



WASHINGTON STATE
UNIVERSITY

2025 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.

Students pursuing majors in the College of Arts and Sciences and the College of Veterinary Medicine have additional credit hour requirements chosen from UCORE courses. See the Achieving Academic Success section of this catalog.

Students in the Honors College follow a different set of general education requirements. See the Honors College section of this catalog.

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
(2)	Humanities [HUM]	3
	Degree Program Course ¹	3
(3)	Foreign Language, if necessary, or Elective	4
	Quantitative Reasoning [QUAN]	3 or 4
	Equity and Justice [EQJS]	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, "CHEM", is followed by the course number, and then by "[PSCI]", which indicates that this course meets the UCORE physical science requirement.

The credit hours are shown after the title. This is a 4-credit course. The (3-3) tells you 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. The "concurrent enrollment" tells you that you are allowed to enroll in the course when you enroll in one of the prerequisite courses at the same time.

Finally, notice that the department is recommending that you have one year of high school chemistry. This is not a course prerequisite -- but it is good advice that you may want to consider.

CHEM

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.

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.

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 a member institution with the Northwest Commission on Colleges and Universities (NWCCU). Washington State University's accreditation status is Accreditation Reaffirmed. The NWCCU's most recent action on the institution's accreditation status in 2018 was to reaffirm accreditation. Washington State University's next accreditation review is scheduled for Spring 2026 and 2027. NWCCU is an institutional accrediting agency recognized by the US Secretary of Education and the Council for Higher Education Accreditation (CHEA).

Accreditation status granted by NWCCU applies to the entire institution, not to individual programs or locations. NWCCU is not a programmatic accrediting agency. Information about programmatic accreditation can be found in the next section "Specialized Accreditations".

Inquiries regarding Washington State University's institutional accreditation status by NWCCU should be directed to WSU's accreditation liaison officer, Dr. William B. Davis, at wbdavis@wsu.edu or (509) 335-4930. Individuals may also contact NWCCU directly at:

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) (<https://www.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)
Association to Advance Collegiate Schools of Business (AACSB)
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
Committee on Accreditation for the Exercise Sciences
Council for Interior Design Accreditation (CIDA)
Council on Academic Accreditation in Audiology and Speech-Language Pathology
Council on Social Work Education (CSWE)
Institute of Food Technologists' (IFT) Higher Education Review Board (HERB)
Landscape Architectural Accreditation Board (LAAB)
Liaison Committee on Medical Education (LCME)
National Architectural Accrediting Board (NAAB)
National Association of Schools of Music (NASM)
National Professional Science Masters Association (NPSMA)
Society of American Foresters - provisional accreditation
Washington Professional Educator Standards Board (PESB)
Washington State Department of Health, Nursing Care Quality Assurance Commission

Academic Calendar

	2025- 2026	2026- 2027	2027- 2028	2028- 2029	2029- 2030	2030- 2031	2031- 2032
First Semester (Fall)							
Classes begin, Monday	Aug 18	Aug 24	Aug 23	Aug 21	Aug 20	Aug 19	Aug 18
Labor Day holiday	Sept 1	Sept 7	Sept 6	Sept 4	Sept 3	Sept 2	Sept 1
Midterm grades due, 5:00 p.m.	Oct 8	Oct 14	Oct 13	Oct 11	Oct 10	Oct 9	Oct 8
Veterans Day holiday	Nov 11	Nov 11	Nov 11	Nov 10*	Nov 12*	Nov 11	Nov 11
Thanksgiving Vacation	Nov 24-28	Nov 23-27	Nov 22-26	Nov 20-24	Nov 19-23	Nov 25-29	Nov 24-28
Thanksgiving Day holiday	Nov 27	Nov 26	Nov 25	Nov 23	Nov 22	Nov 28	Nov 27
Native American Heritage Day holiday	Nov 28	Nov 27	Nov 26	Nov 24	Nov 23	Nov 29	Nov 28
Commencement	Dec 6	Dec 12	Dec 11	Dec 9	Dec 8	Dec 7	Dec 6
Final Examinations	Dec 8-12	Dec 14-18	Dec 13-17	Dec 11-15	Dec 10-14	Dec 9-13	Dec 8-12
Final grades due, 5:00 p.m.	Dec 16	Dec 22	Dec 21	Dec 19	Dec 18	Dec 17	Dec 16
Second Semester (Spring)							
Classes begin	Jan 12	Jan 11	Jan 10	Jan 8	Jan 7	Jan 6	Jan 12
Martin Luther King, Jr. Day holiday	Jan 19	Jan 18	Jan 17	Jan 15	Jan 21	Jan 20	Jan 19
Presidents Day holiday	Feb 16	Feb 15	Feb 21	Feb 19	Feb 18	Feb 17	Feb 16
Midterm grades due, 5:00 p.m.	Mar 4	Mar 3	Mar 1	Feb 28	Feb 27	Feb 26	Mar 4
Spring Vacation, (10th week)	Mar 16-20	Mar 15-19	Mar 13-17	Mar 12-16	Mar 11-15	Mar 10-14	Mar 16-20
Final Examinations	May 4-8	May 3-7	May 1-5	April 30- May 4	April 29- May 3	April 28 - May 2	May 4-8
Commencement	May 9	May 8	May 6	May 5	May 4	May 3	May 9
Final grades due, 5:00 p.m.	May 12	May 11	May 9	May 8	May 7	May 6	May 12
Summer Session							
Early Session begins	May 11	May 10	May 8	May 7	May 6	May 5	May 11
Memorial Day holiday	May 25	May 31	May 29	May 28	May 27	May 26	May 25
Eight-Week Session begins	June 8	June 7	June 5	June 4	June 3	June 2	June 8
Juneteenth holiday	June 19	June 18*	June 19	June 19	June 19	June 19	June 19
Late Six-Week Session begins	June 22	June 21	June 19	June 18	June 17	June 16	June 22
Independence Day holiday	July 3*	July 5*	July 4	July 4	July 4	July 4	July 3*
Summer Session ends, Friday	July 31	July 30	July 28	July 27	July 26	July 25	July 31
Final grades due, 4:00 p.m.	Aug 4	Aug 3	Aug 1	July 31	July 30	July 29	Aug 4

* 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 more than 25,000 undergraduate, graduate, and professional students from every state and over 100 countries.

Academic programs prepare undergraduates to succeed

WSU empowers students through proven, 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 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

WSU 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 across the state. WSU Health Sciences colleges educate healthcare professionals to serve Washington communities where they are needed most.

School spirit is unstoppable

Fans form a sea of crimson to cheer on the Cougars. Campuses in Pullman, Everett, Spokane, Tri-Cities, and Vancouver serve students across the state and the online programs of the Global Campus reach worldwide. WSU Extension, with offices in every Washington county and on the Colville Reservation, translates knowledge and innovation into hands-on solutions for the people of Washington.

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
Architectural Studies, BS
Architecture, MArch
Art, BA, BFA, MFA
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, BS, MS, PhD
Construction Management, BS
Coordinated Program in Dietetics, Nutrition, and Exercise Physiology, MS
Criminal Justice and Criminology, BA, MA, PhD
Crop Science, MS, PhD
Cybersecurity, BS
Data Analytics, BS
Digital Technology and Culture, BA
Earth and Environmental Science, BS
Economics, MS, PhD
Economic Sciences, BS
Education, BA, EdM, MA, MIT, EdD, PhD
Electrical and Computer Engineering, PhD
Electrical Engineering, BS, MS
Electrical Power Engineering, PSM
Energy Conscious Construction, MECC
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, MS, PhD
Food Science, BS, MS, PhD
Foreign Languages and Cultures, BA
Genetics and Cell Biology, BS
Geology, MS, PhD
Health Communication and Promotion, MA
Healthcare Administration and Leadership, MHAL
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, MN, DNP, PhD
Nutrition and Exercise Physiology, BS, MS, PhD
Pharmaceutical and Medical Sciences, BS
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
Public Health, BS
Science, Bachelor of
Social Sciences, BA
Social Studies, BA
Social Work, 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 Anatomic Pathology, MVAP
Veterinary Medicine, DVM
Veterinary Science, BS
Viticulture and Enology, BS
Women's, Gender, and Sexuality Studies, BA
Zoology, BS

WASHINGTON STATE UNIVERSITY SYSTEM STRATEGIC PLAN

Vision

Washington State University will deepen and expand its impact by building on the strengths of each campus and location for a stronger Washington state and Global community.

Mission

Washington State University is a public research university committed to the principles of practical education for all, scholarly inquiry that benefits society, and the sharing of expertise to positively impact the state and communities. Our mission is threefold:

- Our **educational mission** is to help students become more informed, aware, engaged, and creative, and to make education available to anyone who seeks to benefit from it.
- Our **scholarly mission** is focused on the betterment of human existence through the uncovering of new information, the discovery of how to use that information to solve problems, and the creative expression of human experience.
- Our **outreach mission** is to serve the needs of Washingtonians by sharing its expertise and helping residents integrate that knowledge into their daily lives.

Values

- **Land-grant ideals.** Land-grant ideals of access to practical education for all regardless of background, the teaching of skills and knowledge necessary to be an engaged community member, scholarly inquiry for the betterment of society, and the sharing of institutional expertise with state residents.
- **Community.** A “Cougar Spirit” in WSU graduates that emphasizes community: both the community in which university faculty, staff, and students live and in the one made up of the family of Cougs worldwide.
- **Integrity, trust, and respect.** Trust and respect for all persons in an environment that cultivates individual and institutional integrity in all that the university does.
- **Equity, diversity, inclusion, and belonging.** Promotion of an ethical and socially just society through an intentional commitment to equity, diversity, and inclusion.
- **Global Citizenship.** Stewardship of the planet’s resources to ensure its vitality, as well as actions focused on social responsibility and cultural empathy in the context of an interconnected world.
- **Freedom of Expression.** Free exchange of ideas in a constructive and civil environment, including the canons of academic freedom in teaching, research, and outreach.
- **Wellbeing.** Whole-person wellness for all members of the institution and a belief it is WSU’s responsibility to contribute to the overall wellness of our communities and the broader society in which individuals reside.

WSU System Goals

Goal 1: Research, Innovation, and Creativity

Washington State University will be recognized for embracing risk and bold thinking to serve the needs of its communities through innovative research, scholarship, and creative activities.

Goal 2: Student Experience

Washington State University students will engage in scholarship, research, and experiential learning activities to prepare future leaders, scholars, and global citizens.

Goal 3: Outreach, Extension, Service & Engagement

Washington State University will be a national leader in advancing quality of life, economic development, sustainability, and equity through meaningful engagement in discovery, education, and service with partners throughout the state, nation, and world.

Goal 4: Institutional Effectiveness & Infrastructure

WSU will advance a culture of engagement and collaboration across its multi-campus system that values and invests in resources—physical, financial, human, and intellectual—leveraging these to become the social and economic drivers for the community, the state, and the world.

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

WASHINGTON STATE UNIVERSITY FOUNDATION

WSU Foundation, 800-448-2978

255 E Main Street, Suite 301

PO Box 641925, Pullman, WA 99164-1925

<https://foundation.wsu.edu>

Established in 1979, the Washington State University Foundation promotes, accepts, and maximizes philanthropic support for Washington State University students, faculty, research, programs and services systemwide. The WSU Foundation also prudently manages, invests, and stewards the assets entrusted to it by WSU and its alumni, friends, and donors. Philanthropic support for WSU funds scholarships for deserving undergraduate and graduate students, retains and attracts top faculty, builds state-of-the-art facilities, and enables 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 - 190
509-335-6000

<https://ascc.wsu.edu>
ascc@wsu.edu

Bursar's Office (Tuition and Fees)

(Student Accounts)
French Administration Building, Room 342
509-335-9711

<https://bursar.wsu.edu>
bursar.office@wsu.edu

Center for Civic Engagement

Compton Union Building (CUB), Room L45/L48
509-335-7708

<https://cce.wsu.edu/>
cce@wsu.edu

WSU Children's Center

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

Compliance and Civil Rights

French Administration Building, Room 220
509-335-8288
<https://ccr.wsu.edu>
ccr@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://cougarcard.wsu.edu>
cougarcard@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

WSU Student Insurance 509-335-3575
student.insurance@wsu.edu

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

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
509 335-4357
<https://its.wsu.edu>
CrimsonServiceDesk@wsu.edu

Intensive American Language Center (IALC)

Bryan Hall
509-335-6675
<https://ip.wsu.edu/learn-english>
ialc@wsu.edu

International Programs

Bryan Hall, Room 301
509-335-2541
<https://ip.wsu.edu>
ip.admin@wsu.edu

LGBTQ+ Student Center

Compton Union Building (CUB), Room 401
<https://thecenter.wsu.edu>
sa.lgbtq.center@wsu.edu

The Libraries

509-335-9672
<https://libraries.wsu.edu>

Multicultural Student Services

Compton Union Building (CUB), Room 409
509-335-7852
<https://mss.wsu.edu>
mss@wsu.edu

Ombuds

French Administration Building, Room 134
509-335-1195
<https://ombuds.wsu.edu>
ombuds@wsu.edu

The Registrar's Office

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

Student Accommodations and Disability Resources

(Formerly the Access Center)
Washington Building, Room 217
509-335-3417
<https://accesscenter.wsu.edu>
access.center@wsu.edu

Student Engagement Services

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

Student Entertainment Board

Compton Union Building (CUB), Room L47
509-335-3503
<https://seb.wsu.edu>
seb.director@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 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 Recreation Center

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
509-335-2238
<https://learn365.wsu.edu/summer-session/>
learn365@wsu.edu

Transfer Center

Lighty Building, Room 180
509-335-8704
<https://transfercredit.wsu.edu>
transfer@wsu.edu

WSU Veterans and Military-Affiliated Student Services (VMAS)

Federal Veterans Benefits
<https://va.wsu.edu>
Bremerton, Everett, Global, Pullman, and Spokane
Holland Library, Room 120BA
509-335-1234
veterans@wsu.edu
Tri-Cities
Elson S. Floyd Building, Room 203
509-372-7364
tricitie.veterans@wsu.edu
Vancouver
Student Services Center, Room 113
630-546-9570
van.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), Rooms 303 and 305
509-335-7959
<https://writingprogram.wsu.edu>
writing.program@wsu.edu
Information includes:
Writing Placement Process
Junior Writing Portfolio
The Writing Center

WSU Vaccination Requirements

Washington Building
1125 NE Washington St.
Cougar Health Services / Immunizations
[https:// cougarhealth.wsu.edu/medical-services/specialty-care-and-services/immunizations/required-immunizations/](https://cougarhealth.wsu.edu/medical-services/specialty-care-and-services/immunizations/required-immunizations/)

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 and/or gender, race, religion, color, creed, national or ethnic origin, and other bases identified [in EP15](#). 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.

Applicants must apply with a full and complete application packet by March 31 (first-year students) and August 7 (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. In certain circumstances, priority dates may be delayed. Please consult the website for the most up-to-date information. 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 2025-2026 academic year.

The University reserves a limited number of spaces in the incoming class for students with exceptional talent or potential.

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.

Applications are available at <https://apply.wsu.edu>.

Retention of Students

The grade point average for first-year students entering from high school in the fall semester 2023 was 3.50 (all campuses). Of the 4,132 first-year full-time students who entered in the fall 2023, 3,626 were enrolled in the spring of 2024 (87.8% retention rate).

First-Year Admission Requirements

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

First-year 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/apply/application-process/transferring-credits/>

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/apply/first-year-students/>

Washington State University welcomes homeschooled students. Homeschooled students must submit all high school and community college transcripts, as well as the Homeschool Academic Resume for admission consideration.

Adult Student Admission

<https://admission.wsu.edu/apply/first-year-students/>

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 musical ability, athletic accomplishment, awards in science, math, or artistic competitions or similar measures of talent.

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 review students identified as having extraordinary talent. 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 year, the Vice Provost for Enrollment Management, or designees, will provide, as a part of the annual Enrollment presentation, an update to the Faculty Senate 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://tricities.wsu.edu/>

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

<https://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 reactivate your 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://reinstatement.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://apply.wsu.edu>.

Non-Degree Admission

<https://admission.wsu.edu>

Individuals may enroll at Washington State University as non-degree students for personal enrichment, professional development, certificate completion, 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 intending to complete a certificate program must provide academic credentials to prove admissions eligibility. Students who are interested in applying as a non-degree-seeking student may apply at <https://apply.wsu.edu>.

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 WSU

Qualified high school students may be eligible to enroll at the Pullman or Tri-Cities campuses through the Running Start Program. For more information, see:

Pullman Running Start Program: <https://registrar.wsu.edu/running-start/>

Tri-Cities Running Start Program: <https://tricities.wsu.edu/running-start/>

Limited Enrollment Programs

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 admission into major programs vary. Academic departments may establish additional requirements for admission to specific programs. However, eligibility for admission to Washington State University is determined independently from limited enrollment programs. Students applying for admission to selective programs should contact the department or check its website or catalog section for more information.

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>

The College of Agricultural, Human and Natural Resource Sciences (CAHNRS) creates a more resilient world. Discovery in CAHNRS improves the wellbeing of families and communities, our economy, and the environment, and encompasses the expanding, interconnected fields of agriculture and technology.

Putting students in roles of responsibility and service, CAHNRS is training an adaptable, highly skilled workforce for tomorrow. Graduates learn how to sustain our vital natural resources and secure reliable access to affordable, nutritious food for all. Research and engagement in the College supports thriving, healthy communities, families, and individuals of all ages. We fulfill WSU's land-grant mission by providing affordable access to world-class education for all.

The College offers professional career paths through approximately 22 majors in more than a dozen departments and schools, including Animal Sciences; Apparel, Merchandising, Design, and Textiles; Crop and Soil Sciences; Economic Sciences; Entomology; Environment; Food Science; Horticulture; Human Development; Plant Pathology; and Viticulture and Enology. Students receive a solid foundation in the sciences with a technological grounding that enables them to explore and stay up to date with relevant, dynamic fields. 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.

Agriculture 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; human nutrition and food systems; 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.

The School of the Environment prepares students for careers in earth sciences, environmental and ecosystem sciences, forest ecology and management, and wildlife ecology and conservation sciences. Graduates enter their profession as natural resource managers, earth and atmospheric scientists, environmental consultants, foresters, fish and wildlife scientists, and environmental educators.

CAHNRS 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 little 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 CAHNRS 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 Student Success and Academic Programs Crop and Soil Sciences Animal Sciences Economic Sciences Environment Food Science Crop and Soil Sciences Horticulture Viticulture and Enology
Animal Sciences	
Economic Sciences	
Earth and Environmental Sciences	
Food Science	
Integrated Plant Sciences	
Viticulture and Enology	
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 Student Success and Academic Programs Animal Sciences Apparel, Merchandising, Design, and Textiles Biological Systems Engineering
Animal Sciences	
Apparel, Merchandising, Design, and Textiles	
Biological and Agricultural Engineering	
Crop Science	Crop and Soil Sciences
Economics	Economic Sciences
Entomology	Entomology
Environmental and Natural Resource Sciences	Environment
Food Science	Food Science

Geology
Horticulture
Molecular Plant Sciences
Natural Resource Sciences
Plant Pathology
Prevention Science
Soil Science

Doctor of Philosophy

Agricultural Economics
Animal Sciences
Biological and Agricultural
Engineering
Crop Science
Economics
Entomology
Environmental and Natural
Resource Sciences
Food Science
Geology
Horticulture
Molecular Plant Sciences
Plant Pathology
Prevention Science
Soil Science

Environment
Horticulture
Molecular Plant Sciences
Environment
Plant Pathology
Human Development
Crop and Soil Sciences

Economic Sciences
Animal Sciences
Biological Systems Engineering

Crop and Soil Sciences
Economic Sciences
Entomology
Environment

Food Science
Environment
Horticulture
Molecular Plant Sciences
Plant Pathology
Human Development
Crop and Soil Sciences

COLLEGE OF ARTS AND SCIENCES

Courtney Meehan, Interim 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, Sport, and Human Sciences, 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, Sport, and Human Sciences.

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
Art	Art
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
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	
Art	Art
Bachelor of Music	
Music	Music

Bachelor of Science

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

Master of Arts

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

Sociology

Master of Fine Arts

Art

Master of Public Affairs

Public Affairs (Vancouver campus)

Master of Science

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

Doctor of Philosophy

American Studies
Anthropology
Biology
Chemistry
Criminal Justice and Criminology
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

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.

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

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

Art

Politics, Philosophy, and
Public Affairs

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

Mathematics and Statistics

Languages, Cultures, and Race
Anthropology
Biological Sciences
Chemistry
Criminal Justice and Criminology
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

CARSON COLLEGE OF BUSINESS

Deborah Compeau

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 30 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 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 professional advising staff supports the academic, professional, and personal success of the more than 3,000 undergraduate students.

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 consistently ranked in the top 15% in the *U.S. News & World Report* "Best Online MBA Programs".

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 2025-2026 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, Business Administration

Bachelor of Arts, Hospitality Business Management

Areas of Study within Degrees

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

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:

Aging Business Management

Hospitality Business Management

Wine and Beverage Business Management

Not all majors in each degree are offered at every campus. To see at which campuses each of these programs are offered, go to business.wsu.edu.

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, and 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. To see at which campuses each of these minors is offered, go to business.wsu.edu.

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.

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.

THE EDWARD R MURROW COLLEGE OF COMMUNICATION

Bruce Pinkleton, Dean
Goertzen Hall, Room 101
509-335-8535

<https://murrow.wsu.edu>

Where can Murrow take you?

A degree from Murrow College ensures you possess the technical, analytical and critical thinking skills necessary to succeed in the highly competitive and dynamic field of professional communication.

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 digital-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, a student run advertising and public relations firm, an adobe lab, and a collaborative greenhouse space.

The Edward R. Murrow College of Communication offers degree programs in Journalism and Media Production (Broadcast News; Broadcast Production; Media Innovation; 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 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 to 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 to 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 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.

Murrow Professional Student Code of Conduct

The Murrow College of Communication is named after Edward R. Murrow, a legendary journalist, communicator, and WSU alumnus who held strong personal values of honesty, integrity, and truth. The Student Professional Code of Conduct is an outline of behavior expectations set for all students admitted to a major within the Murrow College of Communication. These standards serve to uphold the professionalism and ethical behavior that was demonstrated by our namesake and ensure an environment of academic excellence. They provide a foundation for the many skills, lessons, experiences, and opportunities you will gain as a student and future alum of the Murrow College of Communication at Washington State University.

The full code of conduct can be found on the Murrow College website: [Student Code of Conduct | Edward R. Murrow College of Communication | Washington State University](#).

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 Innovation 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, SPORT, AND HUMAN SCIENCES

Karen Thomas-Brown, Dean
Cleveland Hall
509-335-1738
<https://education.wsu.edu>

The College of Education, Sport, and Human Sciences 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, Sport, and Human Sciences 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, Sport, and Human Sciences 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, Sport, and Human Sciences 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, Sport, and Human Sciences 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, Sport, and Human Sciences 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, Sport, and Human Sciences 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, Sport, and Human Sciences are as follows:

Degree	Academic Area or Emphasis
Bachelor of Arts	
Education	Teaching and Learning
Sport Management	Educational Leadership and Sport Management
Bachelor of Science	
Kinesiology	Kinesiology and Educational Psychology
Sports Medicine (part of the Master in Athletic Training degree program)	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

Partha Pande, 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, cybersecurity, and materials science. The college offers several engineering degrees including bioengineering, chemical engineering, civil engineering, computer 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	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 Management Cybersecurity (also Tri-Cities, Everett) 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 Energy Conscious Construction	Design
Master of Engineering	Civil Engineering
Master of Engineering and Technology Management	Engineering and Technology Management (Global 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)
Professional Science Masters in Electrical Power Engineering	Electrical 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 (<i>Interdisciplinary Program</i>) 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. 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

James Record, Interim Dean
WSU Spokane
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 Interim Dean Dr. James Record, the College of Medicine is driven by its mission to serve Washington and beyond through collaboration and problem-solving in education, research, and health care with a focus on rural communities, Tribal Nations, and people who have been historically marginalized.

The College of Medicine administration is primarily located on the WSU Spokane campus with three regional medical campuses in Everett, Tri-Cities, and Vancouver. Employing a community-based model in which medical 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 medical 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 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 extends the reach of the college's mission by improving health outcomes through community-informed research and the development of evidence-based policies and practices. 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 also delivers the professional Certificate in Medical Ethics program.

The Department of Medical Education and Clinical Sciences delivers the MD program and graduate medical education programs, training medical students and residents to be insightful and compassionate physicians. The College of Medicine's graduate medical education programs, also known as residency programs, are available in three locations: internal medicine in Everett, family medicine in Pullman, and pediatrics in Spokane. Both the undergraduate and graduate medical education programs immerse learners 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 health care issues. Students and residents learn to recognize problems in health care delivery, innovate solutions, and mobilize change that improves the health of entire populations. The department also delivers the Healthcare Leadership Certificate, the Medical Ethics Certificate, and the Master of Healthcare Administration and Leadership

comprised of three professional certificates. These programs provide training to current and future health care leaders in key leadership skills and professional competencies.

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 Master of Science Coordinated Program in Dietetics, Nutrition and Exercise Physiology (MS CPD) prepares you to enter the field of nutrition and dietetics as an entry-level Registered Dietitian Nutritionist (RDN) through coordinated didactic coursework and experiential supervised practice, also preparing students for the registration examination for dietetics administered through the Commission on Dietetic Registration (CDR) in partnership with the Academy of Nutrition and Dietetics (AND). The department offers degrees at the B.S., M.S., and Ph.D. levels.

The Department of Speech and Hearing Sciences offers programs leading to a B.A. in Speech and Hearing Sciences and a M.S. in Speech and Hearing Sciences in speech-language pathology. In addition to the traditional undergraduate sequence, a post-baccalaureate course sequence leading to the M.A. degree is available for students who already have a bachelor's degree. 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 department offers degrees at the B.A., post-baccalaureate, 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
Master of Healthcare Administration and Leadership	Medical Education and Clinical 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 WSU College of Nursing educates more than 900 upper-division undergraduate and graduate-level nursing students each year across its four sites statewide.

The College offers a prelicensure Bachelor of Science in Nursing (PL-BSN) program and a Registered Nurse to Bachelor of Science program (RN-BSN) 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 (MN) with specialties in Nurse Educator and Systems Leadership; the Doctor of Nursing Practice (DNP), with specialties in family nurse practitioner (FNP), psychiatric mental health nurse practitioner (PMHNP), or general specializations for licensed advanced practice RNs; and Doctor of Philosophy (PhD) programs to develop nurse scientists.

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 Board of Nursing and are accredited by the Commission on Collegiate Nursing Education. Approximately 600 PL-BSN and RN-BSN 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 the teaching site in Yakima.

