program in Speech and Hearing Sciences through the Health Professions Student Center (HPSC). health.professions@wsu.edu.

Students interested in the program in Speech and Hearing Sciences (SHS) must meet the requirements for admission to the major. The requirements 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 admission to Speech and Hearing Sciences can be obtained from Health Professions Advisor, LeeAnn Tibbals, Health Professions Student Center, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551., Pullman, WA 99164-4551.

Pre-Veterinary Curriculum

healthprofessions.wsu.edu
Smith Center for Undergraduate Education
(CUE) 502
509-335-4549
health.professions@wsu.edu

Director and Clinical Assistant Professor, Donald Allison, PhD, PA-C

All pre-veterinary students are assisted with their preparation for veterinary school through the Health Professions Student Center (HPSC). health.professions@wsu.edu.

Students interested in veterinary medicine may prepare for admission from any major in the University as long as they satisfy the required prerequisite courses for admission. The requirements for admission are listed on the Health Professions Student Center webpage and requirements specific to the WSU College of Veterinary Medicine can be found 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 Health Professions Specialists in the Health Professions Student Center will assist all students, regardless of major, who have an interest in a veterinary medicine profession in meeting their goal.

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 lifelong 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 Pre-Veterinary Health Professions Specialist in the Health Professions Student Center, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551.

Department of Psychology

psychology.wsu.edu
Johnson Tower 233
509-335-2631

Professor and Department Chair, D. Marcus; Professors, C. Barry, T. D. Barry, A. Blume, G. L. Burns, S. Collins, L. Fournier, M. Gartstein, J. M. Hinson, M. M. Morgan, T. M. Probst, R. Quock, K. Schmaling, M. Schmitter-Edgecombe, W. Scott, P. S. Strand, P. M. Whitney; Associate Professors, S. Bauman, J. Fales, B. Ladd, S. Lakatos, H-Y. Liao, R. Magnan, S. Tragesser; Assistant Professors, E. Canning, C. Cuttler, C. Liu, K. Meidenbauer; Professors (Career-Track), D. Posey, S. Swindell; Associate Professors (Career-Track), B. Duell, L. Daffin, M. C. Kirchhoff, A. L. Matthews, J. Peters; Assistant Professor (Career-Track), A. Spradlin; Instructor, K. Baldwin; Professors Emeriti, M. Craft, T. A. Brigham, F. K. McSweeney, J. W. Wright.

Psychology is the scientific study of the human mind and behavior. The department offers courses of study leading to the Bachelor of Science in Psychology and the Doctor of Philosophy. It also offers an undergraduate minor in Psychology.

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.

The Undergraduate Program

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.

Student Learning Outcomes

Students graduating with a bachelor of science degree in psychology will be able to: 1) use the major

concepts, principles, theories and perspectives of the discipline to explain psychological phenomena and address real world issues; 2) demonstrate tolerance for ambiguity while using reasoning, skepticism, and empirical evidence to recognize, develop, and evaluate claims made about psychological topics; 3) effectively design, conduct, and interpret ethical studies to address psychological questions; 4) communicate effectively by using professional writing and oral conventions; 5) practice information literacy by locating and evaluating relevant references from a variety of sources; 6) explain how individual differences interact with social, economic, and cultural factors to affect perceptions, cognitions, and behaviors; and 7) develop skills and knowledge that enable them to better understand themselves, behave ethically and responsibly, and pursue their unique personal and professional goals.

Graduate Programs

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. For information about the clinical psychology program's accreditation status, you can contact the Commission on Accreditation of the American Psychological Association, which can also be reached at: Office of Program Consultation and Accreditation, 750 First Street, NE, Washington, DC 20002-4242; Phone: 202-336-5979; TDD/TIY: 202-336-6123; Fax: 202-336-5978; apaaccred@apa.org.

Student Learning Outcomes (Clinical Psychology)

The Clinical Psychology Program is based on the scientist-practitioner model of training. The Program is designed to integrate theory, research, and clinical practice in the training of students. The goals of the program are to produce graduates who (1) have a broad knowledge of scientific psychology; (2) can provide evidence-based clinical services that are consistent with ethical and professional standards, including knowledge of and sensitivity to issues of diversity; and (3) are capable of contributing to current knowledge in clinical psychology.

Student Learning Outcomes (Experimental Psychology)

The doctoral program in Experimental Psychology is designed to produce skilled, innovative, and productive experimental psychologists. Degree recipients are expected to be (1) highly knowledgeable about their specialty area (Cognition, Biological, Social, Industrial/Organizational, Health, or Applied Quantitative Methods), (2) well-versed in general experimental psychology, (3) able to identify significant research problems, (4) conversant with a wide variety of strategies for generating and testing hypotheses that emerge from these problems, and (5) able to effectively communicate scientific results.

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, 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 CREDITS)

The Bachelor of Science in Psychology requires a minimum of 35 credits in PSYCH, at least 15 of which must be in 300-400-level courses. Students must take at least 10 credits 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 be admitted to the Psychology major after completion of 30 credits, 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	Credits
BIOLOGY 101 [BSCI] and 105, or BIOLOGY 102 [BSCI], 106 [BSCI], or 107 [BSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
PSYCH 105 [SSCI]	3

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3 or 4
Foreign Language or Electives	3 or 4

Second Year

First Term	Credits
Arts [ARTS]	3
Physical Sciences [PSCI] with lab	4
PSYCH 210	3
Foreign Language and/or Electives	5

Second Term	Credits
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
PSYCH 311	4
Electives	7
Complete Writing Portfolio	

Third Year

First Term	Credits
Focus Area PSYCH Electives ¹	9
PSYCH 312 [M]	4
Electives	3

Second Term	Credits
Focus Area PSYCH Electives ¹	6
300-400-level Electives	10

Fourth Year

First Term	Credits
Focus Area PSYCH Electives ¹	6
Integrative Capstone [CAPS]	3
PSYCH [M] Course	3
300-400-level Electives	4

Second Term	Credits
Electives	15
Complete Psychology Exit Interview and Survey	

¹ Focus Area Electives (21 credits): Students must complete at least 2 courses from each of the following areas: 1) Neuroscience/Cognition: PSYCH 265, 372, 384, 473, 490, 491, 492; 2) Social/Motivational PSYCH 230, 306, 307, 308, 309, 321, 328, 350, 403, 466, 470; and 3) Clinical/Counseling: PSYCH 110, 320, 324, 333, 342, 361, 363, 440, 442, 444, 464, 468. Additional approved courses include any PSYCH course not used to fulfill other PSYCH requirements. Note that many courses require prerequisites and not all courses are offered both Fall and Spring semester. Contact advisor for additional information.

Minors

Addiction Studies (Vancouver only)

A minor in addiction studies requires 19 or 22 credits. Track 1 (professional certification, 22 credits): comprises coursework primarily in the Department of Psychology and is aimed at preparing students for certification as chemical dependency professionals (CDP) in Washington State. Track 2 (addictions research, 19 credits): geared toward students preparing for graduate study in research careers in clinical and health psychology, as well as public policy emphasizing the study of addictive behaviors. 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.

Track 1: This track comprises coursework based primarily in the Department of Psychology. It aims to prepare students for certification as chemical dependency professionals (CDP) in Washington State. The minor provides theoretical and practical training in the diagnosis and treatment of addictive behaviors. It is important to note that courses in Track 1, taken by themselves, address only a subset of these competencies. To obtain certification requires additional coursework and relevant practical experience.

Track 1 requires a minimum of 22 semester credits, which must include the following:

Required Courses (16 credits):

- PSYCH 110
- PSYCH 265
- PSYCH 333
- PSYCH 342
- PSYCH 442

Elective Courses (choose two of the following; six credits):

- PSYCH 301
- PSYCH 320
- PSYCH 440
- PSYCH 444
- PSYCH 468
- CRM J 428
- SOC 368

Track 2: This track prepares students for graduate training in research careers emphasizing the empirical study of addictive behaviors (e.g., clinical and health psychology, public health and policy). To ensure completion, students must commit to this track no later than the beginning of their junior year (i.e., with 4 semesters remaining at WSUV). Track 2 culminates in an independent research project under the supervision of a Psychology faculty member.

Track 2 requires a minimum of 19 semester credits, which must include the following:

Required Courses (16 credits)

- PSYCH 265
- PSYCH 312
- PSYCH 333

• PSYCH 498: Must work in at least one research lab for a minimum of 2 semesters.

• PSYCH 499 (2 credits min.): Student will produce a final independent product (e.g., grant application, review paper, research project) related to addiction or related topics. Student must identify a mentor willing to work with them no later than the end of their junior year.

Electives (3 credits)

- PSYCH 301
- PSYCH 342
- PSYCH 468
- CRM J 428
- SOC 368

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 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.

110 Introduction to Addiction Studies 3 Analysis of cultural, societal, individual, and physiological factors underlying drug addiction.

- 201 Degrees and Careers in Psychology** 1 Introduction to the major, degree requirements, resources for degree planning, graduate degrees, and careers for psychology majors. Recommended preparation: PSYCH 105.
- 210 Psychology as a Science** 3 How psychology uses reasoning, skepticism, and the scientific method to evaluate claims made in everyday life.
- 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, WGSS 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 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 Work, Stress, and Health** 3 Workplace stressors and their effects on employee health, well-being, and safety; employee burnout, engagement, and stress management interventions. Recommended preparation: PSYCH 105.
- 311 [QUAN] Statistics in Psychology** 4 Course Prerequisite: One of the following with a C- or better: ENGR 107, MATH 103 or higher, MGTOP 215, STAT 205, STAT 212, or a minimum ALEKS math placement score of 45%. Descriptive statistics, probability, and inference; design and interpretation of research. Recommended preparation: PSYCH 105.
- 312 [M] Research Methods in Psychology** 4 (3-3) Course Prerequisite: PSYCH 210; 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 Personality** 3 Theories, concepts, methods, discoveries in psychology of personality. Recommended preparation: PSYCH 105.
- 324 Psychology of Gender** 3 Contemporary overview of the psychological theory and research on sex and gender. (Crosslisted course offered as PSYCH 324, WGSS 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 Fundamentals of Psychological Disorders** 3 Course Prerequisite: PSYCH 105. An introduction to psychological disorders, their diagnoses, contributing factors, and treatments.
- 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.
- 348 Forensic and Legal Psychology** 3 Introduction to the ways in which psychological science is used to inform the legal system. Recommended preparation: PSYCH 105.
- 350 Social Psychology** 3 Course Prerequisite: Sophomore standing. 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 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 Course Prerequisite: Sophomore standing. Functional relationship between nervous system and behavior; integrated organ systems, sensory processes, and investigative procedures. 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.
- 390 [M] Alcohol Use and Abuse** 3 Course Prerequisite: PSYCH 105. Biopsychosocial models of alcohol use and abuse; biology, effects, risk, and protective factors, assessment and diagnosis, and prevention of alcohol use and abuse disorders. Recommended preparation: PSYCH 210, 312.
- 401 [CAPS] [M] Historical Development of Psychology** 3 Course Prerequisite: Admitted to the major in Psychology; junior standing. Concepts, methods, theories, trends, and systems. Recommended preparation: PSYCH 105.
- 403 Multicultural Psychology** 3 Multidisciplinary analyses of the relationship between social-ecological and political contexts and individual and collective psychology.
- 405 Instructional Practicum Training** 1 Course Prerequisite: By permission only. Training of undergraduate students in best practices, policies, and responsibilities of being a teaching assistant. S, F grading.
- 412 [CAPS] [M] Psychological Testing and Assessment** 3 Course Prerequisite: PSYCH 311; junior standing. Introduction to test and survey development in clinical, organizational, and educational settings; assessment of attitudes, personality, and behavior. Recommended preparation: PSYCH 105.
- 440 [M] Clinical/Community Psychology** 3 Course Prerequisite: PSYCH 333; junior standing. 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 [M] Basic Clinical 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.
- 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, H D 101, or H D 340. Theoretical and empirical approaches to the description, etiology, and treatment of behavior disorders in children and adolescents. Recommended preparation: PSYCH 105; PSYCH 333.

- 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 Among Diverse Populations** 3 Course Prerequisite: Junior standing. Overview of social, cultural, and historical perspectives on dealing with addictive behavior. (Crosslisted course offered as PSYCH 468, CRM J 468, SOC 468). Recommended preparation: SOC 101, PSYCH 105, or CRM J 101.
- 470 Motivation** 3 Course Prerequisite: Junior standing. 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.
- 485 Gerontechnology I** 3 Course Prerequisite: CPT S 215, 223, or 233; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, Data Analytics, or major in Psychology. Introduction to the field of gerontechnology, including aging and senses, mobility and exercise, data analysis, and research methods. (Crosslisted course offered as CPT S 485, PSYCH 485).
- 486 Gerontechnology II** 3 Course Prerequisite: CPT S 215, 223, or 233; admitted to the major or minor in Computer Science, Computer Engineering, Electrical Engineering, Software Engineering, Data Analytics, or major in Psychology. In-depth exploration of gerontechnology, including socialization, caregiver issues, dementia, app design and data visualization. (Crosslisted course offered as CPT S 486, PSYCH 486).
- 490 Cognition and Memory** 3 Course Prerequisite: Junior standing. Human information processing, memory, and cognition. Recommended preparation: PSYCH 105.
- 491 Principles of Learning** 3 Course Prerequisite: Junior standing. 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. Course Prerequisite: By permission only. S, F grading.
- 498 Research Participation** V 1-4 May be repeated for credit. 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. Cooperative: Open to UI degree-seeking students.
- 505 Teaching Introductory Psychology** V 1-3 May be repeated for credit; cumulative maximum 5 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 6 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.
- 510 Introduction to Online Instruction** 1 Course Prerequisite: Ph. D student in Psychology. Instruction in teaching online courses addressing issues faced by instructors and students; students are mentored while teaching online. S, F grading.
- 511 Experimental Design, T-Tests, and Analysis of Variance** 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 Non-Experimental Designs, Correlation, and Regression** 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 512; PSYCH 514. Confirmatory factor analysis, path analysis, structural regression analysis, multilevel analysis and latent growth analysis with current software.
- 517 Clinical Skills** 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: Ph.D. student in Psychology. Introduction to micro-skills and basic therapeutic interventions necessary for entering practicum students. S, F grading.
- 518 Lifespan Developmental Psychology** 3 Course Prerequisite: Ph.D. student in Psychology. Study of continuity and change from infancy through senescence, with an emphasis on a biopsychosocial perspective and an interdisciplinary approach to the principles of development.
- 519 Industrial/Organizational Psychology** 3 Course Prerequisite: Ph.D. student in Psychology. Overview of research, theory, and application of psychological principles in the workplace.
- 520 Adult Psychotherapy** 3 Course Prerequisite: PSYCH 533. An overview of empirically-supported treatments for psychological disorders in adults and the science of psychotherapy research.
- 521 Empirical Approaches to Psychotherapy II** 3 Course Prerequisite: PSYCH 520. Research methods in empirically-supported therapies (ESTs), and specific ESTs approaches including cognitive-behavioral (CBT) for mood disorders, personality disorders, pain and health-related problems.

- 523 Health Psychology** 3 Course Prerequisite: Ph.D. student in Psychology. Overview of the field of health psychology from a social-cognitive perspective; includes a focus on health behavior models addressing how beliefs, expectations, affect, and other social influences impact health decisions and behavior.
- 524 Motivational Interviewing** 3 Advanced background in Motivational Interviewing (MI), a strategy for motivating health behavior change; knowledge on outcome and process MI research and introduction to the basic clinical techniques and skills of MI.
- 529 Occupational Health Psychology** 3 Course Prerequisite: Ph.D. student in Psychology. Overview of major occupational health psychology content areas and foundational theories; causes and consequences of work-related stressors, injury, and illness; individual and organizational interventions.
- 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.
- 534 Clinical Psychopharmacology** 3 Course Prerequisite: PSYCH 533; Ph.D. student in Clinical or Counseling Psychology. 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 6 hours. Course Prerequisite: PSYCH 539; Ph.D. student in Psychology. Supervised practice in psychological assessment, including neuropsychological assessment, in the WSU 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 Cognitive and Neuropsychological Assessment** 3 Course Prerequisite: Ph.D. student in Psychology. Theory and application of psychological cognitive assessment across the lifespan, including test administration and interpretation.
- 542 Evidence-Based Therapy for Children and Adolescents** 3 Course Prerequisite: Ph.D. student in Psychology. Theoretical and evidence-based approaches to intervention with children and adolescents.
- 543 Developmental Psychopathology and Evidence-Based Assessment for Children** 3 Course Prerequisite: Ph.D. student in Psychology. Research on developmental psychopathology and evidence-based assessment of children and adolescents.
- 544 Clinical Health and Primary Care Psychology** 3 Course Prerequisite: Ph.D. student in Clinical or Counseling Psychology. Principles and practice of clinical health and primary care psychology.
- 545 Psychology Clinic Assessment and Psychotherapy Practicum** 3 May be repeated for credit; cumulative maximum 24 hours. Course Prerequisite: Ph.D. student in Psychology. Supervised practice in the clinical application of psychology with children/adolescents and adults in the Psychology Clinic. S, F grading.
- 546 Counseling and Psychological Services Practicum** 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 WSU Counseling and Psychological Services. S, F grading.
- 547 Clinical Health and Primary Care Psychology Practicum** 3 May be repeated for credit; cumulative maximum 18 hours. Course Prerequisite: Ph.D. student in Clinical Psychology. Supervised practice in the application of clinical health and primary care psychology in medical settings. 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.
- 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.
- 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. Cooperative: Open to UI degree-seeking students.
- 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: Admitted to the Psychology PhD program. 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 Sociology

soc.wsu.edu/
Wilson-Short 204
509-335-4595

Department Chair and Professor, J. Kmec; Professors, D. Dillman, C. Horne, M. Johnson, A. MacLean, T. Rotolo, J. Schwartz, J. Sherman; Associate Professors, J. Denney, E. Johnson; Assistant Professor, M. Amorim, D. Bugden, K. Leupp, A. Zamora-Kapoor; Career Track Assistant Professors, K. Cutler, J. Kremer, S. Whittle; Instructor, M. Nesbitt.

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. Substantively, sociologists look at a range of issues, from inequality to human ecology, from deviance to social order, from medicine to politics. Few fields offer students (and researchers) opportunities of such breadth.

Courses in sociology are designed to provide the student with an understanding of what makes individuals and groups behave the way they do. Social inequality, social order, and social change are prominent themes. In today's changing job market, the skills developed by sociology majors are important – skills in analyzing problems, understanding diverse peoples, and assessing how changes in the broader social structure shape individuals' daily lives. Sociology also provides training in social science research methods and statistics, communication, and critical thinking. Successful sociology majors enter the professional world with skills useful in a wide range of careers including public relations, community planning, positions in government and social agencies, as researchers and data analysts, criminal justice system professions, health and medical fields, and business. Sociology also provides an excellent foundation for professions that may require graduate school training, such as counseling, law, public policy and administration, social work, public health or teaching.

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, a minor in At-Risk Youth, a minor in Workplace Diversity, a minor in Health and Society, and, in partnership with the Carson College of Business, a certificate in Organizational Leadership in Sustainability.

Undergraduate Student Learning Outcomes

At the completion of the bachelor of arts degree in sociology, students will be able to 1) think critically about social problems; 2) understand and apply basic statistics to social issues; 3) clearly communicate sociological concepts, theories, and findings; 4) evaluate and conduct empirical research, and use social science to develop informed judgements about significant social issues; 5) analyze the relationships between social, technological, and natural physical systems; 6) analyze the contributions of social institutions to social order; 7) analyze the causes and consequences of social inequality; and 8) put into practice the skills and habits of successful professionals.

Schedules of Studies

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

SOCIOLOGY (120 CREDITS)

A student may be admitted to the Sociology program upon making their intentions known to the department.

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.

A Bachelor of Arts degree in sociology requires a minimum of 31 credits of sociology coursework in which students must maintain a C average. All majors must complete five required core courses: Introduction to Sociology (SOC 101), Development of Social Theory (SOC 310), Research Methods in Sociology (SOC 317 [M]), Quantitative Techniques in Sociology (SOC 321), and one of the following "capstone experience" integrative capstone courses: Internship Capstone (SOC 495 [CAPS][M]), From Theory to Practice Capstone (SOC 496 [CAPS][M]), or Research Practicum Capstone (SOC 497 [CAPS][M]).

Students must also complete 15 credits of elective courses in sociology and 12 credits in a concentration area, half of which must be in 300-400-level courses. Concentration courses enable students to individualize their programs of study to best meet their academic and career goals. Students select concentration courses from a department-approved list and in consultation with an academic advisor.

First Year

First Term	Credits
Arts [ARTS]	3
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN]	3
SOC 101 [SSCI]	3
Foreign Language, if necessary, or Elective	4

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Foreign Language, if necessary, and/or Electives	5

Second Year

First Term	Credits
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Biological Sciences [BSCI] with lab ¹	4
Diversity [DIVR]	3
Electives	6

Second Term	Credits
Physical Sciences [PSCI] with lab ¹	4
SOC Elective ²	3
Electives	9
Complete Writing Portfolio	

Third Year

First Term	Credits
Concentration Elective ³	3
SOC 310	3
SOC 317 [M]	3
Electives	3
SOC Electives ²	3

Second Term	Credits
Concentration Elective ³	3
SOC 321	4
SOC Electives ²	6

Fourth Year

First Term	Credits
300-400-level Concentration Elective ³	3
SOC Elective ²	3
Electives	9

Second Term	Credits
SOC 495 [CAPS] [M] or 497 [CAPS] [M]	3
300-400-level Concentration Elective ³	3
300-400-level Electives	9

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² SOC Electives (15 credits): Any SOC course except required SOC courses and SOC 320. Must include sufficient 300-400-level courses to meet University Requirement of 40 credits of Upper Division coursework.