The PL-BSN program is for students beginning their nursing education. 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 spent taking prerequisite coursework and general education courses. Those may be completed on the Pullman or Tri-Cities campuses at WSU, Whitworth University, or at any institution offering courses equivalent to those taught at Washington State University. The last two years of the curriculum are focused on core nursing education with courses offered in Spokane, Yakima, and the Tri-Cities. Graduates are then 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 are 300-400-level courses and are offered in Spokane, Yakima, Tri-Cities, and Vancouver. Prerequisite coursework requirements may be taken on the Pullman or Tri-Cities campuses at WSU, or through any institution offering courses equivalent to those taught at Washington State University.

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 PL-BSN or RN-BSN programs must apply to the College of Nursing. Please note that the College of Nursing uses a Centralized Application Service (CAS) for BSN applicants.

Application information can be found on the College of Nursing website for [PL-BSN applicants](#) and [RN-BSN applicants](#). The PL-BSN program admits students for Fall- and Spring-starts. The RN-BSN program admits students for Fall-, Spring-, and Summer-starts. Students are encouraged to contact an advisor at their campus for advising. 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 Post-Licensure Master of Nursing (MN) program prepares students for advanced nursing practice roles. This degree requires students to complete didactic coursework to attain competency in personal leadership skills, discerning best evidence, collaborating in change initiatives and implementation of technology that positively impact healthcare outcomes. Additionally, students completing this degree choose between one of two specializations: Clinical Systems Leadership or Nurse Educator.

The Doctor of Nursing Practice (DNP) program offers prospective students with a BSN in nursing the opportunity to earn a doctoral degree with a specialization in either Family Nurse Practitioner (DNP-FNP) or Psychiatric Mental Health Nurse Practitioner (DNP-PMHNP). Students who are already advanced practice RNs with a master's degree may also choose to do the post-master's generalist option (DNP-PMG). 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 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. Students will have the opportunity to choose focal areas of research including behavioral health, health equity, climate change and health, or work science, education, and policy. 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 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 at Spokane, Yakima, Tri-Cities, or Vancouver. Hybrid means that there is a requirement of attendance at some on-campus courses, while including the completion of some learning activities via live interactive videoconference and using internet-based course management software.

Certificates

Graduate certificates offered by the college include Nurse Educator and Nursing Leadership. The Nurse Educator certificate is specifically designed for nurses who envision a role in shaping the future of nursing as an academic educator or professional educator in a clinical setting. This program can be taken as a standalone certificate by working nurses seeking to advance their careers in education, or as an addition to another graduate program in the College of Nursing. The Nursing Leadership certificate equips individuals with the tools necessary to excel in dynamic healthcare environments. The coursework provides students with an opportunity to acquire specialized skills in clinical systems leadership.

Graduate Admission

All students planning to pursue entrance in any of the graduate programs must apply to the College of Nursing. Please note that the College of Nursing uses a Centralized Application Service (CAS) for applicants. Information about the programs and application details may be found at <https://nursing.wsu.edu/graduate-program-options/>. The graduate programs admit students for Fall-starts. 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.

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. Washington State University College of Nursing is approved as a provider of nursing continuing professional development by the Office of the Superintendent of Public Instruction, the Professional Educator Standards Board (PESB), and Montana Nurses Association, an accredited approver with distinction by the American Nurse Credentialing Center's Commission on Accreditation. 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 Arts in Social Work	Social Work
Bachelor of Science in Nursing	Generalized practice of professional nursing
Master of Nursing	Nurse Educator Population Health (not accepting applications at this time.) Systems Leadership
Doctor of Nursing Practice	Family Nurse Practitioner (FNP) Population Health (not accepting applications at this time.) Psychiatric/Mental Health Nurse Practitioner (PMHNP) Post-Master's (generalist) (PMG)
Doctor of Philosophy	Nursing

COLLEGE OF PHARMACY AND PHARMACEUTICAL SCIENCES

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

The College of Pharmacy and Pharmaceutical Sciences offers three degree programs: the professional degree of the Doctor of Pharmacy (PharmD); the Doctor of Philosophy in Pharmaceutical Sciences and Molecular Medicine (PhD); and the undergraduate degree of the Bachelor of Science in Pharmaceutical and Medical Sciences (BS PharMeds).

These programs are all offered on the WSU Spokane campus. The PharmD degree is delivered in Spokane and in Yakima on the Pacific Northwest University campus. One of the research programs within the college, the U.S. Transuranium and Uranium Registries (USTUR), is located in Richland, Washington.

Professional Program

The Doctor of Pharmacy (PharmD) is geared for those who wish to become pharmacists and work in a health care setting. The schedule of studies involves four professional years. The first three professional years of the PharmD curriculum are delivered at the WSU Spokane and the Pacific Northwest University of Health Sciences campus in Yakima. The fourth year will consist of seven 6-week rotations in various practice settings. During your four years in pharmacy school you will have 1,960 hours of professional pharmacy experience in a variety of settings. The 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.

The college offers specialized tracks for psychology and Honors College students, where a bachelors and Doctor of Pharmacy degree can be achieved in 7 years as opposed to the normal 8 years it would take to achieve both degrees.

Certificates and dual degrees develop skills beyond the traditional Doctor of Pharmacy curriculum. The college offers five dual degrees and certificates, including Engineering and Technology Management, Master of Business Administration (MBA), MA in Health Communication and Promotion, MA in Strategic Communication, and 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 2-3 years of prepharmacy education. Tuition waivers are given to out-of-state students. For additional information regarding the Doctor of Pharmacy curriculum, please see the College of Pharmacy and Pharmaceutical Sciences home page at <http://pharmacy.wsu.edu/>, or contact the Office of Student Services at 509-368-6605.

Graduate Program

The college's PhD in Pharmaceutical Sciences and Molecular Medicine graduate program prepares you for careers in academia, industry, and other public and private institutions dedicated to the promotion of human health. The PhD program provides 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. Careers upon graduation include academia, research, medical writers, medical science liaisons, and many others.

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 and PhD dual 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 transcripts for all college level work, three letters of recommendation, and a statement of purpose discussing career goals, previous research experience, and research interests. The GRE is no longer required. For students whose native language is not English, please contact the graduate program coordinator for language requirements to enter the program. Inquiries should be emailed to: pharmacy.gradprogram@wsu.edu.

Undergraduate Program

The college offers a Bachelor of Science degree in Pharmaceutical and Medical Sciences. The first two years of coursework are to be completed at a 4-year institution or community college. The last two years of the program are offered on the WSU Spokane campus. Interested students who have completed the first two years of coursework will apply to transfer to WSU Spokane to complete their degree.

The program incorporates options to serve the needs of students with various interests. The degree prepares students to apply to pharmacy school, medical school, graduate school, or other health-related programs following graduation, or to seek employment in the biotechnology and pharmaceutical sector. Research options provide students the opportunity to gain experience while completing their undergraduate degree, in preparation for applying to graduate school. The 3+4 option allows students who are interested in becoming pharmacists to finish their 4th year of their undergraduate degree with the first year of their PharmD coursework. Inquiries should be emailed to: pharmacy.undergrad@wsu.edu or contact 509-358-7631.

Degrees

The College of Pharmacy and Pharmaceutical Sciences awards the following degrees:

Degree	Academic Area
Doctor of Pharmacy	Pharmacy
(Dual Degrees and Certificates: MBA, Strategic Communication, Health Communication and Promotion, Engineering and Technology Management, PhD in Pharmaceutical Sciences and Molecular Medicine. Accelerated Pathways for BS in Psychology and Honors College students.)	
Bachelor of Science	Pharmaceutical and Medical Sciences (Options: General; Medical Laboratory Sciences; and Accelerated Pharmacy)
* Master of Science	Pharmaceutical Sciences and Molecular Medicine
Doctor of Philosophy	Pharmaceutical Sciences and Molecular Medicine

* Not accepting applications at this time.

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.

Five undergraduate majors are housed in the College of Veterinary Medicine - Biochemistry, Genetics & Cell Biology, Microbiology, Neuroscience, and Public

Health. 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 Public Health
Master of Science	Biomedical Sciences Molecular Biosciences Neuroscience
Master of Veterinary Anatomic Pathology	Veterinary Microbiology and Pathology
Doctor of Philosophy	Biomedical Sciences Molecular Biosciences Neuroscience

WSU Regional Program in Veterinary Medicine

Washington State University's DVM education program is offered in a regional partnership with the University of Idaho and Montana State University. This regional program involves instruction on the WSU Pullman campus and at Montana State University (Bozeman, MT). Specific quotas of students to be admitted from Idaho and Montana 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). Under the terms of this agreement, a student admitted to the college who is a resident of participating states or territories may be sponsored financially by their home state or territory, which covers a substantial portion of non-resident tuition. Students must apply to their home state or territory 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 Western Interstate Commission for Higher Education, 303-541-0200 or info@wiche.edu.

The Graduate School

Tammy Barry, Dean of the Graduate School and Vice Provost for Graduate Education

French Administration Building, Room 324

509-335-6424

<https://gradschool.wsu.edu>

Under the Office of the Provost, the Graduate School, led by the Dean and Vice Provost for Graduate Education and their team, works closely with the Faculty Senate's Graduate Studies Committee and Professional Health Sciences Committee to oversee and guide the development and implementation of graduate academic programs. Adhering to the Council of Graduate Schools' comprehensive guidelines, the Graduate School's key responsibilities include:

- Advocating for the interests of graduate students
- Establishing a vision of excellence for graduate education
- Ensuring the quality of graduate programs
- Maintaining consistent standards across disciplines
- Defining the unique characteristics of graduate education
- Providing a comprehensive overview of post-baccalaureate programs
- Encouraging interdisciplinary collaboration
- Facilitating intellectual exchanges between faculty and graduate students
- Promoting the significance of graduate education
- Emphasizing the importance of training future faculty
- Enriching undergraduate education through graduate education
- Ensuring access to essential services for graduate students
- Supporting key issues and groups critical to the success of graduate programs

These responsibilities are executed through various tasks that involve programs, faculty, students, administration, and external stakeholders.

Owing to the specific needs and standards of many professional degrees (such as D.V.M., M.B.A., M.D., M.H.A.L., D.N.P., and Pharm.D.), certain aspects of these programs may be managed by bodies other than the Graduate School.

Graduate and Professional 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)

Professional Doctoral Degrees

Doctor of Medicine (S)
Doctor of Nursing Practice
 Family Nurse Practitioner (S, T, V, Y)
 Population Health (S, T, V, Y) (Not accepting applications at this time.)
 Psychiatric/Mental Health Nurse Practitioner (S, T, V, Y)
 Post-Master's (general) (S, T, V, Y)
Doctor of Pharmacy (S)
Doctor of Veterinary Medicine (P)

Doctor of Education Degree

Educational Leadership, EdD (P, E, S, T, V)

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)
- Sport Management (P)
- 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 Education Degrees

- Curriculum and Instruction (P, S, T, V)
- Educational Leadership (P, S, T, V)
- Language, Literacy, and Technology Education (P, S, T, V)
- Special Education (P, G, V)

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)
- 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, V)
- 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 and Natural Resource Sciences (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, V)
- 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)

Professional Master's 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 (G)
- Electrical Power Engineering, PSM (G)
- Engineering and Technology Management, METM (G)
- Master of Business Administration, MBA (G)
- Master of Energy Conscious Construction, MECC (P, G)
- Master of Healthcare Administration and Leadership, MHAL (G)
- Master of Veterinary Anatomic Pathology, MVAP (P)
- Molecular Biosciences, PSM (G) (Not accepting applications at this time.)
- Nursing, MN
 - Nurse Educator (S, T, V, Y)
 - Population Health (S, T, V) (Not accepting applications at this time.)
 - Systems Leadership (S, T, V, Y)
- Public Affairs, MPA (V)

Master in Teaching

- Teaching (elementary), MIT (P, S, T, V)
- Teaching (secondary), MIT (P, S, T, V)

Fine Arts Degree

- Master of Fine Arts, MFA (P)

Graduate Certificates

- Applied Educational Research Methods (P)
- Applied Measurement and Quantitative Methods (P)
- Bioinformatics (P, E, S, T, V)
- C-NSPIRE: Carbon and Nitrogen Systems Policy Oriented Integrate Research and Education (P, G, S, T, V)
- Community Engagement in Rivers and Watershed (P, V)
- Constraints Management (G)
- Digital Humanities and Culture (P)
- Education Technology Across the Curriculum (P)
- Energy Conscious Construction (G)
- 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)
- Interdisciplinary Robotics and Autonomous Systems (P, T, V)
- Logistics and Supply Chain Management (G)
- Nuclear Materials, Science and Engineering (P, T)
- Nurse Educator (S, T, V)
- Nursing Leadership (S, T, V)
- Pavement Durability and Sustainability (G)
- Professional Molecular Science (P, G)
- Project Management (G)
- Protein Biotechnology (P)
- Public Health (S, T, V)
- Radiation Protection (T) (Not accepting applications at this time.)
- Research Communication (G)
- Responsible Data Science and Analytics (G)
- Six Sigma Quality Management (G)
- Strategic Communication (G)
- Supply Chain Management (G)
- Sustainable Agriculture (P, G)
- Systems Engineering Management (G)
- Teaching College Mathematics (P, V)
- Teaching English as a Second Language (P)
- Women's, Gender, and Sexuality Studies (P,S,T,V)

Professional Certificates

- Essentials of Healthcare (G)
- Finance (G)
- Foundations of Leadership (G)
- General Business Administration (G)

Healthcare Leadership (S)
 Hospitality and Tourism (G)
 International Business (G)
 Managing the Business of Healthcare (G)
 Marketing (G)
 Medical Ethics (G, S)

Dual Degrees

PharmD / BUSN (MBA)
 PharmD / METM
 PharmD/ MA in Health Communication and Promotion
 PharmD/ MA in Strategic Communication
 PharmD / PhD Pharmaceutical Sciences and Molecular Medicine

--Program Location Key

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

--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
 MHAL = Master of Healthcare Administration and Leadership
 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, Scholarly Associate Professor and Program Coordinator, Electrical Engineering

1720 Warren 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 residents of Bremerton.

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

Anura Rathnayake, Scholarly Associate Professor and Program Coordinator, Mechanical Engineering

1720 Warren Avenue
Bremerton, WA 98337

360-475-7384

anura.rathnayake@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 residents of 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. As a city within Washington State University's 130-year legacy of accessibility and public service, we are dedicated to providing students with meaningful opportunities for growth and success. Our urban location places students at the heart of a

dynamic and expanding community, offering unique access to internships, networking opportunities, and career pathways. WSU Everett's degree programs strategically align with the growing needs of our region ensuring graduates are career and citizen-ready professionals who can contribute to the economic health and vitality of Washington State.

We offer industry-aligned, interdisciplinary undergraduate degree-completion programs that are affordable, accessible, and flexible. Students can complete their general education requirements at any community college before transferring to WSU Everett to finish their bachelor's degree.

Located in the heart of Everett, our campus is surrounded by a thriving economic hub, home to the Port of Everett and major employers across diverse industries—including Fortive, Boeing, FUNKO, AquaSox, and more—providing students with unique opportunities for hands-on experience and career connections.

Degrees and Certificates Offered at WSU Everett

When you attend Washington State University Everett, your program curriculum and degree are identical to those earned at any WSU campus. 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)
Cybersecurity, BS
Data Analytics, BS
(Options: Actuarial Science; Business; and General)
Electrical Engineering, BS
Hospitality Business Management, BA
(Majors: Aging Business Management; and Hospitality Business Management)
Mechanical Engineering, BS
Software Engineering, BS
Strategic Communication, BA
(Major: Integrated Strategic Communication)

Graduate Degrees

Education:
(Specialization: Educational Leadership, EdD)

Undergraduate Certificates

Culinary Business
Dual Language Pathway
Sustainable Organizational Leadership

Graduate Certificates

Bioinformatics

Campus and Student Life

WSU Everett offers a close-knit campus experience with numerous advantages. Small class sizes and cohort-based programs foster strong support networks and lasting relationships among students and faculty.

Students have access to cross-disciplinary, industry-connected projects, where collaboration with local businesses helps them build valuable professional networks for future career opportunities. The campus also offers a variety of student clubs, activities, and events throughout the year, creating opportunities for leadership, engagement, and community-building.

Our state-of-the-art 95,000-square-foot facility includes modern classrooms, computer labs, engineering laboratories, student collaboration and study spaces, a coffee shop, and a dedicated tutoring center. Our faculty and staff are highly accessible, providing personalized academic support. Students also have access to local fitness centers, libraries, and additional study spaces. WSU Everett partners with Everett Community College and Edmonds College for housing, offering convenient living options for students.

Beyond campus, Everett and the surrounding Snohomish County region provide a vibrant community with diverse restaurants, cultural events, sports, and stunning waterfront views of Puget Sound. The area offers hiking, camping, boating, fishing, art shows, museums, and year-round festivals—all within easy reach of Seattle and Canada via I-5.

Industry-Aligned Programs

Beyond a world-class education, WSU Everett is a key partner in strengthening the region's workforce. Our programs are designed to meet the demands of a global marketplace, helping address workforce needs in industrial, commercial, and professional sectors.

We maintain strong connections with regional employers to facilitate internships and career opportunities, ensuring students gain hands-on experience and a direct pathway to local employment after graduation. Our graduates leave prepared to contribute immediately and make an impact in their fields.

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.

NC-SARA Membership and Student Complaint Process

WSU is a member of the [National Council for State Authorization Reciprocity Agreements](#) (NC-SARA). NC-SARA serves as a national leader in enhancing quality and consumer protections in interstate postsecondary distance education. If students are enrolled on the WSU Global Campus and have a complaint about the WSU Global Campus, Students should begin the complaint process with WSU. If resolution is not found, then the student should contact WSU's home state SARA Portal Entity. NC-SARA maintains a directory of SARA [State Portal Entities](#) and the formal [student complaint process](#).

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: Basic Medical Sciences; and General)

Business Administration, BA

(Majors: Accounting; Management; Management Information Systems; and 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

English, BA

(Option: Integrative English Studies; and Rhetoric and Professional Writing)

History, BA

(Options: General; and Pre-Law)

Hospitality Business Management, BA

(Majors: Aging Business Management; and Hospitality Business Management)

Human Development, BA

(Options: Early Childhood Education; and Lifespan Development)

Humanities, BA

Journalism and Media Production, BA

(Major: Media Innovation)

Political Science, BA

(Options: General; and Pre-Law)

Psychology, BS

(Option: General)

Social Sciences, BA

Sociology, BA

Strategic Communication, BA

(Major: Integrated Strategic Communication)

Graduate Degrees

Agriculture, MS

Education:

(Specializations: Special Education, EdM)

Health Communication and Promotion, MA

Music, MA

Software Engineering, MS

Strategic Communication, MA

Professional Degrees

Business Administration, MBA

Civil Engineering, ME

Electrical Power Engineering, PSM

Energy Conscious Construction, MECC

Engineering and Technology Management, METM

Master of Healthcare Administration and Leadership, MHAL

Molecular Biosciences, PSM (Not accepting applications at this time.)

Undergraduate Certificates

Advanced Data Science

American Indian Studies

Core Competencies in Spanish Language and Culture

Culinary Business

Dual Language Pathway

Early Childhood Education

Editing and Publishing

Energy Conscious Construction

Family Studies

Foundations of Data Analytics

Foundations of Data Science

Gerontology

Global Leadership

Human Services Case Management and Administration

Intermediate Data Analytics

Intermediate Data Science

Organic Agriculture

Professional Science and Technology Writing

Professional Writing

Sustainable Organizational Leadership

Graduate Certificates

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

Constraints Management

Energy Conscious Construction

Health Communication and Promotion

Industrial Leadership
 Logistics and Supply Chain Management
 Pavement Durability and Sustainability
 Professional Molecular Science
 Project Management
 Research Communication
 Responsible Data Science and Analytics
 Six Sigma Quality Management
 Strategic Communication
 Supply Chain Management
 Sustainable Agriculture
 Systems Engineering Management

Professional Certificates

Essentials of Healthcare
 Finance
 Foundations of Leadership
 General Business Administration
 Hospitality and Tourism
 International Business
 Managing the Business of Healthcare
 Marketing
 Medical Ethics

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.

SPOKANE CAMPUS

Daryll DeWald, Executive Vice President for Health Sciences and Chancellor

WSU Spokane
412 E Spokane Falls Blvd.
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 is home to Washington's community-based medical school driven by its mission to serve Washington and beyond through collaboration and problem-solving in education, research, and health care with a focus on rural communities, Tribal Nations, and people who have been historically marginalized.

The Department of Medical Education and Clinical Sciences delivers the Doctor of Medicine program, which seeks applicants with significant ties to Washington who are passionate about solving problems in challenging health care environments. The College of Medicine administration is primarily located on the WSU Spokane campus with three regional medical campuses in Everett, Tri-Cities, and Vancouver. Employing a community-based model in which medical 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 medical students will ultimately settle to practice as physicians. All campuses foster active learning environments, interdisciplinary teaching, research, outreach, and clinical services. The department also delivers graduate medical education programs, the Certificate in Healthcare Leadership, and the Master of Healthcare

Administration and Leadership comprised of three professional certificates. These programs provide training to current and future health care leaders in key leadership skills and professional competencies.

The College of Medicine also houses the research-focused departments of Community and Behavioral Health and Translational Medicine and Physiology. The Department of Translational Medicine and Physiology is the central hub of foundational and translational biomedical research at the College of Medicine. The faculty represent a diverse set of interests, ranging from the neuroscience of sleep to cancer. The department provides research opportunities to graduate students in participating Ph.D. programs and to medical students.

The Department of Community and Behavioral Health extends the reach of the college's mission by improving health outcomes through community-informed research and the development of evidence-based policies and practices. 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 also delivers the professional Certificate in Medical Ethics program.

The college also houses the Department of Nutrition and Exercise Physiology and Speech and Hearing Sciences. 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. Degrees are offered at the B.S., M.S., and Ph.D. levels.

The Department of Speech and Hearing Sciences offers programs leading to a B.A. in Speech and Hearing Sciences and a M.S. in Speech and Hearing Sciences in speech-language pathology. Bachelor's degree students are prepared for a range of careers in health professions, education and social services, as well as 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 WSU College of Nursing educates more than 900 upper-division undergraduate and graduate-level nursing students each year across its four sites statewide. The College offers a prelicensure Bachelor of Science in Nursing (PL-BSN) program and a Registered Nurse to Bachelor of Science program (RN-BSN) 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 (MN); the Doctor of Nursing Practice (DNP), with specialties in family nurse practitioner (FNP), psychiatric mental health nurse practitioner (PMHNP), or general specializations for licensed advanced practice RNs; and Doctor of Philosophy (PhD) programs to develop nurse scientists.

The WSU College of Pharmacy and Pharmaceutical Sciences trains future pharmacists through the four-year Doctor of Pharmacy professional degree program on the WSU Spokane campus and at the Pacific Northwest University campus in Yakima. Students in this program train to provide patient-centered care in both urban and rural settings as a pharmacist as part of a health care team. Graduates from the program go on to a variety of professions from hospital pharmacy, pharmaceutical companies, to community pharmacy. The college also offers a PhD in Pharmaceutical Sciences and Molecular Medicine where students interact face-to-face with research faculty and learn from preeminent researchers who are world-renowned experts in their fields. PhD students go to work in the pharmaceutical industry and academia in research and drug development. Finally, the college offers a Bachelor of Science in Pharmaceutical and Medical Sciences. The first two years of coursework are completed at WSU Pullman or at another university or community college. The last two years of the program are completed on the WSU Spokane campus. This is intended to be a pathway for students wishing to pursue professional degrees in health care and health sciences.

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 healthcare leaders.

Spokane MESA (Mathematics, Engineering, Science Achievement)

Spokane MESA, hosted by Washington State University Spokane, is one of six Washington MESA centers in the state with the mission to inform, equip and empower underrepresented students in STEM by providing them a community

who supports their pathways to higher education. The support is through mentorship, academic programs, interactive workshops, industry presentations/field trips, and competitions. These experiences give them the tools to create innovative solutions and become the next leaders in STEM. Spokane MESA serves students and their teachers in grades 6-12 in Spokane Public Schools, Cheney School District and Inchelium.

Upward Bound

Stevens County Upward Bound is a federally funded Title IV TRIO program whose purpose is to generate in program participants the skills and motivation necessary to complete a program of secondary education and to enter and succeed in a program of postsecondary education. Hosted by WSU Spokane, Stevens County Upward Bound serves 50 students at Mary Walker, Wellpinit and Columbia High Schools.

Degrees and Certificates Offered at WSU Spokane

Undergraduate Degrees

Nursing, PL-BSN, RN-BSN
 Nutrition and Exercise Physiology, BS
 Pharmaceutical and Medical Sciences, BS
 (Options: General; Medical Laboratory Science; and Accelerated Pharmacy)
 Public Health, BS
 (Option: Community and Behavioral Health)
 Speech and Hearing Sciences, BA

Graduate Degrees

Coordinated Program in Dietetics, Nutrition, and Exercise Physiology, MS
 Criminal Justice and Criminology, *MA
 Education:
 Curriculum and Instruction, EdM, MA
 Educational Leadership, EdD, EdM, MA
 Language, Literacy, and Technology Education, EdM, MA
 Teaching, Elementary or Secondary, MIT
 Nursing, PhD
 Nutrition and Exercise Physiology, MS, PhD
 Pharmaceutical Sciences and Molecular Medicine, *MS, PhD
 Prevention Science, MS, PhD
 Speech and Hearing Sciences, MS

* Not accepting applications at this time.

Professional Degrees

Doctor of Medicine, MD
 Doctor of Nursing Practice (DNP)
 Family Nurse Practitioner
 Population Health (Not accepting applications at this time.)
 Psychiatric/Mental Health Nurse Practitioner
 Post-Master's (general)
 Master of Nursing, MN
 Nurse Educator
 Population Health (Not accepting applications at this time.)
 Systems Leadership
 Doctor of Pharmacy, PharmD

Undergraduate Certificates

Dual Language Pathway
 Mindfulness-Based Emotional and Social Intelligence
 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
 Women's, Gender, and Sexuality Studies

Professional Certificates

Healthcare Leadership
 Medical Ethics

Learning Opportunities

Health sciences students at WSU Spokane adopt an interprofessional, team-based approach to healthcare education and have 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 campus was established in 1989 and features 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 1,200 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), 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, 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.tricities.wsu.edu>

WSU Tri-Cities offers hands-on, project-based learning at an affordable price where students truly graduate career-prepared and job-connected. Nearly half of degree-seeking undergraduates 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, and a close-knit campus community open to all 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 nine 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

Art, BFA
 Biology, BS
 (Options: General; and Basic Medical Sciences)
 Business Administration, BA
 (Majors: Accounting; and Business Administration)
 Civil Engineering, BS
 Computer Science, BS
 Cybersecurity, BS
 Digital Technology and Culture, BA
 Earth and Environmental Science, BS
 (Major: Environmental and Ecosystem Sciences)
 Education, BA
 (Major: Elementary Education)
 Electrical Engineering, BS
 English, BA
 (Options: Integrative English Studies; Literary Studies; and Rhetoric and Professional Writing)
 History, BA
 (Options: General; and Pre-Law)
 Hospitality Business Management, BA
 (Majors: Aging Business Management; Hospitality Business Management; and Wine and Beverage Business Management)
 Humanities, BA
 Mechanical Engineering, BS
 Nursing, BSN
 (Options: PL-BSN; and RN-BSN)
 Psychology, BS
 Science, Bachelor of
 (Options: General Biological Sciences; General Mathematics; and General Physical Sciences)
 Social Sciences, BA
 Social Work, BA
 Viticulture and Enology, BS

Graduate Degrees

Biology, MS
 Chemistry, MS
 Computer Science, MS
 Education:
 (Specializations: Curriculum and Instruction, EdM, MA; Educational Leadership, EdD, EdM; Language, Literacy, and Technology Education, EdM; and Teaching, Elementary or Secondary, MIT)
 Electrical Engineering, MS
 Environmental Engineering, MS
 Environmental and Natural Resource Sciences, MS
 Mechanical Engineering, MS

Professional Degrees

Doctor of Nursing Practice (DNP)
 Family Nurse Practitioner
 Population Health (Not accepting applications at this time.)
 Psychiatric/Mental Health Nurse Practitioner
 Post-Master's (general)
 Master of Nursing, MN
 Nurse Educator
 Population Health (Not accepting applications at this time.)
 Systems Leadership

Undergraduate Certificates

Culinary Business
 Dual Language Pathway
 Education:
 (Administrative Credentials; Endorsements; and Teacher Professional Certification Program)
 Global Leadership
 Molecular Biosciences
 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
 Interdisciplinary Robotics and Autonomous Systems
 Nuclear Materials, Science and Engineering
 Nurse Educator
 Nursing Leadership
 Public Health
 Radiation Protection
 Women's, Gender, and Sexuality Studies

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

WSU Tri-Cities has an active student body and campus culture, with numerous student organizations ranging from academic based to special interests to sports; a student government that strives to advocate and support student needs; a student union building that is always bustling with action from the pool and ping pong tables, to the video game TV stations, and the warm coffee shop vibes; and the student entertainment board that rounds out hundreds of fun and vibrant student events that take place on campus before, between, and after classes. 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 WSU 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, Lamb Weston, 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. With about 2,700 students, it offers a small-college atmosphere and all the resources of a large public university.

Degrees and Certificates Offered at WSU Vancouver

Choose from 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; Entrepreneurship; Finance; Management; Management Information Systems; and Marketing)
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
(Major: Elementary Education)
Electrical Engineering, BS
English, BA
(Options: Integrative English Studies; Literary Studies; and Teaching without Certification)
History, BA
Hospitality Business Management, BA
Human Biology, BA
Human Development, BA
(Options: Early Childhood Education; and Lifespan Development)
Humanities, BA
(Options: Anthropology; Art; Digital Technology and Culture; English; Foreign Languages and Cultures; History; and Women's, Gender, and Sexuality Studies)
Mathematics, BS
(Options: Applied Mathematics; and Teaching without Certification)
Mechanical Engineering, BS
Neuroscience, BS
Nursing, RN-BSN
Political Science, BA
(Options: General, Global Politics, and Pre-Law)
Psychology, BS
Public Affairs, BA
(Options: Justice Studies; Public Administration and Management; and Public Policy and Politics)
Public Health, BS
(Option: Community and Behavioral Health)
Social Sciences, BA
(Options: Anthropology; 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, EdM, MA; Educational Leadership, EdD, EdM; Language, Literacy, and Technology Education, EdM; Special Education, EdM, MA; and Teaching, Elementary or Secondary, MIT)
Electrical Engineering, MS
Environmental and Natural Resource Sciences, MS
History, MA
Mechanical Engineering, MS
Prevention Science, MS, PhD

Professional Degrees

Doctor of Nursing Practice (DNP)
Family Nurse Practitioner
Population Health (Not accepting applications at this time.)
Psychiatric/Mental Health Nurse Practitioner
Post-Master's (general)
Master of Nursing, MN
Nurse Educator
Population Health (Not accepting applications at this time.)
Systems Leadership
Public Affairs, MPA

Undergraduate Certificates

Biology:
(Quantitative Biology)
Business:
(Professional Sales)
Core Competencies in Spanish Language and Culture
Culinary Business
Digital Technology and Culture:
(Game Studies and Design)
Dual Language Pathway
Education:
(Endorsements: English Language Learners; Middle Level Mathematics; and Special Education)
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
Race and Ethnicity in the Corporate World
Social and Environmental Justice
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
Education:
(Administrative Credentials; and Field-based Superintendent Certification Program)
English Language Learner
Interdisciplinary Robotics and Autonomous Systems
Nurse Educator
Nursing Leadership (Open to DNP students only)
Public Health
Teaching College Mathematics
Women's, Gender, and Sexuality Studies

Faculty and Research

More than 120 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, just across the Columbia River from Portland, Ore. Both Portland and Vancouver offer extraordinary and accessible cultural and recreational opportunities in sports, theater, dance, music, 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 70 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 Action, Intercultural Learning and Affirmation, 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 and Analysis Program in the Carson College of Business 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.

The Center for Intercultural Learning and Affirmation strives to cultivate an inclusive community where historically underserved students are affirmed and feel a 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.

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.

The Future Leaders Project is an initiative of Workforce Southwest Washington, Columbia River Economic Development Council and WSU Vancouver that seeks to connect students from communities who have experienced longstanding inequities and exclusion and first-generation college students with employer-sponsored summer internships, providing growth and professional development opportunities.

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/campus-info/>

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 Prelicensure Bachelor of Science in Nursing (PL-BSN), RN-BSN Bachelor of Science in Nursing (RN-BSN), Master of Nursing (MN), and Doctorate of Nursing Practice (DNP) programs. Students who attend classes and complete clinically-based or community-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 (both PL-BSN and RN-BSN)

Graduate and Professional Degrees

Nursing, Master of Nursing, MN

Nurse Educator

Population Health (Not accepting applications at this time.)

Systems Leadership

Doctor of Nursing Practice (DNP)

Family Nurse Practitioner

Population Health (Not accepting applications at this time.)

Psychiatric/Mental Health Nurse Practitioner

Post-Master's (general)

Doctor of Pharmacy, PharmD



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	4520	Water Economics and Policy	3
AGEC	5250	Master's Econometrics	3
AGEC	5260	Master's Microecon Analysis	3
AGEC	5270	Mathematics for Economists	3
AGEC	5290	Research Methods	2
AGEC	5320	Natural Resource Econ/Policy	3
AGEC	5330	International Trade and Policy	3
AGEC	5340	Production Economics	3
AGEC	5350	Industrial Organization	3
AGEC	5870	Regional Econ Dev Methods	3
AIST	4111	Tutxinmepu Powwow	1 to 3
AIST	4220	Contemporary PNW Indians	3
ANTH	4110	Human Evolution	3
ANTH	4220	Contemporary PNW Indians	3
ANTH	4310	Historical Archaeology	3
ANTH	4420	Human Osteology & Osteometry	3
ANTH	5110	Human Evolution	3
ANTH	5220	Contemporary PNW Indians	3
ANTH	5310	Historical Archaeology	3
ANTH	5420	Human Osteology & Osteometry	3
ANTH	5800	Tribal Nation-Building	1
ANTH	5810	Land Education Seminar	2
ARCH	1540	Intro to Architectrl Graphics	3
ARCH	4210	Asia Program Preparation	2
ARCH	4300	Rome Preparatory Seminar	2
ARCH	5210	Asia Program Preparation	2
ARCH	5800	British Green Architecture	2
ASM	1070	Beginning Welding	3
ASM	3050	Precision Agriculture	3
ASM	3150	Irrig Syst/Water Mgmt	3
ASM	3310	Elec Power Syst/Agric	3
ASM	5051	Precision Agriculture	3
ASM	5150	Irrig Syst/Water Mgmt	3
AVS	2630	Live Animal & Carcass Evaluatn	3
AVS	3060	Feeds & Ration Formulation	3

AVS	3300	Genetics/Livestock Improvement	3
AVS	3630	Animal Products/Hum Consumptn	4
AVS	4510	Endocrine Physiology	3
AVS	4520	Physiology of Reprodctn	4
AVS	4630	Growth and Lactation	3
AVS	4660	Equine Science and Management	3
AVS	4670	Advanced Systems Physiology	4
AVS	4720	Dairy Cattle Mgmt	3
AVS	4750	Advanced Dairy Management	3
AVS	4760	Sheep Science	3
AVS	5510	Endocrine Physiology	3
AVS	5550	Environmental Physiology	2
AVS	5630	Growth and Lactation	3
AVS	5670	Advanced Systems Physiology	4
BE	4410	Instrumentation and Controls	4
BE	5410	Instrumentation and Controls	4
BIOL	4260	Systems Biology	3
BIOL	4460	Phylogenetics	3
BIOL	4560	Computer Skills for Biologists	3
BIOL	4610	Neurobiology	3
BIOL	5220	Molecular Evolution	3
BIOL	5260	Systems Biology	3
BIOL	5360	Phylogenetics Reading Group	1
BIOL	5450	Phylogenetics	3
BIOL	5480	Evolutionary Ecology	3
BIOL	5490	Computer Skills for Biologists	3
BIOL	5510	Seminar/Reproductive Biology	1
BIOL	5630	Mathematical Genetics	3
BIOL	5650	Neurobiology	3
CE	4220	Hydraulic Struct Anlys/Design	3
CE	4250	Engineering Hydrology	3
CE	4280	Open Channel Hydraulic	3
CE	4320	Dsgn Water/Wastewater Sysys II	3
CE	4740	Traffic Systems Design	3
CE	5210	Sedimentation Engineering	3
CE	5220	Hydraulic Struct Anlys/Design	3
CE	5320	Dsgn Water/Wastewater Sysys II	3
CE	5430	Dynamics of Structures	3
CE	5440	Adv Design of Steel Structures	3
CE	5460	Finite Element Anly	3
CE	5470	Reliability of Engr Systems	3
CE	5550	Adv Pavement Design/Analysis	3
CE	5560	Pavement Materials	3
CE	5580	Rigid and Airport Pavement	3
CE	5610	Engr Properties of Soils	3
CE	5620	Adv Foundation Engr	3
CE	5630	Seepage and Slope Stability	3
CE	5660	Geot Eq Engineering	3
CE	5710	Traffic Flow Theory	3
CE	5720	Transportation Planning	3
CE	5740	Intersection Traffic Operation	3
CE	5750	Public Transportation	3
CE	5770	Pavement Preserve/Management	3
CHE	4840	Process Safety	3
CHE	5150	Transport Phenomena	3
CHE	5270	Thermodynamics	3
CHE	5290	Chem Engr Kinetics	3
CHE	5410	Chem Engr Analysis I	3
CHE	5840	Process Safety	3
CORS	2540	Our National Parks	3
CS	3401	Computer Graphics	3
CS	3980	Cmptr Sci Coop Internship	1 to 3
CS	4380	Network Security	3
CS	5380	Network Security	3
DAN	1050	Dance	1
DAN	1160	Technique	1

UI Cooperative Courses

DAN	2160	Technique	1	FS	3010	Food Mycology	3
DAN	4160	Technique	1	FS	3020	Food Processing Lab	1
DAN	5160	Technique	1	FS	3030	Food Processing	3
ECE	4150	Analog Integrated Circuit Dsgn	3	FS	3040	Cereal Chemistry & Processing	3
ECE	4180	Intro to Electronic Packaging	3	FS	3500	Instrum & Sens Analysis Food	5
ECE	4190	Image Sensors and Systems	3	FS	3630	Animal Products/Hum Consumptn	4
ECE	4270	Power Electronics	3	FS	3980	Internship	1 to 16
ECE	4520	Communication Systems	3	FS	4010	Industrial Fermentations	3
ECE	4690	Critical Infrastructure	3	FS	4030	Workshop	1 to 16
ECE	4700	Control Systems	3	FS	4040	Special Topics	1 to 16
ECE	5150	Analog Integrated Circuit Dsgn	3	FS	4160	Food Microbiology	3
ECE	5160	Image Sensors and Systems	3	FS	4170	Food Microbiology Lab	2
ECE	5180	Intro to Electronic Packaging	3	FS	4180	Oral Seminar in Food Science	1
ECE	5200	Advanced Electrical Machinery	3	FS	4290	Dairy Processing	3
ECE	5220	Induction Machines	3	FS	4300	Dairy Processing Lab	1
ECE	5230	Symmetrical Components	3	FS	4320	Food Engineering	3
ECE	5240	Transients in Power Systems	3	FS	4330	Food Engineering Lab	1
ECE	5250	Power Syst Protectn/Relaying	3	FS	4360	Principles of Sustainability	3
ECE	5260	Protection Power Systems II	3	FS	4600	Food Chemistry	3
ECE	5300	Adv Electromagnetic Theory I	3	FS	4610	Food Chemistry Lab	1
ECE	5330	Antenna Theory	3	FS	4640	Food Toxicology	3
ECE	5690	Critical Infrastructure	3	FS	4700	Adv Food Technology	3
ECE	5700	Random Signals	3	FS	4890	Food Product Development	3
ECE	5720	Linear System Theory	3	FS	4980	Internship	1 to 16
ENGR	2100	Engineering Statics	3	FS	4990	Directed Study	1 to 16
ENGR	2200	Engineering Dynamics	3	FS	5020	Directed Study	1 to 16
ENGR	3200	Engr Thermodynamic/Heat Transfer	3	FS	5030	Workshop	1 to 16
ENGR	3350	Engr Fluid Mechanics	3	FS	5040	Special Topics	1 to 16
ENT	4400	Insect Identification	4	FS	5090	Princ Environmental Toxicology	3
ENT	4410	Insect Ecology	3	FS	5100	Functional Foods and Health	3
ENT	5400	Insect Identification	4	FS	5170	Scientific Writing	2
ENT	5410	Insect Ecology	3	FS	5180	Oral Seminar	1
ENT	5490	Insect-Plant Interactions	3	FS	5290	Dairy Processing	3
ENVS	4290	Environmental Audit	3	FS	5300	Dairy Processing Lab	1
ENVS	4360	Principles of Sustainability	3	FS	5320	Advanced Food Microbiology	3
ENVS	4850	Energy Efficiency and Cons	3	FS	5360	Principles of Sustainability	3
ENVS	5090	Princ Environmental Toxicology	3	FS	5640	Food Toxicology	3
ENVS	5290	Environmental Audit	3	FS	5700	Adv Food Technology	3
ENVS	5360	Principles of Sustainability	3	FS	5880	Food Science Tchg Practicum	1 to 3
ESS	5910	Hist/Phil of Geography	3	FS	5980	Internship	1 to 16
FIRE	3321	Cultural Use of Fire	3	FSP	4380	Lignocellulosic Biomass Chem	1
FIRE	4980	Internship	1 to 16	FSP	5380	Lignocellulosic Biomass Chem	1
FISH	3140	Fish Ecology	3	GEOE	4280	Geostatistics	3
FISH	4150	Limnology	4	GEOE	5350	Seepage and Slope Stability	3
FISH	4180	Fisheries Management	4	GEOG	2000	World Cultures & Globalization	3
FISH	4220	Concepts in Aquaculture	4	GEOG	3170	Dendrochronology	3
FISH	4240	Fish Health Management	4	GEOG	3500	Sustainability of Global Devel	3 to 4
FISH	4500	Freshwater Invertebrates	2	GEOG	3650	Geopolitics and Conflict	3
FISH	4510	Freshwater Invert Methods	2	GEOG	3850	Foundations of GIS	3
FISH	5030	Workshop	1 to 16	GEOG	4070	Spatial Analysis and Modeling	3
FISH	5040	Special Topics	1 to 16	GEOG	4100	Biogeography	3
FISH	5100	Advanced Fish Wildlife Mangmnt	3	GEOG	4110	Natural Hazards	3
FISH	5150	Large River Fisheries	2	GEOG	4200	Land/Resources/Environment	3
FISH	5250	Aquaculture/Wild Fisheries	2	GEOG	4240	Hydro Apps/GIS&Remote Sensing	3
FISH	5260	Climate Effects & Cons Manage	2	GEOG	4300	Climate Change Ecology	3
FISH	5350	Limnology	4	GEOG	4350	Climate Change Mitigation	3
FISH	5500	Freshwater Invertebrates	2	GEOG	4750	Intermediate GIS	3
FISH	5510	Freshwater Invert Methods	2	GEOG	4790	GIS Programming	3
FISH	5600	Advanced Fisheries Techniques	3	GEOG	4830	Remote Sensing/GIS Image Analy	3
FOR	1400	Intro to Forest Mgmt	2	GEOG	4880	Geography of Energy Systems	3
FOR	2500	Forest Operations I	2	GEOG	5070	Spatial Analysis and Modeling	3
FOR	3400	Forest Regeneration	3	GEOG	5170	Dendrochronology	3
FOR	3980	Renew Nat Resources Intern	1 to 16	GEOG	5240	Hydro Apps/GIS&Remote Sensing	3
FOR	4500	Forest Operations II	2	GEOG	5250	GIS Fundamentals	3
FOR	4720	Remote Sensing of Environment	4	GEOG	5350	Climate Change Mitigation	3
FOR	4980	Renew Nat Resources Intern	1 to 16	GEOG	5500	Sustainability of Global Devel	3 to 4
FREN	4070	French/Francophone Literatures	3	GEOG	5610	Natural Hazards	3
FS	1100	Introduction to Food Science	3	GEOG	5650	Geopolitics and Conflict	3
FS	1130	Intro to Vines and Wines	3	GEOG	5790	GIS Programming	3
FS	2040	Special Topics	1 to 16	GEOG	5830	Remote Sensing/GIS Image Analy	3
FS	2990	Directed Study	1 to 16	GEOG	5880	Geography of Energy Systems	3

GEOG	5910	Hist/Phil of Geography	3	ME	4140	HVAC Systems	3
GEOL	1102	Historical Geology	3	ME	4170	Turbomachinery	3
GEOL	2120	Dinosaurs and Prehistoric Life	4	ME	4360	Sustainable Energy Sources	3
GEOL	2260	Crime Scene Science	3	ME	4380	Sustainability & Green Design	3
GEOL	2500	Marine Geology	3	ME	4500	Fund Comp Fluid Dynamics	3
GEOL	3020	Field Geology Methods	3	ME	4580	Finite Element Applications	3
GEOL	3050	Gamifying the Earth	2	ME	4660	Compliant Mechanism Design	3
GEOL	3090	Ground Water Hydrology	3	ME	4720	Mechanical Vibrations	3
GEOL	3100	Geological Core Logging	1	ME	4810	Control Systems	3
GEOL	3180	Economic Geology	3	ME	5140	HVAC Systems	3
GEOL	3450	Structural Geology	4	ME	5170	Turbomachinery	3
GEOL	3610	Geology and the Environment	3	ME	5250	Advanced Heat Transfer	3
GEOL	4070	Basin Analysis	3	ME	5270	Thermodynamics	3
GEOL	4100	Groundwater Field Methods	3	ME	5380	Sustainability & Green Design	3
GEOL	4110	Advanced Paleontology	3	ME	5390	Adv Mechanics of Materials	3
GEOL	4130	Environmental Hydrogeology	3	ME	5400	Continuum Mechanics	3
GEOL	4240	Adv Topics in Sedimentary Rock	3	ME	5410	Mech Engr Analysis	3
GEOL	4270	Paleoclimatology	3	ME	5460	Convection Heat Transf	3
GEOL	4280	Geostatistics	3	ME	5490	Finite Element Analy	3
GEOL	4330	Geodynamics	4	ME	5500	Adv Comp Fluid Dynamics	3
GEOL	4350	Glaciology & Dyn Frozen Earth	3	ME	5580	Finite Element Applications	3
GEOL	4470	Geo/Thermochronology	3	ME	5660	Compliant Mechanism Design	3
GEOL	4480	Tectonics	3	ME	5800	Linear System Theory	3
GEOL	4620	Petroleum Systems & Energy	3	ME	5830	Reliability of Engr Systems	3
GEOL	4670	Volcanology	3	MEDS	4040	Special Topics	1 to 16
GEOL	4710	Ore Deposits and Exploration	3	NRS	4440	Recreation Ecology	3
GEOL	4740	Stable Isotopes Environment	3	NRS	4720	Remote Sensing of Environment	4
GEOL	4890	Virtual Field Camp	3	NRS	5060	Fundamentals of Research	3
GEOL	4900	Geology Field Camp	3	NRS	5080	Foundations of Research	3
GEOL	5070	Basin Analysis	3	NRS	5310	Wildfire Risk and Management	3
GEOL	5080	Groundwater Field Methods	3	NRS	5550	Human Dimensions of Nat Res	3
GEOL	5100	Geosystems	3	NRS	5910	Theories of Env Behavior	3
GEOL	5110	Advanced Paleontology	3	NS	1010	Introduction to Naval Science	3
GEOL	5170	Paleoclimatology	3	NS	1040	Seapwr & Maritime Affr	3
GEOL	5200	Adv Topics in Sedimentary Rock	3	NS	1210	Intro to Naval Science Lab I	1
GEOL	5330	Geodynamics	4	NS	1220	Intro to Naval Science Lab 2	1
GEOL	5340	Geostatistics	3	NS	2030	Workshop	1 to 16
GEOL	5350	Glaciology & Dyn Frozen Earth	3	NS	2040	Special Topics	1 to 16
GEOL	5470	Geo/Thermochronology	3	NS	2050	Navigation	3
GEOL	5480	Tectonics	3	NS	2060	Naval Leadership & Mgmt	3
GEOL	5490	Electron Microscopy	3	NS	2210	Intro to Naval Science Lab 3	1
GEOL	5620	Petroleum Systems & Energy	3	NS	2220	Intro to Naval Science Lab 4	1
GEOL	5670	Volcanology	3	NS	2990	Directed Study	1 to 16
GEOL	5720	Ore Deposits and Exploration	3	NS	3030	Ship Systems I	3
GEOL	5840	Stable Isotopes Environment	3	NS	3040	Ship Systems II	3
GERM	4200	Topics/Germ Cltre & Lit-Themes	3	NS	3110	Evolution Of Warfare	3
HIST	3880	History of Mathematics	3	NS	3210	Intro to Naval Science Lab 5	1
HYDR	4120	Environmental Hydrogeology	3	NS	3220	Intro to Naval Science Lab 6	1
HYDR	5120	Environmental Hydrogeology	3	NS	4020	Naval Leadership and Ethics	3
HYDR	5760	Fund Modeling Hydrogeol Sys	3	NS	4030	Workshop	1 to 16
JAPN	1010	Elementary Japanese I	4	NS	4040	Special Topics	1 to 16
JAPN	1020	Elementary Japanese II	4	NS	4060	Naval Operations	3
LARC	3890	Hist of Landscape Arch	3	NS	4120	Maneuver Warfare	3
LAW	9470	Environmental Law	3	NS	4210	Intro to Naval Science Lab 7	1
MATH	3880	History of Mathematics	3	NS	4220	Intro to Naval Science Lab 8	1
MATH	4370	Mathematical Biology	3	NS	4230	Intro to Naval Science Lab 9	1
MATH	4510	Probability Theory	3	NS	4240	Intro to Naval Science Lab 10	1
MATH	4520	Mathematical Statistics	3	NS	4990	Directed Study	1 to 16
MATH	4530	Stochastic Models	3	ORGS	5350	Personnel	3
MATH	5210	Topology I	3	PHIL	2210	Philosophy in Film	3
MATH	5280	Differentiable Manifold	3	PHIL	3200	History Ancient/Medieval Phil	3
MATH	5310	Complex Variables	3	PHIL	3210	History of Modern Philosophy	3
MATH	5370	Fourier Analysis	3	PHIL	3510	Philosophy of Science	3
MATH	5380	Stochastic Models	3	PHIL	4430	Philosophy of Language	3
MATH	5390	Thry Ord Differential Equatns	3	PHIL	4460	Metaphysics	3
MATH	5400	Partial Differential Equations	3	PHIL	4470	Theory of Knowledge	3
MATH	5550	Groups and Fields I	3	PHIL	4700	Philosophy of Law	3
MATH	5560	Groups and Fields II	3	PHIL	5430	Philosophy of Language	3
MATH	5570	Ring Theory	3	PHYS	4650	Particle and Nuclear Physics	3
MATH	5580	Intro to Algebraic Geometry	3	PHYS	4840	Astrophysics of Stars/Planets	3
MATH	5630	Mathematical Genetics	3	PHYS	4890	Relativistic Astrophysics	3

UI Cooperative Courses

PHYS	5210	Advanced Mechanics	3	WLF	5550	Statistical Ecology	3
PHYS	5330	Statistical Mechanics	3	WLF	5610	Landscape Genetics	2
PHYS	5410	Electromagnetic Theory I	3	WLF	5620	Landscape Genetics Lab	1 to 2
PHYS	5420	Electromagnetic Theory II	3	WLF	5750	Behavioral Ecology	2
PHYS	5500	Quantum Mechanics I	3	WR	5180	(s) System Dynamics Modeling	2
PHYS	5510	Quantum Mechanics II	3	WR	5190	Hydro modeling	2
PHYS	5650	Particle and Nuclear Physics	3	WR	5520	Water Economics and Policy	3
PHYS	5710	Math Methods of Physics	3				
PHYS	5840	Astrophysics of Stars/Planets	3				
PHYS	5890	Relativistic Astrophysics	3				
PLP	4110	Virus Diseases of Plants	3				
PLP	5110	Virus Diseases of Plants	3				
PLSC	3400	Nursery Management	3				
PLSC	4100	Invasive Plant Biology	3				
PLSC	4330	Plant Tissue Culture Technique	3				
PLSC	4510	Vegetable Crops	3				
PLSC	4900	Potato Science	3				
PLSC	5100	Invasive Plant Biology	3				
PLSC	5330	Plant Tissue Culture Technique	3				
PLSC	5510	Vegetable Crops	3				
PLSC	5900	Potato Science	3				
PSYC	4460	Engineering Psych	3				
PSYC	5090	Human Factors in Engr Design	3				
PSYC	5350	Personnel	3				
PSYC	5410	Human Relations in Workplace	3				
PSYC	5520	Ergonomics/Biomechanics	3				
PSYC	5620	Advanced Human Factors	3				
RELS	4220	Contemporary PNW Indians	3				
REM	4110	Wildland Habitat Ecol & Assmnt	2				
REM	5110	Wildland Habitat Ecol & Assmnt	2				
SOIL	4090	Princ Environmental Toxicology	3				
SOIL	4150	Soil and Environmental Physics	3				
SOIL	4220	Environmental Soil Chemistry	3				
SOIL	4360	Principles of Sustainability	3				
SOIL	4540	Pedology	3				
SOIL	4560	North Idaho Field Trip	1				
SOIL	4580	Soil and Site Evaluation	2				
SOIL	4640	Food Toxicology	3				
SOIL	5090	Princ Environmental Toxicology	3				
SOIL	5150	Soil and Environmental Physics	3				
SOIL	5210	Environmental Soil Chemistry	3				
SOIL	5360	Principles of Sustainability	3				
SOIL	5560	North Idaho Field Trip	1				
SOIL	5640	Food Toxicology	3				
SPAN	3010	Advanced Grammar	3				
STAT	4070	Experimental Design	3				
STAT	4140	Nonparametric Statistics	3				
STAT	4180	Multivariate Analysis	3				
STAT	4310	Statistical Analysis	3				
STAT	4510	Probability Theory	3				
STAT	4520	Mathematical Statistics	3				
STAT	4530	Stochastic Models	3				
STAT	5070	Experimental Design	3				
STAT	5140	Nonparametric Statistics	3				
STAT	5190	Multivariate Analysis	3				
STAT	5440	Stochastic Models	3				
STAT	5550	Statistical Ecology	3				
STAT	5650	Computer Intensive Statistics	3				
THE	5520	Theatre Historiography	3				
THE	5530	Topics World Theatre Hist	3 to 16				
WLF	4110	Wildland Habitat Ecol & Assmnt	2				
WLF	5030	Workshop	1 to 16				
WLF	5040	Special Topics	1 to 16				
WLF	5110	Wildland Habitat Ecol & Assmnt	2				
WLF	5210	Communicating Science Broadly	2				
WLF	5400	Conservation Genetics	1 to 3				
WLF	5450	Wildlife Habitat Ecol	2 to 3				
WLF	5500	Stat. Dist. in Ecology	2				
WLF	5510	Applied Mixed Effects Modeling	2				
WLF	5520	Ecological Modeling	3				
WLF	5530	Reproducible Data Science	3				

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, leadership positions, volunteer/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, and demonstrate care and respect.
- Guide students as they define and develop realistic goals.
- Teach students how to successfully navigate their degree path and the University.
- Understand and effectively communicate the curriculum, graduation requirements, and university and college policies and procedures.
- Support students by providing information on available resources and services at the University and within their community.
- Educate students about the purposes 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, transfer credit report, forms, etc.) to aid in decision making and to build a class schedule free of conflicts.
- Prepare a list of questions or concerns to discuss with the advisor when you meet.
- Discuss any problems that impact 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 are an in-depth study of an academic area.