³ Concentration Electives (12 credits): At least 6 credits must be at the 300-400 level. Students are encouraged to select a concentration area that best furthers their career objectives. Concentration areas include: Work and Family (SOC 251, 340, 351, 384, 390); Crime, Deviance, and Control (SOC 360, 361, 362, 364, 368, 461); Sustainable Societies (SOC 332, 334, 335, 336, 430, 474); and Related Fields (COM 101, 410, 440, 464, 470, COMSOC 230, 321, 421, COMSTRAT 312, 380, CPT S 401, IBUS 380, MGMT 301, MIL SCI 201, 202, 301, 302, 401, 402, MKTG 360, SOE 110, 312, and any AMER ST, ANTH, ASIA, CES, CRM J, ECONS, H D, HISTORY, HONORS, PHIL, POL S, PSYCH, and WGSS courses). Students may not use the 12-credit concentration areas to fulfill the 15 credits of sociology electives required in the major.

Minors

At-Risk Youth

A student may be admitted to the minor in At-Risk Youth after completion of 60 credits. The minor requires a minimum of 18 credits in sociology, including SOC 352, 360, 362, and 368, and at least 6 additional credits of electives (SOC 346, 351, 361, or CRM J 365/SOC 367). At least 9 credits must be upper-division taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. A GPA of 2.0 is required for the minor.

Health and Society

Students may be admitted to the minor in Health and Society after completion of 60 credits. The

minor requires a minimum of 18 credits in Sociology or related disciplines, including SOC 334; SOC 340; and at least 12 additional credits of Health and Society electives from the following: ANTH 205, 304, 405, PHIL 365, PSYCH 310, SOC 101 or 102, 251, 330, 336, 351, 356, 368, 384, 493, WGSS/SOC 385. At least 9 credits must be upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange programs. Up to 3 credits of SOC 493 may apply to the minor. All minor courses must be completed with a minimum 2.0 GPA.

Sociology

A student may be admitted to the minor in Sociology after completion of 60 credits. It requires a minimum of 18 credits in sociology, including SOC 101, 320, and at least 9 additional graded credits 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.

Workplace Diversity

Faculty coordinator: Dr. Sarah Whitley
Wilson 204
Pullman, WA 99164-4020
509-335-4595
whitley@wsu.edu

The Minor in Workplace Diversity program is designed specifically for students and/or professionals with the aim of preparing them for increasingly diverse and global workplaces. It increases their intercultural understanding and skills, as well as provides evidence of those skills (in the form of an academic minor) to prospective or current employers. Given the possibility of following a number of profession-specific tracks, the program is useful for individuals across majors or disciplines who are or expect to be in management positions, or work with diverse colleagues, clients, customers, patients, or students.

The intent of this minor is to broaden and enhance knowledge and/or incorporate additional skills in the student's academic preparation. The minor's program of studies is designed by the student in collaboration with the coordinator and /or the advisor. Students may be admitted after completing 60 credits and/or admission into a major. A minimum of 18 credits is required and must include 9 credits of upper-division work taken in residence at WSU or through WSU-approved education abroad or educational exchange courses. All core courses must be taken at WSU. Not counting the SOC 341 course, no more than two courses with the same subject (or content, as in cross-listed courses) may be applied towards the minor. A maximum of 3 internship credits may count towards the minor's electives, if approved by coordinator. For a selection of suggested electives, please consult with the minors' faculty coordinator or the academic advisor for the Department of Sociology.

Program of Study

Core Courses (12 credits): SOC 341; PHIL 360; ANTH 203, CES 101 or WGSS 101; SOC 340 or CES 301

Electives (6 credits) to be selected in collaboration with program director from: ANTH 316; ANTH/POL S/SOC 418; CES 244, 301, 440, 446; COMSOC 321, 421; MGMT 315; PHIL 365 ; POL S 305, 432; PSYCH 309; SOC 334, 390; WGSS 385, 406.

Learning Goals

After completing the Workplace Diversity Minor Program, students will be able to:

- Recognize how behavior and perspective are shaped by social structural factors such as economics, power, and institutionalized discrimination.
- Assess how their own and others' cultural identity, filters and behaviors impact the work environment.
- Respond to bias in a proactive and transformational way.
- Utilize strategies to value and bridge differences among, and work more effectively with, people who differ from one another according to a wide variety of attributes.
- Demonstrate behaviors that contribute to a welcoming and respectful workplace.

Certificates

Sustainable Organizational Leadership

The Certificate in Sustainable Organizational Leadership at WSU is open to all majors. This interdisciplinary certificate provides value to students by building synergies across two strongly complementary units: the Department of Sociology and the Carson College of Business. Environmental and resource sustainability is an important social problem and an increasingly common issue across for-profit, not-for-profit, and governmental workplaces. Achieving sustainability requires attention to the intersections of three key domains – financial, environmental, and social. This certificate will develop student expertise and skills in these three arenas and the intersections between them, producing leaders who can act to achieve sustainability goals across a diversity of organizational settings.

The Certificate in Sustainable Organizational Leadership requires 15 credits including SOC 332, 340, and MGMT 301, and two electives drawn from: HBM 381 or MGMT 401; MGMT 483, 487; SOC 335, 336, 430, 474.

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).
- 103 [COMM] Social Psychology of Communication 3** Use of social psychological principles to communicate effectively with diverse audiences.

106 Murder and Mass Mayhem in American Society 3 Similarities and differences in murder and mass mayhem within the US and between US and other nations.

230 Society and Technology 3 Role of technology in social evolution; social impacts and shaping of technology. Recommended preparation: SOC 101. (Formerly SOC 430.)

245 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 [DIVR] 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, WGSS 251.)

300 [DIVR] [M] Intersections of Race, Class, Gender, and Sexuality 3 Course Prerequisite: SOC 101 or WGSS 101. Intersections between race, class and gender through case studies; experiences in interdisciplinary methods. (Crosslisted course offered as WGSS 300, ENGLISH 310, SOC 300.)

302 Contemporary Masculinities 3 Analysis of the development of masculinity in its biological and cultural forms. (Crosslisted course offered as WGSS 302, SOC 302.)

305 Degree and Careers 1 Introduction to the major or minor, degree or minor requirements, resources for degree planning, graduate degrees, and careers for sociology majors and minors.

310 Development of Social Theory 3 Foundations of sociological theory; introduction to original works of early social theorists. Recommended preparation: SOC 101.

311 Visual Presentation and Data Management in Social Science 3 Investigate and communicate with social science data; techniques of visual data display using Excel and other tools.

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.

- 330 America's Changing Population: Challenges and Strategies** 3 Introduction to population studies and to measurements of fertility, mortality, and migration; study of impacts of populations changes on contemporary social issues (e.g., mass incarceration, poverty, teen pregnancy, environment).
- 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 [SSCI] Sustainability and Society** 3 The study of human-environment relationships and the connections between environmental, economic, and social systems. 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 Medical Sociology** 3 Study of the societal dimensions of health and medicine: social determinants of health.
- 335 Shopping and Society** 3 Course Prerequisite: SOC 101. Consumption and its impacts on the environment and society.
- 336 Sociology of Food** 3 Theoretical, historical, and empirical issues of food and agriculture in the United States including social, political, and economic aspects. Recommended preparation: SOC 101.
- 337 Climate Change in Your Lifetime** 3 Reflections on personal experiences with climate change, climate politics and policy, scientific uncertainty, and more
- 340 [DIVR] Social Inequality** 3 Causes and consequences of social inequality in contemporary America. Recommended preparation: SOC 101.
- 341 Inclusive Workplace Leadership** 3 For upper-division students, development of leadership skills necessary for careers in a diverse workplace.
- 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 Course Prerequisite: Sophomore standing. 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, WGSS 351.) Recommended preparation: SOC 101.
- 352 Youth and Society** 3 Social issues facing youth; youth and social institutions of education, employment, family, criminal justice system, and politics.
- 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.
- 358 Beliefs, Norms, and Values** 3 Sources and consequences of beliefs, norms, and values.
- 359 Giving** 3 Giving that contributes to flourishing societies; philanthropy, volunteering, cooperation, and altruism.
- 360 Social Deviance** 3 A survey of the sociology of deviance. Recommended preparation: SOC 101.
- 361 [DIVR] Criminology** 3 Crime measurement, theories of crime, 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.
- 364 Law and Society** 3 Intersection of legal and social systems.
- 367 Juvenile Justice and Corrections** 3 Course Prerequisite: CRM J 101. 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 Drugs and Society** 3 Social issues in drug use and addiction; drug policy.
- 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, WGSS 384.) Recommended preparation: SOC 101.
- 385 [DIVR] Introduction to Lesbian, Gay, Bisexual, and Transgender 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 WGSS 385, SOC 385.)
- 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, WGSS 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.
- 415 [CAPS] [M] 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.
- 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 Among Diverse Populations** 3 Course Prerequisite: Junior standing. Overview of social, cultural, and historical perspectives on dealing with addictive behavior. (Crosslisted course offered as PSYCH 468, CRM J 468, SOC 468). Recommended preparation: SOC 101, PSYCH 105, or CRM J 101.
- 474 Social Movements** 3 Course Prerequisite: Junior standing. Social movement processes and social change in historical and contemporary societies. Recommended preparation: SOC 101.
- 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 [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 [CAPS] [M] Capstone Research Practicum** 3 Course Prerequisite: SOC 317 or concurrent enrollment; admitted to the 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.
- 511 Data Management** 3 Core concepts and procedures regularly used in the quantitative analysis of sociological data.
- 517 Seminar in Contemporary Sociological Theory** 3 Recent developments in sociological theory, analysis, application and appraisal of specific theoretical systems. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 526 Experimental Methods** 3 Design and analysis, settings, manipulations, measures, and human participant considerations.
- 527 Social Network Analysis** 3 Practical research experience with social network theory, concepts, measurement, and data collection/analysis.
- 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.
- 552 Poverty and Family** 3 Explores the experience of poverty and how it affects family life, family structure, and family formation in both rural and urban America.
- 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.
- 560 Geographic Information Systems in Health and Social Sciences** 3 Utilizing Geographical Information Systems (GIS) and mapping tools to examine and visualize epidemiological and social science data; assess public health, social, and policy issues including obesity, cardiovascular disease, and drug use; explore how this work can be applied to interventions. Required preparation must include a college-level statistics course. (Crosslisted course offered as NEP 560, SOC 560).
- 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. Course Prerequisite: Admitted to the Sociology PhD program. 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

medicine.wsu.edu/speech-and-hearing-sciences-2/
Health Science Bldg, Room 125X; WSU Spokane
509-358-7602
speechhearing@wsu.edu

Professor and Department Chair, A. Meredith; Professors, G. Chermak, N. Potter; Associate Professor, M. VanDam; Assistant Professors, D. Jenson, G. Lynch, L. Thompson; Clinical Professor, K. Simpson; Clinical Associate Professors, D. Algeo-Nichols C. Dechert; Teaching Associate Professor, M. Ratsch; Instructors, R. Jackson, E. Schreiner; Professors Emeriti, S. Bassett, E. Inglebret, C. L. Madison, R. E. Potter, L. Power.

The Department of Speech and Hearing Sciences in the Elson S. Floyd College of Medicine offers courses of study leading to the degrees of Bachelor of Arts in Speech and Hearing Sciences and Master of Science in Speech and Hearing Sciences. Training in speech and hearing sciences through the bachelor's degree prepares students for a range of careers in health professions, education, and social services, among others. State and national clinical and educational licensure and certification require completion of the master's degree. 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.

Graduate students are prepared as speech-language pathologists to provide evidence-based, direct and consultative services in education and medical

settings to meet the diagnostic and treatment needs of individuals across the life span evidencing a wide variety of speech, language, swallowing, voice and hearing problems. 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 undergraduate and graduate programs, located in the Health Sciences Building on the Washington State University Health Sciences Spokane campus, 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 across the state and the region. Contact: speechhearing@wsu.edu and speech.hear.grad@wsu.edu

Student Learning Outcomes

A graduate of the bachelor's Speech and Hearing Sciences program will be able to: 1) identify needs or issues in clinical service delivery; 2) identify contextual factors to consider in addressing clinical service delivery needs/issues; 3) identify and consider various perspectives important to analysis of the needs/issues and underlying assumptions associated with each; 4) identify and assess the quality of evidence supporting particular service delivery practices; 5) identify and assess conclusions, implications, and consequences associated with examination of the needs/issues; 6) Provide informed leadership to achieve desired social outcomes.

Learning outcomes for students in Speech and Hearing Sciences master's program reflect the knowledge and skills competencies required by the American Speech-Language-Hearing Association. Students earning a master's degree 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 and hearing sciences are required to complete undergraduate prerequisite coursework prior to applying to the graduate program.

Schedules of Studies

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

SPEECH AND HEARING SCIENCES (120 CREDITS)

Admission 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 for admission to the 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 credits required for the bachelor's degree in this program must be in 300-400-level courses. Successful completion of SHS 473 [M] and 482 [M] fulfills the university requirement of two writing in the major courses.

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>Credits</i>
BIOLOGY 102 [BSCI] or 106 [BSCI]	4
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
HISTORY 105 [ROOT]	3
PSYCH 105 [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 101 [WRTG]	3
PHYSICS 101/111 [PSCI] or CHEM 101 [PSCI]	4
SHS Elective ¹	3
STAT 212 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
SHS 205	3
SHS Electives ¹	6
Electives	3

<i>Second Term</i>	<i>Credits</i>
Humanities [HUM]	3
SHS Electives ¹	6
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
SHS 371	3
SHS 372	3
SHS 375	3
SHS 377	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
SHS 376	3
SHS 378	3
SHS 472	3
SHS 478	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
SHS 201	4
SHS 477	3
SHS 479	3
SHS 482 [M]	3
SHS Electives ¹	2

<i>Second Term</i>	<i>Credits</i>
SHS 202	4
SHS 451	3
SHS 461	2
SHS 473 [M]	3
SHS 480 [CAPS]	3

¹ SHS electives (17 credits required) include any H D or PSYCH course 200-level or above, or as approved by advisor.

Description of Courses**SPEECH AND HEARING SCIENCES****SHS**

- 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 psychophysiological aspects of normal hearing and speech perception, and the nature and consequences of hearing disorders.
- 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 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 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 hard of hearing; 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 [CAPS] Senior Seminar 3 Course Prerequisite: Senior standing. Synthesis of theory and evidence underlying professional principles and practices inclusive of multicultural populations in speech-language pathology and audiology.

482 [M] 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.

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 Early Language Development 2 Developmental progression of communication and language in pediatric populations, with an emphasis on assessment and intervention for very young children and families. 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 2 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.

552 Speech-Language Pathology and Audiology in Schools 2 Laws, policies, and ethical issues involved in providing speech-language and audiology services in public schools.

- 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. By departmental consent only; minimum grade of B in SHS 575 or a grade of S in SHS 566 or SHS 568 in the prior semester or summer term, and a minimum grade of C in all prior SHS graduate coursework. 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. By departmental consent only; minimum grade of B in SHS 575 or a grade of S in SHS 566 or SHS 568 in the prior semester or summer term, and a minimum grade of C in all prior SHS graduate coursework. 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. By departmental consent only; minimum grade of S in SHS 566 or SHS 568 in the semester or summer term preceding internship, and a minimum grade of C in all prior SHS graduate coursework. 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 and Cognition I 2** Study of acquired language and cognitive disorders resulting from neurological damage (specific to left and right hemisphere-based 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 and Resonance Disorders 2** Functional and organic voice disorders resulting from various etiologies. SHS graduate student; all undergraduate prerequisite courses completed.
- 577 Neurogenic Disorders of Language and Cognition II 2** Study of acquired cognitive-communication disorders resulting from diffuse and/or progressive neurological damage.
- 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.
- 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 Advanced Speech and Sound Disorders 2** Current literature in articulatory development and deviancy; diagnosis and therapy. Required preparation: 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 Teaching and Learning

education.wsu.edu/tl/
Cleveland 321
509-335-6842

Chair and Associate Professor, T. Akmal; Regents Professor, J. L. Egbert; Professors, S. Finley, S. Kruse, A. R. McDuffie, E. J. Johnson, J. Morrison, A. G. Rud, R. D. Sawyer, D. Slavit; Associate Professors, Y. Ardasheva, A. Cavagnetto, D. Day-Wiff, M. Dunn, J. Firestone, A. Guerretaz, Y. Hsiao, J. E. Kelley, K. Lesseig, J. Lupinacci, D. McMahon, S. Newcomer, M. Poppen, K. Puzio, T. L. Salsbury, M. Vaughn; Assistant Professors, L. Bruno, S. Fick, A. Gilmore, S. RunningHawk Johnson, M. Kelton, J. Masterson, H. Whittenburg; Career Track Faculty, J. Johnson, M. Moscatelli, S. Rakha, A. Segadelli, A. Sheftel, S. E. Skavdahl, T. F. Watson, L. White; Professors Emeriti, J. M. Canty, G. Ernst-Slavit, T. Holmlund, S. B. Kucer, L. Mabry, D. Miller; Associate Professor Emeriti, P. J. Bettis, 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, Middle Level Math, and Middle Level Science. Graduate programs include Master of Arts in the following specializations: Curriculum and Instruction; Language, Literacy, and Technology; and Special Education; Masters of Education, Masters in Teaching, 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.); Mathematics and Science Education (Ph.D.); and Special Education (Ph.D.).

Department of Teaching and 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.

Student Learning Outcomes

Faculty 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. Visit our website at <https://education.wsu.edu/graduate>

The Washington State University annual report on teacher education, required under Title II, Section 207(f)(2) of the Higher Education Act, is available upon request. Visit our web site at <https://education.wsu.edu/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:

1. 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.
2. 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 2.5.
- 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 or demonstrated basic skills on the statewide examinations in basic skills (WEST-B, SAT, or ACT), content (WEST-E or NES).
- The candidate has met the Professional Dispositions Assessment standards.

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 ensure 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

<https://education.wsu.edu/certification/>

Information is available upon request from the Certification Coordinator, College of Education, PO Box 642114, Pullman, WA 99164-2114 (509) 335-8146 or sbickel@wsu.edu.

WSU PULLMAN/SPOKANE TEACHER CERTIFICATION

Inquiries and requests for program information should be addressed to Office of Undergraduate Student Services, College of Education, PO Box 642152, Pullman WA 99164-2152 (509) 335-4855 or beateacher@wsu.edu or visit our website at <https://education.wsu.edu/teachered/>.

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. Single-subject endorsement preparation is available in Agriculture, Biology, Chemistry, Earth and Space Science, English Language Arts, World Languages (French and Spanish), History, Family and Consumer Sciences, Mathematics, Music, Physics, and Social Studies. Add-on endorsements for pre-service teachers are offered in English Language Learners, Middle Level Math, Middle Level Science, and Special Education. Candidates holding single-subject endorsements typically will be assigned to teach in grades 5-12 except those endorsed in ELL, World Languages, Music, or Special Education who are authorized to teach P-12. Specific course requirements for endorsements are listed in the subject matter of the catalog. 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 or 317. The following minimum criteria must be met for consideration for admission:

Minimum Criteria

Contact Office of Undergraduate 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. Twenty of these hours must be with students from diverse populations or attending cultural events.
- Basic skills proficiency in reading, writing, and mathematics. Students may use SAT, ACT, or WEST-B scores to demonstrate proficiency or request alternative means to meet the basic skills requirement. For information go to: <https://education.wsu.edu/basicskillstesting>.
- Completion of at least 45 semester hours of post-secondary course work.
- Minimum WSU cumulative GPA of 2.50 for elementary and secondary applicants (transfer student GPA is based on WSU course work).
- TCH LRN 301, ENGLISH 101, and ENGLISH 201 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. Admitted to major department. Contact major department for additional requirements.
- Personal goal statement.
- Interview.

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 all practicum courses with the exception of TCH LRN 317. 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, Pre-Internship for Elementary Teachers (3 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 5-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, Pre-Internship for Secondary Teachers (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 an extended 5-week, full-time practicum in a school setting one semester prior to student teaching. Placement is arranged by the Department of Teaching and Learning. All practica involve observation, reflection, and practice in classrooms.

TCH LRN 415, Student Teaching Internship (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; satisfactorily complete all course work for the degree and teacher certificate; obtain a passing score on the content exam (NES, WEST-E, and/or ACTFL); 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.

MIT 571 Pre-Internship (2 credits) requires successful completion of MIT summer courses, enrollment in concurrent fall coursework and fingerprinting clearance from the Washington State Patrol, the FBI, and the Office of Professional Practices.

MIT 575 Internship (10 credits) requires successful completion of MIT 571 and concurrent coursework, and a passing score on the NES, WEST-E, and/or ACTFL 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 13 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 attempt an approved basic skills exam in reading, writing, and math to be considered for admission. Students may use SAT, ACT, or WEST-B scores to meet the basic skills requirement. If passing scores are not achieved, a bachelor's degree from an accredited institution will fulfill the basic skills requirement. 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 <https://education.wsu.edu/graduate>. For additional information about certification issues contact the Certification Coordinator at sbickel@wsu.edu or visit them online at <https://education.wsu.edu/undergradprograms/teachered/certification/>.