Choosing a major is an important decision for students. Identifying academic

and personal interests and abilities helps 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 Everett, Global, Spokane, Tri-Cities, or Vancouver campuses 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
- Human Nutrition and Food Systems
- 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

Food Science, Bachelor of Science

- Food Science (option: General)

Human Development, Bachelor of Arts

- Human Development (options: Early Childhood Education; Family and Consumer Sciences; and Lifespan Development)

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

Art, Bachelor of Arts (BA)

- Art (options: Graphic Arts and Integrated Design; and Studio)

Art, Bachelor of Fine Arts (BFA)

- Art

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: Creative Media and Digital Culture (Vancouver); Digital Cinema, Sound, and Animation (Pullman); Digital Design (Pullman, Tri-Cities); Game Studies (Pullman); and Web Design and Development (Pullman))

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)

Foreign Languages and Cultures, Bachelor of Arts

- Chinese Language and Culture (options: General)
- French (options: General; and Teaching)
- Japanese (options: General)
- Spanish (options: General; Latin American and Latinx Studies; 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 (options: General; and Elective Studies in Pre-Law)

Music, Bachelor of Music (BMus)

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

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 (options: Justice Studies; Public Administration and Management; and Public Policy and Politics)

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 (options: Education; and Teaching without Certification)

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 Science; 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; Secondary Mathematics Teaching with Certification; Secondary Mathematics Teaching without Certification; Statistics; and Theoretical Mathematics)

Physics, Bachelor of Science

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

Psychology, Bachelor of Science

- Psychology (options: General; and Accelerated Pre-Pharmacy)

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

Hospitality Business Management, Bachelor of Arts

- Aging Business Management
- Hospitality Business Management
- Wine and Beverage Business Management

College of Communication**Journalism and Media Production, Bachelor of Arts**

- Broadcast News
- Broadcast Production
- Media Innovation
- Multimedia Journalism

Strategic Communication, Bachelor of Arts

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

College of Education, Sport, and Human Sciences**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: Biomedical Systems; Cellular and Molecular; Pre-Med – Biomedical Systems; and Pre-Med – Cellular and Molecular)

Chemical Engineering, Bachelor of Science

- Chemical Engineering (options: General)

Civil Engineering, Bachelor of Science

- Civil Engineering

Computer Engineering, Bachelor of Science

- Computer Engineering

Computer Science, Bachelor of Science

- Computer Science

Construction Management, Bachelor of Science

- Construction Management

Cybersecurity, Bachelor of Science

- Cybersecurity

Electrical Engineering, Bachelor of Science

- Electrical Engineering

Interior Design, Bachelor of Arts

- Interior Design

Landscape Architecture, Bachelor of

- Landscape Architecture

Materials Science and Engineering, Bachelor of Science

- Materials Science and Engineering

Mechanical Engineering, Bachelor of Science

- Mechanical Engineering

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

College of Nursing**Nursing, Bachelor of Science**

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

Social Work, Bachelor of Arts (Tri-Cities only)

- Social Work

College of Pharmacy and Pharmaceutical Sciences (Spokane)**Pharmaceutical and Medical Sciences, Bachelor of Science**

- Pharmaceutical and Medical Sciences (options: General; Medical Laboratory Science; and Accelerated 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 (option: Molecular Biology)

Microbiology, Bachelor of Science

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

Neuroscience, Bachelor of Science

- Neuroscience (options: Biomedical Business; General; Pre-Professional; Research; and Accelerated Pre-Veterinary)

Public Health, Bachelor of Science

- Public Health (options: Community and Behavioral Health; General; and Infectious Disease)

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 Business Management	Hospitality Business Management
Agribusiness Economics	Economic Sciences
Agriculture Technology and Production Management	Agricultural and Food Systems
Agricultural Education	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
Biongingeneering	Chemical Engineering and Bioengineering
Biology	Biological Sciences
Business Administration	Business
Business Economics	Economic Sciences
Chemical Engineering	Chemical Engineering and Bioengineering
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	Management, Information Systems, and Entrepreneurship
Environmental and Resource Economics and Management	Economic Sciences
Environmental Policy and Equity	Sociology
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
Gerontology	Human Development
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
Japanese Area and Culture Studies	Languages, Cultures, and Race
Jazz Studies	Music
Landscape Architecture	Design and Construction
Latin American and Spanish Area Studies	Languages, Cultures, and Race
Leadership	Human Development
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	History
Modern Global Issues	History
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	Core Competencies in Japanese Language and Culture	Languages, Cultures, and Race
Pre-Genetic Counseling	Molecular Biosciences	Core Competencies in Spanish Language and Culture	Languages, Cultures, and Race
Psychology	Psychology	CySER Basics	Management, Information Systems, and Entrepreneurship
Public Health	Public Health	CySER CAE-CO Fundamentals	Electrical Engineering and Computer Science
Public Relations	Strategic Communication	Culinary Business	Hospitality Business Management
Queer Studies	Women's, Gender, and Sexuality Studies	Dual Language Pathway	Teaching and Learning
Religious Studies	History	Early Childhood Education	Human Development
Rhetoric and Professional Writing	English	Eco Arts and Public Engagement	Fine Arts
Sociology	Sociology	Editing and Publishing	English
Software Engineering	Electrical Engineering and Computer Science	Education Technology	Teaching and Learning
Soil Science	Crop and Soil Sciences	Energy Conscious Construction	Design and Construction
Spanish	Languages, Cultures, and Race	English Language Learners	Teaching and Learning
Spanish Language Translation	Languages, Cultures, and Race	Entertainment Entrepreneurship	Music
Sport Management	Educational Leadership and Sport Management	Family Studies	Human Development
Sports Communication	Journalism and Media Production	Foundations of Data Analytics	Data Analytics
Statistics	Mathematics and Statistics	Foundations of Data Science	Data Analytics
Strength and Conditioning	Kinesiology and Educational Psychology	Game Studies and Design	Creative Media and Digital Culture / Digital Technology and Culture
Sustainable Development	Economic Sciences	Gerontology	Human Development
Viticulture and Enology	Horticulture	Global Competencies	Honors College
War and Society	History	Global Leadership	Undergraduate Education
Wildlife Ecology	Environment	Graphic Design	Digital Technology and Culture
Wine and Beverage Business Management	Hospitality Business Management	Honors and Business Innovation and Leadership Experience (HABILE)	Business
Women's, Gender, and Sexuality Studies	Women's, Gender, and Sexuality Studies	Human Services Case Management and Administration	Human Development
Workplace Diversity	Sociology	Intermediate Data Analytics	Data Analytics
Zoology	Biological Sciences	Intermediate Data Science	Data Analytics

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

Adolescence
Advanced Data Science
Agricultural Leadership
American Indian Studies
Behavioral Business Research
Business of Art

Business of Biomedicine
Core Competencies in Chinese Language and Culture
Core Competencies in French Language and Culture
Core Competencies in German Language and Culture

Department

Human Development
Data Analytics
Agricultural and Food Systems
Languages, Cultures, and Race
Business
Fine Arts/Management, Information Systems, and Entrepreneurship
Neuroscience
Languages, Cultures, and Race
Languages, Cultures, and Race
Languages, Cultures, and Race

Core Competencies in Japanese Language and Culture	Languages, Cultures, and Race
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
Culinary Business	Hospitality Business Management
Dual Language Pathway	Teaching and Learning
Early Childhood Education	Human Development
Eco Arts and Public Engagement	Fine Arts
Editing and Publishing	English
Education Technology	Teaching and Learning
Energy Conscious Construction	Design and Construction
English Language Learners	Teaching and Learning
Entertainment Entrepreneurship	Music
Family Studies	Human Development
Foundations of Data Analytics	Data Analytics
Foundations of Data Science	Data Analytics
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
Honors and Business Innovation and Leadership Experience (HABILE)	Business
Human Services Case Management and Administration	Human Development
Intermediate Data Analytics	Data Analytics
Intermediate Data Science	Data Analytics
Italian Language	Languages, Cultures, and Race
Latinx Studies	Languages, Cultures, and Race
Leadership in Coaching	Kinesiology and Educational Psychology
Mindful Emotional and Social Intelligence	Human Development
Mindfulness-based Emotional and Social Intelligence	Honors College
Molecular Biosciences	Molecular Biosciences
Music Production	Music
Organic Agriculture	CAHNRS
Professional Sales	Business
Professional Science and Technology Writing	English
Professional Writing	English
Quantitative Biology	Biology/Mathematics and Statistics
Race and Ethnicity in the Corporate World	Languages, Cultures, and Race
Social and Environmental Justice (Vancouver only)	English
Social Media	Creative Media and Digital Culture / Digital Technology and Culture
Sustainable Organizational Leadership	Sociology/Management, Information Systems, and Entrepreneurship
Teaching English as a Foreign Language	English
Water Resources Science and Management	Environment

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 – Currently on hiatus, 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 Common Reading Program, CUE 503, 509-335-7421, <https://commonreading.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, 509-335-7421, <https://firstyear.wsu.edu/>.

College Success Seminar – The College 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 college. Contact: First-Year Programs, CUE 503, 509-335-7421, <https://firstyear.wsu.edu/>.

Career Exploration and Professional Development – University 301 (UNIV 301) 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 WSU career. One way to do this is through a study abroad, 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, 750 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 to enhance their experiences at home and abroad. The Global Learning Department within the Office of International Programs advises all WSU students on all these opportunities. Contact: Global Learning, ip.globallearning@wsu.edu, 509-335-6204, <https://ip.wsu.edu/>.

Writing Center:

- **Free individual peer tutoring for writing** – The Writing Center provides support to WSU students as they clarify, develop, and articulate their ideas in writing. Writing Center consultants assist students with writing for all University courses across disciplines, colleges, and majors. Writing support includes brainstorming and planning, outlining and

drafting, revising and editing. Free support on any and all types of writing assignments is available in the WSU Pullman Writing Center, Smith Center for Undergraduate Education (CUE), Room 303. Writing support is available on all campuses through the Vancouver, Tri-Cities, Spokane, Everett, and eTutoringOnline writing centers. Pullman students can visit: <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 and revising skills. These courses are managed and provided by the Writing Center. Contact: WSU Writing Center, Smith Center for Undergraduate Education (CUE), Room 303, 509-335-1323.
- **Advanced Writing Tutorial** – WRITE 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 student-centered approach focusing on students' discipline-specific needs. Additionally, WRITE 205 "Sentences and Paragraphs" can be taken concurrently with an M course or upper-division writing-intensive course. This course also employs a 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://asc.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 have 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 peer 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://tutoring.wsu.edu> provides an up-to-date list each semester of free, drop-in tutoring services available in ASCC, the Holland and Terrell Library, 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, triostudentsupport@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 College Success Foundation Achievers, Passport to College, National Student Exchange, STEM SSS, Teacher Prep SSS, Veterans SSS, Veterans Scholars Network, and the Peer Educator Training Program. 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.

College Success Foundation Achievers Program: All WSU Campuses – In collaboration with College Success Foundation, supports high-achieving students from limited-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.csp@wsu.edu for more info.

Passport to College 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 – As WSU's domestic study away program, 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, 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.csp@wsu.edu.

Teacher Prep SSS: WSU Pullman – Teacher Prep SSS partners with WSU's College of Education, Sport, and Human Sciences 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 Veteran and Military Affiliated Student Services 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.csp@wsu.edu.

Veterans Scholars Network: All WSU campuses – Funded by the Boeing Foundation, VSN connects student veterans and transitioning service members with peer advisors who provide guidance, mentorship, and a clear path to achieving their goals. Additional benefits include professional development, mentoring opportunities, and a supportive community by and for veterans. Visit <https://provost.wsu.edu/oea/veterans-scholars-network/> or email oea.csp@wsu.edu.

Peer Educator Training Program: All WSU campuses – The Office of Academic Engagement is certified as a College Reading and Learning Association (CRLA) International Peer Educator Training Program (IPTPC). Through CRLA Peer Educator Training, peer mentors/advisors complete rigorous training and development standards in advance of mentoring secondary and postsecondary students from historically-excluded populations. Visit <https://provost.wsu.edu/peer-educator-training-program/> or email oea.csp@wsu.edu.

College Affordability Programs – A system-wide effort to support the engagement, persistence, and graduation of students through financial education and direct financial support. Financial education efforts are delivered through Cougar Money Matters utilizing a strengths-based, individualized approach, focusing on student self-advocacy and efficacy. Direct financial support provides funding for educational purposes, including scholarships, matched savings, and emergency grant aid. Unmet need and lack of financial support are among the biggest indicators of persistence and college. 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 and 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, with a scholarship of up to \$22,500 (over four years). <https://provost.wsu.edu/wsos/>

Invest in Cougs: Persisting through school from enrollment to graduation is no small task. Invest In Cougs' goal is to help lessen the burden of financial stress for students through financial education applicable to their time as a Coug and life post-graduation. We work with students to save \$1,000 and provide one-to-one peer advising, financial education, and individualized support. At the end of the program, students have the potential to receive up to \$4,000 in matched grant funding! <https://provost.wsu.edu/investincougs/>

Cougar Money Matters: Cougar Money Matters is WSU's financial education program, which is available to all students at no cost. Everyone's financial situation is unique, and Cougar Money Matters is here to provide support and help students get resources and information to navigate college and make sound financial decisions. Through peer mentoring, professional counseling, and online tools, Cougar Money Matters provides one-on-one appointments, self-paced modules, and presentations and workshops on topics such as paying for college (billing, financial aid, scholarships, resources, and more), creating a budget, post-college financial planning, and more. Through WSU courses, Cougar Money Matters takes a deeper dive to prepare students for financial success during and after college. <https://cmm.wsu.edu>

College Access & Transition Programs – At the core of Washington State University's land-grant mission, our College Access & Transition Programs are designed to open doors to education for those who have been historically excluded. What sets us apart is our commitment to equity, which we infuse into every aspect of our programs. We start by creating clear pathways at the secondary level and then implement high-impact practices to foster a culture of academic excellence. Our ultimate goal is to ensure post-secondary and long-term success for all our students. For more information, 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. Participants can have an opportunity to build a support network, work with faculty and staff, and explore university life. In addition to assisting with the college-going process (financial aid applications, admission, registration, housing, etc.), Cougs Rise provides students with a mentor who is a current Coug and had similar experiences along their journey. Visit <https://provost.wsu.edu/cougsrise/> or email cougs.rise@wsu.edu for more info.

Dare to Dream Pre-College Program: Statewide – Dare to Dream provides instruction and support in the sciences, math, engineering, and English, as well as 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 scholarly 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.

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, 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 for students who need to enroll in English 101 or its equivalent. The Writing Placement Process is administered during the summer and during the fall and spring terms. 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 Program at writing.program@wsu.edu, or visit <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 an online platform. 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.

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 (UCOREs) 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 — Additional 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.

Inquiry: Ways of Knowing—Complete 3 credits in each of the seven inquiry designations: [ARTS], [BSCI], [DIVR], [EQJS], [HUM], [PSCI], and [SSCI].
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.

College of Veterinary Medicine — Additional Graduation Requirements

In addition to the University Requirements for Graduation, the College of Veterinary Medicine requires that students complete one additional requirement for graduation. The additional college graduation requirement has already been incorporated in the departmental requirements listed in this catalog.

Inquiry: Ways of Knowing—Complete 3 credits in each of the seven inquiry designations: [ARTS], [BSCI], [DIVR], [EQJS], [HUM], [PSCI], and [SSCI].

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.



WSU Graduation Requirements

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 eleven requirements. Match courses in the WSU Catalog (<https://catalog.wsu.edu>) to the 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.

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 University Common Requirements section of the catalog for more information or contact the Transfer Center.

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.

INQUIRY: WAYS OF KNOWING: 19 credits

Of the following seven designations, students must complete six designations:

- ☐ Inquiry in the Arts [ARTS] (3 cr.)
course: _____ semester/year F Sp Su _____
- ☐ Inquiry in the Biological Sciences [BSCI] (3 or 4 cr.)*
course: _____ semester/year F Sp Su _____
- ☐ Inquiry into Equity and Justice [EQJS] (3 cr.)
course: _____ semester/year F Sp Su _____
- ☐ Inquiry into Global Cultural Diversity [DIVR] (3 cr.)
course: _____ semester/year F Sp Su _____
- ☐ Inquiry in the Humanities [HUM] (3 cr.)
course: _____ semester/year F Sp Su _____
- ☐ Inquiry in the Physical Sciences [PSCI] (3 or 4 cr.)*
course: _____ semester/year F Sp Su _____
- ☐ Inquiry in the Social Sciences [SSCI] (3 cr.)
course: _____ semester/year F Sp Su _____

*At least one lab science (either BSCI or PSCI) must be completed to satisfy the UCORE inquiry requirement. Students in the College of Arts and Sciences complete one additional lab credit for a total of 8 semester credits.

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).
- ☐ Two 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 *

- ☐ 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 from Inquiry: Ways of Knowing—Complete 3 credits in each of the seven inquiry designations: [ARTS], [BSCI], [DIVR], [EQJS], [HUM], [PSCI], and [SSCI].
- ☐ Additional 1 lab credit of [BSCI] or [PSCI] for a total of 8 semester credits (2 labs).

COLLEGE OF VETERINARY MEDICINE ADDITIONAL REQUIREMENTS *

- ☐ Additional 3 semester credits from Inquiry: Ways of Knowing—Complete 3 credits in each of the seven inquiry designations: [ARTS], [BSCI], [DIVR], [EQJS], [HUM], [PSCI], and [SSCI].

*All students, including transfer students with an approved transferable associate's degree, or students pursuing a second bachelor's degree in the majors in these colleges, will be held to these additional requirements.



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.

University Common Requirements (UCORE) Program

The University Common Requirements 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 University Common Requirements (UCORE) Program. 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. A first-year experience course [ROOT] and a senior capstone experience [CAPS] bookend course work that features engagement with foundational competencies and inquiry-based learning. The program's structure includes coursework in contemporary issues, social sciences, humanities, creative or professional arts, quantitative reasoning, natural sciences, diversity, equity and justice, and communication.

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
INQUIRY: WAYS OF KNOWING	
Of the following seven designations, students must complete six designations:	
Arts [ARTS]	3
Biological Sciences [BSCI] ³	3 or 4
Equity and Justice [EQJS]	3
Global Cultural Diversity [DIVR]	3
Humanities [HUM]	3
Physical Sciences [PSCI] ³	3 or 4
Social Sciences [SSCI]	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 one lab science (either BSCI or PSCI) must be completed to satisfy the UCORE inquiry requirement.

General Rules

- While courses with a UCORE designation can be taken on a pass, fail (P, F) 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 this limitation, three 1-credit UCORE courses may be combined to count for a single 3-credit UCORE course.
- Taken at WSU, a minimum of three (3) credits is required in each UCORE designation to fulfill the specific UCORE requirement (i.e., two one-credit WSU courses in the [ARTS] designation will not fulfill the three-credit ARTS UCORE requirement).
- A course from another institution that articulates (transfers) as a direct equivalent to a UCORE designation will satisfy a UCORE designation 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.)
- 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.

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 (HISTORY 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, or RCI, introduces students to five WSU 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. Students also learn to recognize the complexity of causes and outcomes of historical change; use relevant evidence to answer historical questions; use historical approaches and evidence to understand the diversity of the human experience across time and space; and practice communicating historical ideas and evidence in written forms with intentionality, clarity, accuracy, and organization.

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

FOUNDATIONAL COMPETENCIES

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

Quantitative Reasoning [QUAN]

Quantitative Reasoning courses help students develop and sharpen their ability to apply quantitative principles and computational methods to solve quantitative problems; convert relevant information into various mathematical forms; communicate mathematical information in writing; identify when and what type of quantitative data are appropriate to support claims; and interpret and/or apply with accuracy, as well as recognize the limitations of quantitative information in real-world and/or multi-disciplinary contexts.

CPT S 111	Introduction to Computer Programming
DATA 115	Introduction to Data Analytics
ECONS 310	Statistics for Economists
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

POL S 201	Political Research Methods
PSYCH 311	Statistics in Psychology
STAT 212	Introduction to Statistical Methods

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

—**Writing:** Written communication courses help students develop and sharpen their ability to compose texts that demonstrate intentional rhetorical choices, including attention to audience, context, genre, and convention; use evidence to support and explain claims, recognize how and why conventions vary among disciplines and communities; and reflect on and apply feedback to increase the effectiveness of 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
PHIL 200	Critical Thinking and Writing
SPANISH 308	Intermediate Grammar and Writing
WRITE 111*	Writing and Reading in History
WRITE 112*	Writing and Reading in the Natural Sciences
WRITE 113*	Writing and Reading in the Social Sciences

* Take three of the 1 credit WRITE courses to meet the minimum of 3 credits required.

—**Communication:** Communication courses help students develop and sharpen their ability to communicate effectively as appropriate to the mode of non-written communication (e.g. public speaking, musical expression; interpersonal, intercultural, or visual communication; multi-media authoring; conversational foreign language); recognize how the intended audience for a message shapes choices about style, tone, media, and delivery, as well as how those choices in turn shape audience reception; recognize how the organization of a message impacts both its effectiveness and potential responses; reflect on and apply feedback to increase the effectiveness of communication; identify when and what types of supporting materials are necessary, given the chosen delivery mode; and communicate information in appropriate written forms to support effective non-written communication.

COM 102	Public Speaking in the Digital Age
COM 210	Multimedia Content Creation
COM 400	Communicating Science and Technology
DTC 202	Internet Revolutions
DTC / DATA 209	Visualizing Data
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
NEUROSCI / MBIOS 201	Introduction to Communication in the Molecular Life Sciences
PHARMEDS 315	Biomedical Literature: Communicating Science
SOC 103	Social Psychology of Communication

WAYS OF KNOWING

Inquiry in the Arts, the Biological Sciences, Equity and Justice, Global Cultural Diversity, the Humanities, the Physical Sciences, and the Social 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 seven broad areas—arts, biological sciences, equity and justice, global cultural diversity, humanities, physical sciences, and social sciences—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 Arts [ARTS]

Arts courses help students develop and sharpen their ability to interpret and/or produce creative work using relevant methods, processes, or tools; receive and reflect on constructive feedback to refine creative methods, process, outcomes and/or interpretations; recognize the role of scholarship in creative or professional arts; explain in writing how creative work or interpretation is grounded in scholarship; and understand fundamental knowledge and concepts in creative or professional arts as appropriate to the discipline.

AMDT 313	Visual Analysis and Aesthetics
ANTH 301	Arts and Media in Global Perspective
ART 101	Introduction to Art
ART 102	2D Art and Design
ART 103	3D Art and Design
ART 110	Drawing
ART 201	World Art History I
ART 202	World Art History II
ART 303	Modern Art - 19th Century
ART 305	Arts of Ancient Greece and Rome
ART 307	The Arts of Renaissance Europe
ART 340	Ceramics
ART 350	Sculpture
CES 338	Cinematic Images of Blackness
CES 358	U.S. Latinx in Film
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 252	Introduction to Creative Writing and Creative Writing Pedagogy
ENGLISH 339	Topics in Film as Literature
ENGLISH 342	Documentary Film Theory and Production
HISTORY 320	Modern U.S. History Through Film
HUMANITY 280	Quests and Callings
MUS 120	Class Guitar
MUS 153	Understanding Music
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
SDC 100	World of Design and Construction
SDC 220	Design Through Literature
SPANISH 110	Understanding Peninsular Spanish Film
SPANISH 111	Understanding 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

* Take three of the 1 credit MUS courses to meet the minimum of 3 credits required.

Inquiry in the Biological Sciences [BSCI]

Biological Science courses help students develop and sharpen their ability to draw conclusions based on biological science methods or evidence; apply quantitative methods and principles to solve biological science problems or

explain scientific observations; identify how biological science informs societal developments and issues; evaluate biological scientific claims or information based on the sources and methods used to generate it; communicate effectively biological science information or findings in written forms appropriate to the discipline; and understand fundamental knowledge and concepts in biological science.

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

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 105	(L) General Biology Laboratory
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 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 201	Science in the Public Eye
FS 201	Science on Your Plate
FS 202	(L) Science on Your Plate - Laboratory
HORT 150	(L) Science and Art of Growing Plants
MBIOS 101	(L) Introductory Microbiology
MBIOS 320	DNA and Society
NEUROSCI 105	Meet Your Brain
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

Inquiry into Equity and Justice [EQJS]

Equity and Justice courses help students develop and sharpen their ability to understand fundamental knowledge and concepts related to power, privilege, equity, and/or justice; recognize how structures of power and privilege shape unequal social positioning and/or sustain unethical worldviews or ideologies; recognize the ways in which one's own social identities impact one's engagement with others; identify relevant sources of information that demonstrate how individuals, communities, and movements resist and/or transform institutions that (re-)produce inequality and oppression; evaluate claims or information about how and why constructions, scripts, and other broad generalizations about groups are produced, adapted over time, and/or persist or manifest in oppressive beliefs and behaviors; and communicate about power, privilege, equity, and/or justice in written forms appropriate to the discipline.

AMDT / WGSS 222	Fat Studies
AMER ST / ENGLISH 472 / CES 462	Race, Justice, and Food Ecosystems
ANTH 210	Health Divides: Human Inequality and Well-Being
ANTH 215	Material Culture of Confinement and Incarceration
ANTH 220	Perspectives on Race
ANTH 310	Contemporary Human Issues
ART 304	Modern Art-20th Century
CES 101	Race and Racism in the United States

CES 291	Antisemitism and Jewishness	CES 208	Race and Speculative Narratives
CES 335 / HISTORY 360	Black Freedom Struggle	CES 325	Traveling Cultures: Tourism in Global Perspective
CES / HISTORY 426	Workers Across North America	COMSOC 321	Intercultural Communication
COMSTRAT 285	Culture and Communication in the Workplace	DTC 206	Digital Inclusion
CRM J 205	Realizing Justice in a Multicultural Society	DTC / AMER ST 475	Digital Diversity
ENGLISH 362	Rhetorics of Racism	ECONS 428	Global Capitalism Today: Perspectives and Issues
ENGLISH 489	20th/21st Century British and Postcolonial Literatures	ENGLISH 322 / CES 332	Topics in African American Literature
H D 334	Principles of Community Development	FOR LANG 110	Understanding World Cinema
HISTORY 224	Baseball and American Social Movements	FOR LANG 120	Introduction to World Cultures
HISTORY 250	Peoples of the United States	H D 350	Family Diversity
HISTORY 292	Cultural Appetites: Food in World History	HBM 270	Exploring the Business of Aging
HISTORY 384	The World Through Sports History	HISTORY 120	World History I
HISTORY / WGSS 398	Women, Gender, and the History of the Un-West	HISTORY 130	History of Organized Crime in America
HISTORY / WGSS 399	LGBTQ+ History: Culture, Politics, and Social Change in the U.S.	HISTORY / ASIA 271	Southeast Asian History: Vietnam to Indonesia
MUS 267	Black American Music: Roots to Fruit	HISTORY / ASIA 272	Introduction to Middle Eastern History
PHARMEDS 375	Equity, Disparity, and Social Justice in Healthcare	HISTORY / ASIA 273	Islam in Global History
POL S / PHIL 234	Peace, Justice, and Human Rights	HISTORY / ASIA 275	Introduction to East Asian Culture
POL S / PHIL 438	Contemporary Political Theories of Power, Oppression, and Resistance	HISTORY 308	Native American History
SDC 102	Social Justice in the Built Environment	HISTORY 321	U.S. Popular Culture, 1800 to 1930
SOC / WGSS 251	The Sociology of Sex, Relationships, and Marriage	HISTORY 322	U.S. Popular Culture Since 1930
SOC 340	Social Inequality	HISTORY / WGSS 335	Women in Latin American History
SOC 361	Criminology	HISTORY 361	American Roots: Immigration, Migration, and Ethnic Identity
SPMGT 101	Sport and Popular Culture: Trends and Issues	HISTORY / ASIA 377	Modern Japanese History
WGSS 101	Introduction to Women's, Gender, and Sexuality Studies	HISTORY 383	Drugs in World History
WGSS 120	Sex, Race, and Reproduction in Global Health Politics	JAPANESE 320*	Issues in East Asian Ethics
WGSS 300*	Intersections of Race, Class, Gender, and Sexuality	MATH 431	Intersections of Culture and Mathematics
WGSS 332 / ANTH 317	Global Feminisms	MUS 263	Rags to Rhinestones: A History of Country Music
WGSS / SOC 385	Introduction to Lesbian, Gay, Bisexual, and Transgender Studies	MUS 362	History of Jazz
		MUS / WGSS 363	Women in Music
		MUS 366	LGBTQ+ Perspectives in Music
		SOC / WGSS 351	The Family
		SOE 312	Natural Resources, Society, and the Environment
		SOE 316	Sustaining Human Societies and the Natural Environment A Faculty Led Study Abroad Program in New Zealand
		SPANISH 320	Peninsular Spanish Culture
		SPANISH 321	Latin American Cultures
		WGSS 220	Gender, Culture, and Science

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

Inquiry into Global Cultural Diversity [DIVR]

Global Cultural Diversity courses help students develop and sharpen their ability to understand fundamental knowledge and concepts related to cultural diversity; recognize the complexity of elements important to members of a culture in relation to history, values, politics, communication styles, economics, or beliefs and practices; recognize the sources and limits of one's own perspective and cultural rules and limitations in relation to the perspective of others; identify relevant sources of information that demonstrate the ways in which history, institutions, and/or ideologies shape cultural variation and/or different experiences; evaluate claims or information about cultural diversity based on the sources and the methods used to generate it; and communicate about cultural diversity in written forms appropriate to the discipline.

AMDT 317	Multicultural Perspectives on the Body and Dress
ANTH 101	Introduction to Anthropology
ANTH 203	Global Cultural Diversity
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 322*	Ecology in East Asian Cultures
BIOLOGY / WGSS 307	Biology of Sex and Gender
CES 207	Race/Ethnic Dynamics and the Corporate World

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

Inquiry in the Humanities [HUM]

Humanities courses help students develop and sharpen their ability to recognize the role of evidence in the humanities, including what kinds of evidence are appropriate or possible in the context of a research question; identify claims based on interpretation of evidence in the humanities; evaluate claims or information in the humanities based on the methods used to generate it; communicate about the humanities in written forms appropriate to the discipline; and understand fundamental knowledge and concepts in the humanities.

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 Latinx 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 U.S. Popular Culture
CES 313 / ENGLISH 311	Asian Pacific American Literature
CES 465	Race, Science, and Society
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 306	Shakespeare
ENGLISH 366	The British Novel to 1900
ENGLISH 368	The American Novel to 1900
ENGLISH / WGSS 373	Empire, Gender, and Postcoloniality in Global Literature
FOR LANG 101	Introduction to the World of Languages
FOR LANG / HUMANITY 130	Global Literature in Translation
FOR LANG / ASIA 220	Global Issues, Regional Realities
FRENCH 110	French/Francophone Film
FRENCH 120	French Culture
FRENCH 320	French/Francophone 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 355	Peasants, Potions, Rituals and Rumors: European Popular Culture, 1200-1800
HISTORY 356	Europe Since 1945
HISTORY 359	Modern Britain
HISTORY / ASIA 373	Chinese Civilization
HISTORY / ASIA 374	Japanese Civilization
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 360	Business Ethics
PHIL 365	Biomedical Ethics
PHIL 370	Environmental Ethics
PHIL 450	Data Analytics Ethics
POL S / PHIL 437	Classical Political Thought
PUBHLTH 101	Introduction to Public Health
SHS 205	Introduction to Speech-Language Pathology and Audiology
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 Physical Sciences [PSCI]

Physical Science courses help students develop and sharpen their ability to draw conclusions based on physical science methods or evidence; apply quantitative methods and principles to solve physical science problems or explain scientific observations; identify how physical science informs societal developments and issues; evaluate physical scientific claims or information based on the sources and methods used to generate it; communicate effectively physical science information or findings in written forms appropriate to the discipline; and understand fundamental knowledge and concepts in physical science.

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

AMDT 210	(L) Textiles
ASTRONOM 135	(L) Astronomy
ASTRONOM 138	Planets and Planetary Systems
CHEM 101	(L) Introduction to Chemistry
CHEM 105	(L) Principles of Chemistry I
PHYSICS 101	General Physics
PHYSICS 111	(L) General Physics Lab
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	The Solar System: An Introduction to Planetary Science
SOE 105	Natural Resources and Natural Hazards
SOE 106	Exploring the Dinosaurs of Jurassic Park
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

Inquiry in the Social Sciences [SSCI]

Inquiry in the Social Sciences courses help students develop and sharpen their ability to recognize the difference between quantitative and qualitative evidence for use in social scientific research, including when each is appropriate to support claims; evaluate evidence-based claims and conclusions that are rooted in social scientific research methods; communicate social scientific information or findings in written forms; and understand fundamental knowledge and concepts in social science as appropriate to the discipline.

AFS 336	Agriculture, Environment, and Community
ANTH 130	Global 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	Latinx Worlds: Cultures, Power, Identity
CES 308	Cultural Politics of Sport
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 / ANTH 256	Introduction to the Study of Language
ENGLISH 457	Sociolinguistics
H D 101	Human Development Across the Lifespan
H D 204	Family Interactions
HBM 235	Travel, Society, and Business
HISTORY 309	Place-based Digital History
HISTORY 476	Revolutionary China
NEP 200	Place and Health
POL S 101	American National Government
POL S 102	Introduction to Comparative Politics
POL S 103	International Politics
POL S 206	State and Local Government
PSYCH 105	Introductory Psychology
SOC 101	Introduction to Sociology
SOC 102	Social Problems
SOC 332	Sustainability and Society
SOCL WRK 201	Introduction to Social Work I
SOIL SCI 105	Applied Chemistry in Soil, Agriculture, and Environmental Sciences

INTEGRATIVE LEARNING

Integrative Capstone [CAPS]

Integrative Capstone courses help students develop and sharpen their ability to conceptualize a substantial, culminating project that requires the application of key concepts, methods, and skills to address authentic situations; apply concepts, skills, and/or methods of inquiry within and/or across disciplines to address authentic situations; identify and synthesize multiple relevant bodies of knowledge and sources of information to support findings or results within the context of an authentic situation; and communicate finds in written forms appropriate to the discipline and to 400-level course expectations.

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 466	Advanced Equine Systems
ANIM SCI 472	Dairy Cattle Management
ANIM SCI 474	Beef Cattle Production
ANTH 404	The Self in Culture
ANTH / POL S / SOC 418	Human Issues in International Development
ANTH 464	Hormones and Human Reproduction
ANTH 490	Integrative Themes in Anthropology
ARCH 403	Comprehensive Design Studio I
ART 498	Contemporary Issues Seminar
ASTRONOM 450	Life in the Universe
BIO ENG 411	Bioengineering Capstone Project II
BIOLOGY 401	Plants and People
BIOLOGY 402	Beneficial Microbes in Nature and Society
BIOLOGY 408	Contemporary Genetics
BIOLOGY / ANTH 473	Evolution and Society
BIOLOGY 483	Organisms and Global Change
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
CHE 451	Chemical Process Analysis and Design II
CHEM 485	Senior Thesis in Chemistry
COM 421	Intercultural Communication and Globalization
COM 471	Stereotypes in Communication
COMSOC 421	Intercultural Communication and Globalization
CPT S 423	Software Design Project II
CPT S 432	Cybersecurity Capstone Project
CRM J / WGSS 403	Violence Toward Women

CRM J 480	Senior Capstone in Criminal Justice and Criminology
CS 420	Software Design Project I
CST M 475	Senior Capstone
DATA 424	Data Analytics Capstone
DTC 497	Senior Seminar
E E 416	Electrical Engineering Design
ECE 452	Capstone Design II
ECONS 490	Economics Capstone
ENGLISH 415	Traditions of Comedy and Tragedy
ENGLISH 446	Form and Theory in Creative Writing
ENGLISH 494	Advanced Topics in Literature
ENGR 421	Multidisciplinary Engineering Design II
ENTRP 492	Small Business Strategy and Planning
FOR LANG 410	Advanced Studies in World Cinema
FRENCH 410	French Film in Translation
FRENCH 420	French Culture Through Wine
FS 489	Food Product Development
GERMAN 420	Socio-Cultural History of the German Language
HBM 475	Senior Living Management Capstone
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 495	Space, Place, and Power in History: Historical Geography in Global Perspective
HORT / CROPS 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
NEP 495	Interprofessional Capstone in Nutrition and Exercise Physiology
NEUROSCI 490	Senior Project
NURS FPC 430	Senior Practicum
NURS FPC 495	Nursing Practice: Advanced Clinical Practicum
PHARMEDS 490	Senior Seminar: Capstone Experience
PHIL 413	Science and Religion
PHIL 442	Philosophy of Mind
PHIL 445	Philosophy of Technology
PHIL 475	Zombie Apocalypse
POL S 428	Issues in Political Psychology
POL S 430	The Politics of Natural Resource and Environmental Policy
POL S 432	Comparative Public Policy
POL S 472	European Politics

PSYCH 401	Historical Development of Psychology
PSYCH 412	Psychological Testing and Assessment
PUBHLTH 490	Public Health Capstone
SHS 480	Senior Seminar
SOC 415	Globalization
SOC 495	Internship Capstone
SOC 497	Capstone Research Practicum
SOCL WRK 441	Translating Research into Social Work Practice
SOE 404	The Ecosystem
SOE 408	Advanced Earth Science Field Methods
SOE 410	It's about time: Understanding Timescales of Change in Geology and Environmental Science
SOE 454	Restoration Ecology
SOE 471	International Wildlife Conservation
SOE 474	Physics and Chemistry of the Earth
SOE 477	Environmental Dispute Resolution and Conflict Management
SOE 480	How to Build a Habitable Planet
SOE 484	Forest Management and Planning
SPANISH 450	Seminar in Spanish Studies - Themes
SPANISH 451	Seminar in Spanish Studies - Authors
SPANISH 452	Seminar in Spanish Studies - Literary Genres
SPMGT 489	Theory and Application in Sports Event Management
TCH LRN 490	Pre-Internship for Elementary Teachers
VIT ENOL 494	Critical Thinking in Vineyard and Winery Management
WGSS 495	Re-Directions in Women's, Gender, and Sexuality Studies: Theory and Practice



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- to four-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.

UNIV (university-wide) courses are one-, two-, three-, and four-credit elective offerings designed to help students from all majors develop the knowledge, skills, attitudes, and behaviors necessary to succeed in college, engage in high-impact experiences, and be career-ready at graduation. UNIV courses fall into four broad categories including academic support and transition, career preparation and exploration, leadership and global citizenship development, and undergraduate research and creative discovery. The curriculum is managed and overseen by the system-wide UNIV Curriculum Committee.

In the UNIV curriculum, 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. UNIV courses also prepare students for engagement in high impact practices that support their educational and career goals, including internships and undergraduate research, and creative activities.

The Writing Program's prefix, WRITE, offers a selection of 1-credit courses designed to support WSU students with the writing they are doing in their classes and in other academic and professional contexts. These courses offer low-risk, high-contact environments in which to learn and practice writing skills that will serve students as they write in their disciplines and in their future careers.

All WRITE courses are designed to be taken concurrently with a writing-intensive course such as English 101/105, a UCORE course such as History 105, or an "M" course (writing in the major). WRITE courses prioritize contextualized practice, so that students learn more about writing based on the writing they're already doing for other

courses, as well as self-regulated learning models that guide students to determine and pursue their own learning goals.

Finally, the Division of Academic Engagement and Student Achievement supports general education at WSU through the University Common Requirements (UCORE) Program. Information about UCORE can be found in other parts of the WSU Catalog or online through the UCORE website.

Certificates

Global Leadership

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 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, ART 202, COM 105, 321, ECONS 101, 1 BUS 380, POL S 103, 427, 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) Global Leadership Experience (1 credit, UNIV 490): Intensive or sustained experiential global learning through experiences such as education abroad or local intercultural activities.

3) Leadership in a Global Context (1 credit, UNIV 493): Specifically designed to enable you to understand your role as a leader in an ever-increasing interconnected world.

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

101 College Majors and Career Choice V 1-3 Establish initial connections to campus and community; cultivate a college success mindset through collaborative, experiential learning. Credit not granted for both UNIV 101 and 102.

102 College Majors and Career Exploration 1 Career development and the decision-making process; exploration of academic majors and careers. Specifically geared for students who are undecided/exploring major options in their first year at WSU. Credit not granted for both UNIV 101 and 102. (Formerly UNIV 100.)

104 College Success Seminar 2 Course Prerequisite: Less than 30 credits. Explore how to successfully navigate college; topics include student identity, cultural lenses, academic skills, university resources; utilizes a collaborative learning environment.

110 Developing Academic Strategies for Reading and Writing 4 Course Prerequisite: TOEFL iBT 64-75, TOEFL PBT 185-205, or IELTS 5.5-6; Undergraduate Bridge 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; Undergraduate Bridge 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.

198 Foundations of Academic Research 1 Introduction to secondary research and scholarly communication; information-seeking, evaluation, and use; critical reflection on biases, authority, misinformation, and research process.

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.

204 First-Year Career Exploration and Design Thinking V 1-2 Development of strategies for turning college success into personal and professional success. Recommend preparation: UNIV 104.

250 Success in College and Beyond 1 Academic skills and strategies that are critical for college success and personal growth.

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 for students with transfer credit to acclimate to the university and develop skills for 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. 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.

493 Leadership for the Global Context 1 Course Prerequisite: Admitted to the Global Leadership Certificate Program. Enhancement of student skills, perspectives, and competencies relating to global leadership 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.

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

WRITE

102 A Writing Group Collaborative for Support with Lower-Division UCORE Courses 1 May be repeated for credit; cumulative maximum 2 hours. A cross-disciplinary writing group that works to support writing-intensive course work in lower-division UCORE courses; not to be confused with ENGLISH 102, which supports first-year English composition courses. S, F grading.

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.

111 [WRTG] Writing and Reading in History 1 Introduction to writing and reading in history and related fields (art history, music history) with focus on how historians ask questions, answer questions, and communicate answers. Suggested corequisite: Concurrent enrollment in a lower-division history or related course (art history, music history).

112 [WRTG] Writing and Reading in the Natural Sciences 1 Introduction to writing and reading in the natural sciences with focus on how natural scientists ask questions, answer questions, and communicate answers. Suggested corequisite: Concurrent enrollment in a lower-division natural science course (Astronomy, Biology, Chemistry, Entomology, Environmental Science, Physics, etc.).

113 [WRTG] Writing and Reading in the Social Sciences 1 Introduction to writing and reading in the social sciences with focus on how social scientists ask questions, answer questions, and communicate answers. Suggested corequisite: Concurrent enrollment in a lower-division social science course (Anthropology, Archaeology, Criminal Justice, Economic Science, Psychology, Sociology, etc.).

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 Writing for Admission and Scholarship Applications 1 May be repeated for credit; cumulative maximum 3 hours. Strategies for writing personal statements using rhetorical inquiry, reflection, and peer review; focuses on professional/graduate school and scholarship applications.

405 The Sophisticated Scholarly Writer 1 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Junior standing. Individualized and small group instruction focusing on reading, analyzing and composing scholarly writing. 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

Daggy 213

509-335-3902

Lieutenant Colonel P. Brunke, Major J. Ford, Major D. Mack, Captain B. Sexton.

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 USSE.

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 earned in WSU courses 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 Course Prerequisite: Concurrent enrollment in AERO 103 required. Survey course that introduces students to the Department of the Air Force and the Air Force Reserve Officer Training Corps (AFROTC); focuses on the mission and organization of the Air Force / Space Force, dress and appearance standards, military customs and courtesies, Air Force heritage and introduction to communication skills.

102 Heritage and Values II 1 Course Prerequisite: Concurrent enrollment in AERO 103 required. Survey course that introduces students to the Department of the Air Force and the Air Force Reserve Officer Training Corps (AFROTC); focuses on the mission and organization of the Air Force / Space Force, dress and appearance standards, military customs and courtesies, Air Force heritage and introduction to communication skills.

103 Leadership Laboratory I 2 (0-4) May be repeated for credit; cumulative maximum 4 hours. Intercollegiate athletics and leadership course; leadership principles, military experience, and management practice; 2 hours laboratory and 2-3 hours required physical training; fitness tests include strength/conditioning muscle fitness, cardiorespiratory/aerobic endurance, and body composition requirements. Location of the course alternates between WSU and UI campuses throughout the term. S, F grading.

201 Team and Leadership Fundamentals I 1 Course Prerequisite: Concurrent enrollment in AERO 203 required; AERO 101 or concurrent enrollment. Fundamental principles of leadership, followership, team building, and accountability within the military; develops communication skills.

202 Team and Leadership Fundamentals II 1 Course Prerequisite: Concurrent enrollment in AERO 203 required; AERO 102 or concurrent enrollment. Fundamental principles of leadership, followership, team building, and accountability within the military; develops communication skills.

203 Leadership Laboratory II 2 (0-4) May be repeated for credit; cumulative maximum 4 hours. Intercollegiate athletics and leadership course; leadership principles, military experience, and management practice; 2 hours laboratory and 2-3 hours required physical training; fitness tests include strength/conditioning muscle fitness, cardiorespiratory/aerobic endurance, and body composition requirements. Location of the course alternates between WSU and UI campuses throughout the term. S, F grading.

311 Leading People and Effective Communication I 3 Course Prerequisite: Concurrent enrollment in AERO 313 required; AERO 201. Applied leadership through supervision, mentorship, and case studies; expands on military knowledge, ethics, and communications.

312 Leading People and Effective Communication II 3 Course Prerequisite: Concurrent enrollment in AERO 313 required; AERO 202. Applied leadership through supervision, mentorship, and case studies; expands on military knowledge, ethics, and communications.

313 Leadership Laboratory III 2 (0-4) May be repeated for credit; cumulative maximum 4 hours. Intercollegiate athletics and leadership course; leadership principles, military experience, and management practice; 2 hours laboratory and 2-3 hours required physical training; fitness tests include strength/conditioning muscle fitness, cardiorespiratory/aerobic endurance, and body composition requirements. Location of the course alternates between WSU and UI campuses throughout the term. S, F grading.

411 National Security, Leadership, and Commissioning Preparation I 3 Course Prerequisite: Concurrent enrollment in AERO 413 required; AERO 311. National security, regional studies, ethics, and doctrine; discusses military profession, justice, communications, and active-duty preparation.

412 National Security, Leadership, and Commissioning Preparation II 3 Course Prerequisite: Concurrent enrollment in AERO 413 required; AERO 312. National security, regional studies, ethics, and doctrine; discusses military profession, justice, communications, and active-duty preparation.

413 Leadership Laboratory IV 2 (0-4) May be repeated for credit; cumulative maximum 4 hours. Intercollegiate athletics and leadership course; introduces students to leadership principles, military experience, and management practice; 2 hours laboratory and 2-3 hours required physical training; fitness tests include strength/conditioning muscle fitness, cardiorespiratory/aerobic endurance, and body composition requirements. Location of the course alternates between WSU and UI campuses throughout the term. 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:

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

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

Gerontology Minor

The minor in gerontology requires a minimum of 18 credits and a minimum GPA of 2.6 or better in course work used to fulfill the minor. Required courses include H D 405 and 15 credits selected from HBM 270, 497; H D 308, 360, 384, 385; KINES 264; MGMT 101, 301; PSYCH 320, 363, 490; SOC 351, 356. Course work for the minor 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.

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, L. Carpenter-Boggs; School of Economic Sciences Director and Professor, J. McCluskey; Plant Pathology Department Chair and Professor, L. du Toit; Horticulture Department Interim Chair and Associate Professor, S. Ficklin; Entomology Department Chair and Professor, L. Lavigne; School of Food Science Director and Professor, Soo-Yeun Lee; Professors, I. Burke, L. Carpenter-Boggs, A. Carter, D. Crowder, A. Felser, M. Flury, J. Goldberger, P. Jacoby, R. Koenig, V. McCracken, K. Murphy, M. Neff, H. Pappu, C. Peace, M. Pumphrey, N. Rayapati; Associate Professors, M. Brady, L. DeVetter, C. Neely, J. Owen, K. Sanguinet T. Sullivan, A. Warner; Assistant Professors, J. Antonangelo, D. Griffin-LaHue, G. LaHue, H. Neely; Teaching Associate Professors, J. Baser, H. Henning, C. Perillo; Instructor, J. Holden; Teaching Assistant Professors, L. Brueggeman, M. Maquivar, T. Wheeler; Associate in Research, B. Jaekel; 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; Human Nutrition and Food Systems; 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. Additional minors in Agricultural Systems, Precision Agriculture, and Agricultural Technology and Production Management are also available. 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 address an emerging issue or problem and provide recommendations to one an industry partner (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.

Human Nutrition and Food Systems

- 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. See <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/>.

Master in Teaching (MIT)

Students who plan to pursue teaching credentials through a Master in Teaching program with an agricultural education focus will need to meet specific requirements for certification. These requirements include: (1) Students must complete an undergraduate degree in an agricultural related field, (2) Students must take all core Agriculture courses for a total of 35 credits from the College of Agricultural, Human and Natural Sciences with a grade of C or better, (3) Students must also meet the College of Education, Sport, and Human Sciences certification requirements for general certification and entry into the program, (4) students will need to take AG ED 407 Student Teaching in Agriculture Education along with student teacher internship through the College of Education, Sport, and Human Sciences TCH LRN 415 or TCH LRN 575, in order to complete requirements for the Office of the Superintendent of Public Instruction (OSPI) Form 4075E form for CTE Certification in Agricultural Education, (5) One year of occupational industry experience (2,000 hours) in the subject area other than teaching in the past 10 years is required for the Career & Technical certificate in Agriculture (OSPI Form 4075V). Volunteer hours can only be used for the 300 hours of current industry experience. This is not a WSU graduation requirement but is a requirement to obtain a CTE certificate to teach Agricultural Education in Washington. Admission to the WSU Master in Teaching Program requires a 3.0 GPA. Further information on the Master in Teaching Program can be found at <https://education.wsu.edu/graduate/mit/>.

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
MATH 202 [QUAN] ¹	3
UCORE Inquiry ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
AFS 201	3
CHEM 101 [PSCI] or 105 [PSCI]	4
STAT 212 or MGTOP 215	4
UCORE Inquiry ²	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
ACCTG 220 or 230	3
CHEM 102 or 106	4
SOIL SCI 201 [BSCI]	3
UCORE Inquiry ²	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
AFS Core Systems Elective ³	3
BIOLOGY 120	4
ECONS 301	3
ECONS 350 ⁴	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 Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

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.

⁴ 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
UCORE Inquiry ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
AFS 201	3
CHEM 101 [PSCI]	4
ECONS 101 [SSCI]	3
TCH LRN 301	3
UCORE Inquiry ²	3

<i>Second Term</i>	<i>Credits</i>
CHEM 102	4
SOIL SCI 201	3
STAT 212 [QUAN], MATH 140 [QUAN], 171 [QUAN], or 202 [QUAN]	3 or 4
UCORE Inquiry ²	3
300-400-level Agricultural Elective ³	3
Apply to College of Education, Sport, and Human Sciences	
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 ⁴	3
AG ED 471	2
CROP SCI 360	3
ECONS 350 ⁵	3
300-400-level Agricultural Elective ³	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 ³	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 Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

³ 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.