Course of Study for Elementary Education: KINES 536, MIT 501, 502, 505, 507, 508, 511, 530, 531, 532, 533, 534, 535, 571, 575, SPEC ED 520.

Course of Study for Secondary Education: MIT 501, 502, 505, 506, 507, 508, 511, 550, 551, 552, 571, 575, SPEC ED 520, and an additional 9 credits of graded course work.

WSU PULLMAN/SPOKANE MASTERS' DEGREES (non-certification)

Master of Arts

WSU Pullman offers Master of Arts degrees (M.A.) in the following areas: Curriculum and Instruction; Language, Literacy, and Technology 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, Literacy, and Technology 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 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, Mathematics and Science Education, and Special Education (see <https://education.wsu.edu/graduate/> for program descriptions and application procedures).

WSU TRI-CITIES TEACHER CERTIFICATION

<https://education.wsu.edu/certification/>
<http://tricity.wsu.edu/education>

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) 372-7394.

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. The admission deadline is March 1 with admission effective for Fall semester. Candidates must complete formal admission procedures and be admitted to teacher education prior to taking any professional education coursework beyond TCH LRN 301. Applicants must meet the admission criteria listed for WSU Pullman. 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.

Master in Teaching (MIT)

The Master in Teaching is a full-time, field-based program leading to elementary or secondary certification and a master's degree. Students in this program will complete certification courses during the first 15 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 GPA in the last 60 semester hours of graded course work, and submit the MIT application portfolio which is available from the WSU Tri-Cities Education Department. All applicants must attempt an approved basic skills exam in reading, writing and mathematics. Passing SAT, ACT, or WEST-B scores may be used to meet basic skills. If passing scores are not achieved, a bachelor's degree from an accredited institution will fulfill the basic skills requirement. Content proficiency (NES or WEST-E) is also required to be considered for admission. Applications for Elementary Education and Secondary Education must be submitted by November 15 for programs beginning the following summer.

Course of Study for Elementary Education: KINES 536, MIT 501, 502, 505, 507, 508, 511, 530, 531, 532, 533, 534, 535, 571, 575, SPEC ED 520.

Course of Study for Secondary Education: MIT 501, 502, 505, 506, 507, 508, 511, 550, 551, 552, 571, 575, SPEC ED 520, and an additional 9 credits of graded course work.

Master of Education (Ed.M.)

Washington State University Tri-Cities offers the Master of Education (Ed.M.) degree with specializations in Curriculum and Instruction; and Language, Literacy, and Technology. 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 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://education.vancouver.wsu.edu/teacher-certification-programs>

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 attempt an approved basic skills exam in reading, writing, and math to be considered for admission. Passing WEST-B, SAT or ACT scores may be used to meet basic skills. If passing scores are not achieved, a bachelor's degree from an accredited institution will fulfill the basic skills requirement. 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 demonstrate proficiency or request alternative means to meet basic skills requirements in reading, writing and mathematics (SAT, ACT, or WEST-B) and content proficiency (NES, WEST-E, and/or ACTFL) 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: KINES 536, MIT 503, 504, 505, 506, 507, 509, 512, 530, 531, 532, 533, 534, 535, 537, 571, 575, 702, SPEC ED 520, TCH LRN 521.

Course of Study for Secondary Education: MIT 502, 503, 504, 505, 506, 507, 510, 513, 551, 552, 571, 575, 702, SPEC ED 520.

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. Some of our endorsements may 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, Middle Level Mathematics, and Special Education. Endorsements offered only as non-degree: Biology, English/Language Arts, History, Mathematics, 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 Special Education, Middle Level Mathematics, and/or English Language Learners 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.

Schedules of Studies

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

ELEMENTARY EDUCATION TEACHER CERTIFICATE (128 CREDITS)

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.

First Year

First Term	Credits
ENGLISH 101 [WRTG]	3
H D 101 [SSCI]	3
MATH 251	3
MUS 153 [ARTS] or Arts [ARTS]	3
Science Requirement ¹	4

Second Term	Credits
Endorsement Course ²	3
HISTORY 105 [ROOT]	3
HISTORY 110 [HUM] or 111 [HUM]	3
MATH 252 [QUAN]	3
Science Requirement ¹	4

Second Year

First Term	Credits
Endorsement Course ²	3
ENGLISH 201 [WRTG], 301 [WRTG], or 402 [WRTG]	3
POL S 101, ECONS 101, or ECONS 102	3
Science Requirement ¹	4
TCH LRN 301	3

Second Term	Credits
Endorsement Courses ²	6
HISTORY 120 [DIVR]	3
Science Requirement ¹	4
TCH LRN 307	3

Apply for admission to the major Complete Writing Portfolio

Third Year

First Term	Credits
ED PSYCH 401	3
TCH LRN 320 or 321	3
TCH LRN 352	3
TCH LRN 402	1
TCH LRN 445	2
TCH LRN 483 ³	3

Second Term	Credits
Endorsement Course ²	3
SPEC ED 420	3
TCH LRN 306 [M] or 322 [M]	3
TCH LRN 310 [M]	2
TCH LRN 371	3
TCH LRN 405	1

Fourth Year

<i>First Term</i>	<i>Credits</i>
Endorsement Course ²	3
TCH LRN 330	3
TCH LRN 385	3
TCH LRN 390	3
TCH LRN 413	3
TCH LRN 490 [CAPS]	3
<i>Second Term</i>	<i>Credits</i>
TCH LRN 415	16

¹ Science Requirement – choose one of two options: Option 1) SCIENCE 101 [PSCI] and 102 [BSCI], plus two from: ASTRONOM 135 [PSCI] or 138 [PSCI], BIOLOGY 102 [BSCI] or 106 [BSCI], CHEM 101 [PSCI], 103, or 105 [PSCI], PHYSICS 101 [PSCI], or 150 [PSCI], SOE 101 [PSCI], 110 [BSCI], 210 [PSCI], 230 [PSCI], or 280 [PSCI]; Option 2) SOE 101 [PSCI], and BIOLOGY 102 [BSCI] or 106 [BSCI], plus two from: ASTRONOM 135 [PSCI] or 138 [PSCI], CHEM 101 [PSCI], 103, or 105 [PSCI], PHYSICS 101 [PSCI] or 150 [PSCI], SCIENCE 101 [PSCI], SCIENCE 102 [BSCI], or SOE 110 [BSCI], 210 [PSCI], 230 [PSCI] or 280 [PSCI].

² Endorsement Courses: Students seeking a BA in Elementary Education must complete at least 20 semester credits in an endorsable area. Some required coursework may be applied to the endorsement area. See Specific Subject area requirements.

³ TCH LRN 483 must be completed prior to the Fourth Year.

SPECIFIC SUBJECT TEACHER CERTIFICATE

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: 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 education 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. All courses taken for teacher certification must be completed with a C (2.0) or better.

SPECIFIC SUBJECT AREA REQUIREMENTS

Schedules of Studies for specific subjects teaching plans can be found in the subject area.

Agricultural Education: AFS 101, 201, 401; ANIM SCI 101; CROP SCI 360; CROP SCI/HORT 102; ECONS 350 or 352; AG ED 407, 440, 450, 471;

AGTM 201, 402; SOIL SCI 201; plus 9 additional 300-400-level credits in agriculture system-based electives selected with adviser approval; and 3 credits AFS core system elective. A valid first aid card is required for Career and Technical certification.

Biology: BIOLOGY 106, 107, 301, 372, 405, 430, 499; CHEM 105, 106, 345; MBIOS 303, 305, 306; MATH 140 or 171; PHYSICS 101 or 201; PHYSICS 102 or 202; STAT 212, 412, or PSYCH 311; one from HISTORY 381, 382, SOC 430 or HONORS 390; 9 credits approved biological sciences electives.

Chemistry: BIOLOGY 106, 107; CHEM 105, 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; PHYSICS 101 or 201, 102 or 202; SCIENCE 430; STAT 212, 412 or PSYCH 311; plus an additional 7 credits 300-400-level CHEM including CHEM 331 or MBIOS 465, and at least 4 credits from CHEM 333, 335, 347, 398, 425, 426, 495 or 499.

Designated World Languages French: FRENCH 204, 306, 307, 308, or 408; two from FRENCH 120, 320, 420; one from FRENCH 310, 350, 361; FOR LANG 440, 441; approved internship in French or study abroad in Francophone country at the advanced level.

Designated World Languages Spanish: 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, 441.

Earth and Space Science: SOE 101 or 102 (102 preferred), 207, 210, 230, 315, 320, 340, 350, 408; MATH 140 or 171; PHYSICS 101, 102; CHEM 101 or 105, 102 or 106; BIOLOGY 106; SOE 311 or SOIL SCI 368; BIOLOGY 372 or SOE 300; SOE 312; SCIENCE 430; STAT 370 or 412; minimum of 19 credits from ASTRONOM 390, 435, 450, SOE 303, 405, 470, 475, 498.

English Language Arts: ENGLISH 301 or 302; one from ENGLISH 368, 371, 372, 470, 472, 480, 481, 482; one from ENGLISH 332 (with advisor approval), 338 (with advisor approval), 366, 370, 373, 419, 483, 484, 485, 486, 487, 488, 489; HUMANITY 303, 304, 335, 338, 350, 410, 450; ENGLISH 305 or 306; one from ENGLISH 309, 311, 314, 315, 317, 321, 322, 332 (with advisor approval), 338 (with advisor approval), 341, 345, 409; ENGLISH 323, 324, 325, 326; nine credits of ENGLISH or HUMANITY electives, with 3 credits of 100-200-level electives allowed except for transfer students who will be allowed 9 credits of 100-200-level electives.

Family and Consumer Sciences: AG ED 440; two from AMDT 210, 211, 417; BIOLOGY 140; HBM 258; HD 201, 202, 203, 204, 302, 310, 320, 350, 406, 407, 410, 479, 480.

History: ECONS 102; POL S 101; HISTORY 101, 102, 110, 111, 120, 300, 422, 469, 480; one HISTORY from two separate categories: 1) 230 or 231, 2) 270 or 271, 3) 272 or 273, 4) 275; one from HISTORY 411, 413, 414, 415, 416; one from HISTORY 412, 417, 418, 419; 6 credits 300-400-level HISTORY electives which must include one European and one global non-western course.

Mathematics: MATH 171, 172, 216, 220, 273, 300, 301, 320 or 421, 330, 360, 398, 403, 431, 432; PHYSICS 201.

Music Education Endorsements General Requirements: Each endorsement below 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.

Music Education - Choral/Instrumental/General Endorsement: MUS 164, 251, 252, 253, 254, 351, 352, 353, 354, 359, 360, 361, 455, 480, 482, 483, 487, 488, 489, 490, 491, 493, 494, 497. Performance Studies: 14 credits of which 2 credits must be at the 400-level. Include a minimum of 2 credits in choral and 2 credits in performing groups. Performance Groups: 7 credits (minimum of 1 credit during each of seven semesters) to include at least one semester of MUS 435 for instrumentalists and MUS 428 for vocalists.

Music Education - Choral/General Endorsement: MUS 164, 251, 252, 253, 254, 351, 352, 353, 354, 359, 360, 361, 455, 480, 482, 483, 488, 489, 490, 491, 497. Performance Studies: 14 credits of which 2 credits must be at the 400 level. Performance Groups: 7 credits (minimum of 1 credit during each of seven semesters) to include at least 1 credit of MUS 428.

Music Education - Instrumental/General Endorsement: MUS 164, 251, 252, 253, 254, 351, 352, 353, 354, 359, 360, 361, 455, 480, 482, 483, 487, 490, 491, 493, 494, 497. Performance Studies: 14 credits of which 2 credits must be at the 400 level. Performance Groups: 7 credits (minimum of 1 credit during each of seven semesters) to include at least 1 credit of MUS 435.

Physics: ASTRONOM 345; BIOLOGY 106; 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 credits hours includes observing PHYSICS 101 and 102); SCIENCE 430; one from STAT 212, 412 or PSYCH 311; two from PHYSICS 320, 330, 341.

Social Studies: ECONS 102; HISTORY 101, 102, 110, 111, 120, 422, 480 and 12 credits 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 404, 428, 430; one HISTORY from two separate categories: 1) 230 or 231, 2) 270 or 271, 3) 272 or 273, 4) 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; one 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 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: TCH LRN 333, 410, or 510; 339 or 549; 401 or 501; 409 or 509; 411; 413, 414, or 514; one from ENGLISH 256, TCH LRN 330, 404, 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 courses]: TCH LRN 333, 339, 401, 413 or 414, and 409. One from ENGLISH 256, TCH LRN 330, 404, 504 (highly recommended), 512, 516, 537, 574, 580.

English Language Learners [graduate courses]: TCH LRN 501, 509, 510, 514, 549; one from TCH LRN 512, 516, 504, (highly recommended), 537, 574 or 580.

Middle Level Math: MATH 106, 252, 303, 351; TCH LRN 433 or 533, 434 or 534, approved probability and statistics course.

Middle Level Science: BIOLOGY 106, 107, BIOLOGY/TCH LRN 430, CHEM 101, PHYSICS 150, SCIENCE 101, 102, SOE 101.

Reading [graduate courses]: TCH LRN 528, 537, 544, 546, 551, 553, 558.

Special Education [undergraduate courses]: SPEC ED 301, 401, 402, 403, 404, 409, 421, 440, 471, 490 or 499 (4 credits).

Special Education [graduate courses]: SPEC ED 301, 501, 502, 503, 504, 509, 521, 540, 571, 590 or 499 (4 credits).

Certificates

Certificate in Education Technology

The WSU College of Education undergraduate certificate in Education Technology allows students to develop skills and obtain documentation that will help them obtain positions that require knowledge of and experience with education technology. The course work comprises 15 credits that address International Society for Technology in Education (ISTE), TESOL, and disciplinary standards, and it focuses on developing knowledge and skills for working with diverse students and communities. The required course work emphasizes research, theoretical, and practical issues concerning effective uses and affordances of technologies and the implementation of appropriate classroom teaching techniques.

To earn the certificate, students must complete 12 credits of required course work and one elective for a total of 15 credits. Required courses include: TCH LRN 445 or 466; 416, 417, 419; and 1 credit of TCH LRN 499. Approved elective courses include DTC 201, 206, 354, ENGLISH 342 and SPEC ED 495, or as approved by department. The prerequisite for TCH LRN 445 and 466 is admission to the teacher education program or an undergraduate program in the College of Education or status as an in-service teacher/teacher education program graduate. TCH LRN 445 or 466 are prerequisites for all other required TCH LRN courses.

English Language Learners

The Certificate in English Language Learners requires a minimum of 18 hours. The 15 hour core is: TCH_LRN 333, 339, 401, 409, 413/414. 3 hours

of electives are selected from TCH_LRN 404, 519, 516, or courses in other programs that are approved by the ELL Program Coordinator. A grade of C or better must be earned in all classes that apply towards this certificate. Few of the courses required for this certificate have prerequisites, but teaching experience or education classes are recommended.

Description of Courses

CULTURAL STUDIES AND SOCIAL THOUGHT IN EDUCATION

CSSTE

530 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.

531 Cultural Studies in Education 3 Historical and conceptual background of the field of cultural studies.

532 Gender, Power, and Education 3 Interdisciplinary focus on the relationships among gender, power, and education.

533 Race, Identity, and Representation in Education 3 Interdisciplinary research in race, identity and representations in education.

534 Social Theory in Education 3 Social theory and how it applies to intellectual work in education. Recommended preparation: Admission to a doctoral program.

535 Multicultural Education in a Global Society 3 Multicultural and multilingual education from a global perspective; development of multicultural curriculum. (Crosslisted course offered as TCH LRN 580, CSSTE 535, MIT 552). Credit not granted for both TCH LRN 480 and TCH LRN 580.

536 Environment, Culture and Education 3 Role of education in the social, ecological, and political conflicts between culture and environment.

537 Place-Based Education 3 Theory and practice of place-based education with an emphasis on community-based action research and curriculum planning.

538 Youth Cultures in Education 3 Analysis of how youth cultures operate in society and how they are practiced in schools.

539 Curriculum Theory 3 Curriculum theory as the interdisciplinary study of educational experience. (Crosslisted course offered as TCH LRN 577, CSSTE 539).

540 Globalization and Identity in Education 3 Issues relating to the complexities of globalization and identity in education.

544 Discourse Analysis 3 Course Prerequisite: ED RES 562; ED RES 564. Examination of and preparation for discourse analysis research approach.

545 Critical Ethnography in Education 3 Course Prerequisite: ED RES 562; ED RES 564. In-depth focus on issues in qualitative research and ethnography and critical ethnography.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: Admitted to Cultural Studies and Social Thought in Education PhD program. 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.

LANGUAGE, LITERACY, AND TECHNOLOGY

LLT

586 Seminar in Language, Literacy, and Technology 1 May be repeated for credit; cumulative maximum 3 hours. Tools for professional development in the areas of research, teaching, and service. Seminar compliments required courses in the LLT doctoral student program.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: Admitted to the Language, Literacy, and Technology PhD program. 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.

MASTER IN TEACHING

MIT

501 Learning and Development in School and Community Contexts 3 Course Prerequisite: Admission to MIT Program. Theories of learning and student development within school and community contexts.

502 Assessment for Teaching and Learning 3 Course Prerequisite: Admission to MIT Program. Instruction in sound assessment practices for preservice and in-service graduate students.

503 Theories of Learning and Development V 2-3 Course Prerequisite: Admission to MIT Program. Theories of learning and development for K-12 teaching.

504 Social Foundations of Education for Teachers V 2-3 Course Prerequisite: Admission to MIT Program. The social context of American education including historical and contemporary influences; education in the context of history, politics, and society.

505 Classroom Management Seminar 3 Course Prerequisite: Admission to MIT Program. Contemporary issues in management of elementary, middle school, and secondary classrooms; issues of abuse.

- 506 Integrating Technology into Classroom Teaching** V 2-3 Course Prerequisite: Admission to MIT Program. Exploration of technology use in schools, production techniques, instructional methods, and integration of technology into grade-level curriculum based on current technology standards.
- 507 Teacher Inquiry and Praxis** V 2-3 Course Prerequisite: Admission to MIT Program. Exploration and development of teacher research strategies; concepts for producing knowledge and empowerment enabling teachers to challenge social norms that perpetuate inequality and marginalization.
- 508 Curriculum and Instruction Methods** 3 Course Prerequisite: Admission to MIT Program. Development of curriculum and instructional methods for teaching in diverse K-12 classrooms.
- 509 Instruction and Assessment for Elementary Teachers** 3 Course Prerequisite: Admission to MIT Program. Knowledge, skills, and dispositions that support continuous improvement in teaching and learning.
- 510 Instruction for Secondary Teachers** 3 Course Prerequisite: Admission to MIT Program. Methods of improvement in education, with emphasis on teacher collaboration, classroom instruction, and school reform.
- 511 Methods for Teaching English Language Learners, K-12** 2 Course Prerequisite: Admission to MIT Program. Research-based ESL strategies, methods, and practical knowledge that pre-service teachers can apply in a variety of instructional contexts to insure the success of minority students from diverse linguistic and cultural backgrounds.
- 512 ESL Methods for General Educators (K-8)** 2 Course Prerequisite: Admission to MIT Program. Research-based ESL strategies and methods for pre-service and experienced teachers.
- 513 ESL Methods and Materials for Secondary Teachers** 2 Course Prerequisite: Admission to MIT Program. Research-based ESL strategies and methods for pre-service and secondary content area teachers.
- 530 Elementary School Social Studies Methods** 3 Course Prerequisite: Admission to MIT Program. 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.
- 531 Literacy Development I** 3 Course Prerequisite: Admission to MIT Program. 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.
- 532 Literacy Development II** 3 Course Prerequisite: Admission to MIT Program. Review of current research and approaches to instruction in the development of literacy in elementary and middle grades.
- 533 Elementary School Mathematics Methods** 3 Course Prerequisite: Admission to MIT Program. Introduction to research, theory, and methods of teaching K-8 mathematics; emphasis on integrating theory and practice.
- 534 Elementary School Science Methods** 3 Course Prerequisite: Admission to MIT Program. Theoretical base to design and implement appropriate standards-based elementary science instruction.
- 535 Integrating Fine Arts into K-8 Curriculum** 2 Course Prerequisite: Admission to MIT Program. Integrating Fine Arts (art, music, dance, drama) into K-8 curriculum; curriculum design and methods.
- 537 Problem Solving in Elementary Mathematics** 1 (0-2) Course Prerequisite: Admission to MIT Program. Supplemental practicum course for MIT 533 that affords pre-service elementary teachers opportunity to discuss mathematical problem solving in great detail: theoretically, by looking at samples of children's mathematical solutions, and engaging in mathematical problem solving.
- 550 Seminar in Middle Level Education** 3 Course Prerequisite: Admission to MIT Program. Research on organizational structures, curriculum, instructional approaches, and materials for contemporary middle grade schools.
- 551 Literacy within the Disciplines** 3 Explores literacy research and practices that enhance the learning of various disciplines taught in K-12 settings. (Crosslisted course offered as TCH LRN 528, MIT 551). Credit not allowed for students who have earned credit for TCH LRN 428.
- 552 Multicultural Education in a Global Society** 3 Multicultural and multilingual education from a global perspective; development of multicultural curriculum. (Crosslisted course offered as TCH LRN 580, CSSTE 535, MIT 552). Credit not granted for both TCH LRN 480 and TCH LRN 580.
- 571 Pre-internship and Seminar** 2 (1-3) May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Admission to MIT Program. Instructional practice in diverse classroom settings and reflection on that practice. S, F grading.
- 575 Internship and Seminar** 10 (1-27) Course Prerequisite: MIT 571; admission to MIT Program. Instructional practice in classroom settings, reflection on practice; completion of Washington state licensure requirements for teacher certification. 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.