⁴ 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.

⁵ 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 101	1
AFS 103	1
AGTM 201	3
BIOLOGY 120 [BSCI]	4
HISTORY 105 [ROOT]	3
HORT / CROP SCI 102	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107	4
ECONS 101 [SSCI]	3
ENGLISH 101 [WRTG]	3
MATH 140 [QUAN], 171 [QUAN], 202 [QUAN] or STAT 212 [QUAN]	4 or 3
SOIL SCI 201	3

Second Year

<i>First Term</i>	<i>Credits</i>
AFS 201	3
AGTM 314	3
ANIM SCI 101	3
CHEM 101 [PSCI] or 105 [PSCI]	4
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
ACCTG 220	3
AFS 102	1
CHEM 102 or 106	4
COM 102 [COMM] or H D 205 [COMM]	3 or 4
UCORE Inquiry ¹	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
AGTM 305	3
AGTM 315	3
CROP SCI 305, 403, or PL P 429 ²	3
CROP SCI 360	3
ECONS 350 ³	3

<i>Second Term</i>	<i>Credits</i>
AGTM 330	3
AGTM 405	2
ECONS 450 [M] or [M] Elective ⁴	3
MGMT 301 or Elective ⁴	3
UCORE Inquiry ¹	3

<i>Third Term</i>	<i>Credits</i>
AGTM 495 (recommended) ⁵	0-3

Fourth Year

<i>First Term</i>	<i>Credits</i>
400-level Business or Elective ⁴	3
AFS 336 ⁶	3
AFS Core Systems Elective ⁷	3
ENGLISH 402 [M], ENGLISH 403 [M], or COM 400	3
MKTG 360 or Elective ⁴	3
<i>Second Term</i>	<i>Credits</i>
AFS 401 [CAPS]	3
AGTM 412	3
AGTM 416	3
Electives ⁴	5

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

² ENTOM 351 can be taken in the spring as an alternative to the other courses listed.

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

⁴ Completion of a Business minor is recommended. Working with their advisors, students are encouraged to apply electives towards a minor of their choice.

⁵ Completion of a 2-credit AGTM 495 internship is recommended.

⁶ SOE 312 [DIVR] can be taken in the spring as an alternative to AFS 336.

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.

HUMAN NUTRITION AND FOOD SYSTEMS (120 CREDITS)

Students in this major are the next generation of population health scientists, plant breeders, and researchers. This major focuses on understanding our obligation to meet the nutritional needs of a growing population by producing sustainable, nutrient-rich foods, that benefit the health of people and the planet.

Students learn to understand the complexity of relationships within agricultural ecosystems, how external factors influence these systems, and how research advances our ability to provide nutrient-rich food without incurring undue risks to human or environmental health. Course offerings begin with a strong scientific base in biology, chemistry, and human biochemistry; and expand to focus on crop science, soil science, nutrition and health.

The major is an exciting blend of classroom instruction and field experience that is tailored to the eventual employment goals of the student. Excellent employment opportunities exist within research and development programs for state, federal, and international agricultural, environmental, and regulatory agencies, agricultural and environmental consulting firms, local health departments, nutritionists, food processing companies, and a wide range of other agribusiness enterprises.

A student may be admitted to the Human Nutrition and Food Systems 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]	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	4
ENGLISH 101 [WRTG]	3
HORT / CROP SCI 202	4

Second Year

<i>First Term</i>	<i>Credits</i>
AFS 201	3
BIOLOGY 107 [BSCI]	4
SOIL SCI 201	3
UCORE Inquiry ¹	6
<i>Second Term</i>	<i>Credits</i>
AFS Core Elective ²	3
BIOLOGY 106	4
FS 220	3
STAT 212 [QUAN]	4
UCORE Inquiry ¹	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 333	3
CROP SCI 305	3
CROP SCI 360	3
ECONS 350 ³	3
Electives	3
<i>Second Term</i>	<i>Credits</i>
IPM 452	3
NEP 330	3
SOIL SCI/AFS 302 [M] ⁴	3
Electives	5

Fourth Year

<i>First Term</i>	<i>Credits</i>
AFS 336	3
CROP SCI 403	3
FS 436	3
NEP 400	3
Electives	3
<i>Second Term</i>	<i>Credits</i>
400-500-level Seminar in CAHNRS ⁵	1
AFS 401 [CAPS]	3
NEP 402	3
NEP 431	3
Electives	3

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

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.

⁴ SOIL SCI 414 and 415 can be taken as an alternative to SOIL SCI 302 [M]. However another [M] course will be required.

⁵ 400-500-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
STAT 212 [QUAN]	4
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
[COMM] Course (COM 102 [COMM] or	

H D 205 [COMM] recommended)	3 or 4
BIOLOGY 107	4
ENTOM 351	3
SOIL SCI 201	3
UCORE Inquiry ¹	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 ²	3
PL P 429	3

<i>Second Term</i>	<i>Credits</i>
AFS 445	3
ECONS 352 ³	3
SOIL SCI 302 [M]	3
SOIL SCI 478	2
UCORE Inquiry ¹	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
AFS Core Systems Elective ⁴	3
SOIL SCI 443	3
SOIL SCI 479	2
Electives	10

<i>Second Term</i>	<i>Credits</i>
AFS 401 [CAPS]	3
SOIL SCI 303	2
SOIL SCI 441	3
SOIL SCI 480	2
SOIL SCI 498	3

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

² Horticulture Production Electives: CROP SCI 403, HORT 310, HORT 313, HORT 357 (spring), or as approved by advisor.

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

⁴ 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 Education

The Agricultural Education minor is composed of a minimum of 18 credits, 13 of which must be upper-division courses earned in WSU courses or through WSU-approved education abroad or educational exchange courses. Required courses include AG ED 110, 440, 450, 471; AGTM 201, and 402. Additional courses that may apply to the Agricultural Education minor include: AG ED 430, 431, or any other upper division agricultural elective (including: prefixes in AG ED, AGTM, AFS, ANIM SCI, CROP SCI, ECONS, ENTOM, FS, HORT, IPM, LND ARCH, PL P, SOE, and SOIL SCI). Students majoring in Agricultural Education are not eligible to declare a minor in Agricultural Education.

The Agricultural Education Minor will help students who are considering pursuing teaching credentials within agricultural education. Students will develop knowledge and skills related to agricultural content knowledge, Career and Technical Education (CTE), and instructional pedagogy. Students completing this minor will be prepared to complete the Master in Teaching (MIT) offered through the College of Education, Sport, and Human Sciences to fulfill requirements to qualify for a Washington residency teacher certificate. This minor does not lead to teacher certification. Further information on the Master in Teaching Program can be found at <https://education.wsu.edu/graduate/mit/>.

Agricultural Systems

The minor in Agricultural Systems requires a minimum of 18 credits, 9 of which must be upper-division and earned in WSU courses 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 earned in WSU courses 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 earned in WSU courses 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

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 would like in-depth knowledge of organic systems, those wanting to pursue a career in organic agriculture, and anyone interested in having a garden or farm-to-table enterprise. It is perfect for 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 requires the following courses:

- SOIL SCI 101
- SOIL SCI 201
- SOIL SCI 302 or 443
- SOIL SCI 478
- SOIL SCI 479
- One from SOIL SCI 303, 480, or 498
- 3 credits from: AFS 336, 445, CROP SCI/HORT 102, ENTOM 351, SOIL SCI 441, or prior approval of another course by an advisor.

All courses exist as permanent courses, and the certificate can be fulfilled by on-line delivery through Global campus or in-person participation on the Pullman or Everett campuses.

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 1 For new undergraduate agricultural and plant sciences majors; an introduction to advising, student success resources, academic skills, goal setting, development of graduation plans, and exploration of professional pathways.

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 May be repeated for credit; cumulative maximum 6 hours. 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. Recommended preparation: SOIL SCI 201. (Crosslisted course offered as SOIL SCI 302, AFS 302.)

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; junior standing. Problem solving methodologies as applied to integrated agricultural systems analysis and design problems; strong emphasis on teamwork.

418 Soil Health and Regenerative Agriculture 2 Expert guest seminars and group discussions explore concepts in soil health and regenerative agriculture from microscale mechanisms to policies and practices for improving the food system. Recommended preparation: SOIL SCI 201.

435 Leadership for Agriculture and Natural Resources Professionals 2 Exploration of skills, goals, philosophies, and other qualities of leadership related to agriculture and natural resources in Washington state.

445 Field Analysis of Sustainable Food Systems 3 Course Prerequisite: By instructor permission. 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.

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.

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. 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.

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.

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. Course Prerequisite: Admission to the MS Agriculture thesis plan. 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 Legal guidelines and best practices for reducing risk in agricultural settings; topics include equipment, electrical, chemical, livestock, and other hazards around the farm as well as worker protection standards and injury compensation programs; includes an opportunity to prepare and test for a WSDA Private Pesticide Applicators License.

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 V 1-4 May be repeated for credit; cumulative maximum 8 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 2-12 May be repeated for credit; cumulative maximum 12 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. 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.

Department of Animal Sciences

ansci.wsu.edu/
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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. Reitmeier; Adjunct and Affiliate Faculty, T. Hudson, P. S. Kuber, D. A. Llewellyn, M. Marcondes, S. M. Smith; Faculty Emeriti, M. E. Benson, J. R. Busboom, L. K. Fox, C. T. Gaskins, J. Harrison, J. P. McNamara.

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:
 - a. the importance of animals to the health and well-being of society;
 - b. economic, environmental, animal welfare, and societal impacts of animal production and management systems at the local and global levels;
 - c. varied ethical perspectives on animal practices;
 - d. 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 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*First Term*

ANIM SCI Electives ²	Credits
BIOLOGY 107	3
CHEM 345	4
UCORE Inquiry ³	6

Second Term

ANIM SCI 240	Credits
ECONS 101 [SSCI]	3
MBIOS 301	4
STAT 212 [QUAN]	4
UCORE Inquiry ³	3
Complete Writing Portfolio	

Third Year*First Term*

ANIM SCI 313	Credits
ANIM SCI 330	4
ANIM SCI 380	3
ANIM SCI 440 [M], 464 [CAPS] [M], 472 [CAPS] [M], or 488 [M] ⁴	1
CHEM 370 or MBIOS 303	3 or 4

Second Term

ANIM SCI 350	Credits
ANIM SCI 351	3
ANIM SCI 408 [M], 451 [M], 473 [M], 474 [CAPS] [M], or 485 [M] ⁴	1
ANIM SCI Electives ²	3
PHYSICS 101	6
PHYSICS 111	3

Fourth Year*First Term*

DVM Coursework	Credits
	15

Second Term

DVM Coursework	Credits
	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 Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

⁴ To fulfill UCORE [CAPS] requirement, must include one of the following courses: ANIM SCI 464 [CAPS], 472 [CAPS], or 474 [CAPS].

ANIMAL SCIENCES - 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*First Term*

ANIM SCI 101	Credits
ANIM SCI 180	3
	1

CHEM 101 [PSCI] or 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH Requirement ¹	3 or 4

Second Term

BIOLOGY 106 [BSCI]	Credits
CHEM 102 or 106	4
ENGLISH 101 [WRTG]	4
H D 205 [COMM] (recommended) or other [COMM] course	3

Second Year*First Term*

BIOLOGY 107	Credits
Lab Management Requirement ²	4
UCORE Inquiry ³	1
MATH Requirement and /or Electives ¹	3
	6

Second Term

ANIM SCI 240	Credits
ECONS 101 [SSCI]	3
STAT 212 [QUAN], 412, or PSYCH 311 [QUAN] ⁴	3 or 4
UCORE Inquiry ³	3
Electives	3
Complete Writing Portfolio	

Third Year*First Term*

ANIM SCI 313	Credits
ANIM SCI 330	4
ANIM SCI 380	3
ANIM SCI Group 1 Elective ⁵	1
Business and Economics Course ⁶	2 or 3
Electives	3

Second Term

ANIM SCI 350	Credits
ANIM SCI 351	3
ANIM SCI Group 1 Elective ⁵	1
Business and Economics Course ⁶	2 or 3
UCORE Inquiry ³	3
VET CLIN 361, 367, or VET PH 308	3 or 4

Fourth Year*First Term*

Ag Sciences Elective ⁷	Credits
ANIM SCI 464 [CAPS] [M] or 472 [CAPS] [M] ⁸	3
ANIM SCI Group 2 Electives ⁹	6
Electives ¹⁰	3

Second Term

ANIM SCI Group 2 Electives ⁹	Credits
Electives ¹⁰	6
	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 Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

⁴ Students who have not yet completed a [QUAN] course should select STAT 212 or PSYCH 311.

⁵ 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.

⁶ 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.

⁷ 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.

⁸ ANIM SCI 474 [CAPS][M] may be taken as an alternative in Spring semester.

⁹ 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.

¹⁰ 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 - PRE-VETERINARY MEDICINE/SCIENCE OPTION (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*

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

Second Term

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

Second Year*First Term*

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

Second Term

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

Third Year*First Term*

ANIM SCI 313	Credits
ANIM SCI 330	4
ANIM SCI 380	3
	1

MBIOS 301	4
200-300-level ANIM SCI Electives ⁵	2 or 3
<i>Second Term</i>	
ANIM SCI 350	3
ANIM SCI 351	1
ECONS 101 [SSCI]	3
PHYSICS 101	3
PHYSICS 111	1
UCORE Inquiry ³	3
200-300-level ANIM SCI Electives ⁵	2 or 3

Fourth Year

<i>First Term</i>		<i>Credits</i>
ANIM SCI 464 [CAPS] [M] or 472 [CAPS] [M] ⁶	3	
400-level ANIM SCI Electives ⁷	5 or 6	
Electives ⁸	7	
<i>Second Term</i>		<i>Credits</i>
BIOLOGY 324, VET CLIN 361, or VET PH 308	3 or 4	
400-level ANIM SCI Electives [M] ⁷	3	
Electives ⁸	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 Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

⁴ Students who have not yet completed a [QUAN] course should select STAT 212 or PSYCH 311.

⁵ 200-300-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.

⁶ Students may substitute ANIM SCI 474 [CAPS] [M] in the spring.

⁷ 400-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.

⁸ 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, earned in WSU courses 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.

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 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.

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.
- 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. Recommended preparation: FS 304 and 465. (Crosslisted course offered as FS 405, ANIM SCI 405.) 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; junior standing. Care and management of companion animal species throughout the life cycle, including nutrition, reproduction, exercise and behavior. Cooperative: Open to UI degree-seeking students.
- 466 [CAPS] [M] Advanced Equine Systems** 3
Course prerequisite: ANIM SCI 266 or ANIM SCI 267; ANIM SCI 313; ANIM SCI 330; ANIM SCI 350; ANIM SCI 351. Integrating Animal Sciences disciplines with real-world issues involving horse businesses.
- 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.
- 474 [CAPS] [M] Beef Cattle Production** 3 (2-3)
Course Prerequisite: ANIM SCI 313; ANIM SCI 330; ANIM SCI 350; junior standing. 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.
- 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. 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 Seminar in Animal Sciences** 1 May be repeated for credit. Current developments in animal sciences.
- 503 Advanced Animal Biology and Genomics** 3 Advanced concepts and biological processes regulating animal behavior, physiology, and endocrinology; genetic and epigenetic principles fundamental to animal production; integration of biological and genomic knowledge to solve animal production problems. Recommended preparation: ANIM SCI 440 or equivalent; BIOLOGY 330 or equivalent. Cooperative: Open to UI degree-seeking students.
- 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. Recommended preparation: BIOLOGY 474; MBIOS 478. (Crosslisted course offered as CROP SCI 545, ANIM SCI 545, BIOLOGY 545, HORT 545, PL P 545.) 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.

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
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Professor and Department Chair, A. Duff; Professors, C. Grier, E. Hagen, C. L. Meehan, M. B. Quinlan, R. J. Quinlan, C. Wilkinson; Associate Professor, E. Thornton; Assistant Professors, J. Blong, S. Fladd, R. Horowitz, K. Smith, E. Van Alst; Professors, Career Track, N. Hess, M. Mansperger; Associate Professor, Career Track, B. L. Hewlett; Assistant Professors, Career Track, M. Cory, N. Grow; Professors Emeriti, R. E. Ackerman, W. Andrefsky, Jr., J. H. Bodley, B. S. Hewlett, T. A. Kohler, 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 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 archaeology of the Americas, including the Pacific Northwest, the Intermountain West, the Southwest, the Plains, Mesoamerica, and the Andes. Faculty specialize in archaeological science and community based Indigenous research methods. The department also conducts summer archaeological field schools.

The program in cultural anthropology emphasizes ethnography, ethnobiology, medical anthropology, biocultural perspectives, and public health anthropology. Faculty research is based in North and Central America, Sub-Saharan Africa, and South Asia. The program in evolutionary anthropology emphasizes biocultural perspectives, behavioral ecology, evolutionary psychology, primatology, and evolutionary cultural anthropology. Evolutionary faculty have research interests that span several continents including the Americas, Europe, Southeast Asia, and Africa.

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

All undergraduate students completing a Bachelor of Arts Degree in Anthropology will engage in a variety of activities designed to develop a student's ability to:

Goal 1: Creative and Critical Reasoning

- Demonstrate an understanding of the broad field of anthropology and the types of questions and data used in pursuit of the goals of anthropology.
- Formulate a reasonable question for their own research.
- Select data and analytical techniques appropriate to the question being asked.
- Demonstrate an understanding of both subjective and objective components for different types of anthropological data, data collection, and data analysis.

- Formulate a reasonable interpretation based on the data and analytical techniques they used.
- Effectively consider how subjective and objective aspects of data identification, collection, and analysis may have shaped their interpretations.

Goal 2: Information and Data Gathering

- Understand the strengths and weaknesses of online data and its use.
- Demonstrate an understanding of the different types of traditionally published data and the strengths and weaknesses of such data.
- Adequately cite information and ideas gathered for their research.

Goal 3: Communication Skills

- Write a clear and concise thesis statement defining their research topic.
- Write an adequate contextual statement for their research topic.
- Present a clear statement of their research methods.
- Write a well-reasoned interpretation of their analysis.
- Write a unifying conclusion statement.

Goal 4: Intercultural Perspectives

- Demonstrate an understanding of the character and universality of ethnocentrism.
- Demonstrate an understanding of the strengths and limitations of the concept of cultural relativism.
- Demonstrate an understanding of the character and differences between the cultural constructs of race, gender, and ethnicity.
- Demonstrate an understanding of the time frame relevant to the development human biological and cultural diversity.

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

First Term	Credits
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
Second Term	Credits
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

First Term Credits
ANTH 230 3
Arts [ARTS] 3
Physical Sciences [PSCI] with lab¹ 4
Social Sciences [SSCI] 3
Electives 3

Second Term Credits
ANTH Electives⁴ 6
Equity and Justice [EQJS] 3
Electives 6
Complete Writing Portfolio

Third Year

First Term Credits
ANTH 390 [M] 3
ANTH Elective⁴ 3
Humanities [HUM] 3
Electives 6

Second Term Credits
300-400-level Electives⁵ 9
ANTH Electives⁴ 6
Consider study abroad or summer field school

Fourth Year

First Term Credits
300-400-level Electives⁵ 12
ANTH Elective⁴ 3

Second Term Credits
300-400-level Electives⁵ 9
ANTH 490 [CAPS] [M] 3
Electives 3

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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

First Term Credits
ANTH 203 [DIVR] 3
BIOLOGY 106 [BSCI] 4

CHEM 101 or 105 [PSCI] 4
ENGLISH 101 [WRTG] 3

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

Second Year

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

Second Term Credits
BIOLOGY 301 4
Equity and Justice [EQJS] 3
Human Behavior Requirement³ 3
Science and Society Requirement⁴ 3
Major Elective^{1,2} 3
Complete Writing Portfolio

Third Year

First Term Credits
Genetics and Evolution Requirement⁵ 3
Human Behavior Requirement³ 3
Humanities [HUM] 3
Foreign Language, if needed, or Major Electives^{6,1,2} 6

Second Term Credits
Genetics and Evolution Requirement⁵ 3
Writing in the Major [M] course⁷ 2-4
Foreign Language, if needed, or Major Electives^{6,1,2} 9

Fourth Year

First Term Credits
Human Cultural Diversity Requirement⁸ 3
Integrative Capstone [CAPS]⁹ 3 or 4
Writing in the Major [M] course 2-4
Major Electives and/or Electives^{10,1,2} 7

Second Term Credits
Major Electives and/or Electives^{10,1,2} 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 Human Behavior Requirement (6 credits) approved courses include: ANTH 268, 381, 466; BIOLOGY 307, 438; PSYCH 230, 321, 324, 372.

⁴ Science and Society Requirement (3 credits) approved courses include: ANTH 309; BIOLOGY

330; PHIL 350, 365, 370; SOC 331, 332; SOE 390, 402, 444.

⁵ 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.

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 [M] courses must be chosen from ANTH or BIOLOGY.

⁸ Human Cultural Diversity Requirement (3 credits) approved courses include: ANTH 201, 307, 316, 320, 327.

⁹ Integrated Capstone [CAPS] course must be chosen from either ANTH 464, 473 [M], 490 [M], BIOLOGY 401, 408, 473 [M], or 483 [M].

¹⁰ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need to include a writing in the major [M] course to meet University requirements.

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 earned in WSU courses 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 Archaeological investigations of cultures and environments of the Americas. (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 department permission. 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 department permission. 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 biological anthropology (human evolution), archaeology (material remains of past peoples), sociocultural anthropology (present peoples), and linguistics (language).

130 [SSCI] Global Discoveries in Archaeology 3 Impact of well-known archaeological sites on our understanding 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.

210 [EQJS] Health Divides: Human Inequality and Well-Being 3 A critical exploration of how systemic inequalities along lines of class, race, gender, and sexuality become embodied in adverse health outcomes.

215 [EQJS] Material Culture of Confinement and Incarceration 3 The impact of confinement and incarceration on human lives across both time and space.

220 [EQJS] Perspectives on Race and Human Variation 3 Critical examination of the history 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 methods with a focus on how we use data to reconstruct 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.

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. (Crosslisted course offered as ENGLISH 256, ANTH 256.)

260 [BSCI] Introduction to Biological Anthropology 4 (3-3) Evidence for human evolution; evolutionary explanations of human and primate variation; techniques of biological anthropology.

268 [BSCI] Sex, Evolution, and Human Nature 3 Human sexuality, relations across sexes and genders, parenting, cooperation, and violence compared across cultures and to nonhuman primates, using 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 Ecological/environmental anthropology relevant to questions of population, resources, cognition, health and livelihoods.

310 [EQJS] Contemporary Human Issues 3 Journey into numerous and dynamic contemporary human issues in American society focusing on their interconnectivity with equity, justice, and social power.

316 [DIVR] Gender in Cross Cultural Perspective 3 Cross-cultural examination of gendered status and roles, sexuality and marriage, folk concepts of sexual anatomy in Western and non-Western societies; concepts of nature and culture are explored through a variety of perspectives. Recommended preparation: Sophomore standing. (Crosslisted course offered as ANTH 316, WGSS 316.)

317 [EQJS] 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.)

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.)

323 Indigenous Women: Activism and Agency 3 An in-depth examination of Indigenous women's roles in their societies both traditionally and in the contemporary world.

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 Origins of human 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 Archaeological investigations of cultures and environments of the Americas. (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 States and Empires in Africa and Eurasia 3 Overview of past urbanism, states and empires in the eastern hemisphere; survey of European, African and Asian archaeology.

340 [M] Maya, Aztec and Inca Civilizations 3 Examination of the archaeology of Mesoamerica and South America. Recommended preparation: 3 credits ANTH.

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, linguistical 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.
- 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.
- 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, ART, CES, COM, ENGLISH, 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 [CAPS] Human Issues in International Development 3** Interdisciplinary analysis of complex interaction in the context of colonial and post-colonial development. (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.
- 455 Museum Anthropology 3** Exploration of anthropology museums within the broader museum field and the history of field anthropology, including hands-on experience with museum work. Credit not granted for both ANTH 455 and ANTH 555.
- 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. Recommended preparation: ANTH 260. Credit not granted for both ANTH 463 and ANTH 563. 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 305, 395, 403, or 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 (senior standing strongly recommended). Current research crosscutting traditional subdisciplines of anthropology.
- 495 Research Practicum V 1-6** May be repeated for credit; cumulative maximum 10 hours. Course Prerequisite: By department permission. 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. 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 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; 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.

- 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.
- 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 Archaeology of the Southwest** 3 Archaeology of the North American Southwest; Pueblo, Mogollon, and Hohokam traditions and relationships to contemporary native groups.
- 540 Archaeology of the Pacific Northwest** 3 Cultures, chronologies, and interrelationships on the northwest coast of North America.
- 543 Archaeology 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.
- 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.
- 555 Museum Anthropology** 3 Exploration of anthropology museums within the broader museum field and the history of field anthropology, including hands-on experience with museum work. Credit not granted for both ANTH 455 and ANTH 555.
- 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. Recommended preparation: ANTH 260. Credit not granted for both ANTH 463 and ANTH 563. 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.
- 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 Sediment and Soils in Geoarchaeology** 4 (3-3) Geoarchaeological field and lab techniques focused on stratigraphy and site formation 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.
- 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.
- 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; Associate Professors, H. Liu, J. Son; Assistant Professors, Y. Chen, S. Guo, S. Gopalakrishnan; Instructor, M. Shaheen; Principal Assistant, A. Goswami Chana; Academic Coordinator, K. Gardner; 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 classrooms, computer lab and laboratory equipment, fully equipped apparel design studios, visual merchandising studio, and photo studio, 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, textile and fashion 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 and 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, Merchandising, or both options. 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 options. 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, apparel, and fashion 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, retail, textile and apparel industry. State of the art classrooms, computer labs and laboratory equipment, fully equipped apparel design studios, visual merchandising studio, and photo studio, 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, MERCHANDISING, DESIGN, AND TEXTILES - APPAREL DESIGN OPTION (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
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
AMDT 268	3
ENGLISH 101 [WRTG]	3
H D 205 [COMM]	4
UCORE Inquiry ¹	3
Electives	4

Second Year

<i>First Term</i>	<i>Credits</i>
AMDT 210 [PSCI]	4
AMDT 211	3
AMDT 220	3
ECONS 101 [SSCI]	3
UCORE Inquiry ¹	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 ²	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 ²	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
AMDT 412	3
AMDT 413 [CAPS]	3
AMDT Electives ²	3
Electives	3

¹ Must complete 3 of these 4 UCORE designations: ARTS, BSCI, EQJS, HUM.