MATHEMATICS / SCIENCE EDUCATION

ED MTHSC

598 Research Seminar in Mathematics and Science Education 1 May be repeated for credit; cumulative maximum 6 hours. Through targeted readings and discussion, students will develop knowledge base proficiencies related to areas of mathematics and science education.

800 Doctoral Research, Dissertation, and/or Examination V 1-18 May be repeated for credit. Course Prerequisite: Admitted to the Mathematics/Science Education PhD program. 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.

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 concurrent enrollment, or SPEC ED 420 or concurrent enrollment. 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 or concurrent enrollment. 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 concurrent enrollment, or SPEC ED 420 or concurrent enrollment. 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 concurrent enrollment, or SPEC ED 420 or concurrent enrollment. 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 concurrent enrollment, or SPEC ED 420 or concurrent enrollment. 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 or concurrent enrollment. 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.
- 471 Effective Assessment and Instruction in Reading for Diverse Learners 3** Course Prerequisite: SPEC ED 301 or concurrent enrollment, or SPEC ED 420 or concurrent enrollment. Methods and approaches to reading assessment and designing, implementing evidence-based reading interventions. Credit not granted for both SPEC ED 471 and 571.
- 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.
- 495 Universal Design for Educators 3** Factors associated with developing, implementing, and assessing curricular materials based on Universal 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.
- 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.
- 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 Effective Assessment and Instruction in Reading for Diverse Learners 3** Methods and approaches to reading assessment and designing, implementing evidence-based reading interventions. Credit not granted for both SPEC ED 471 and 571.
- 589 Special Education Personnel Preparation and Professional Development 3** Current research, issues, trends in special education personnel preparation and professional development.
- 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; admitted to the major in education or completed certificate. S, F grading.
- 591 Research in High-Incidence Disabilities 3** Current research, issues, and trends in high-incidence disabilities. 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, Equity, and Inclusion in Special Education 3** Diversity, equity, and inclusion 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 10 hours. Course Prerequisite: Admitted to the Teaching and Learning PhD programs. 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.
- 700 Master's Research, Thesis, and/or Examination** V 1-18 May be repeated for credit. Course Prerequisite: Admission to Special Education graduate program. 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: Admission to Special Education graduate 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: Admitted to the Special Education PhD program. 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** 3 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: TCH LRN 301 or concurrent enrollment; for candidates admitted to teacher education (Elementary Education). 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 (1-6) 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 linguistic and cultural backgrounds in educational settings. Credit not granted for both TCH LRN 401 and 501.
- 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.
- 404 Linguistics for Educators** 3 Use of linguistics to better understand second language learning and teaching and the physical aspects of acquiring a language. Recommended preparation: TCH LRN 333, and /or TCH LRN 339, or admission to the College of Education.
- 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.
- 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 Internship** V 6 (1-15) to 16 (1-45) 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.
- 416 Computer-assisted Language Learning** 3 Course Prerequisite: TCH LRN 333. Principles of language learning with technology and application to problems of practice.
- 417 Coding for Teachers** 3 Course Prerequisite: TCH LRN 445 or 466. Elements of coding and programming for elementary and secondary classrooms. Credit not granted for both TCH LRN 417 and 517. Recommended preparation: Introduction to education technology course.
- 419 Instructional Media Production** 3 Course Prerequisite: TCH LRN 333. Principles of media design for diverse learners and application to problems of practice.
- 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).
- 428 Introduction to Literacy within the Disciplines** 3 Course Prerequisite: For candidates admitted to teacher education (elementary education or secondary education). Enrollment not allowed if credit already earned for TCH LRN 528. Explores literacy research and practices that enhance the learning of various disciplines taught in K-12 settings. Credit not allowed for students who have earned credit for TCH LRN 528.
- 430 Methods of Teaching Secondary Science I** 3 Course Prerequisite: Junior standing. Application of learning and theory and philosophy and structure of science in teaching middle and secondary school science courses. (Crosslisted course offered as BIOLOGY 430, MBIOS 480, TCH LRN 430).
- 431 Methods of Teaching Secondary Science II** 3 Course Prerequisite: BIOLOGY 430, MBIOS 480, or TCH LRN 430; junior standing. Integration of assessment, curricular, and technological tools into instruction that aligns with learning theory and the philosophy/structure of science. (Crosslisted course offered as BIOLOGY 431, MBIOS 481, TCH LRN 431).
- 433 Middle Level Mathematics Methods** 3 Middle-school philosophy; understanding of effective standards and research-based methods. Credit not granted for both TCH LRN 433 and 533.
- 434 Conceptualization of Proportional Thinking** 3 Investigation of the development of K-14 students' understanding of proportional reasoning. Credit not granted for both TCH LRN 434 and 534.
- 441 Psychology of Reading for K-12** 3 Enrollment not allowed if credit already earned for TCH LRN 551. Psychological, perceptual, motivational, developmental and physiological aspects of reading. Credit not allowed for students who have earned credit for TCH LRN 551.
- 443 Introduction to Assessment and Instruction for Reading: K-12** 4 Course Prerequisite: TCH LRN 321. Enrollment not allowed if credit already earned for TCH LRN 553. Evaluation techniques and instructional practices for impacting the reading achievement of K-12 students. Credit not allowed for students who have earned credit for TCH LRN 553.
- 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.
- 446 Developmental Approaches to Writing** 3 Enrollment not allowed if credit already earned for TCH LRN 546. Theory and research relevant to instructional approaches and practices for teaching writing in K-12 schools. Credit not allowed for students who have earned credit for TCH LRN 546.
- 448 Teaching Reading Comprehension** 3 Enrollment not allowed if credit already earned for TCH LRN 558. Key theoretical concepts and their implications for improved comprehension instruction, for K-12. Credit not allowed for students who have earned credit for TCH LRN 558.
- 463 Teaching Concepts of Probability and Statistics** 3 Course Prerequisite: MATH 252. Development of mathematical concepts and related teaching strategies for probability and statistics, with an emphasis on middle school topics. Credit not granted for both TCH LRN 463 and 563.
- 464 Curriculum, Instruction and Content Literacy Methods** 3 Course Prerequisite: For candidates admitted to teacher education (secondary education). Development of curriculum, instruction and content literacy materials and methods for teaching in the secondary school classroom.
- 465 Teaching English Language Learners for Secondary Teachers** 3 Course Prerequisite: For candidates admitted to teacher education (secondary education). Practical knowledge for teaching ELL students in a variety of instructional contexts.
- 466 Secondary Methods of Educational Technology** 2 (1-2) Course Prerequisite: For candidates admitted to teacher education (secondary education). Integration of technologies for teaching and learning within the 9-12 classrooms; hands-on development of technology enhanced activities and lessons.
- 467 [M] Adolescence, Community, and School** 3 Course Prerequisite: TCH LRN 317; TCH LRN 464; TCH LRN 465; for candidates admitted to teacher education (secondary education). Understanding the socio-cultural dynamics of adolescence and youth cultures and the roles they play in secondary schools.
- 469 Pre-Internship for Secondary Teachers** V 2 (0-6) to 3 (0-9) Course Prerequisite: TCH LRN 317. Field experience with classroom observation and teaching prior to student teaching; weekly seminar included. S, F grading.
- 470 Special Education, Transition, and Classroom Management for Secondary General Education Teachers** 3 Course Prerequisite: TCH LRN 317; TCH LRN 464; TCH LRN 465; for candidates admitted to teacher education (secondary education). Overview of special education topics, transition practices, and classroom management techniques for general education classrooms.
- 480 Multicultural Education in a Global Society** 3 Multicultural and multilingual education from a global perspective; development of multicultural curriculum. (Crosslisted course offered as TCH LRN 580, CSSTE 535, MIT 552). 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 [CAPS] Pre-Internship for Elementary Teachers** 3 (0-9) Course Prerequisite: TCH LRN 401 or 405; senior standing. 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 Practicum in Bilingual/ESL Education** 3 (1-6) May be repeated for credit; cumulative maximum 6 hours. Work with students from diverse linguistic and cultural backgrounds in educational settings. Credit not granted for both TCH LRN 401 and 501.
- 502 Assessment for Teaching and Learning** V 2-3 Instruction in sound assessment practices for preservice and inservice graduate students.
- 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.
- 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.
- 511 Theoretical Foundations of Education Research** 3 Identification and use of theoretical components to guide and explain education research.
- 512 Language and Cultural Factors in Mathematics** 3 Research and instructional strategies related to linguistic and cultural influences on learning math.
- 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 Coding for Teachers** 3 Elements of coding and programming for elementary and secondary classrooms. Credit not granted for both TCH LRN 417 and 517. Recommended preparation: Introduction to education technology course.
- 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.
- 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. (Crosslisted course offered as TCH LRN 528, MIT 551). Credit not allowed for students who have earned credit for TCH LRN 428.
- 530 Innovations in Reading** V 2-3
- 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 Methods** 3 Middle-school philosophy; understanding of effective standards and research-based methods. Credit not granted for both TCH LRN 433 and 533.
- 534 Conceptualization of Proportional Thinking** 3 Investigation of the development of K-14 students' understanding of proportional reasoning. Credit not granted for both TCH LRN 434 and 534.
- 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.
- 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 Teaching Children's and Young Adult Literature 3** Trends, issues, and research in children's and young adult literature.
- 546 Teaching Writing 3** Enrollment not allowed if credit already earned for TCH LRN 446. Theory and research relevant to instructional approaches and practices for teaching writing in K-12 schools. Credit not allowed for students who have earned credit for TCH LRN 446.
- 547 Teaching Folk Literature to Children and Adolescents 3** Folk literature as a genre in child 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** Course Prerequisite: Admission to a graduate program. Research on second language teaching and learning in literacy education with a focus on English language learners in US schools.
- 551 Psychology of Reading 3** Enrollment not allowed if credit already earned for TCH LRN 441. Psychological, perceptual, motivational, developmental and physiological aspects of reading. Credit not allowed for students who have earned credit for TCH LRN 441.
- 553 Assessment and Instruction for Reading 4 (3-3)** Enrollment not allowed if credit already earned for TCH LRN 443. Evaluation techniques and instructional practices for impacting the reading achievement of K-12 students. Credit not allowed for students who have earned credit for TCH LRN 443.
- 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.
- 557 Research in Reading 3** Exploration of qualitative and quantitative reading research covering topics of current and historical importance.
- 558 Improving Reading Comprehension (K-12) 3** Enrollment not allowed if credit already earned for TCH LRN 448. Key theoretical concepts and their implications for improved comprehension instruction, for K-12. Credit not allowed for students who have earned credit for TCH LRN 448.
- 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** Research on curriculum and instruction issues in elementary school mathematics.
- 562 Foundations of Literacy: Theory and Research 3** Interdisciplinary inquiry into the various foundations of literacy.
- 563 Teaching Concepts of Probability and Statistics 3** Development of mathematical concepts and related teaching strategies for probability and statistics, with an emphasis on middle school topics. Credit not granted for both TCH LRN 463 and 563.
- 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 Language and Literacy 3** Social and cultural theories of language and literacy. Recommended preparation: Admission to a doctoral program.
- 568 Psychological Foundations of Language and Literacy 3** Psychological foundations of language and Literacy. Recommended preparation: Admission to a doctoral program.
- 569 Critical Analysis of Children's and Young Adult Literature 3** Course Prerequisite: Admission to a graduate program. Multicultural analysis of children's and adolescent literature and its pedagogical and sociopolitical implications and possibilities.
- 570 Theory and Research in Digital Literacies 3** Ideas of literacy and effects of technology on literacy and policy, particularly those issues addressing diverse learners.
- 571 Research in STEM Education 3** Contemporary issues in STEM education research and practice.
- 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** Implications of cultural and individual diversity for understanding western scientific and mathematical thought; an activity-based, educational perspective.
- 577 Curriculum Theory 3** Curriculum theory as the interdisciplinary study of educational experience. (Crosslisted course offered as TCH LRN 577, CSSTE 539).
- 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. (Crosslisted course offered as TCH LRN 580, CSSTE 535, MIT 552). 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.
- 582 Scholarly Writing 3** Interdisciplinary; supports students to write publication-quality manuscripts.
- 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.
- 588 Action Research: Teachers as Research 3** Theoretical concepts, research, issues, models, and strategies for implementation of action research.
- 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 V 2-3** 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.

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.

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. Course Prerequisite: Admitted to one of the following PhD programs: Cultural Studies and Social Thought in Education, Math and Science Education, or Language, Literacy, and Technology. 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 Veterinary Medicine

vetmed.wsu.edu/academic-programs
Bustad 110
509-335-1532

The College of Veterinary Medicine offers courses of study leading to the degrees of Doctor of Veterinary Medicine (DVM), Master of Science, and Doctor of Philosophy. Additional information, including requirements for admission, is contained in the general information section of this catalog.

The professional DVM program offered by the College of Veterinary Medicine at Washington State University is accredited by the Council on Education of 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 three to four years of undergraduate education. 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 complete at least 64 semester credits of acceptable prerequisite credits from an accredited college or university. The 64 semesters should include: 36 credits of science and math prerequisites, including general biology, inorganic and organic chemistry, biochemistry, physics, mathematics, genetics, and statistics; and 27 credits of University Common Requirements (UCORE): 21 credits of social science, arts and humanities, history, diversity studies, language, etc.; and 6 credits of English composition and communication (written or verbal). Non-academic criteria for admission include clinical, animal, employment, volunteer, and research experience; honors, awards, and scholarships; extracurricular activities, community service, letters of recommendation, personal statements, and may include a personal interview.

Courses designed to fit the academic requirements are offered by Washington State University, and the number of students admitted to undergraduate courses is not limited. Because the number of applicants for admission to the DVM program exceeds the number that can be admitted, no assurance can be given that all applicants who successfully complete the undergraduate 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. Many successful applicants major in animal science, biology, chemistry, microbiology, neuroscience, wildlife ecology, 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 a Veterinary Medical College Application Service (VMCAS) application (<http://www.aavmc.org/Students-Applicants-and-Advisors/Veterinary-Medical-College-Application-Service.aspx>) designating WSU as a school of choice and answering the supplemental questions. Please see <http://dvm.vetmed.wsu.edu> for further application information. The Admissions Committee selects those students to be admitted to the first year of the professional DVM program. Applicants will be notified of their acceptance on or before April 15th. Unsuccessful applicants who wish to be considered the next year must submit new applications.

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

- To qualified applicants who are certified and financed as residents of Washington, Idaho, Montana, or Utah.
- To qualified applicants certified and financed by the Western Interstate Commission for Higher Education (WICHE) contract states
- To all other qualified applicants

PRE-ADMITTANCE PROGRAMS

1. A highly selective program for admission of academically qualified students to the DVM program at Washington State University College of Veterinary Medicine has been established with the WSU Honors College. This program conditionally admits successful applicants directly to the program upon completion of one year of undergraduate work at WSU. This is a pre-admit 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 pre-professional education and the four-year professional DVM program. The first three years of this program are a combination of Honors College courses and regular University classes which fulfill the pre-veterinary requirements plus the completion of an honors thesis. The last four years are the traditional Doctor of Veterinary Medicine program. Interested students should identify themselves to the Honors College as soon as they decide to enter WSU, because the number of positions is limited.
2. 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.

DOCTOR OF VETERINARY MEDICINE (DVM) CURRICULUM (153 CREDITS)

The professional curriculum for the Doctor of Veterinary Medicine degree is outlined below. A total of 154 semester hours are required for graduation. All courses required in the professional program are 500-600-level professional courses.

Fourth Year: The fourth year begins immediately after the end of the spring semester of the third year (May) and continues for 12 consecutive months. Fourth-year professional students are required to enroll in course work for a minimum of 44 credits in 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.

First Year

<i>First Term</i>	<i>Credits</i>
VET MED 510	4
VET MED 511	5
VET MED 513	4
VET MED 568	2
VET MED 586	1

<i>Second Term</i>	<i>Credits</i>
VET MED 512	4
VET MED 520	5
VET MED 521	3
VET MED 534	3
VET MED 545	3
VET MED 580	1

Second Year

<i>First Term</i>	<i>Credits</i>
VET MED 522	3
VET MED 535	3
VET MED 536	4
VET MED 546	6
VET MED 589	3

<i>Second Term</i>	<i>Credits</i>
VET MED 523	3
VET MED 537	4
VET MED 543	2
VET MED 561	2
VET MED 576	1
VET MED 585	2
VET MED 587	2
VET MED 588	3

Third Year

<i>First Term</i>	<i>Credits</i>
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

<i>Second Term</i>	<i>Credits</i>
VET MED 500	1
VET MED 552	3
VET MED 570	3
VET MED 571	3
VET MED 572	2
VET MED 575	1
VET MED 590	1
VET MED 596	1
VET MED 598	1

Fourth Year

<i>First Term</i>	<i>Credits</i>
Equine Elective ¹	2
Medicine Elective ²	4
Supplemental Electives ³	14
Surgery Elective ⁴	2
VET MED 600	1
VET MED 605	2
VET MED 606	2
VET MED 607	2

<i>Second Term</i>	<i>Credits</i>
VET MED 650	3
VET MED 656	2
VET MED 674	1
VET MED 675	2
VET MED 690	2
VET MED 691	4
VET MED 699	1

³ Courses to be chosen in consultation with advisor. Approved courses include 600-level VET MED courses. Courses may not be used to fulfill more than one requirement unless they are repeated for additional credit.
⁴ VET MED 608, or advisor-approved 698 course.

Description of Courses

VETERINARY MEDICINE

VET MED

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.

499 Special problems V 1-4 May be repeated for credit. Course Prerequisite: Veterinary Medicine student. S, M, F grading.

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.

503 Case-based Learning in Veterinary Pathology V 1 (0-3) to 3 (0-9) Course Prerequisite: Veterinary Medicine student. Principles of pathophysiology, infectious disease, laboratory diagnosis, zoonoses, and clinical diagnostic reasoning learned through the development of multistep teaching cases. S, M, F grading.

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.

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 4 (3-3) 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 Physiology I 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 2 (1-3) Course Prerequisite: VET MED 512. Applied anatomy of large animals including surgical anatomy. S, M, F grading.

520 Veterinary Physiology II 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. 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 Pharmacology and Toxicology 3 Course Prerequisite: VET MED 522. Pharmacology and toxicology of the systems of domestic animals. Continuation of VET MED 522. S, M, F grading.

524 Clinical Veterinary Pharmacology 3 Course Prerequisite: VET MED 523. Clinical pharmacology of domestic animal species. S, M, F grading.

¹ Select one from VET MED 628 or 629.

² Select two from VET MED 609, 620, or 621.

- 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. Focus on the medical relevance of behaviors that can cause diseases, and diseases that can lead to behavior problems in domestic and exotic animals. 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 General Pathology** 3 (2-3) Structural and functional alterations in disease; elementary oncology. Cooperative: Open to UI degree-seeking students. S, M, F grading.
- 546 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 Surgical Diseases and Traumatology** 3 Course Prerequisite: Veterinary Medicine student. Diagnosis and medical management of small animal patients with surgical conditions, including determining if/when surgery is indicated. S, M, F grading.
- 554 Small Animal Anesthesia and Surgery** 1 (0-3) Course Prerequisite: VET MED 586; VET MED 587; concurrent enrollment in VET MED 553. Work professionally as a team to anesthetize, spay, and provide peri-operative care for surgical patients. 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 Integrative Veterinary Medicine** 1 Presentation of integrative veterinary medicine theories, modalities, and applications. 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 Orientation** 2 (1-3) Course Prerequisite: Veterinary Medicine student. Introduction to clinical restraint procedures, physical exam and treatment procedures, and clinical behavior and management. 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** 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.
- 575 Clinical Techniques in Theriogenology** 1 (0-3) Course Prerequisite: Concurrent enrollment in VET MED 571. Canine, bovine, equine, bull breeding, stallion breeding, and obstetrics. S, M, F grading.
- 576 Transboundary and Emerging Diseases of Animals** 1 Course Prerequisite: Veterinary Medicine student. Fundamentals of emerging and transboundary animal diseases and the response to them for veterinary students. S, M, F grading.
- 577 Herd Production Medicine** 2 Course Prerequisite: Veterinary Medicine student. Fundamentals of developing and providing business-to-business (B2B) professional services to commercial scale livestock operations. 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** 1 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.
- 594 Applied Clinical Simulation 1** (0-2) May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: VET MED 587 or concurrent enrollment; Veterinary Medicine student. Clinical simulation applied to anesthesia practice. 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 Orthopedic Surgery and Sports Medicine - Small Animal V** 1 (0-3) to 14 (0-42) Course Prerequisite: Veterinary Medicine student. Clinical rotation emphasizing the diagnostics and treatment of orthopedic and sports medicine-related diseases in small animals. 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 Orthopedic Surgery and Sports Medicine - Small Animal Supplemental Core V** 1-4 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Veterinary Medicine student. Supplemental core for clinical rotation emphasizing the diagnostics and treatment of orthopedic and sports medicine-related diseases in small animals. 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 Advanced Lab** V 1-4 Course Prerequisite: Veterinary Medicine student. Clinical experience with the Equine Medicine and 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.
- 660 Shelter Medicine and Surgery - Special Topics** V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Veterinary Medicine student. Clinical experiences in medicine and surgery in a shelter setting. 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.
- 695 Integrative Veterinary Medicine** V 1 (0-3) to 4 (0-12) May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: Veterinary Medicine student. IVM rotation course; introduction to veterinary physical rehabilitation, acupuncture, and pain management. 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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ADBF 1020
509-335-0738

Chair/Professor, R. Mealey; Professors, G. Barrington, W. Bayly, B. Campbell, M. Court, R. DeBowes, W. Dernell, R. Farnsworth, B. Fransson, S. Martinez, S. Matthew, J. Mattoon, K. Mealey, O. L. Nelson, C. Ragle, D. Sellon, A. Tibary, K. J. Wardrop; Associate Professors, A. Allen, J. Cary, A. Chen-Allen, K. Farnsworth, J. Fidel, J. Gold, J. Haines, R. Kasimanickam, L. Martin, C. McComel, M. Mickas, T. Owen, G. Roberts, M. Sanz, R. Sellon, C. DeSouza, N. Villarino, J. Wenz, T. Wilkerson; Assistant Professors, Y. Ambrosini, R. Baumwart, J. Bell, J. Bunch, M. Ciccarelli, E. Davidow, N. Finch, P. Gilbert, S. Guess, A. Hanna, S. Hoehne, K. Kuehl, F. Leal Yepes, M. Logsdon, L. Malayasi, V. Murthy, T. Perez, J. Sexton, M. Suarez; Lecturers, C. Cordon, R. Elfers.