² AMDT Electives (9 credits): Any AMDT course not used to fulfill major requirements or as approved by advisor.

APPAREL, MERCHANDISING, DESIGN, AND TEXTILES - MERCHANDISING OPTION (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

First Term	Credits
AMDT 105	1
AMDT 108	3
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN]	3
Electives	3

Second Term	Credits
AMDT 221	3
H D 205 [COMM]	4
HISTORY 105 [ROOT]	3
UCORE Inquiry ¹	3
Electives	3

Second Year

First Term	Credits
AMDT 268	3
ECONS 101 [SSCI]	3
UCORE Inquiry ¹	6
Electives	4

Second Term	Credits
ACCTG 220	3
AMDT 210 [PSCI]	4
AMDT 212	3
AMDT 250	3
Electives	3
Complete Writing Portfolio	

Third Year

First Term	Credits
AMDT 314	3
AMDT 318	3
AMDT 488	1
Electives ²	6

Second Term	Credits
AMDT 307	3
AMDT 308	3
AMDT Electives ^{2,3}	3
Business Industry Elective ⁴	3
Electives ²	3

Third Term	Credits
AMDT 490	3

Fourth Year

First Term	Credits
AMDT 317 [DIVR] [M]	3
AMDT 430	3
AMDT 435	3
AMDT Electives ^{2,3}	3
Electives	3

Second Term	Credits
AMDT 413 [CAPS]	3
AMDT 450 [M]	3
AMDT Electives ^{2,3}	3
Electives ²	4

¹ Must complete 3 of these 4 UCORE designations: ARTS, BSCI, EQJS, HUM.

² AMDT and general electives should include sufficient 300-400-level coursework to meet University requirement of 40 upper-division credits.

³ AMDT Electives (9 credits): Any AMDT course not used to fulfill major requirements or as approved by advisor.

⁴ 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.

222 [EQJS] Fat Studies 3 Course Prerequisite: Sophomore 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 222, WGSS 222.)

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.

313 [ARTS] Visual Analysis and Aesthetics 3 Course Prerequisite: Sophomore standing. In-depth analysis of the visual interaction among apparel, accessories and the body; identifying effective visual communication.

- 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.
- 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.
- 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] [M] 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.
- 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.
- 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.
- 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: By permission of instructor; AMDT 211 or 308; admitted to the major in Apparel, Merchandising, Design, and Textiles. 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. 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.
- 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.
- 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.
- 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.

Department of Art

art.wsu.edu
FA Center 5072
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Department Chair and Professor, S. Meisel; Professors, A. Bawa (Vancouver), K. Haas, I. Palmer, R. Safavi; Associate Professors, P. Christenson (Tri-Cities), D. DeHart, J. Hedges, H. Higgs (Vancouver), M. Holloman; Assistant Professors, J. Lin, H. Meredith; Career Track Faculty, K. Brand, D. Janssen; Instructors, D. Doty, M. Mehrabian, A. Rocha.

The Department of Art 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 Art (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 eleven areas of emphasis within which to develop a program: ceramics, drawing, digital media, graphic arts, integrated design, illustration, painting, printmaking, photography, sculpture, and interdisciplinary studies. These are supported by a strong art history component.

Students with a BA in Art - Art Studio Option or the BFA in Art, 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 Art - 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 (ART 201 and ART 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

While each degree is distinct the core values and outcomes of each are the same. In the case of the BA Studio option, study is more truncated and general, and therefore final expectations should reflect contact in the program. The BA Graphic Arts and Integrated Design option is specialized toward media and design while the BFA is a more intensive reflection of the investment of a student in mastery classes and expectation should reflect that more time and energy should equal higher quality of achievement.

In completion of these degrees students should be able to:

- Appropriately conduct and incorporate research findings into their work.
- Evaluate art movements from various cultures and time periods.
- Articulate a philosophical and aesthetic approach to their art and its place in the larger cultural and historical context.
- Design and execute projects effectively.
- Use new tools and methods with facility.
- Create a distinctive body of work that embodies their personal approach and their creative and technical mastery.

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 arts.wsu.edu.

Transfer Credits

The Department of Art will accept up to 18 credit hours in art toward the major and 9 credit hours in art toward the minor.

Graduate Study

The MFA program at Washington State University is a two-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 56 graded credit hours and 5 credit hours of thesis work (ART 700) totaling 61 credits. The MFA Handbook is viewable at arts.wsu.edu.

Schedules of Studies

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

ART - GRAPHIC ARTS AND INTEGRATED DESIGN OPTION (120 CREDITS)

A student may be admitted to the Bachelor of Arts in Art - Graphic Arts and Integrated Design Option upon completing ART 102 or 103 and 9 credits of 200-300-level art history courses, while maintaining a minimum cumulative GPA of 2.0 in ART courses.

For the Bachelor of Arts in Art a total of at least 45 credits of ART with a minimum cumulative GPA of 2.0 is required; 18 of these credits must be in 300-400-level courses.

First Year

First Term	Credits
ART 102 [ARTS]	3
ART 103	3
ART 110	3
Biological Sciences [BSCI] with lab ¹	4
English 101 [WRTG]	3

Second Term	Credits
ART 332, 336, or 369	3
ART 381	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
ART or Electives (recommended courses include DTC 201 and 335)	3

Second Year

First Term	Credits
ART 332, 336, or 369	3
Diversity [DIVR]	3
Humanities [HUM]	3
Physical Sciences [PSCI] with lab ¹	4
Foreign Language, if necessary, or Electives	4

Second Term	Credits
ART 111, 333, 337, 370, 371, or 435	3
ART 304 [EQJS]	3
Communication [COMM] or Written Communication [WRTG]	3
Foreign Language, if needed, or Electives	4

Third Year

First Term	Credits
ART 111, 333, 337, 370, 371, or 435	3
ART 300-level Art History course	3
Social Sciences [SSCI]	3
300-400-level ART or Electives (recommended courses include DTC 201, 335, 336, 435, and 436)	6

<i>Second Term</i>	<i>Credits</i>
ART 111, 333, 337, 370, 371, or 435	3
300-400-level ART or Electives (recommended courses include DTC 201, 335, 336, 435, and 436)	12

Fourth Year

<i>First Term</i>	<i>Credits</i>
ART [M]	3
ART 433	3
ART or Electives (recommended courses include DTC 201, 335, 336, 435, and 436)	8

<i>Second Term</i>	<i>Credits</i>
ART 498 [CAPS] [M] ²	3
300-400-level ART Electives	9
Electives	3

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² ART 498 [M] is repeatable but cannot be used to fulfill both of the two required [M] courses.

**ART - STUDIO OPTION
(120 CREDITS)**

A student may be admitted to the Bachelor of Arts in Art – Studio Option upon completing ART 102 or 103 and 9 credits of 200-300-level art history courses, while maintaining a minimum cumulative GPA of 2.0 in ART courses.

For the Bachelor of Arts in Art a total of at least 39 credits of ART with a minimum cumulative GPA of 2.0 is required; 18 of these credits must be in 300-400-level courses.

First Year

<i>First Term</i>	<i>Credits</i>
ART 102, 103, or 110	6
ART 201 [ARTS]	3
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
ART 102, 103, or 110	3
ART 111, 312, 320, or 370	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3 or 4
Elective	3

Second Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
Humanities [HUM]	3
Physical Sciences [PSCI] with lab ¹	4
300-400-level ART Elective	3
Foreign Language, if necessary, or Elective	3 or 4

<i>Second Term</i>	<i>Credits</i>
ART 202	3
Communication [COMM] or Written Communication [WRTG]	3
Equity and Justice [EQJS]	3
300-400-level ART Elective	3
Foreign Language, if necessary, or Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ART 303	3
Social Sciences [SSCI]	3
300-400-level ART Elective	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
300-400-level ART Elective	3
Electives	12

Fourth Year

<i>First Term</i>	<i>Credits</i>
ART [M] Course ²	6
300-400-level Electives	9

<i>Second Term</i>	<i>Credits</i>
ART 498 [CAPS]	3
300-400-level Electives	10

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² ART [M]: Repeatable [M] course cannot be used to fulfill both of the two required [M] courses.

**ART, BACHELOR OF FINE ARTS (BFA)
(120 CREDITS)**

For the degree Bachelor of Fine Arts in Art a total of at least 70 credits in 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) ART 102, 103 and 110;
- 2) ART 201 and 202;
- 3) One course from 2D area (ART 111, 312, 320 or 370);
- 4) One course from 3D area (ART 340 or 350);
- 5) One course from media arts areas (ART 332, 333 or 381);
- 6) 6 additional credits in major emphasis;
- 7) 2.0 cumulative GPA in ART courses;
- 8) Slide portfolio and exhibit presentation of original art work.

First Year

<i>First Term</i>	<i>Credits</i>
ART 102	3
ART 110	3
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN]	3 or 4

<i>Second Term</i>	<i>Credits</i>
ART 103	3
ART 111, 312, 320, or 370	3
ART 201 [ARTS]	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4

Second Year

<i>First Term</i>	<i>Credits</i>
ART 340 or 350	3
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3

300-400-level ART Elective	3
Foreign Language or Electives	3 or 4

<i>Second Term</i>	<i>Credits</i>
ART 202	3
ART 332, 333, or 381	3
Equity and Justice [EQJS]	3
300-400-level ART Elective	3
Foreign Language or Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ART 303	3
ART 312	3
Social Sciences [SSCI]	3
300-400-level ART Elective	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
ART 304	3
Humanities [HUM]	3
300-400-level ART Electives	6
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
ART 498 [M] [CAPS]	3
300-400-level ART Electives	12

<i>Second Term</i>	<i>Credits</i>
ART [M] ²	3
ART 493	4
300-400-level ART Electives	3
Electives	3

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² 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 ART 102 or ART 103; ART 110; and one course from ART 201 or 202. The remaining 9 hours of electives must be in 300-400-level ART courses earned in WSU courses or through WSU-approved education abroad or educational exchange courses.

Art History

A minor in art history requires 18 hours including 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 earned in WSU courses 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 earned in WSU courses 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 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; ART 102, 103, 201, 301, 303, 304, 307, 333, 381, 385, 405, 434, 435; COM 101, 105, 471; DTC/ENGLISH 336; 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; 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 Art.

Certificates

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 of four emphasis areas: Art (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.

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 ART 102, 103, or 110; and ENTRP 490. Three additional electives should be drawn from ENTRP 426; ENTRP 489 or FIN 223; ART 332, 340, or 350; and ART 363.

Description of Courses

Art

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: 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.

300 Engaged Art: Making Connections and Communities 3 Practice-driven exploration of the relationship between collective art-making and civic engagement; open to any major in the Humanities with special emphasis on visual culture.

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 ART 302, ASIA 302.)

303 [ARTS] Modern Art-19th Century 3 History of 19th century art in Europe and the United States.

304 [EQJS] 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.

306 [M] A History of Collecting and Museums 3 An exploration of the history of museums and collecting as dynamic processes with a fundamental goal of contextualizing the presence of the past for the beholder.

307 [ARTS] [M] The Arts of Renaissance Europe 3 Course Prerequisite: 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 ART 308, WGSS 308.)

309 [M] Experiencing Ancient Making 3 Investigating ancient objects, representations of objects, and their makers, including movement of objects and production process issues.

310 [M] Women Artists II 3 Women artists of the 19th to 20th century. (Crosslisted course offered as ART 310, WGSS 310.)

311 Seminar in Visual Literacy 3 Discussion of content, impact, purpose, audience, and ownership of visual messages, including topics such as synesthesia, AI images, reality TV, deep fakes, mockumentaries, phenomenology, semiotics, hallucinations, optical illusions, maps, advertising, infographics, Op Art, iconography, iconoclasm, cultural bias and blind spots, political cartoons, police body cams, and musical notation.

312 Advanced Drawing 3 (0-6) May be repeated for credit. Course Prerequisite: ART 110. Advanced projects using drawing media and process.

313 Drawing from the Body 3 (0-6) May be repeated for credit. Course Prerequisite: 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: 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: 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, Sound, and Animation 3 (0-6) Principles and processes of digital media through video, 2D animation and sound-based projects; theoretical investigations and conceptual development.

336 Introduction to Typography 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Translating design concepts into typographic form and expression; exploring the interplay of type form and meaning with projects and daily challenges; communicating ideas about typography critically and fluently.

337 Experimental Animation 3 (2-2) Digital and analog animation techniques; conceptual development of narrative structures. (Crosslisted course offered as ENGLISH 337, ART 337.)

340 [ARTS] Ceramics 3 (0-6) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: 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: ART 340.

- 350 [ARTS] Sculpture 3** (0-6) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: 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: ART 350. May be repeated for credit; cumulative maximum 9 hours.
- 359 3D Modeling and Studio Fabrication 3** (0-6) May be repeated for credit; cumulative maximum 9 hours. Introduction to 2D and 3D digital fabrication techniques with software and hardware including 3D printers, scanners, laser cutters, and CNC machines; integration of technologies with traditional fabrication methods.
- 361 Special Topics - Drawing V 1-6** May be repeated for credit.
- 362 Special Topics - Painting V 1-6** May be repeated for credit.
- 363 Special Topics - Digital Media V 1-6** May be repeated for credit.
- 364 Special Topics - Ceramics V 1-6** May be repeated for credit.
- 365 Special Topics - Sculpture V 1-6** May be repeated for credit.
- 366 Special Topics - Printmaking V 1-6**
- 367 Special Topics - Photography V 1-6** May be repeated for credit.
- 369 Illustration 3** (0-6) May be repeated for credit; cumulative maximum 9 hours. Exploring the intersection of visual art and narrative by learning how to use illustration skills to tell stories; developing skills in visual communication to create meaningful conversations and discover a personal visual language.
- 370 Introduction to Printmaking 3** (0-6) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: ART 102. Introduction to the fundamentals of printmaking, incorporating drawing, painting and collage; processes may include lithography, etching, relief and monotype.
- 371 Screen Printing 3** (0-6) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: ART 102. Introduction to the basic techniques, processes and history of screen printing for art and design.
- 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) May be repeated for credit; cumulative maximum 9 hours. Fundamentals in lens-based media (photography) tools and techniques, in conjunction with image capture, editing, printing, and display; formal, conceptual, expressive, and aesthetic concepts explored. Cooperative: Open to UI degree-seeking students.
- 382 Intermediate Photography 3** (0-6) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: 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.
- 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 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: 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: 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: 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: ART 341.
- 451 Material and Performance 3** (2-4) Course Prerequisite: 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: ART 351. Six credits only with permission of instructor.
- 471 Advanced Printmaking 3** (0-6) May be repeated for credit. Course Prerequisite: 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: 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: 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. 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 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 Biological Sciences

sbs.wsu.edu
Abelson 301
509-335-3553

Professor and Director, A. Cousins (P); Professor and Associate Director of Graduate Program, H. Hellmann (P); Professor and Associate Director of Undergraduate Program, R. D. Evans (P); Professor and Associate Director of Research, H. Watts (P); Professors, K. Beerman (P), J. Brunner (P), J. Busch (P), P. Carter (P), A. Cavagetto (P), E. Crespi (P), W. Dowd (P), M. Knoblauch (P), C. Portfors (V), E. Roalson (P), C. Schultz (V), E. Schwartz (P), M. Skinner (P), A. Storfer (P), M. Tegeder (P); Associate Professors, T. Cheeke (TC), M. Dybdahl (P), J. Piovah-Scott (V), S. Porter (V), J. Wisecaver (P); Assistant Professors, K. Korn (P), C. Rodriguez-Furlan (P), S. Rudman (V), R. Shartau (P), J. Zambrano (P), H. Zand Karimi (P); Professors, Career Track, L. Carloye (P), D. Wilmington (V); Associate Professors, Career Track, D. Allison (P), N. Ankrah (P), M. Berger (V), G. Gakhar (V), E. Johnson (P), Y. Liu, K. McAteer (TC), L. Nelson (TC), S. Ritchie (P), E. Sweet (TC); Assistant Professors, Career Track, G. Cox (V), M. Jorgensen (P), D. Monk (P); Research Faculty, E. Nilsson (P); Professors Emeriti, J. Bishop, R. A. Black, G. Edwards, L. Hufford, M. Ku, J. Larsen, R.N. Mack, J. Mallatt, A. McCubbin, D. Miller, D. Moffett, S. Moffett, C. Omoto, J. Paznokas, H. Schwabl, G. Thorgaard, E. Uribe, P. Verrell. 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 Aquatics Phenomics Research Center, 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) demonstrate understanding of fundamental biological concepts: terminology, functions, processes and principles; (2) demonstrate higher order thinking by synthesizing, summarizing, drawing conclusions and making arguments on biology topics and real world applications; (3) clearly communicate scientific research findings, concepts, and analysis, both orally and in writing; (4) evaluate and properly cite scientific sources; (5) formulate logical hypotheses, select methods, and clearly present quantitative findings from an experimental design; (6) analyze, interpret and display quantitative data and models to draw conclusions and explain limitations; (7) describe multiple well-developed perspectives on a single contemporary biological issue.

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. Students 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 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 workforce 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 prerequisites 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 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 a 2.0 cumulative GPA at the college level.

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 18 semester credits of core BIOLOGY (BioCore) courses (BIOLOGY 106, 107, 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 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. Coursework must include one additional BIOLOGY writing in the major course (identified by [M] in the course listings) or ENGLISH 402 [M], and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings. A cumulative 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]	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<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>
Arts [ARTS]	3
BioCore ¹	3 or 4
CHEM 345	4
Electives ²	4

<i>Second Term</i>	<i>Credits</i>
BioCore ¹	4 or 3
CHEM 348	4
Social Sciences [SSCI]	3
Electives ²	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BioCore ¹	3 or 4
Communication [COMM] or Written Communication [WRTG]	3
Program Option Course ³	3 or 4
Foreign Language or Electives ^{2,4}	4
Electives	1

<i>Second Term</i>	<i>Credits</i>
CHEM 370 or MBIOS 303	3 or 4
Humanities [HUM] ⁵	3
Program Option Course ³	3 or 4
Foreign Language or Electives ^{2,4}	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
Program Option Course ³	3 or 4
Electives ²	12

<i>Second Term</i>	<i>Credits</i>
BIOLOGY Capstone [CAPS] [M] or HONORS 450	3
Electives ²	12

¹ BioCore (10 credits required): BIOLOGY 301, one of 370 [M] or 372 [M], and one of 305, 395, 403, or 405.

² Students should consult with their advisor for additional courses in Physics or Statistics that may be required for entrance to a graduate or professional program. Must include sufficient 300-400-level courses to meet University Requirement of 40 credits of upper division coursework.

³ Program Option Courses (9 credits minimum required): Approved courses are BIOLOGY 251, 315, 321, 324, 333 350, 352, 353, 354, 393, 418; MBIOS 304, 305, 306, 401, 405, 413, 414, 423, 440, 442, 446; NEUROSCI 301, 403, 404, 430; PSYCH 372. Students should consult with their advisor as some professional schools require junior-level physiology or higher.

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 PHIL 365 [HUM] may be required for admission to some graduate and professional programs.

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 a 2.0 cumulative GPA at the college level.

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 18 semester credits of core BIOLOGY (BioCore) courses (BIOLOGY 106, 107, 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 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. Coursework must include one additional BIOLOGY writing in the major course (identified by [M] in the course listings) or ENGLISH 402 [M], and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). A cumulative 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>
BioCore ¹	3 or 4
CHEM 345	4
Humanities [HUM]	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
BioCore ¹	4 or 3

Program Option Course 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>
BioCore ¹	4 or 3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Option Course 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 ²	3 or 4
Foreign Language or Electives ³	4
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY Capstone [CAPS] [M]	3
Program Option Course ^{4,5}	3 or 4
Electives	9

<i>Second Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
Program Option Course ^{5,2}	3
Electives	9
Complete School of Biological Sciences Exit Survey	

¹ BioCore (10 credits required): BIOLOGY 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 403, or 405.

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 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.

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 BioCore requirements (BIOLOGY 106.

107, 301, one from BIOLOGY 370 [M] or 372 [M], one from BIOLOGY 305, 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.

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 a 2.0 cumulative GPA at the college level.

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 18 semester credits of core BIOLOGY (BioCore) courses (BIOLOGY 106, 107, 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 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. Coursework must include one additional BIOLOGY writing in the major course (identified by [M] in the course listings) or ENGLISH 402 [M], and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). A cumulative 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.

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

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT]	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 106	4
ENGLISH 101 [WRTG]	3
ENGR 120	2
Humanities [HUM]	3

Second Year

<i>First Term</i>	<i>Credits</i>
BioCore ¹	3 or 4
CHEM 345	4
Diversity [DIVR]	3
TCH LRN 301	3
Foreign Language or Electives ²	0 - 4

<i>Second Term</i>	<i>Credits</i>
BioCore ¹	3 or 4
CHEM 370 or MBIOS 303	3 or 4
Communication [COMM] or Written Communication [WRTG]	3
MATH 140 [QUAN] or 171 [QUAN]	4
Foreign Language or Electives ²	3 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BioCore ¹	4 or 3
Equity and Justice [EQJS]	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Electives	3 or 4

<i>Second Term</i>	<i>Credits</i>
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
TCH LRN 465	3
Program Option Course ³	3 or 4
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY/TCH LRN 430	3
STAT 212, 412, or PSYCH 311	3 or 4
TCH LRN 467 [M]	3
TCH LRN 470	3
Electives	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY Capstone [CAPS] [M]	3
BIOLOGY/TCH LRN 431	3
Program Option Course ³	3 or 4
PSYCH 105 [SSCI]	3
Electives	3
Complete School of Biological Sciences Exit Survey	

¹ BioCore (10 credits required): BIOLOGY 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 403, or 405.

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 Program Option Requirements include one Biology Plant course (BIOLOGY 332 [M], 401 [CAPS], 409, or 420) and one Biology Animal course (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, SOE 102, 210.

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 a 2.0 cumulative GPA at the college level.

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 18 semester credits of core BIOLOGY (BioCore) courses (BIOLOGY 106, 107, 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 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. Coursework must include one additional BIOLOGY writing in the major course (identified by [M] in the course listings) or ENGLISH 402 [M], and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). A cumulative 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]	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<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>
Arts [ARTS]	3
BioCore ¹	3 or 4
CHEM 345	4
ENTOM 343	3

<i>Second Term</i>	<i>Credits</i>
BioCore ¹	4 or 3
Humanities [HUM]	3
Social Sciences [SSCI]	3
STAT 212, 412, or PSYCH 311	3 or 4
Program Option Course ²	3 or 4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BioCore ¹	4
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Option Course ²	4
Foreign Language or Electives ³	4

<i>Second Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Program Option Course ²	3
Foreign Language or Electives ³	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY Capstone [CAPS] [M]	3
Communication [COMM] or Written Communication [WRTG]	3
Program Option Course ²	3
Electives	8

<i>Second Term</i>	<i>Credits</i>
Program Option Course ²	3
Electives	12
Complete School of Biological Sciences Exit Survey	

¹ BioCore (10 credits required): BIOLOGY 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 403, or 405.

² Entomology Option Requirements include 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 six credits from the Entomology Emphasis (any ENTOM-prefix, upper division courses, excluding ENTOM 343).

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.

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 a 2.0 cumulative GPA at the college level.

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 18 semester credits of core BIOLOGY (BioCore) courses (BIOLOGY 106, 107, 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 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. Coursework must include one additional BIOLOGY writing in the major course (identified by [M] in the course listings) or ENGLISH 402 [M], and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). A cumulative 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]	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<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>
Arts [ARTS]	3
BioCore ¹	3 or 4
CHEM 345	4
Humanities [HUM]	3

<i>Second Term</i>	<i>Credits</i>
BioCore ¹	4 or 3
Program Option Course ²	3 or 4
Social Sciences [SSCI]	3
STAT 212, 412, or PSYCH 311	3 or 4
Electives ³	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BioCore ¹	3 or 4
Communication [COMM] or Written Communication [WRTG]	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Option Course ²	3
Foreign Language or Electives ⁴	4

<i>Second Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Program Option Course or Electives	3 or 4
Foreign Language or Electives ⁴	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 473 [CAPS] [M]	3
Electives ³	13

<i>Second Term</i>	<i>Credits</i>
Program Option Course or Electives ³	6 - 8
Electives ³	9

Complete School of Biological Sciences Exit Survey

¹ BioCore (10 credits required): BIOLOGY 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 403, or 405.

² General Biology Option Requirements include one course from the Biochemistry Emphasis (CHEM 370 or MBIOS 303); and one course from the Cell Biology Emphasis (BIOLOGY 352 or MBIOS 405).

³ 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.

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.

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 a 2.0 cumulative GPA at the college level.

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 18 semester credits of core BIOLOGY (BioCore) courses (BIOLOGY 106,

107, 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 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. Coursework must include one additional BIOLOGY writing in the major course (identified by [M] in the course listings) or ENGLISH 402 [M], and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). A cumulative 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

First Term	Credits
BIOLOGY 106 [BSCI] or 107 [BSCI] ¹	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

Second Term	Credits
BIOLOGY 106 or 107 ¹	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

First Term	Credits
Arts [ARTS]	3
BioCore ¹	3 or 4
CHEM 345	4
Humanities [HUM]	3

Second Term	Credits
BioCore ¹	4 or 3
Social Sciences [SSCI]	3
STAT 212, 412, or PSYCH 311	3 or 4
Electives ²	6
Complete Writing Portfolio	

Third Year

First Term	Credits
BioCore ¹	3 or 4
Communication [COMM] or Written Communication [WRTG]	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Option Course ³	3
Foreign Language or Electives ^{4,2}	4

Second Term	Credits
Equity and Justice [EQJS]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Program Option Course ³	3
Foreign Language or Electives ^{4,2}	4

Fourth Year

First Term	Credits
BIOLOGY Capstone [CAPS] [M]	3
Program Option Courses or Electives ^{2,3}	4
Electives ²	9

Second Term	Credits
Program Option Course ³	4
Electives	11
Complete School of Biological Sciences Exit Survey	

¹ BioCore (10 credits required): BIOLOGY 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 403, or 405.

² Plant Biology Option Electives include a minimum of seven 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 Program Option Courses are BIOLOGY 332 [M], 409, 420, and BIOLOGY 462 or 469.

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.

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 2.0 cumulative GPA at the college level.