The PhD and MS programs in Clinical and Translational Science provide education and training in biomedical science with an emphasis on Veterinary Medicine and applications to clinical medicine. The research environment includes faculty with both clinical and basic research interests and provides a unique environment for application of fundamental biomedical principles to solving important clinical problems. The Clinical Sciences graduate group offers MS and PhD programs focused on training scientists to have broad expertise in appropriate concepts, theories, and emerging methods to effectively conduct research across the disciplines represented in Veterinary

Clinical Sciences. To fully understand “health” and appropriate interventions at population and individual levels through studies ranging from the molecular (genetics, pharmacogenetics, molecular epidemiology, bacterial genome characterization), cellular (mechanisms of tumor cell resistances), systems (orthopedics, theriogenology), mechanism of disease (oncology, neurology), populations (epidemiology, gene flow within populations, disease rates), and evaluation of disease interventions (clinical trials, observational studies). The MS program may also be paired with advanced clinical training where the student participates in post-DVM clinical training with the goal of specialty board certification enhanced by training in clinical research methods.

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 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: Admitted to the Veterinary Science PhD program. 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

vmp.vetmed.wsu.edu
Bustad 402
509-335-6030

Department Chair and Professor, K. A. Brayton; Professors, T. Bankhead, S. Bose, W. C. Davis, K. Huyvaert, A. Nicola, K. Snekvik, M. Wild; Associate Professors, J. Abbott, C. Burbick, C. Eckstrand, G. J. Haldorson, A. P. Pessier, K. Taylor; Assistant Professors, L. Broughton-Neiswanger, J. Park, D. Shaw, L. White L. Williams; Adjunct Faculty, E. Altermatt, H. Alzan, T. Baldwin, D. Bimczok, M. Burdette, D. R. Call, F. Cassirer, J. Celli, B. Charles, M. Cinar, M. Dark, C. Davies, L. Fineman, K. Frandle, L. M. Fry, M. Garner, A. Gilbertsen, B. Gowen, M. Hardy, B. Heiser, T. H. Kawula, D. Knowles, S. Keiser, L. Knodler, H. Li, A. C. Nguyen, R. O'Connor, A. Omsland, G. H. Palmer, S. Pence, R. Plowright, C. Quist, K. Rood, D. Schneider, E. Schwartz, G. A. Scoles, D. Shah, K. Sheehy, D. M. Stone, C. Suarez, E. B. Tarbet, N. Taus, S. Taylor, S. J. Thomas, E. Trueblood, E. Trullinger, M. Ueti, V. Vadyvaloo, P. Vandyke, A. Van Wettere, P. Vellutini, A. Viall, J. Vittori, S. White, N. Wolley; Professors Emeriti, T.E. Besser, W. Brown, W. J. Foreyt, S. Hines, D. Jasmer, K. Potter, S. Srikumaran.

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.

541 Advanced Diagnostic Microbiology 1 (0-3) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Admission to Veterinary Science Immunology and Infectious Diseases Ph.D. program. Microbiology laboratory for performing and interpreting virologic, serologic, and related tests for the diagnosis of animal diseases.

563 Deconstruction of Research 3 Course Prerequisite: Graduate standing in a WSU biomedical based graduate program. Nature and development of scientific investigation through oral and written avenues, and methods of critical analyses applied to questions of biomedical interest. (Crosslisted course offered as NEUROSCI 563, GLANHLTH 563, MBIOS 563, VET MICR 563, VET PATH 563, VET PH 563).

564 Topics in Biomedical Experimentation V 1-3 May be repeated for credit; cumulative maximum 6 hours. Examination of the philosophy of experimental design and practical application and analysis of various experimental approaches in biomedical research. Recommended preparation: graduate standing in a WSU biomedical-based program, and an advanced undergraduate or graduate statistics course. (Crosslisted course offered as NEUROSCI 564, GLANHLTH 564, MBIOS 564, PHIL 564, VET MICR 564, VET PATH 564, VET PH 564).

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. Course Prerequisite: Admission to Veterinary Science Immunology and Infectious Diseases Ph.D. program. Seminar in diagnostic veterinary microbiology.

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: Admitted to the Veterinary Science PhD program. 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

542 Advanced Diagnostic Pathology 1 (0-3) May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: Enrollment in Immunology and Infectious Diseases Ph.D. program. Necropsy laboratory for techniques and skills in performing and interpreting necropsy material. S, F grading.

544 Immunopathology 4 Course Prerequisite: VET PATH 545; enrollment in Immunology and Infectious Disease Ph.D. program. The role of immune processes in the pathogenesis of disease.

545 Mechanisms of Disease 4 Biochemical and immunological mechanisms involved in disease processes from the comparative standpoint.

548 Introduction to Research 1 Introduction to research.

563 Deconstruction of Research 3 Course Prerequisite: Graduate standing in a WSU biomedical based graduate program. Nature and development of scientific investigation through oral and written avenues, and methods of critical analyses applied to questions of biomedical interest. (Crosslisted course offered as NEUROSCI 563, GLANHLTH 563, MBIOS 563, VET MICR 563, VET PATH 563, VET PH 563).

564 Topics in Biomedical Experimentation V 1-3 May be repeated for credit; cumulative maximum 6 hours. Examination of the philosophy of experimental design and practical application and analysis of various experimental approaches in biomedical research. Recommended preparation: graduate standing in a WSU biomedical-based program, and an advanced undergraduate or graduate statistics course. (Crosslisted course offered as NEUROSCI 564, GLANHLTH 564, MBIOS 564, PHIL 564, VET MICR 564, VET PATH 564, VET PH 564).

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 2 May be repeated for credit. Gross and histopathologic description, diagnosis, and interpretation.

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: Admitted to the Veterinary Science PhD program. 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 Women's, Gender, and Sexuality Studies

wgss.wsu.edu
Avery Hall 202
509-335-2581

Director and Professor, P. Thoma (English); Professors, P. Boag (History, Vancouver), D. Campbell (English), R. Christopher (English, Vancouver), M. Diversi (Human Development, Vancouver), P. Glazebrook (Philosophy), L. Heidenreich (History), M. Johnson (Sociology), J. Kmec (Sociology), P. Kwon (Psychology), D. Lee (English), L. Mercier (History, Vancouver), P. Narayanan (English, Vancouver), S. Peabody (History, Vancouver), D. Potts (English), J. Sherman (Sociology), C. Siegel (English, Vancouver), E. Soliday (Human Development, Vancouver), N. Shahani (English); Associate Professors, A. Boyd (English), J. Cassaniti (Anthropology), L. Gordillo, (History, Vancouver), J. Lupinacci (Education), M.-A. Neuilly (Criminal Justice and Criminology), A. Salazar (Human Development, Vancouver), E. Schwartz (Mathematics and Statistics and School of Biological Sciences); Assistant Professors, T. Burkhard (Human Development, Vancouver), C. Dickey (Music), K. Leupp (Sociology, Vancouver), B. Wilson (Human Development); Clinical Associate Professor, B. Duell (Psychology); Scholarly Associate Professors, L. Russo (English), K. Robertson (English, Vancouver), M. Sciacchitano (English); Teaching Associate Professor, M. Parkhurst (Music); Scholarly Assistant Professor, B. Hewlett (Anthropology, Vancouver); Instructor, A. Spradlin (Psychology); Lecturer, N. Thrush (Fine Arts, Vancouver).

Women's, Gender, and Sexuality Studies (WGSS) is an interdisciplinary field of research and teaching that places gender and sexuality at the center of inquiry. In WGSS courses students work together to explore the ways that race, ethnicity, sexuality, social class, nationality, age, and ability intersect

to shape gendered experience, injustice, and social change. Using an intersectional lens, students gain expertise in analyzing gendered social roles and the ways in which they affect personal lives, artistic expression, work, relationships, institutional structures, the production of knowledge, and national and international political and economic relations. WGSS offers a Bachelor of Arts in Women's, Gender, and Sexuality Studies, and minors in Women's Studies and Queer Studies. The program is administered through the Department of English. Students interested in declaring a major or minor should contact the program director, Pamela Thoma, professor of English.

Student Learning Outcomes

- Recognizes intersections of race, class, gender, sexuality, and ability in the social construction and perpetuation of structural inequities and injustice.
- Understands intersectionality as a critical framework for analyzing structural inequalities and for recognizing the complexity of social identity.
- Analyzes social norms and assumptions to envision alternative, socially just relations, practices, and policies.
- Asks critical questions to understand problems and formulate viable research plan.
- Accesses information tools to identify relevant context, scholarship, and support for developing arguments and strategies for social justice.
- Examines the influence of historical context on the formation of local, national, and global cultural narratives and political narratives struggles.
- Identifies the key texts of feminist and queer studies and applies key concepts of the interdisciplinary.
- Demonstrates critical oral and written communication skills in the use of scholarly sources in women's, gender, and sexuality studies.

For more information, please see degree options at <https://wgss.wsu.edu/degree-options/>.

Schedules of Studies

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

WOMEN'S, GENDER, AND SEXUALITY STUDIES (120 CREDITS)

A student may be admitted to the Women's, Gender, and Sexuality Studies major upon making their intention known to the program. The major in Women's, Gender, and Sexuality Studies requires a minimum of 36 credits, of which 15 credits are required in the major, 12 credits are required in Field Electives, and 9 credits are required in Interdisciplinary Electives. 15 credits of electives must be at the 300-400 level.

First Year

First Term	Credits
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Social Sciences [SSCI]	3
WGSS 101 [DIVR] or WGSS 120 [DIVR]	3

Second Term	Credits
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4
Quantitative Reasoning [QUAN]	3 or 4
WGSS Field Elective ^{2,3}	3
Electives ⁴	3

Second Year

First Term	Credits
Arts [ARTS]	3
Communication [COMM] or Written Communication [WRTG]	3
Foreign Language, if needed, or Electives ^{5,4}	3 or 4
Humanities [HUM]	3
WGSS Field Elective ^{2,3}	3

Second Term	Credits
Arts [ARTS], Humanities [HUM], or Social Sciences [SSCI]	3
Foreign Language, if needed, or Electives ^{5,4}	3 or 4
WGSS 406, WGSS 332/ANTH 317, or WGSS 340	3
Women's, Gender, and Sexuality Studies Interdisciplinary Elective ^{2,6}	3
Electives ⁴	3
Complete Writing Portfolio	

Third Year

First Term	Credits
WGSS/SOC 385	3
WGSS Field Elective ^{2,3}	3
Women's, Gender, and Sexuality Studies Interdisciplinary Elective ^{2,6}	3
Electives ⁴	6

Second Term	Credits
WGSS 481 [M]	3
Women's, Gender, and Sexuality Studies Interdisciplinary Elective ^{2,6}	3
Electives ⁴	9

Fourth Year

First Term	Credits
WGSS Field Elective ^{2,3}	3
Electives ⁴	12

Second Term	Credits
WGSS 403 [CAPS] or 495 [CAPS]	3
300-400-level Electives ⁴	13

¹ To meet University and College of Arts and Sciences requirements, students must take a [BSCI] course with lab and [PSCI] course with lab.

² Women's, Gender, and Sexuality Studies Field and Interdisciplinary Electives (21 credits): 12 credits of Field Electives and 9 credits of Interdisciplinary Electives required. 15 of the 21 credits must be at the 300-400 level and to meet University requirements electives must include one [M] course. Courses may not be used to fulfill more than one requirement.

³ WGSS Field Electives (12 credits): Approved courses include WGSS 101, 120, 220, 301, 321, 338, 340, 406, 410, 460, 477, 485 [M], 499; CRMJ/WGSS 403; ENGLISH/WGSS 309, 317; WGSS 332/ANTH 317; WGSS/ENGLISH 211; WGSS/ENGLISH/SOC 300 [M]; WGSS/HISTORY 336, 369; WGSS/SOC 302.

⁴ Electives: Students are encouraged to pursue an additional major, minor, or certificate. Electives

should include sufficient 300-400-level coursework to meet the University requirements of 40 upper-division credits.

⁵ Two years of high school foreign language or at least two semesters of college-level foreign language are required by the College of Arts and Sciences for graduation.

⁶ Women's, Gender, and Sexuality Studies Interdisciplinary Electives (9 Credits): Approved courses include AMDT/WGSS 422; AMER ST/DTC/ENGLISH 475; AMER ST/ENGLISH/HISTORY/WGSS 216; ANTH/WGSS 316; BIOLOGY 307; CES 435, 454; CES/ANTH 312; CES/WGSS 411; COM/WGSS 464; ENGLISH/WGSS 306 [M]; ENGLISH 483/WGSS 382; FINE ART/WGSS 308 [M], 310 [M]; HISTORY/CES 235; HISTORY/WGSS 398, 399; MUS/WGSS 363; PHIL/WGSS 425; POL S 305/WGSS 305; PSYCH/WGSS 230, 324; SOC/WGSS 251, 351, 384, 390; WGSS/PHIL 462 [M].

Minors

Queer Studies

Completion of the minor in Queer Studies requires a minimum of 16 credits with a 2.0 GPA. At least 9 credits must be from upper-division courses and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Required core courses (9 credits): WGSS 101 or 120, 369 or 385, and 485.

Electives: A minimum of 7 credits from any WGSS courses, except those used as required courses.

Women's Studies

Completion of the minor in Women's Studies requires a minimum of 16 credits with a 2.0 GPA. At least 9 credits must be from upper-division courses and taken in residence at WSU or through WSU-approved education abroad or educational exchange courses.

Required core courses (9 credits): WGSS 101 or 120; WGSS 300, 332, 369, or 385; and WGSS 481.

Electives: A minimum of 7 credits of any WGSS courses, except those used as required courses.

Description of Courses

Women's, Gender, and Sexuality Studies

WGSS

101 [DIVR] Introduction to Women's, Gender, and Sexuality Studies 3 Analysis of gender and power in contemporary society from perspectives of different racial, ethnic and socioeconomic groups.

120 [DIVR] Sex, Race, and Reproduction in Global Health Politics 3 Examination of how cultures, institutions, states, and economies influence reproductive health inequalities around gender, sexuality, race, class, and national identity.

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 WGSS 211, ENGLISH 211.)

216 Introduction to American Cultural Studies 3 Introduction to the interdisciplinary study of American cultures and the field of American studies. (Crosslisted course offered as AMER ST 216, CES 216, ENGLISH 216, HISTORY 216, WGSS 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, WGSS 230.) Recommended preparation: PSYCH 105.

251 [DIVR] 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, WGSS 251.)

260 Rhetoric and Gender 3 Historical survey of women writers whose contributions distinguish them as rhetoricians of their time. (Crosslisted course offered as ENGLISH 260, WGSS 260.)

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, WGSS 298.)

300 [DIVR] [M] Intersections of Race, Class, Gender, and Sexuality 3 Course Prerequisite: SOC 101 or WGSS 101. Intersections between race, class and gender through case studies; experiences in interdisciplinary methods. (Crosslisted course offered as WGSS 300, ENGLISH 310, SOC 300.)

301 Introduction to Critical Race Feminism 3 Studies structural inequalities in the US through historically grounded analysis of social systems, race, gender, and the law.

302 Contemporary Masculinities 3 Analysis of the development of masculinity in its biological and cultural forms. (Crosslisted course offered as WGSS 302, 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, WGSS 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, WGSS 306.)

307 [DIVR] Biology of Women 3 Course Prerequisite: BIOLOGY 102 or 106. 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 307, WGSS 307.)

308 [M] Women Artists I 3 Women artists of the Middle Ages through the 18th century. (Crosslisted course offered as FINE ART 308, WGSS 308.)

309 Women Writers 3 Women's artistic and intellectual contributions to prose, fiction, drama, and poetry. (Crosslisted course offered as ENGLISH 309, WGSS 309.)

310 [M] Women Artists II 3 Women artists of the 19th to 20th century. (Crosslisted course offered as FINE ART 310, WGSS 310.)

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, WGSS 316.) Recommended preparation: Sophomore standing; ANTH 101, PSYCH 105, SOC 101, or WGSS 101 or 120.

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, WGSS 317.)

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.

324 Psychology of Gender 3 Contemporary overview of the psychological theory and research on sex and gender. (Crosslisted course offered as PSYCH 324, WGSS 324.) Recommended preparation: PSYCH 105.

332 Global Feminisms 3 Course Prerequisite: ANTH 101, WGSS 101, or WGSS 120. An interdisciplinary approach to examining women's roles and experiences throughout the world and different approaches to feminism/feminisms. (Crosslisted course offered as WGSS 332, ANTH 317.)

335 [DIVR] 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, WGSS 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 WGSS 336, HISTORY 336.)

- 338 [HUM] Gender, Race, and Popular Culture** 3 Feminist study of intersections of gender, race, class, sexuality, and ability through popular film, television, digital media, 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 [HUM] Witches, Nuns, Merchants, and Queens in Europe 1200-1800** 3 Women's experiences in Europe from the Renaissance to the Enlightenment and the ideas and roles that affected their lives. (Crosslisted course offered as HISTORY 350, WGSS 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, WGSS 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, WGSS 363.)
- 369 [ARTS] Queer Identities in Contemporary Cultures** 3 Course Prerequisite: CES 101, HISTORY 105, HISTORY 305, WGSS 101, or WGSS 120. Analysis of roots/legacies of creative resistance writing by Queer communities of color; students learn to produce creative resistance work. (Crosslisted course offered as WGSS 369, HISTORY 369.)
- 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, WGSS 382.)
- 384 Sociology of Gender** 3 Construction and maintenance of gender and gender inequality in American society. (Crosslisted course offered as SOC 384, WGSS 384.) Recommended preparation: SOC 101.
- 385 [DIVR] Introduction to Lesbian, Gay, Bisexual, and Transgender 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 WGSS 385, SOC 385.)
- 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, WGSS 390.)
- 398 [DIVR] Women, Gender, and the History of the Un-West** 3 The multicultural history of women in the west through women's literature, archives, and oral history. (Crosslisted course offered as HISTORY 398, WGSS 398.)
- 399 [DIVR] LGBTQ+ History: Culture, Politics, and Social Change in the U.S.** 3 History and theory of queer sexualities and gender identities in the United States including community development, politics and cultures. (Crosslisted course offered as HISTORY 399, WGSS 399.)
- 403 [CAPS] 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 CRMJ 403, WGSS 403.)
- 406 Women and Work in Global Contexts** 3 An interdisciplinary approach to women's labor in global contexts that analyzes differences among women as well as possible shared interests.
- 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, WGSS 409.)
- 410 Internship** V 1-12 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: WGSS 101 or 120; WGSS 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 Course Prerequisite: CES or WGSS 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, WGSS 411.)
- 422 [DIVR] Fat Studies** 3 Course Prerequisite: Junior standing. Examination of weight-based oppression as a social justice issue with other systems of oppression based on gender, race, class, age, sexual orientation, and ability. (Crosslisted course offered as AMDT 422, WGSS 422.)
- 425 Philosophy and Feminism** 3 Course Prerequisite: PHIL 101, WGSS 101, or WGSS 120. Feminist philosophy as critique of Western philosophical tradition and as alternate framework for thought. (Crosslisted course offered as PHIL 425, POL S 425, WGSS 425.)
- 460 Gender, Race, and Nature in American Culture** 3 Course Prerequisite: WGSS 101, 120, 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, WGSS 101, or WGSS 120. Study of gender and feminism and their effect on contemporary ethical theories and issues. (Crosslisted course offered as WGSS 462, PHIL 462.) Cooperative: Open to UI degree-seeking students.
- 464 Gender and the Media** 3 Course Prerequisite: Admitted to any major; sophomore standing. 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, WGSS 464.)
- 477 Special Topics: Study Abroad** V 1-15 May be repeated for credit. S, F grading.
- 481 [M] Feminist Theory** 3 Course Prerequisite: WGSS 101, 120, or 300. Introduction to the field of feminist theory, including classic interdisciplinary methods, and applications of this scholarship to contemporary women's issues.
- 485 [M] Theoretical Issues in Queer Studies** 3 Course Prerequisite: WGSS 484 or any 300-400-level WGSS course. Theoretical construction and interpretation of sexualities, gender, and identity.
- 495 [CAPS] Re-Directions in Women's, Gender, and Sexuality Studies: Theory and Practice** 3 Course Prerequisite: WGSS 385; WGSS 481; admitted to the major in Women's, Gender, and Sexuality Studies or to the minor in Women's Studies or Queer Studies; senior standing; and department permission. Seminar-style culminating experience in synthesizing prior learning and new scholarship for application of theory and practice; written and oral communication of original final project research.
- 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.



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.

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UNDERGRADUATE ADMISSION REQUIREMENTS

1. GENERAL REQUIREMENTS

- 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 college or university with approved accreditation (see Rule 6).
- 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.
- Appeal of admission decisions may be made only to the Admissions Subcommittee of the Academic Affairs Committee or its designee.
- Anyone seeking admittance to the Graduate School must follow procedures in the Graduate School Policies and Procedures Manual available in the Graduate School.
- 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. FIRST-YEAR STUDENT REQUIREMENTS. First-year student applicants are considered for admission to the university on the basis of their academic records and other supporting documents, which include official transcripts that show coursework through at least grade 11 or its equivalent, completion of the Washington College Academic Distribution Requirements (CADRs), and other relevant materials as requested or as may be provided. On the basis of these criteria, the most qualified applicants are offered admission.

A complete list of the Washington College Academic Distribution Requirements (CADRs) for admission may be found at the Washington Student Achievement Council's (WSAC) website, linked here www.cadr.wsu.edu.

Applicants from unaccredited high schools may contact the Office of Admissions for additional information.

ADVANCED STANDING AND TRANSFER CREDIT

4. TRANSFER REQUIREMENTS

- Applicants who have completed a transferable Associate's degree from a post-secondary institution with approved accreditation (see Rule 6) will be admitted as space allows.
- Applicants without a transferable Associate's degree, but with at least 27 semester (40 quarter) hours of transferable credit from a post-secondary institution with approved accreditation (see Rule 6) 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.
- Applicants with fewer than 27 semester (40 quarter) hours of transferable credit will be considered for admission if they also meet the first-year student 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.
- 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. Transfer credit is awarded for college-level academic credit earned based on appropriateness for WSU's academic programs and

comparableness in nature, content, academic rigor, and quality to WSU's curriculum. One set of transfer course articulation tables will be used for course evaluation by all WSU campuses. The transfer course search tool articulation tables for courses from approved domestic and international institutions is maintained and monitored by WSU Pullman Admissions transcript evaluators and the Transfer Center in consultation with academic units. Transfer credit equivalencies are subject to change.

- a) Transfer credit is awarded from nationally recognized postsecondary institutions with institutional accreditation from the following approved accreditation agencies (or equivalent for international institutions).
- Accrediting Commission for Community and Junior Colleges (ACCJC) Western Association of Schools and Colleges
 - Higher Learning Commission (HLC)
 - Middle States Commission on Higher Education (MSCHE)
 - New England Commission of Higher Education (NECHE)
 - Northwest Commission on Colleges and Universities (NWCCU)
 - Southern Association of Colleges and Schools Commission on Colleges (SACSCOC)
 - WASC Senior College and University Commission (WSCUC)

See Rule 14 for information on credit processes for postsecondary institutions with nationally recognized institutional accreditation that is not from an approved accreditation agency.

- b) Transfer credit awarded from approved institutions on the quarter system is converted to 0.67 semester credits.
- c) Ninety semester hours shall be the maximum allowed by transfer toward a baccalaureate degree.
- d) The maximum combined lower-division transfer credit allowed [from approved accredited institutions, CLEP (College Level Examination Program), AP (Advanced Placement), IB (International Baccalaureate), Cambridge International, military, and any other source] shall be 73 semester credits toward a baccalaureate degree irrespective of when those credits were earned.
- e) Junior status, 60 semester credits, 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 state public community and technical college. Additional courses, up to the 73-semester credit limit, will be reviewed for transfer on a course-by-course basis. Certain approved associate degrees may also be considered to have fulfilled the lower-division UCORE for graduation, provided the degree's general education curriculum approximates the disciplinary breadth of WSU's UCORE curriculum, but do not guarantee junior status or 60 semester credits. Completion of lower-division UCORE will be granted to students who have been certified by their institution as having completed the University of California Intersegmental General Education Transfer Curriculum (IGETC) or the California State University General Education Breadth Curriculum. For details on specific degrees consult the Office of Admissions and the Transfer Center.
- f) Reverse transfer allows students to complete an associate's degree after transfer to WSU. Policy details and credit levels vary depending on the community or technical college. Students who enter WSU with at least 30 transferable quarter credits (20 semester credits) from a Washington state public community college or technical college will receive the support of the Transfer Center to complete the steps for reverse transfer. Students who enter WSU and later complete one of the associate degrees listed in Rule 6(d) or (f) will receive the benefits described in Rule 6(d) or (f).
- g) Students who have completed the Associate of Science Transfer (AS-T) degree from a Washington state public community and technical college normally will receive the same priority consideration for admission as they would for completing the Direct Transfer Associate (DTA) and will be given junior status and 60 semester credits. Completion of the AS-T degree satisfies UCORE WRTE, QUAN, BSCI, PSCI, and three of the following requirements: HUM, SSCI, ARTS, DIVR, ROOTS. Up to three additional lower-division UCORE may be satisfied via transfer credit, up to the 73-semester credit limit, or via in-residence credit prior to completion of a baccalaureate degree. An individual course completed within the AS-T degree may not satisfy more than one UCORE category.
- h) Completion of all UCORE and the University Writing Portfolio graduation requirement will be granted to students who have completed a baccalaureate degree from another approved accredited institution

or the equivalent of a U.S. bachelor's degree from an international institution with approved accreditation (see 6a), provided that the general education curriculum approximates the disciplinary breadth of WSU's UCORE curriculum. Approved degrees will also provide senior standing and 90 semester credits.

- i) Completion of lower-division UCOREs will be granted to students who have been certified as having completed the lower-division general education curriculum from a baccalaureate institution with approved accreditation (see 6a), provided the degree's general education curriculum approximates the disciplinary breadth of WSU's UCORE curriculum. Please consult the Office of Admissions or Transfer Center for more information.
- j) Other degrees will be evaluated on a course-by-course basis for fulfillment of requirements, in the absence of an approved articulation. Higher degrees do not necessarily fulfill baccalaureate degree requirements.
- k) Transfer credit follows WSU policy for repeat credit (see Rule 34), academic forgiveness (see Rule 43), and grades and grade points (see Rule 90). Transfer credit graded below D is considered failing. Transfer credit grades do not count in the WSU grade point average (see Rule 114).

14. CREDIT FROM INSTITUTIONS WITHOUT APPROVED ACCREDITATION. Students who have taken college-level, academic work at institutions that are nationally recognized but not from an approved accreditation agency 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 FOR COLLEGE PREPARATORY PROGRAM EXAMS. 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. Approved external examinations include: Advanced Placement (AP) Program examinations of the College Entrance Examinations Board; the International Baccalaureate (IB) Examinations; and Cambridge International Examinations.

WSU does not accept credit by examination as transcribed by other institutions. Students must request official score reports to be sent directly to WSU. Acceptable scores for receiving credit are published online at wsu.edu/advancedcredit.

Credits by examination shall yield no grade points. Such credits may partially fulfill University Common Requirements (UCOREs) for graduation. Duplicate credit for the same subject taken on different exams like Cambridge A-level or A-S level, AP, or IB will not be granted. Advanced credit policies are reviewed on a regular basis and are subject to change.

Students may request to take a course at WSU for which they have been awarded AP, IB, or Cambridge International credit. Prompted by the request, all the credit earned from the applicable AP, IB, or Cambridge International examination credit is removed from the overall credits awarded by WSU. Only the subsequent enrollment in the WSU course will contribute to the total credits earned and grade point average; the AP, IB, or Cambridge International credit cannot be reconsidered for credit for the same course. Students submit the request to ask for the WSU course to be allowed and for the AP, IB, or Cambridge International credit to be omitted to the Registrar's Office.

- (a) Advanced Placement Program. Credit for AP examinations will be granted at the lower-division for scores of 3 and above, as determined in consultation with the specific academic department. The acceptable score for receiving credit is published online at wsu.edu/advancedcredit.
- (b) International Baccalaureate (IB) Examinations. Credit is awarded for standard and higher-level examinations with a score of 4 or higher with the exception of non-English Language A exams. See wsu.edu/advancedcredit for course-by-course equivalencies. Please contact the Transfer Center for additional details.
- (c) Cambridge International Examinations. Credit is awarded for A- and AS-level examinations.

16. **MILITARY CREDIT.** Credit will be evaluated on the basis of military transcripts received from active duty military and veterans pursuing an education at WSU. Military credit is limited to a maximum of thirty [30] semester credits.

Transcript Credit:

- (a) WSU uses the American Council on Education (ACE) "A Guide to the Evaluation of Educational Experiences in the Armed Services" as a framework for evaluating transferable credit documented on the Joint Services Transcript.
- (b) ACE recommendations for the amount and level of credit (upper-division or lower-division) are followed if the military course (non-vocational/technical) is applicable to university or departmental requirements.
- (c) DANTES Subject Standardized Tests (DSST) and Defense Language Proficiency Tests (DLPT) Exam Credit: See Rule 17 Credit for Prior Learning.

17. **CREDIT FOR PRIOR LEARNING.** Prior learning is defined as the knowledge and skills gained through informal education and training, work, and life experience. Under limited circumstances, WSU assesses academic credit for prior learning through approved academic department challenge examinations and departmental placement examinations. These sources of academic credit for prior learning are awarded only at the undergraduate level for documented student achievement evaluated by faculty and equivalent to expected learning outcomes for courses within WSU's regular curricular offerings. Students should consult with academic units to determine if such an assessment is warranted and available.

WSU also assesses academic credit for prior learning via external examination sources that include College Level Examination Program (CLEP), DANTES Subject Standardized Tests (DSST), and Defense Language Proficiency Tests (DLPT) exams. Approved credit for these exams is subject to transfer credit limitations as published in Rule 6.

Credit that is granted for prior learning is identified on students' transcripts and may not duplicate other credit awarded to the student in fulfillment of degree requirements. WSU does not accept academic credit for prior learning as transcribed by other institutions.

- (1) **Challenge Examinations.** Under limited circumstances, 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 25% of the credits need for a degree unless permission is obtained from the student's academic dean. Consult the Registrar's Office for challenge exam fees.
- (2) **WSU Placement Assessments.** Under limited circumstances, and in accordance with policies established by the university, some departments may grant credit or curricular advancement based on certain placement or proficiency exams. Consult the department for information on eligibility, applicable fees, and other relevant policies.
- (3) **College Level Examination Program (CLEP) General and Subject Examinations:** Credit for CLEP will be granted if the examination is passed with scores established in consultation with the academic department concerned. Credit will normally be granted for scores of 50 or above. Credit will be granted for the comparable WSU course, or elective credit may be granted. Not more than 6 semester credits will be granted for each examination.
- (4) **DANTES Subject Standardized Tests (DSST) and Defense Language Proficiency Tests (DLPT) Exams:** Credit for DSST and DLPT exams will be granted for college-level academic subjects (non-vocational/technical) using the minimum score and credit amount based on American Council on Education (ACE) credit recommendations.

AUDITING CLASSES

20. **PERMISSION TO AUDIT.** An auditor is a student who is permitted on a space-available basis to observe lecture class discussions but not take examinations

or consume the instructor's time. Auditors receive no grades and no credit. Auditors must be on the official class roster.

Attendance in class as an auditor requires official instructor approval and enrollment. A student wishing to enroll in classes as an auditor may seek permission after classes begin, provided space is available and the instructor approves the request. This option is available only for lecture courses.

Auditors must pay the appropriate fee and submit the signed Enrollment Change Form to the Registrar's Office at the student's home campus. Initial enrollment must be completed by the end of the second week of instruction (census day), or by the add deadline for shorter academic sessions.

Enrolled students wishing to change their enrollment status from credit to audit, or audit to credit, must submit the Enrollment Change Form by the end of the third week 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. The limitation includes any combination of credit and audit hours. The 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, "Audit Only -- No Credit Given.")

24. **TUITION AND FEES.** The tuition amount is composed of the State definition of tuition (an Operating Fee plus building costs) and WSU student approved Student Service and Activity fees. Tuition and fees vary from campus to campus and program to program. Information about tuition rates and financial aid eligibility may be found at <https://bursar.wsu.edu/tuition-rates-explained/> and at <https://financialaid.wsu.edu/tuition-expenses/>.

Tuition rates are different for residents of the State and non-residents of the State for fall and spring semesters. The State subsidizes the resident student tuition but does not subsidize the non-resident tuition.

For fall and spring semesters, typical undergraduate and graduate full-time tuition charges are assessed at 10 to 18 credits. A per-credit tuition charge applies below 10 credits and above 18 credits. There is a two credit minimum charge for all students.

For Summer Session, tuition is assessed at the in-state tuition rate and is based on the specific number of enrolled credits. See <https://learn365.wsu.edu/summer-session/tuition-and-fees/>.

Tuition and fees must be paid according to the published deadlines in order to avoid late fees or holds. Due dates are available at <https://bursar.wsu.edu/tuition-due-dates/>.

Additional information may be found at <https://budget.wsu.edu/tuition-and-fee-rates/> or <https://bursar.wsu.edu/estimated-tuition-fees/>.

ACADEMIC LEVEL AND CREDIT REQUIREMENTS

25. **ACADEMIC LEVEL (CLASS STANDING) FOR UNDERGRADUATES.** An undergraduate student's academic level (or class standing) is based on the number of credits earned. This level is used to meet requirements for enrollment, financial aid and scholarships, housing, etc. A student's academic level includes awarded transfer credit.

Total Credits Earned	Academic Level
0 – 29	First-Year Student
30 – 59	Sophomore
60 – 89	Junior
90 +	Senior

An undergraduate student with a prior bachelor's degree is classified as a post-baccalaureate student regardless of the number of credits earned. Post-baccalaureate students are not considered graduate students.

26. **CREDIT REQUIREMENTS FOR FULL-TIME ENROLLMENT STATUS.** Students are classified as having full-time enrollment status based on the total number

of credits taken and on how the credits are used. For instance, the number of credits required to be considered full time for tuition may be different compared to the credits required for enrollment verification or financial aid purposes.

For Enrollment Verification:

- For the fall and spring semesters, undergraduate students must enroll in 12 or more credits to be considered full time; graduate students must enroll in 10 or more credits; and professional students must enroll in 5 – 10 credits depending on the program.
- For summer session, undergraduates must enroll in 6 or more credits to be considered full time; graduate and professional students must enroll in 5 or more credits.

For Financial Aid: The number of credits enrolled in for a term determines a student's financial aid status and determines eligibility for federal grant, federal loan, and federal work study programs. In order to maintain financial aid eligibility, students must meet Satisfactory Academic Progress (SAP) requirements. The complete SAP policy regarding credit completion, GPA, and degree completion time frame is available at <https://financialaid.wsu.edu/>.

- For financial aid purposes, full-time enrollment status for undergraduate students is 12 credits, three quarter time is 9 – 11 credits, and half-time is 6 – 8 credits. For graduate students, full-time enrollment status is 10 credits and half-time is 5 credits. For students in the professional programs, full-time enrollment status is 10 credits and half-time is 5 credits, except for students in the OMBA program where full-time is 5 credits and half-time is 3 credits.
- Loan Deferments: For all careers, deferments on loans require at least half-time enrollment.

For Veterans Benefits:

- For undergraduate students, full-time enrollment status for a semester is 12 credits, three-quarter-time is 9 – 11 credits, half-time is 6 – 8 credits, less than half-time is 4 – 5 credits, and quarter-time is 1 – 3 credits.
- For graduate students, full-time enrollment status for a semester is 10 credits, three-quarter-time is 7 – 9 credits, half-time is 5 – 6 credits, less than half-time is 3 – 4 credits, and quarter-time is 1 – 2 credits. For non-standard graduate terms, a VA adjusted modifier is used to determine what is full time, half-time, less than half time, or quarter time.
- Full time enrollment status for summer session for undergraduate 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, at WSU Military Affiliated Students.

For International Students: To maintain F-1 or J-1 visa status, international students must enroll in a full-time course of study each fall and spring semesters:

- Undergraduate students: At least 12 credits with no fewer than 9 face-to-face credits.
- Graduate and Professional students: At least 10 credits with no fewer than 7 face-to-face credits.

Enrollment in Summer Session is not required for continuing students. However, if Summer Session is the initial (first) or final (last) semester for an international student, then full-time enrollment is required.

CREDIT

27. CREDIT DEFINITION. Academic credit is a measure of the total minimum time commitment required of a typical student enrolled in a specific course. For the WSU semester system a one-semester lecture credit is assigned a minimum of 45 hours, of which 15 hours are spent in instructor-led activities and 30 hours are spent in outside activities. Instructor-led activities include time spent in scheduled course activities organized by an instructor (lectures, discussions, laboratories, studios, ensembles, visual media, fieldwork, etc.), while outside activities are related to students completing course requirements (reading, studying, problem solving, writing, homework, and other preparations for the course). Achievement of course goals may require more than the minimum time commitment.

Based on a 15-week semester and a traditional format, the minimum in-class time commitment must follow these scheduling contact hour policies: 1) lecture—15 hours of lecture per term for each credit hour (1 hour per week); 2) studio—30 hours of studio per term for each credit hour (2 hours per week); 3) laboratory—45 hours of laboratory per term for each credit hour (3 hours per week); 4) ensemble—60 hours of ensemble per term for each credit hour (4 hours per week). Courses which do not have in-class meeting times must follow these

guidelines: 5) independent study and internships (including field experiences, professional work experiences, and clinical experiences) — approximately 45 hours per term for each credit hour.

Courses taught during periods of time other than the 15-week semester (e.g., intersessions, fall/spring vacations, weekends, etc.) including short courses and study abroad must adjust the class contact hours to meet the minimum in-class time commitment outlined above.

Courses taught using non-traditional formats (e.g., online, hybrid) must define how the time commitment leads to the achievement of stated course goals and how the course covers the same material in the same depth as traditionally-taught courses subject to minimum in-class time commitments.

As part of the initial approval process for new courses, the Catalog Subcommittee reviews course syllabi for adherence to credit and minimum time commitments. For ongoing adherence to credit and minimum time commitments, colleges review the schedule of classes each term to check a judgment sample of scheduled courses.

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.

- 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 Cambridge International, or a review or examination administered by the university.
- Running Start Program: 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.
- Other Courses: College credit may be awarded for courses taken in high school if credit is awarded from a college or university with approved accreditation (see Rule 6) when consistent with the following conditions:
 1. The course must also be currently available in 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 published grading and tuition refund policies;
 3. The faculty teaching the course in high school must carry a regular or adjunct faculty appointment; and
 4. The students taking the course in the high school must be assessed and graded in the same manner any student. 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.

- 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. At WSU, additional repeats may be allowed only by special permission of the academic unit offering the course.

Students in the professional programs (MBA, Medicine, Pharmacy, or Veterinary Medicine) may be held to additional restrictions as described in their student handbooks or catalog materials.

- b. 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. For courses repeated at other institutions, credit is awarded following the WSU repeat policy.
- c. 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. ACADEMIC PROBATION AND RECESS FOR AT-RISK STUDENTS

- a. 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. Academic departments may release students from the major who are on academic probation. See rule 53.
- b. First-time, first-year undergraduate students are recessed from the University after their first term of enrollment if their semester grade point average is below 1.0. Individuals are recessed from the university for one full semester (Fall or Spring). To reenroll for courses offered through any WSU campus students must apply for reinstatement. Recessed individuals may not seek status as a non-degree seeking student. Recessed students may enroll in summer session.

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 must wait a minimum of two full semesters (fall/spring, spring/fall) to reenroll for courses offered through any WSU campus. Dismissed individuals may not seek status as a 'non-degree seeking student.' Dismissed students may enroll in summer session.

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.

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 prior credits earned in courses graded C or better will be restored. Only the courses and credit, not grades or grade points, will be restored. Requests for reinstatement for former WSU students will be considered by the Review Board in the Academic Success and Career Center 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 Conduct.

ENROLLMENT, REGISTRATION, ADMISSION TO THE MAJOR

47. PLACEMENT TESTS. All students will be required to take the regulation placement tests as a prerequisite to enrollment in appropriate courses.

49. UNDERGRADUATE ENROLLMENT LIMIT. The average semester credit load for undergraduate students is 15 or 16 credits. Undergraduate students are not normally advised to enroll for more than 18 credits. Enrolling in more than 18 credits incurs an additional per credit tuition charge. Students will not be allowed to enroll in 23 or more credits without written approval from their academic advisor in consultation with the academic unit, as appropriate.

50. PASS, FAIL GRADING OPTIONS. Pass, fail grading is a student-initiated option, whereby a student elects to take a letter-graded (A – F) course for a pass, fail (P, F) grade.

Pass, fail grading is available to students with the following provisions:

Undergraduate Students:

The university allows up to 21 credits to be taken at WSU on a pass, fail basis by students completing a baccalaureate degree at Washington State University. However, 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.

In addition, 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 requirements if the courses were completed on a pass, fail basis before the student was accepted into the department or program.

In all cases, the advisor's approval is required for an undergraduate to take an A – F graded course for a pass, fail (P, F) grade. Students submit the Enrollment Change Form to the Registrar's Office with advisor approval.

Graduate Students:

Graduate students are eligible to take A – F graded courses for a pass, fail (P, F) grade with the approval of their committee chair or graduate advisor. While

there is no limit on the number of credits, courses taken pass, fail cannot count toward the required credits for graduation and cannot be used as part of the student's Program of Study. Pass, fail grades may not be used for removal of a specific undergraduate deficiency. Credits earned with pass, fail grades are counted toward assistantship minimum credit requirements.

Professional Students:

Students in the professional careers of Medicine, Pharmacy, or Veterinary Medicine are eligible for pass, fail (P, F) grading for courses graded A - F only with the consent of their academic department or college. Students in the professional MBA and business career are ineligible for the pass, fail grading option.

Grading:

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.

Information indicating which students are enrolled on a pass, fail basis will not appear on grade rosters transmitted to instructors. Instructors turn in regular letter grades for all students, and grades of A through D are converted to P for those students who are enrolled pass, fail.

Exclusions:

- Courses approved to be graded with one of the satisfactory, fail grading basis (S, F; or S, M, F; or H, S, F; or S, U) as described in Rule 90f or 90k are excluded from the pass, fail grading option. The grading basis for these courses are indicated in the catalog course description.
- No courses designated as meeting University Common Requirements (UCOREs) may be taken pass, fail.
- No courses offered under the HONORS course prefix may be taken pass, fail.

Deadlines:

A student may change a regular letter-graded enrollment to a pass, fail 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.

52. PREREQUISITE COURSES. All prerequisites shall be satisfactorily completed before the student may register in a course. At the time of registration for an upcoming term, in-progress enrollment counts toward meeting prerequisites. If after grades are entered a prerequisite is no longer met, the course is dropped from the student's enrollment.

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. However, no student may have the prerequisite waived if the academic unit deems the waiver inappropriate.

53. ADMISSION TO THE MAJOR. 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 by the college and the Faculty Senate. The major represents approximately one-third (40) 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).

Admission to the Major:

Major Requirements: Students can be admitted to a major upon enrollment if they satisfy the requirements set by the academic department. Students who are uncertain of their major, exploring majors, or not ready to declare a major will enroll as a Deciding/Exploring student. Exploring/Deciding students will declare a major before reaching 60 credits.

Academic units will provide students with a specific pathway to the degree that outlines major requirements (for example, grade point average, completion of specific courses) that students must achieve in order to be admitted and maintain eligibility for the major and degree.

Consult the catalog for specific major requirements.

Loss of Eligibility and Re-Entry to the Major:

University Requirements: A student in any major whose GPA falls below 2.0 is academically deficient under Rules 38 or 39 and may be released by the academic department.

A student is eligible to re-enter the major when the cumulative and major grade point averages are at or above the minimum level required by the university; additional departmental requirements for the major may also need to be met. Requirements for maintaining eligibility and completing the major will be those stated in the WSU Catalog at the time of re-entry into the major.

Departmental Requirements: A student who falls below the minimum departmental requirements for maintaining eligibility in the major, as approved by Faculty Senate and published in the WSU Catalog, may be released 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 following semester of enrollment. If conditions are not met at the end of the following semester, documentation must be provided to the Academic Success and Career Center along with the request to release the student from the major.

A student may be eligible to re-enter into the same major when minimum departmental requirements are met. Contact department for information and options for meeting minimum departmental requirements for achieving and maintaining eligibility. Requirements for maintaining eligibility and completing the major will be those stated in the *WSU Catalog* at the time of re-entry into the major.

54. UNDERGRADUATE MINOR OR ADDITIONAL MAJOR. Undergraduate minors and additional majors emphasize study in an area outside a student's primary major. An undergraduate minor or additional major is a supplemental academic award that is awarded at the same time that a student's primary major is completed and the undergraduate degree is conferred.

Students should consult with the department concerning specific requirements and restrictions for these supplemental academic awards. The following general provisions apply:

a. Minors:

- (1) An undergraduate student who has completed 60 semester hours and has been admitted to a primary major may be admitted to pursue a minor with the approval of the offering department.
- (2) 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.
- (3) Unless otherwise noted by the department offering the minor, courses forming a minor may also be used to satisfy the requirements of a major.
- (4) No student shall be required by their major to complete a minor, though the department may encourage students to complement the primary major with a minor.
- (5) Students may not pursue a minor, or be awarded a minor, if it carries the same name as any other current or completed academic awards. This includes current or completed degrees; majors; or options, concentrations, or subplans within the major, or other supplemental academic awards. However, a student who has earned a minor may subsequently be admitted to seek a higher academic award with the approval of the offering department (e.g., a student who has earned a minor in English may later return to seek a degree in English).

b. Additional Majors:

- (1) An undergraduate student who has completed 60 semester hours and has been admitted to a primary major may be admitted to pursue an additional major with the approval of the offering department.
- (2) An additional major requires completion of departmental requirements for the major, exclusive of general education requirements.
- (3) Students may not be admitted to pursue an additional major, or be awarded an additional major, if it carries the same name as any other current or completed academic awards. This includes current or completed degrees; majors; options, concentrations, or subplans within the major; or other supplemental academic awards, such as minors. However, a student who has earned an additional major may subsequently be admitted to seek a higher academic award with the approval of the offering department (e.g., a student who has earned an additional major in Spanish may later return to seek a degree in Foreign Languages, with a major in Spanish).
- (4) Note that for each additional baccalaureate degree, students must complete an additional 30 semester hours. See Rule 118.

55. CHANGE OF MAJOR. A student may change majors with the approval of the head of the new academic unit or designee.

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. Further information is available at the Registrar's Office website under the link for Petitions.

Undergraduate and professional students may petition through the Registrar's Office. Graduate students may petition through the Graduate School.

Petitions for exceptions to the academic calendar deadlines and withdrawal limits must be made within two years of the date of enrollment in the course.

61. **LATE REGISTRATION 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.

Information about enrolling in classes is available through myWSU and through the Registrar's Office at <http://registrar.wsu.edu/>.

66. **ADDING A COURSE.** Students may add course enrollments through the first Sunday of the fall and spring semesters. For summer session or shorter courses, a prorated schedule is followed and may be found at <https://registrar.wsu.edu/deadlines-drop-withdrawal/>. (NOTE: If the course is being added pass, fail the approval of the student's faculty advisor is also required.)

After the first Sunday of the fall and spring semesters, 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 fall or spring semester in which the course is offered. For summer session or shorter courses, a prorated schedule is followed and may be found at <https://registrar.wsu.edu/deadlines-drop-withdrawal/>.

If a grade is present, the course may not be dropped without the instructor's consent.

In exceptional circumstances, students may petition to drop a course following the deadline. See Rule 57.

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:

- 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.
- 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.
- If a grade has been entered for a course, the grade may not be changed to a withdrawal without the instructor's consent.
- Withdrawals do not reduce tuition charges.
- For academic calendars that vary from the regular 15-week term, a prorated schedule will be used to determine the withdrawal deadline.
- 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. **TERM WITHDRAWAL.** Students who wish to withdraw from the institution and disenroll from all of their classes initiate a term withdrawal through the Registrar's Office website, <https://registrar.wsu.edu/term-withdrawal/>. Students who withdraw from the current term may be entitled to an adjustment of all or part of their tuition (see <https://registrar.wsu.edu/tuition-adjustments/withdrawal/>). Students seeking to withdraw from a term 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).

For sessions that vary from the regular 15-week fall and spring semesters described below, a prorated schedule will be used to determine the term withdrawal deadline.

- Students withdrawing from all of their classes during the first four weeks of the 15-week fall and spring semester will have their permanent records

marked "withdrew (date)." (Individual course enrollments will not be recorded.)

- Students withdrawing from all of their classes after the fourth week through the Friday before final's week (i.e., the end of the 15th week for fall and spring, or according to a prorated schedule for summer term or shorter sessions) will have their permanent records marked "withdrew (date)," and a grade of W will be recorded for each course enrollment. These W grades will not be counted in the number of withdrawals allowed.
- Students on academic probation during the semester of their term withdrawal must obtain permission from the reinstatement coordinator on their campus to re-enroll.

ATTENDANCE

71. **ADMISSION TO CLASSES.** Students are not permitted to attend a class past the second Friday of the semester (census day), or past the add deadline for shorter academic sessions, without being on the official class roster.

72. **CLASS ATTENDANCE AND ABSENCES.** Students are responsible for ensuring that they attend all class meetings and complete all in-class and out-of-class work as assigned by the instructor. Students are also responsible for communicating with the instructor should they need to be absent.

- Attendance Policy:** The instructor is responsible for determining the attendance policy and for making decisions regarding the policy, including the consequence of missed classes, within guidelines established by the academic unit. The instructor is responsible for communicating the policy to the students in the course syllabus.
- Administrative Drops for Non-Attendance:** Students who have not attended class meetings (including lectures, laboratories, and other meetings) during the first week of the semester or according to a prorated schedule for shorter sessions may be dropped from the course by the department. Students enrolled in online classes may be dropped if they have not logged into the class during the first week.

Students should not assume that they have been dropped without checking their class schedules.
- Absences:** Students should make all reasonable efforts to attend all class meetings. However, in the event a student is unable to attend a class, it is the responsibility of the student to inform the instructor as soon as possible, explain the reason for the absence (and provide documentation, if appropriate), and make up class work missed within a reasonable amount of time, if allowed. Missing class meetings may result in reducing the overall grade in the class.

1. **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 on- or 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. Alternative forms of the Class Absence Request may also be provided by the supervising faculty or staff member and are acceptable for requesting university-sponsored absences. It is recommended, but not required, that a student not be penalized for absence from class provided a properly signed 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.

2. **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 and are entitled to make up the class (RCW 28B.10.270). In such a case, instructors must not penalize students for the absences and must allow them to make-up the missed work. In each instance, it is the responsibility of the student to inform the instructor of the duty before the absence, provide appropriate documentation if requested, and complete the missed work as soon as reasonably possible.

3. **Flexible Attendance as an Access Accommodation.** Some students have disabilities or chronic medical conditions of an episodic nature that may

require flexibility regarding attendance. The Access Center recognizes that in some cases, allowing absences beyond those normally allowed in a course is a reasonable accommodation. However, there are courses in which a specified standard of attendance may be an essential part of the course. When the Access Center determines that flexible attendance may be a reasonable accommodation, instructors will receive notification of approved accommodations and procedures for their consideration. Final determinations regarding flexible attendance will be determined on a case-by-case basis. See the Flexible Attendance Guidelines at the Access Center website and Rule 83.

NOTE: The Access Center does not provide accommodations for acute illnesses that cause extended absences (e.g., mono, strep throat, conjunctivitis). In these cases, students are to work with their instructors as indicated under c.6. Other Absences.

4. Reasonable Religious Accommodation. Washington State University reasonably accommodates absences allowing for students to take holidays for reasons of faith or conscience or organized activities conducted under the auspices of a religious denomination, church, or religious organization. Reasonable accommodation requires the student to coordinate with the instructor on scheduling examinations or other activities necessary for course completion. Students requesting accommodation must provide written notification within the first two weeks of the beginning of the course and include specific dates for absences. Approved accommodations for absences will not adversely impact student grades. Absence from classes or examinations for religious reasons does not relieve students from responsibility for any part of the course work required during the period of absence. Students who feel they have been treated unfairly in terms of this accommodation may refer to Academic Regulation 104 - Academic Complaint Procedures. See also Rule 82.
 5. Adverse Weather Conditions. When appropriate campus authorities declare a “Yellow / Delayed or Limited Operations” or “Red / Closed” campus condition (BPPM 50.40-46), or travel to instructional locations is unsafe, classes may be cancelled or delayed. When a student does not attend due to adverse conditions, the instructor will not penalize the student. See the Inclement Weather Policy online at each campus website and at the Office of the Provost website.
 6. Other Absences. Students must sometimes miss class meetings, examinations, or other academic obligations affecting their grades due to extenuating circumstances. It is the responsibility of the student to provide a written explanation for the absence to the instructor as soon as it is reasonable to do so. When possible, students should provide appropriate documentation for their absence but instructors cannot require written excuses from health care professionals.
- As long as absences are not excessive, it is recommended, but not required, that the instructor provide and document reasonable arrangements. Determinations regarding the acceptance of an absence are the discretion of the instructor based on the attendance policy as stated in the class syllabus.
- Students who attempt to gain advantage through abuse of any aspect of the absence policy (e.g., by providing an instructor with false information) may be referred to the Center for Community Standards.
- d. Emergency Notifications: While the Office of the Dean of Students does not excuse or verify student absences, in the event a student is going to be away from class for an extended period and is unable to contact the instructor in a timely manner, the Office of the Dean of Students may provide an emergency notification on the student's behalf to the instructors, informing them of the student's absence and the planned duration of the absence. An emergency notification should not be required or used to excuse a student's absence.

It is the responsibility of the student to make contact with their instructors as soon as possible to make arrangements for missed work. It is up to the instructor to determine what if any arrangements will be made for the student based upon the attendance policy as stated in syllabus.
 - e. Request for Consideration: The Office of the Dean of Students and/or the Office of Civil Rights Compliance and Investigation may contact instructors on a student's behalf when the student's involvement in a matter implicating the WSU Policy Prohibiting Discrimination, Sexual Harassment, and Sexual Misconduct, Executive Policy #15 is having a significant impact on the student's academic progress.

In such cases, the instructor is strongly encouraged to work with the student to address the student's needs without compromising learning objectives. It is the responsibility of the student to contact the instructor to make these arrangements.

- f. Complaints: Students who wish to raise a concern about the instructor's arrangement regarding missed work may follow the Academic Complaint Procedure, Rule 104.

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. 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.

77. 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.

78. 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. Paper-proctored exams given for Global Campus courses are exempt from this rule, only if scanning and emailing the completed exam is not possible due to lack of equipment or infrastructure.

79. NO EARLY EXAMINATIONS. A student will not be granted special examinations for the purpose of leaving the institution before the close of the semester.

80. SCHEDULING ALL COMMON EXAMINATIONS. Instructors wishing to schedule examinations outside of normal class periods have two options: common examinations (Rule 80) and out-of-class examinations (Rule 81). Both of these options must yield priority to officially scheduled class meetings, including lectures, labs, and studios. For example, if a common examination is scheduled during a student's lab time in another course, the instructor of the common examination must accommodate the student by offering alternate examination times.

Common examinations may be requested for courses having an enrollment of at least two percent of the total student body or undergraduate courses with multiple lecture sections.

Up to four common examinations may be scheduled outside the official class meeting time each semester. Common examination periods must be scheduled at the following time blocks:

- Monday and Friday: 7:00 to 8:00 a.m.; 5:00 to 7:00 p.m.; and 7:00 to 9:00 p.m.
- Tuesday, Wednesday, and Thursday: 7:00 to 8:00 a.m.; 6:00 to 8:00 p.m.; and 8:00 to 10:00 p.m.

One class period shall be omitted to compensate for each common examination given. A class period lost to Labor Day, Veterans Day, Martin Luther King, Jr. Day, Presidents Day, Memorial Day, Independence Day holiday(s), and/or any other class day omitted from the academic calendar may be counted toward this compensation for a common examination.

For prioritized scheduling, proposed common examination dates and times

must be submitted to the Registrar's Office no later than April 1 for fall semesters and no later than October 1 for spring semesters. Common examination times will be confirmed no later than the Friday before priority registration for the future semester. Later requests for common examination dates will be accommodated through the first week of the semester, on a space-available basis.

In cases where an alternate time may be needed to accommodate conflicts, instructors may contact the Registrar's Office for that additional scheduling.

81. SCHEDULING OUT-OF-CLASS EXAMINATIONS. Instructors wishing to schedule examinations outside of normal class periods for a course that doesn't meet the criterion of common examinations (see rule 80) may request out-of-class examinations. Officially scheduled class meetings, including lectures, labs, and studios, and common exams have priority over out-of-class examinations.

Departments may schedule up to four out-of-class examinations at a fixed time for undergraduate (100-400-level) courses. Out-of-class examination periods must be scheduled at the following time blocks:

- Monday and Friday: 7:00 to 8:00 a.m.; 5:00 to 7:00 p.m.; and 7:00 to 9:00 p.m.
- Tuesday, Wednesday, and Thursday: 7:00 to 8:00 a.m.; 6:00 to 8:00 p.m.; and 8:00 to 10:00 p.m.

One class period shall be omitted to compensate for each out-of-class examination given. A class period lost to Labor Day, Veterans Day, Martin Luther King, Jr. Day, Presidents Day, Memorial Day, Independence Day holiday(s), and/or any other class day omitted from the academic calendar may be counted toward this compensation.

Instructors wishing to schedule out-of-class examinations may submit the request beginning the first week of the term. The scheduling priority will be common examination times followed by out-of-class examination on a space-available basis. Except as noted for common examinations as per Rule 80, Rule 81 applies to any out-of-class examination scheduled to be taken at a fixed start and end time, including online examinations.

In cases where an alternate time may be needed to accommodate conflicts, instructors may contact the Registrar's Office for that additional scheduling.

82. ACCOMMODATIONS FOR ABSENCE DUE TO RELIGIOUS OBSERVANCES. Washington State University is committed to providing people of diverse religious backgrounds access to education. The university reasonably accommodates absences allowing for students to take holidays for reasons of faith or conscience or for organized activities conducted under the auspices of a religious denomination, church, or religious organization.

In addition, law requires reasonable accommodation of religious beliefs and practices so that students' grades are not adversely impacted by the absences. The university will provide reasonable accommodation consistent with the fair, efficient and secure administration of its programs, and consistent with state law.

- Instructors must reasonably accommodate students who, due to the observance of religious holidays, expect to be absent or endure a significant hardship during certain days of the course. "Reasonably accommodate" means coordinating with the student on scheduling examinations or other activities necessary for completion of the course and includes offering different times for examinations or activities.
- Any student seeking reasonable accommodations under this section must provide written notice to the instructor, within the first two weeks of the beginning of the course and include the specific dates for absences. Absence from classes or examinations for religious reasons does not relieve students from responsibility for any part of the course work required during the period of absence.
- The instructor shall inform the student of the decision in writing within seven calendar days of the receipt of the request.
- Approved accommodations for absences will not adversely impact student grades.
- The university provides notice to students of this policy on the university's web site and in course or program syllabi, including grievance procedures.

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 CLASSROOM AND 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 disabilities 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.

Students with disabilities who would benefit from either academic or housing accommodations should submit the online "New Student Application" found on their campus Access Center homepage and upload appropriate disability documentation. Once the application and documentation have been reviewed, the Access Center on the respective campus will contact the student to arrange an intake appointment/visit and to develop an appropriate accommodation plan.

Instructors will electronically receive the Faculty Notification of Reasonable Accommodations letter once a student has requested and been approved for an accommodation. Instructors are encouraged to contact the student's disability services provider if they have questions or concerns about any of the requested accommodations, including the feasibility/extent of flexible attendance accommodations with regards to successful completion of course activities and objectives. See the Flexible Attendance Guidelines at the Access Center website and at Rule 72.

Information about the Student Disability Services office available by campus and location is available at <https://access.wsu.edu/campusaccess/>.

88. MIDTERM GRADE SUBMITTAL. Midterm grades will be submitted for students enrolled in undergraduate courses that span the entire regular fall and spring 16-week semester by 5:00 p.m. on the Wednesday of the eighth week.

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. Fall and Spring semester final grades will be submitted to the Registrar's Office by 5:00 p.m. four days after the close of finals week. See <https://registrar.wsu.edu/academic-calendar/>.

Final grades for all other sessions will be submitted to the Registrar's Office by 5:00 p.m. four days after the last scheduled day of the session. See <https://learn365.wsu.edu>, under dates and deadlines.

Note: The timely submission of final grades results in accurate reporting of student information. Grades and the credits earned enable students to register for future courses or graduate on time. They are also used for determining financial aid and scholarships as well as academic deficiency or honors.

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 approved to be taught with one of the following grading basis, which are designated in the catalog and schedule of classes and are used for both final and midterm grading.

S, F (satisfactory, failing) grades are used to report grades for courses numbered 499, 600, special examinations (Rule 15), and other courses duly authorized for S, F grading by the Faculty Senate.

S, U (satisfactory, unsatisfactory) grades are used to report grades only for courses numbered 700, 701, 702, and 800.

S, M, F (satisfactory, marginally satisfactory, failing) grades are used to report grades only for designated courses within the College of Veterinary Medicine.

H, S, F (honors, satisfactory, failing) grades are used to report grades only for designated courses within the College of Pharmacy.

H, NH, S, F (honors, near honors, satisfactory, failing) grades are used to report grades only for designated courses within the College of Medicine.

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. Instructors 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 withdrawn from a course in accordance with Rule 68 or has withdrawn 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, 701, 702, 800), or flexible enrollment courses; X grades are converted to S or to a letter grade upon completion. An X grade may also be used when no final grade is available due to instructor's illness or absence, or due to a pending administrative action outside of the instructor's control. 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.

90k. U. (Unsatisfactory.) Student work demonstrates unsatisfactory performance, failed examination, or unfulfilled requirements in courses numbered 700, 701, 702, and 800.

90l. Z. (Failure due to discontinued attendance without withdrawal.) The Z grade is an internal grade indicating that a student earned a failing grade and discontinued all participation in a course without formally withdrawing from the course. It appears and functions as an F rather than as a Z on the transcript. An instructor entering a Z grade must enter the last date of attendance for each Z grade submitted. If the last day of attendance is not available, the date of the last exam or assignment recorded must be submitted instead.

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. GRADE CHANGES. An instructor may not change a grade after the final grade deadline has passed and grades have posted to the transcript, except to correct a previously submitted grade, or to provide a grade for an I, X, or blank / missing grade.

In the case where a grade is being corrected, the chair of the department is notified when the request is submitted.

Grade changes must be submitted within one year following the end of the term when the course was taught. In extenuating circumstances or when prompted by an academic integrity violation, exceptions to the one-year limit may be considered by request 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.
NH	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.

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

Course	Credits	Grade	Grade Points
ENGLISH 301	3	A	12.000
BIOLOGY 333	3	D+	3.900
SOC 420	3	B+	9.900
MUS 491	2	P	
SOC 499	4	S	

- Credits attempted, excluding those yielding no grade points, equal 9, and divided into total grade points earned, 25.8 = GPA (2.866).
- The third decimal point is rounded one decimal place to result in a final GPA of 2.870. The WSU transcript displays two decimal points, 2.87.
- The number 5 is rounded up following standard rounding rules.

102. **STUDENT'S GRADE POINT AVERAGE.** A student's grade point average (GPA) is determined by adding the grade points earned in all WSU course work and dividing by the total number of credits in which the student has been enrolled at WSU. I, W, S, P, H, M, U, and X grades are disregarded.

The grades earned at other institutions do not count in the Washington State University grade point average.

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.** A student having complaints about instruction or grading should attempt to resolve those issues directly with the instructor. If that fails, the student should send an email to the instructor using his or her official WSU email account no later than 20 business days following the end of the semester. This email should briefly outline the complaint and be copied to the chairperson of the academic department.

If the complaint is not resolved with the instructor within 20 business days of sending the email, then the student may work directly with the chairperson of the academic department in which the course is offered. The chair's decision shall be rendered within 20 additional business days.

After the chair's decision, the student or the instructor may appeal to the academic college Dean's Office. Complaints must be presented in writing to the college 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 college dean. The decision of the college dean is the final step and shall be made within 20 business days.

At the campuses other than Pullman, the procedure is identical except that the program leader shall substitute for the department chair, and the campus chancellor or his or her designee shall substitute for the college dean, if the department chair and/or the college dean is not located on that campus.

The University Ombudsman is available at any stage for advice or assistance in resolving academic complaints.

Note: Though chairs and college deans (and program leaders and campus chancellors) may resolve complaints about instruction and grading, they may not change a final grade without the consent of the instructor, except as provided by Rule 105.

105. **ADMINISTRATIVE CHANGES TO FINAL GRADES**

a. **Chairperson Acting in Lieu of Instructor:** In the extraordinary circumstances when an instructor is not available, or has failed to respond to the student or chairperson using his or her official WSU email account within 20 business days according to Rule 104, the chairperson of the department may change a final grade.

b. **University Grade Appeals Board:** If a chair, dean, Graduate School Dean, Vice Chancellor for Academic Affairs or designee, or University Ombudsman determines 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 chair of the University Grade Appeals Board for review. The case must be referred within one semester of the posting of the grade (excluding summer term).

The University Grade Appeals Board shall have jurisdiction over decisions of any instructor and/or administrator on matters of University course grading appeals. The decision of the board is final and not subject to further appeal.

Note: Students may not take a grade appeal directly to the board but should follow the academic complaint procedures, as presented in Rule 104.

c. **Procedure for academic integrity violations:** Allegations of academic integrity violations are processed through the procedure established in WAC 504-26-415. A final grade may be changed at any time as a result of this procedure.

GRADUATION

106. **UNDERGRADUATE APPLICATION FOR UNDERGRADUATE DEGREE.** Students may apply for their undergraduate degrees online as soon as they have completed 90 credits and are admitted to the major. Advisors and the students' major department are responsible for checking that all departmental requirements are met through the advisement report / degree audit. A

graduation fee must be paid at the time of application. See <http://graduations.wsu.edu/> for further information.

108. **STUDENT RESPONSIBILITY FOR GRADUATION.** The student has the ultimate responsibility for meeting all graduation requirements. The student plans the program of study each semester in consultation with the advisor. The degree requirements listed in the catalog and in the advisement report are binding. Colleges may substitute or waive college-level requirements for individual students. Departments may substitute or waive departmental requirements for individual students.

109. **PETITIONS FOR UNIVERSITY-LEVEL UNDERGRADUATE GRADUATION REQUIREMENTS.** The Provost's Office may substitute or waive university-level undergraduate graduation requirements. Students may petition to substitute or waive university-level graduation requirements by completing and submitting the University and College Requirement Petition form.

110. **UNDERGRADUATE UNIVERSITY REQUIREMENTS FOR GRADUATION.** The University requirements for graduation must be satisfied prior to the awarding of an undergraduate degree. Students meet the University requirements for graduation, including general education requirements, as follows:

- New students are held to the University requirements that are published in the catalog with the effective date that corresponds to their Admission term.
- Former students who are readmitted to WSU are held to the University requirements that are published in the catalog at the time they are readmitted and reflect their most current admission term. However, students who were enrolled at WSU prior to Fall 2012, and who completed the 2009 General Education Requirements (GERs), are considered to have satisfied the current University Common Requirements (UCORE).
Students with incomplete general education requirements (such as GERs or GURs), or who completed general education requirements prior to 2009, are encouraged to work with their academic advisors to determine what coursework is needed to complete the UCORE requirements.
- Students who apply to graduate who are not currently enrolled will be held to current University requirements.

111. **UNDERGRADUATE MAJOR, MINOR, AND COLLEGE REQUIREMENTS FOR GRADUATION.** Graduation requirements for a student's degree are set at the time the student is admitted to the major and include college requirements. Graduation requirements for additional majors, minors, or other academic awards are set at the time of admission to those additional academic plans. The following exceptions apply:

- Departments may require students to meet newer major or minor requirements, provided the newer requirements neither oblige 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.
- Current students whose admission to the major or minor is more than eight years old may be required by the department to meet current degree requirements. This may in some cases prolong the time necessary to complete the degree.
- Former students who must reapply and be readmitted to WSU will need to contact the department where they wish to be admitted as a major since their prior status is not maintained. These students will be eligible to be admitted to the major when they meet the current requirements for certification set by the department.
- Students who apply to graduate and who have not attended WSU for six or more years will need approval from their major department to complete the degree in the major to which they were previously admitted. In some cases, these students may be held to more current requirements which may prolong the time necessary to complete the degree. Students may choose to seek a different major without being readmitted to the university in order to earn a degree.
- Students who maintain continuous enrollment shall have eight years to complete any degree, major, minor, or other academic award that has been discontinued, following the last inclusion in the WSU Catalog.
- Deans, department heads, and program chairs have the authority to

waive or provide substitute course work for college, major, or minor requirements. They may also allow a student to graduate using the requirements from a prior catalog year, provided that the student was enrolled during that time, and that the major or minor is currently offered.

114. REQUIREMENTS FOR BACCALAUREATE DEGREES

- (a) The award of a baccalaureate degree requires the satisfactory completion of all University graduation requirements. The degree grade point average will be posted to the official transcript at the time that the baccalaureate degree is conferred
- (b) The award of a baccalaureate degree requires the completion of and posting to the official transcript of all outstanding incomplete work (including grades of I, X, and no/blank grades).
- (c) The award of a baccalaureate degree and/or diploma requires the student's good standing in the university and satisfaction of all University graduation requirements. "Good standing" means the student has resolved any acts of academic or behavioral misconduct, and complied with all sanctions imposed as a result of the misconduct. (See Rule 45 and the Standards of Conduct for Students.)
 - 1) The University shall have the sole authority in determining whether to withhold the degree and/or diploma in cases where the student is not in good standing due to acts of misconduct, has not resolved any acts of academic or behavior misconduct, or has not complied with all sanctions imposed as a result of misconduct.
 - 2) The University shall deny the award of a degree if the student is dismissed from the University based on his or her misconduct.
 - 3) A diploma will not be sent until the student has resolved any unpaid fees and resolved any acts of academic or behavioral misconduct and complied with all sanctions imposed as a result of misconduct.
- (d) The grades earned at other institutions do not count in the Washington State University grade point average.
- (e) To complete a baccalaureate degree, students shall:
 - 1) Earn a 2.0 cumulative grade point average or better in graded course work.
 - 2) Earn a 2.0 cumulative grade point average or better in graded course work in the major.
 - 3) Complete the departmental and college requirements for an active baccalaureate degree. Baccalaureate degrees remain active for the purpose of degree completion for eight years following the last inclusion in the WSU catalog.
 - 4) Earn a minimum of 120 semester hours of credit. At least 30 must be WSU hours; see Rule 6.
 - 5) 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 complete a 500-level course as a requirement for the baccalaureate degree.
 - 6) Complete the University Common Requirements (UCOREs) for graduation.
 - 7) Complete the university writing requirements, including two Writing in the Major courses and the Writing Portfolio.

115. REQUIREMENTS FOR THE PROFESSIONAL DEGREES

- (a) To earn a professional degree, students shall complete all requirements specified for the degree.
- (b) The award of a professional degree requires the completion of and posting to the official transcript of all outstanding incomplete work (including grades of I, X, and no/blank grades).
- (c) The award of a professional degree and/or diploma requires the student's good standing in the university and satisfaction of all University graduation requirements. "Good standing" means the student has resolved any acts of academic or behavioral misconduct, and complied with all sanctions imposed as a result of the misconduct. (See Rule 45 and the Standards of Conduct for Students.)
 - 1) The University shall have the sole authority in determining whether to withhold the degree and/or diploma in cases where the student is not in good standing due to acts of misconduct, has not resolved any acts of academic or behavior misconduct, or has not complied with all sanctions imposed as a result of misconduct.
 - 2) The University shall deny the award of a degree if the student is dismissed from the University based on his or her misconduct.

- 3) A diploma will not be sent until the student has resolved any unpaid fees and resolved any acts of academic or behavioral misconduct and complied with all sanctions imposed as a result of misconduct.

116. REQUIREMENTS FOR MASTER'S DEGREES

- (a) The Graduate School has no residency requirement.
- (b) 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 master's 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.
- (c) The award of a master's degree and/or diploma requires the student's good standing in the university and satisfaction of all University graduation requirements. "Good standing" means the student has resolved any acts of academic or behavioral misconduct, and complied with all sanctions imposed as a result of the misconduct. (See Rule 45 and the Standards of Conduct for Students.)
 - 1) The University shall have the sole authority in determining whether to withhold the degree and/or diploma in cases where the student is not in good standing due to acts of misconduct, has not resolved any acts of academic or behavior misconduct, or has not complied with all sanctions imposed as a result of misconduct.
 - 2) The University shall deny the award of a degree if the student is dismissed from the University based on his or her misconduct.
 - 3) A diploma will not be sent until the student has resolved any unpaid fees and resolved any acts of academic or behavioral misconduct and complied with all sanctions imposed as a result of misconduct.
- (d) To complete a master's degree, a student shall:
 - 1) Earn no fewer 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.
 - 2) 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.
 - 3) Earn a minimum grade point average of 3.00 for all course work taken as a graduate student.
 - 4) Successfully complete graduate examinations.

117. REQUIREMENTS FOR DOCTOR'S DEGREES

- (a) The Graduate School has no residency requirement.
- (b) 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 doctoral 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.
- (c) The award of a doctoral degree and/or diploma requires the student's good standing in the university and satisfaction of all University graduation requirements. "Good standing" means the student has resolved any acts of academic or behavioral misconduct, and complied with all sanctions imposed as a result of the misconduct. (See Rule 45 and the Standards of Conduct for Students.)
 - 1) The University shall have the sole authority in determining whether to withhold the degree and/or diploma in cases where the student is not in good standing due to acts of misconduct, has not resolved any acts of academic or behavior misconduct, or has not complied with all sanctions imposed as a result of misconduct.
 - 2) The University shall deny the award of a degree if the student is dismissed from the University based on his or her misconduct.
 - 3) A diploma will not be sent until the student has resolved any unpaid fees and resolved any acts of academic or behavioral misconduct and complied with all sanctions imposed as a result of misconduct.
- (d) To complete a doctoral degree, a student shall:
 - 1) Earn no fewer 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.
 - 2) 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 doctoral degree.
 - 3) Earn a minimum grade point average of 3.00 for all course work taken as a graduate student.
 - 4) Successfully complete graduate examinations.

118. TWO OR MORE BACCALAUREATE DEGREES FROM WSU. One baccalaureate degree from WSU requires a minimum of 120 semester hours. For each additional baccalaureate degree, the student must complete an additional 30 semester hours, as well as satisfy all requirements of the college and the second degree program. For a second or subsequent baccalaureate degree, the first baccalaureate degree from WSU is understood to fulfill all University requirements for graduation, including the upper-division requirements, University Writing Portfolio, the minimum hours for the first degree (120), as well as the University Common Requirements (UCOREs).

119. REQUIREMENTS FOR OFFICIAL CERTIFICATES

Official certificates generally represent a body of coursework that demonstrates proficiency in a subset of skills or knowledge that have useful application in a variety of professions. They are formally recognized by the university and convey that students have developed mastery of course material.

An officially recognized certificate is a document issued by WSU, displaying the WSU seal and president's signature, which is issued to students who have completed a course of study that meets the guidelines outlined below and has been approved by the Faculty Senate. Officially recorded certificates also appear on the WSU academic transcript.

For certificate completion, the following criteria apply:

Undergraduate Certificates:

1. Admission and certification requirements: Students who are admitted to the university may pursue an official undergraduate certificate through the unit offering the certificate. The requirements for each certificate, including specific certification criteria, are listed in the catalog under the responsible unit. Not all undergraduate certificates are available on all campuses.
2. Credit hours: A minimum number of 15 credit hours is required, with the exact number specified by the academic unit offering the certificate.
3. Transfer credits: The maximum number of credit hours earned at other institutions that may apply towards a particular WSU certificate shall not exceed $\frac{1}{4}$ of the total number of credit hours required for the certificate. Acceptance of particular courses from other institutions for WSU certificate credit will be at the discretion of the department or program offering the certificate.
4. Grading: The number of credit hours that students may elect to take Pass/Fail shall not exceed one-fourth of the total number of credit hours required for the certificate.
5. GPA requirement for completion: The minimum cumulative GPA based on all graded coursework required to earn the certificate is 2.0.
6. Accumulation of credits towards undergraduate degree: Credit hours earned in certificate program may be applied toward a degree.
7. Application for conferral of the undergraduate certificate: Students apply for conferral of the certificate following the same schedule as is used for undergraduate degree conferral (see rule 125). The unit is responsible for checking that all requirements are met. Upon successful completion of the requirements and payment of the certificate fee, the certificate will be posted to the official WSU transcript and an official certificate will be mailed to the student. Students apply online at myWSU.edu under apply to graduate.

Graduate Certificates:

1. Requirements for the Graduate Certificate vary but typically consist of 9 to 12 credits of graded coursework. Once admitted as a part-time graduate certificate student, the student can take graduate certificate courses and/or graduate courses but must maintain a 3.0 GPA. Students currently enrolled in regular graduate degree programs (master's or doctoral) may concurrently enroll in graduate certificate programs with the approval of their committee.
2. To qualify as a formal graduate certificate program, the program must conform to existing Graduate School academic standards and to existing policies outlined for graduate degree programs, including Faculty Senate approval and the following:
 - a) Graduate certificate programs must use approved undergraduate or graduate coursework, with no more than one-third of the coursework being at the undergraduate (400) level.
 - b) Student may be admitted to the Graduate School as a Graduate Certificate Student and have completed all appropriate prerequisite classes to take graduate coursework.
 - c) Courses graded S/F cannot be used toward major or supporting work for any degree program.

- d) The maximum time allowed for completion of a certificate is 6 years from the beginning date of the earliest course applied toward the certificate. Students may request an extension of this time as described in the Graduate School's Policies and Procedures Manual Chapter 6, Section F.
- e) A certificate fee is assessed at the time of completion of the certificate. The student must be enrolled the semester in which he/she applies for a graduate certificate.

Professional Certificates:

1. Admission Requirements: Students who are enrolled through one of the professional careers (medicine, pharmacy, veterinary medicine, and the MBA business career) must be approved by the academic unit to seek an official certificate. The requirements for the certificate, including specific admission criteria, are listed in the catalog under the unit offering the certificate.
2. Credit hours: A minimum number of 9 credit hours is required, with the exact number specified by the academic unit offering the certificate.
3. Accumulation of credits towards a professional degree: Credit hours earned in certificate program may be applied toward a degree, unless prohibited by the academic unit.
4. Grading: Students must meet grading requirements and maintain satisfactory academic progress as outlined in the catalog in order to earn the certificate.
5. Transfer credits: Acceptance of particular courses from other institutions for credit towards the certificate will be at the discretion of the academic unit offering the certificate.
6. Upon successful completion of the requirements and payment of the certificate fee, the certificate will be noted on the official WSU transcript and an official certificate will be mailed to the student. Students apply online at myWSU.edu under apply to graduate.

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.

140. **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 classes taken at Washington State University and their respective grades.

Requests for official transcripts may be ordered at www.transcript.wsu.edu. Official transcripts are not held for grades or degrees and students should review their unofficial transcript prior to ordering the official transcript. When present, a conduct hold 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 of which WSU possesses the original copy may be requested using the Non-WSU, International Transcript Request form, also available online.

142. **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). See <https://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html>.

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.

Federal law also requires that WSU employees, prior to receiving access to education records, receive training about the rights of students and their education records as governed by FERPA (Family Educational Rights and Privacy Act).

Washington State University may release directory information contained in a student's education records. "Directory information" means information contained in an education record that would not generally be considered harmful or an invasion of privacy if disclosed.

Directory information includes the following: name (including any former name); local and permanent addresses; telephone numbers; email addresses; major and minor fields of study; participation in officially recognized sports; weight and height of members of athletic teams; dates of attendance; enrollment status (e.g., undergraduate, graduate, full-time or part-time); class standing (e.g., junior, senior); status as graduate assistant and assignment; degrees, certificates, and awards received, including the President's Honor Roll; and the most recent previous educational institution attended by the student.

Restricting directory information: Students may request that WSU not release directory information by choosing "FERPA Restrictions" under their profile in myWSU. When students restrict their directory information, their names will not be published in the campus directory, and WSU will not release their names in any WSU press releases, including President's Honor Roll notification to hometown newspapers. In addition, WSU will not be able to verify any degrees earned without signed consent.

Granting access to education records: Students may authorize a parent, spouse, employer or other third party to access their official WSU records, including account balances, class schedules, financial aid, scholarships, and grades. Students designate which information to share (access is read only) by choosing "Third Party Access" under their profile in myWSU. Alternatively, students may request that their education records be shared with specific individuals or departments by providing a written, signed request.

The Washington State University policy on student records can be found in the Washington Administrative Code 504-21 online. Contact the Office of the Registrar at 509-335-5346 or see <http://www.registrar.wsu.edu/ferpa-rights-and-privacy/> for more information.

145. **DISCONTINUED DEGREE PROGRAMS.** Undergraduate students who have been admitted to the major, graduate students accepted to degree candidacy, and matriculated professional students can expect that a degree will be granted if they are currently enrolled and meet all requirements as listed in Academic Regulations 110-118. However, because of serious reductions in financial support, loss of faculty, or for other significant reasons, the university may find it necessary to discontinue a degree.

When an undergraduate or professional degree is discontinued, further admission to the major will cease with the effective date of the degree's discontinuation. For graduate degree programs, admissions will be suspended with the filing for discontinuation and terminated with the effective date of the discontinuation.

Academic leadership of the college and campus has the obligation to provide for individual needs of currently enrolled students so that they may complete their degrees within a reasonable time period, typically no longer than four years. Possible options include the following:

1. Departments and programs may waive or substitute departmental degree requirements in order to award a degree (approval of the graduate school is required for graduate students) when accreditation or licensure allows;
2. The Provost's Office may substitute or waive university-level undergraduate graduation requirements by petition;
3. When necessary, students may be advised to complete their requirements in similar or related degree programs;
4. Undergraduate and professional students may be allowed to complete remaining requirements at another institution; and
5. Graduate students may be allowed to take courses or conduct research at another institution when approved by the student's graduate committee and the graduate school.

In all cases, all financial obligations are the responsibility of the individual student involved, except as otherwise noted in the Washington State University Catalog or the Graduate Studies Policies and Procedures Manual.

Students having questions or concerns about degree programs that have been discontinued should contact the college dean or campus chancellor. The Provost's Office and University Ombudsman are also available at any stage for advice or assistance.

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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