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 18 semester credits of core BIOLOGY (BioCore) courses (BIOLOGY 106, 107, 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 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. Coursework must include one additional BIOLOGY writing in the major course (identified by [M] in the course listings) or ENGLISH 402 [M], and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). A cumulative 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

First Term	Credits
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
SOC 101 [SSCI]	3

Second Term	Credits
BIOLOGY 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Second Year

First Term	Credits
BIOLOGY 251 or 353	4
CHEM 345	4
Program Option Course ^{1,2,3,4}	3
PSYCH 105	3

Second Term	Credits
BioCore ⁵	3 or 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

First Term	Credits
BIOLOGY 315 or 354	4
Foreign Language, or Program Option Course ^{3,2,1,6,4}	3 or 4
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Program Option Course ^{3,2,1,4}	2 - 4
PSYCH 333	3

Second Term	Credits
Arts [ARTS]	3
BioCore ⁵	3 or 4
Program Option Course ^{3,2,1,4}	3
Foreign Language, or Electives ⁶	8

Fourth Year

First Term	Credits
ENGLISH 402 [WRTG]	3
Equity and Justice [EQJS]	3
Program Option Course, or Electives ^{3,2,1,4}	9

Second Term	Credits
BioCore ⁵	3
BIOLOGY Capstone [CAPS] [M]	3
Diversity [DIVR]	3
Program Option Course, or Electives ^{3,2,1,4}	7
Complete School of Biological Sciences Exit Survey	

¹ Pre-Occupational Therapy Program emphasis (13 credits) includes ANTH 203, BIOLOGY 220, BIOLOGY 393 [M], COM 102, H D 101.

² 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.

³ 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.

⁴ 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. 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.

⁵ BioCore (10 credits required): BIOLOGY 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 403, or 405.

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.

ZOOLOGY - ACCELERATED PRE-VETERINARY OPTION (124 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 18 semester credits of core BIOLOGY (BioCore) courses (BIOLOGY 106, 107, 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 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. Coursework must include one additional BIOLOGY writing in the major course (identified by [M] in the course listings) or ENGLISH 402 [M], and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). A cumulative 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]	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
<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>
Arts [ARTS]	3
BioCore ¹	3 or 4
CHEM 345	4
STAT 212, 412, or PSYCH 311	3 or 4
<i>Second Term</i>	<i>Credits</i>
BioCore ¹	3 or 4
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] ²	4
Humanities [HUM]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Social Sciences [SSCI]	3
Foreign Language or Elective ³	3
<i>Second Term</i>	<i>Credits</i>
BioCore ¹	4 or 3
BIOLOGY Capstone [CAPS] [M]	3
Equity and Justice [EQJS]	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 ⁴	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 ⁴	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 BioCore (10 credits required): BIOLOGY 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 403, or 405.

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 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 2.0 cumulative GPA at the college level.

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 18 semester credits of core BIOLOGY (BioCore) courses (BIOLOGY 106, 107, 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 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. Coursework must include one additional BIOLOGY writing in the major course (identified by [M] in the course listings) or ENGLISH 402 [M], and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). A cumulative 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]	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<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>
BioCore ¹	3 or 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
BioCore ¹	3 or 4
Program Option Course ²	4
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BioCore ¹	4 or 3
Communication [COMM] or Written Communication [WRTG]	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Program Option Course ²	4

<i>Second Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Program Option Course ²	4
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY Capstone [CAPS] [M]	3
Program Option or Electives ³	3 or 4
Foreign Language or Electives ^{4,3}	4
Electives ³	6

<i>Second Term</i>	<i>Credits</i>
Program Option or Electives ³	6
Foreign Language or Electives ^{4,3}	4
Electives ³	7
Complete School of Biological Sciences Exit Survey	

¹ BioCore (10 credits required): BIOLOGY 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 403, or 405.

² Zoology General Program Option requirements include two courses from the Anatomy/Invertebrate biology emphasis (BIOLOGY 321, 322 or 324 and 428) and one course from the Physiology emphasis (BIOLOGY 350 or 353).

³ 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.

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.

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 2.0 cumulative GPA at the college level.

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 18 semester credits of core BIOLOGY (BioCore) courses (BIOLOGY 106, 107, 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 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. Coursework must include one additional BIOLOGY writing in the major course (identified by [M] in the course listings) or ENGLISH 402 [M], and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). A cumulative 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]	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	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 ¹	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>
BioCore ²	3 or 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 Courses ¹	7 or 8
Foreign Language or Electives ³	3 or 4
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
BioCore ²	3 or 4
Diversity [DIVR]	3
Program Option Course ¹	3 or 4
Electives	6

<i>Second Term</i>	<i>Credits</i>
BioCore ²	4 or 3
BIOLOGY Capstone [CAPS] [M]	3
Equity and Justice [EQJS]	3
Program Option Course ¹	3
Electives	3
Complete School of Biological Sciences Exit Survey	

¹ 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 MBIO 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).

² BioCore (10 credits required): BIOLOGY 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 403, or 405.

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.

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 2.0 cumulative GPA at the college level.

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 18 semester credits of core BIOLOGY (BioCore) courses (BIOLOGY 106, 107, 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 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. Coursework must include one additional BIOLOGY writing in the major course (identified by [M] in the course listings) or ENGLISH 402 [M], and one BIOLOGY Capstone course (identified by the [CAPS] in the course listings). A cumulative 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]	4
CHEM 105 [PSCI]	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3

<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>
BioCore ¹	3 or 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>
BioCore ¹	3 or 4
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>
BioCore ¹	4 or 3
Communication [COMM] or Written Communication [WRTG]	3
Program Option Course 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 ²	4
Program Option Elective ³	3
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
Program Option Course ²	4
Program Option Courses or Electives ^{3,2}	3
Foreign Language or Electives ⁴	4
Electives	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY Capstone [CAPS] [M]	3
Program Option Course or Electives ^{3,2,5}	3
Foreign Language or Electives ⁴	4
Electives	6
Complete School of Biological Sciences Exit Survey	

¹ BioCore (10 credits required): BIOLOGY 301, one from BIOLOGY 370 [M] or 372 [M], and one from BIOLOGY 305, 395, 403, or 405.

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 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 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.

Minors

Biology

A minor in biology requires a minimum of 20 credits in BIOLOGY coursework including BIOLOGY 106, 107, 301 and 9 additional credits of BIOLOGY courses at the 300-level or above. No more than 2 credits in BIOLOGY 490, 491, 494, 495, 496, 497 or 499 may be included in the 20 credits. A minimum

of 9 credits must be earned in WSU courses 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. The minor must include 9 credits earned at the 300-400-level in WSU courses 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

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 or if enrolled in BIOLOGY 105. 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 [BSCI] General Biology Laboratory 1** (0-3) Course Prerequisite: Junior standing. Enrollment not allowed if credit for BIOLOGY 102 already earned or if enrolled in BIOLOGY 102. Understanding biology as a science and its effect on issues within society. Laboratory only. 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 - ALEKS math placement score of 40%, MATH 100 with an S, MATH 103 or higher, BIOLOGY 103 with a C or better, BIOLOGY 102, BIOLOGY 120, 3 credits bio with lab, or transfer credit for Intermediate Algebra equivalent to MATH 101. 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) 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. Recommended preparation: 2 credits 100-level CHEM or concurrent enrollment.
- 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.
- 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.
- 301 General Genetics 3** Course Prerequisite: BIOLOGY 106 or 120; BIOLOGY 107. Principles of modern and classical genetics. (Crosslisted course offered as MBIOS 301, BIOLOGY 301.)
- 305 Evolutionary Biology and Diversity 3** Course Prerequisite: BIOLOGY 106; BIOLOGY 107. Survey of evolutionary processes that influence adaptation, diversification, and the origins and history of biodiversity; applications of evolution in conservation, agriculture, and medicine.
- 307 [DIVR] Biology of Sex and Gender 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 credits 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. Recommended preparation: BIOLOGY 315 or 354. Credit not granted for both BIOLOGY 251 and 353.
- 354 Human Anatomy for Health Occupations** 4 (3-3) Course Prerequisite: BIOLOGY 107; CHEM 102 or 345. Histology 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. Enrollment not allowed if credit for BIOLOGY 403 or 405 already earned or if enrolled in either BIOLOGY 403 or 405. 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 301, 305, 370, 372, 395, 403, 405, or MBIOS 301. Relationships between plants and people, especially cultural and economic applications of plants.
- 402 [CAPS] [M] Beneficial Microbes in Nature and Society** 3 Course Prerequisite: BIOLOGY 305, 370, 372, 395, 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 370, BIOLOGY 372, or SOE 300. Characteristics, evolution, and systematics; patterns of distribution; adaptive strategies; interactions between humans and amphibians and reptiles.
- 438 Animal Behavior** 3 Course Prerequisite: BIOLOGY 106. Biological study of animal behavior as viewed from genetic, developmental, physiological, ecological, and evolutionary perspectives.
- 446 Mutualism and Symbiosis** 3 Course Prerequisite: BIOLOGY 305, 370, 372, 395, 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: By department permission. Assembly, essential properties, levels of interactions, succession, and stability of natural communities; emphasizes an experimental approach to community investigation. Recommended preparation: BIOLOGY 372. Credit not granted for both BIOLOGY 462 and BIOLOGY 562.
- 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 Course Prerequisite: BIOLOGY 370 with a C or better or BIOLOGY 372 with a C or better. 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 305, 395, 403, or 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.
- 483 [CAPS] [M] Organisms and Global Change 3** Course Prerequisite: BIOLOGY 370, BIOLOGY 372, or SOE 300. Interaction between organisms and global change across scales of biology.
- 485 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: By department permission only; 2 credits BIOLOGY 499; admitted to major in Biology or Zoology; junior standing. 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 department permission. 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 8 hours. Course Prerequisite: By instructor permission; BIOLOGY 106, 107, and 221; junior standing. Work experience 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 department permission. Experience in work related to specific career interests. S, F grading.
- 496 [M] Special Problems and Reports V 1-4** Course Prerequisite: By department permission. 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 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 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 Molecular Biology 3** Advanced techniques and methods applicable to research in molecular biology.
- 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. Cooperative: Open to UI degree-seeking students.
- 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.
- 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. Recommended preparation: BIOLOGY 474; MBIOS 478. (Crosslisted course offered as CROP SCI 545, ANIM SCI 545, BIOLOGY 545, HORT 545, PL P 545.) 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. Recommended preparation: BIOLOGY 372. Credit not granted for both BIOLOGY 462 and BIOLOGY 562.
- 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.
- 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. Required preparation must include multivariate calculus, genetics, and statistics. (Crosslisted course offered as MATH 563, BIOLOGY 566.) 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.
- 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 department permission. Philosophy and methods of formulating hypotheses as mathematical models and confronting them with data.
- 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.
- 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.
- 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, R. Peters, S. Sablani, J. Wu, B. Yang; Associate Professors, L. Khot, Y. Lee, S. Sankaran; Assistant Professors, K.

Huang, K. Rajagopalan; Affiliate Faculty, E. Beers, T. Chi, M. Flury, G. Ganjyal, J. Heyne, A. Jayakaran, M. Karkee, H. Lin, H. Liu, J. Male, D. McCool, J. S. McEwen, J. McIntyre, P. Pfromm, M. Wolcott, V. Yadama G. Yorgey; Adjunct Faculty, P. Bohutskyi, D. J. Brown, J. Casanova, F. Chejne, W. Elliott, D. I. Gustafson, G. Hoogenboom, M. Karkee, F. Leal-Yepes, J. Liu, M. V. Olarte, N. Pickering, W. Qian, P. R. Robichaud, M. J. Schrader, J. Tang, V. Thompson, M. Tucker, S. Wang, M. Wigmosta, V. Wu, R. Yang, L. Yu, X. Zhou; Faculty Emeritus, R. Cavalieri, D. Davis, L. James, L. King, P. Ndegwa, C. O. Stöckle, Q. Zhang.

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.

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.

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.

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.

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.

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.

Food Manufacturing Technology

FMT

501 Conventional Food Processing Technologies 3 Common/ traditional, and novel unit operations used in the food industry to effectively and economically enhance product safety, shelf-life, variety, and nutrition.

502 New Topics in Food Processing 3 Food safety overview including types of hazards, safety issues associated with different food categories, Codex, HACCP, novel decontamination technologies, engineering principles of bacterial adhesion and fouling, novel food contact materials, and biosensors.

503 Food Packaging Technologies 3 Overview of food packaging including materials and their properties, manufacturing, aspects of design including shelf-life design and estimation, safety and legislative aspects, and the packaging requirements of food products.

504 Advanced Food Preservation Technologies - Thermal 3 Basic principles in thermal preservations and their application to commercial and emerging technologies for high-moisture and low-moisture foods.

505 Advanced Food Preservation Technologies - Nonthermal 3 Alternative, novel technologies to process foods where the main stress factor for inactivation of microorganisms and reduction of enzymatic activity is not thermal energy.

506 Food Supply Chain Technologies and Management 3 Aspects of the food supply chain including production, harvesting, warehousing, processing, transportation, and retailing; technologies and management required to move food from where it is produced to where it is consumed.

507 Food Manufacturing Sustainability and Life Cycle Analyses 3 A sustainability overview including climate change and food security, environmental impact of current food systems, analysis and design for sustainability, technologies, practices, and economic and policy implications.

508 Food Ingredients and Plant Protein Technologies 3 Interactions of food ingredients and their functions, especially with regard to qualities desired by consumers and the changing regulatory environment.

509 Remote and Virtual Laboratories 3 Provides virtual modules and remote laboratory experiences to build both practical skills and conceptual knowledge, and to support student learning and retention of FMT concepts.

Sustainable Aviation Fuel Production

SAFP

501 Biomass Conversion Technologies Relevant to SAF Production 3 Fundamental concepts of the chemistry and physicochemical properties of biomass, as well as approaches to existing biomass conversion technologies.

502 Sustainable Aviation Fuel Technologies 3 Review of technologies and approaches for producing sustainable aviation fuels (SAF); development of skills and knowledge for selecting and evaluating sustainable aviation fuels technologies.

503 Renewable Electricity and Hydrogen 3 Fundamental principles of the current and emerging development of converting renewables to electricity technologies, production, and uses.

504 SAF Life Cycle Assessment 3 With an emphasis on the viability and environmental effects of sustainable aviation fuels (SAF), analysis of the fundamental ideas of life cycle assessment (LCA) and applied cases for the sustainable aviation fuel industry.

505 SAF: TEA, Financing, and Investment 3 Technoeconomic analysis (TEA) principles and their application in the context of the SAF industry.

506 SAF Law, Policies, and Regulations 3 United Nations sustainable development goals, authority differences for international and domestic aviation, role of the Carbon Offsetting Reduction Scheme for International Aviation (CORSIA) and regional or country-level policies incentivizing the use, production, or emission reductions of SAF.

507 Feedstock Assessment 3 Feedstocks that can be utilized in the production of SAF; aspects of biomass inventories, global biomass availability, energy crops, and the fundamentals and applications of crop modeling.

508 SAF System Dynamics 3 Principles and applications of system dynamics, focusing on SAF logistics systems; use of scientific method to build stock and flow models, manage parameters of interest, and analyze impacts of policies.

509 SAF Supply Chain Analysis and Optimization 3 Analysis of Sustainable Aviation Fuel (SAF) supply chains, emphasizing the optimization of logistics, transportation economics, and biofuel supply chains.

510 SAF Fuel Analysis Certification and Standardization 3 Fundamental principles of fuel science, detailed methods for fuel analysis and quantification, and the processes involved in certifying and standardizing SAF to meet industry requirements.

511 SAF Combustion and Emissions 3 Fundamental principles of combustion, specific characteristics of SAF combustion in gas turbines, and the environmental impact of emissions.

590 Capstone Project 3 Study of biomass availability and infrastructure in a region, including considerations policies, production pathways, and specific analytic tools.

Carson College of Business

business.wsu.edu

Todd Hall 570

509-335-3596

CARSON COLLEGE OF BUSINESS Dean and Professor, D. Compeau; Senior Associate Dean for Faculty and Research and Professor, D. Whidbee; Senior Associate Dean for Academic Affairs and Professor, T. Tripp; Associate Dean for Professional Programs, C. Oliver.

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 campuses and a thriving Global campus, international activities include partnerships and programs in dozens of countries. For more information and news about the college, its faculty and students, and these international 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 (Tri-Cities campus only), Entrepreneurship, Finance, International Business, Management, Management Information Systems, and Marketing. Different campuses offer different majors. For more information visit: <https://business.wsu.edu/undergraduate/majors-minors/>.

Bachelor of Arts in Hospitality Business Management

The Carson College of Business offers three majors under this degree: Hospitality Business Management, Aging Business Management, and Wine and Beverage Business Management. Different campuses offer different majors. For more information visit: <https://business.wsu.edu/undergraduate/majors-minors/>.

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 admission to a CCB major:

- Complete the following courses with a grade of C or higher:
 - B A 100 Introduction to Business
 - HBM 101 Professional Development and B A 102 Exploring Careers in Business; or HBM 105 Navigating Careers
 - 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

In the rare case that demand for majors exceeds supply, then 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 at WSU
- Have a cumulative GPA of at least 2.50 and not be on academic probation

In the rare case that demand for minors exceeds supply, then 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 regarding loss of eligibility and re-entry to the major.

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 and B A 102 Exploring Careers in Business; or HBM 105 Navigating Careers
- B A 201 Ethics, B A 202 Teams, B A 203 Innovation; or B A 211 Ethics, Teams, Innovation
- B A 212 Spreadsheets, Data Visualization, and Decision Analysis
- 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 Goals

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 summed 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, 417; ANTH 301, 304, 306, 307, 309, 312, 316, 317, 320, 330, 350, 370, 405, 417, 418, 450, 469; ARCH 428; ART 331; ASIA 302, 315, 373, 374, 387, 477, 479; BIOLOGY 401; CES 301, 325, 372, 377, 379, 380, 401, 405, 421, 426, 470; COM 321, 421; CRM J 405; CROP SCI 360; ECONS 427, 428, 430, 433, 453; ENGLISH 373, 410, 457; FOR LANG 410; FRENCH 410, 420; H D 350, 403; HISTORY 294, 331, 335, 350, 364, 366, 371, 373, 374, 377, 379, 386, 387, 436, 449, 491, 492, 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 320, 420; ECONS 327; FIN 481; I BUS 415, 416, 435, 453, 470, 482, 496; MIS 400, 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 CCB's 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 research project 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 for academic affairs for 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 all courses specifically required by the second major, including a minimum of 15 distinct credits from those used to satisfy the first major. Courses used to fulfill the primary major cannot be used to fulfill the requirements of the second major. A double major within the Hospitality Business Management degree 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, 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 also should 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, C. Chi, J. Comeau, R. Crossler, D. Fairhurst, S. Fotopoulos, D. Gursoy, A. Howard, J. Hu, D. Jha, J. Johnson, J. Joireman, M. Jordan, J. Kallberg, H. Kim, T. Kokta, W. Larsen, K. Marvel, D. Miller, K. Minetti, R. Moser, D.

Mundell, D. Paul, M. Petersen, A. Prera, M. Reyes, R. Sanchez, S. Silverman, B. Warnick, 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: Descriptions for courses with a non-B A prefix are 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. Students must include at least one of the following international business courses: FIN 581, HBM 535, I BUS 580, or I BUS 582 in their MBA program of study. 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. Admission requirements to the elective certificates are the same as those for 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 Supply Chain Management:

MGTOP 556, MGTOP 581, MGTOP 585

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, TRI-CITIES CAMPUS ONLY (120 CREDITS)

The following major is available only to students on the Tri-Cities campus. The Everett, Global, Pullman, and Vancouver 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
ECONS 101 [SSCI] or 102 [SSCI]	3
ENGLISH 101 [WRTG] or 105 [WRTG]	3
MATH 201 ¹	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{2,3}	3

<i>Second Term</i>	<i>Credits</i>
ECONS 101 or 102	3
HBM 101 and B A 102, or HBM 105	2
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ⁴	3
UCORE Inquiry ²	4
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
MIS 250	3
Social Science or Humanities Elective ³	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{2,3}	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>
ENGLISH 402 or 403	3
I BUS 380	3
MKTG 360	3
UCORE Inquiry ²	3
300-400-level Business or ECONS Elective ⁷	3

<i>Second Term</i>	<i>Credits</i>
ACCTG 338	3
FIN 325	3
MGMT 401	3
MGTOP 340	3
UCORE Inquiry ²	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 ³	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 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.

² Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

³ Social Science or Humanities Electives (12 credits): Any courses with the [SSCI] or [HUM] designation (excluding courses in ACCTG, B A, B LAW, ENTRP, FIN, HBM, I BUS, MGMT, MGTOP, MIS, and MKTG), or courses in ANTH, ART, ASIA, CES, CRM J, DTC, ECONS, ENGLISH, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS (excluding ECONS 101, 102, 198, 327, ENGLISH 101, 105, 402, 403, H D 205, HISTORY 105, 305).

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. Students should consult with their advisor to determine the best option.

⁶ 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 499 Special Topics courses, or any 498 internship, except that up to three credits of B A 498 may be included as a 400-level business elective.

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 earned in WSU courses 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

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 behavioral business 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.

HABILE

The Honors and Business Innovation and Leadership Experience (HABILE) Certificate is open to Honors College students in all Carson College of Business majors. It provides knowledge, skills, connections, and real-world exposure in preparation for outstanding careers in business-related fields. The certificate requires 15 credits consisting of four core courses and electives from an approved list, in addition to co-curricular requirements associated with the Carson Career Amplifier Program.

Required core courses include ACCTG 298; ENTRP 492; HONORS 198, 450. Up to 2 credits of lower-division electives (from HONORS 211, 212, 298) may apply to the HABILE Certificate. Additional required electives must be from special HABILE sections of required business courses and/or business-related, graded HONORS courses as approved in advance by HABILE director. Co-curricular requirements associated with the Amplifier Program include attendance and participation at Meet the Deans, research and professional presentations, mentoring programs, and networking events.

Professional Sales (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, ALEKS score of 40% or higher, or transfer credit for Intermediate Algebra equivalent to MATH 101. 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 and HBM 101, OR B A 102 and HONORS 198, OR HBM 105; 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 and HBM 101, OR B A 102 and HONORS 198, OR HBM 105; 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 and HBM 101, OR B A 102 and HONORS 198, OR HBM 105; 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 B A 204 if credit is already earned in B A 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 B A 205 if credit is already earned in B A 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 B A 206 if credit is already earned in B A 212.
- 211 Ethics, Teams, and Innovation** 3 Course Prerequisite: B A 100; B A 102 and HBM 101, OR B A 102 and HONORS 198, OR HBM 105; 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 in each of B A 204, 205, and 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 each of B A 204, 205, and 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 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. Advanced decision-making concepts utilizing relevant datasets for data-driven problem-solving and formulating decision analyses to evaluate and recommend management action.
- 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.
- 591 Qualitative Research Methods** 3 Course Prerequisite: Admission to PhD programs in business. Introduction to qualitative research methods including research design, data collection, interpretation, and writing qualitative research for publication in academic journals.
- 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.
- 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: B A 579 or concurrent enrollment; admission to the Online MBA program or to the Executive MBA Online program. 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 Hall 242
509-335-8541

Chair and Professor, B. Wong-On-Wing; Professors, J. Gramlich, R. Toolson; Associate Professors, B. Barnes, X. Gao, K. Harris, J. Jaggi, L. Xu; Assistant Professors, S. K. Ahn, P. Liu, C. Potter; Career Track Faculty, R. Barnes, S. Bergstedt, M. Fan, J. Griffeath, K. Jones; Professor Emeritus, J. Cote, S. Gill, 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. These objectives provide 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.

Additional majors within the Business Administration Degree

Students already admitted to another major within the Business Administration degree, except for the Business Administration major, can elect to earn an additional major in Accounting by completing the following courses: ACCTG 330, ACCTG 331, ACCTG 335, ACCTG 338, ACCTG 433, ACCTG 439, and 3 credits of a 300-400 level Accounting Elective (see footnote 8). None of the required courses for an additional major (except the 300-400 level Accounting Elective) may be used for a 300-400-level Business Elective and at least 15 credits of an additional major's courses cannot be used elsewhere in the degree. If interested in this option, please contact a Carson College of Business advisor.

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.

Students must also earn a grade of C or better in ACCTG 330 and 433 in order to satisfy the degree requirement for the Accounting major.

First Year

<i>First Term</i>	<i>Credits</i>
B A 100	3
ECONS 101 [SSCI] or 102 [SSCI] ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3
MATH 201 ²	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3
<i>Second Term</i>	<i>Credits</i>
COM 102 [COMM], H D 205 [COMM], or MKTG 279 [COMM] ¹	3 or 4
ECONS 101 or 102 ¹	3
HBM 101 and B A 102, or HBM 105	2
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ⁵	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 204, 205, and 206, or B A 212	3
B LAW 210	3
UCORE Inquiry ⁴	7
Consider studying abroad this summer ⁶	

<i>Second Term</i>	<i>Credits</i>
ACCTG 231	3
B A 201, 202, and 203, or B A 211	3
MGTOP 215 ⁷	4
MIS 250	3
Social Science or Humanities Elective ³	3
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ACCTG 330	3
ACCTG 335 or 338	3
FIN 325	3
MKTG 360	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3

<i>Second Term</i>	<i>Credits</i>
ACCTG 331	3
ACCTG 335 or 338	3
ENGLISH 402 or 403	3
MGTOP 340	3
UCORE Inquiry ⁴	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

<i>First Term</i>	<i>Credits</i>
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 ³	3

<i>Second Term</i>	<i>Credits</i>
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 Social Science or Humanities Electives (12 credits): Any courses with the [SSCI] or [HUM] designation

(excluding courses in ACCTG, B A, B LAW, ENTRP, FIN, HBM, I BUS, MGMT, MGTOP, MIS, and MKTG), or courses in ANTH, ART, ASIA, CES, CRM J, DTC, ECONS, ENGLISH, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS (excluding ECONS 101, 102, 198, 327, ENGLISH 101, 105, 402, 403, H D 205, HISTORY 105, 305).

⁴ Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

⁵ Alternative to MATH 202 is MATH 140 or 171.

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. Students should consult with their advisor to determine the best option.

⁷ STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

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.

- 320 Taxing Ourselves** 3 Course Prerequisite: Junior standing. A non-technical, discussion-based focus on the various roles of taxes in society, highlighting international and cross-cultural contexts; development of civic engagement skills that are grounded in theory and data.
- 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; 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.
- 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.
- 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.
- 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.

Department of Finance and Management Science

**business.wsu.edu/finance/
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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, D. Paul (Vancouver), X. Wang, Y. Xiao, H. Zhang; Assistant Professors, E. Im, X. Ma, K. Mayo; Career Track Professor, M. Reyes; Career Track Assistant Professors, A. Boskabadi, K. Haque, Y. He (Vancouver), A. Wang, C. Williamson; Adjunct Professors, F. Benjamin, R. Hernandez, H. Howard, S. Koopman (Tri-Cities).

Schedules of Studies

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

FINANCE (120 CREDITS)

The major in finance prepares students for careers in financial management, investment analysis, financial institutions management, financial services, real estate, or risk management and insurance.

Additional majors within the Business Administration Degree

Students already admitted to another major within the Business Administration degree, except for the Business Administration major, can elect to earn an additional major in Finance by completing the following courses: ACCTG 330, FIN 421, FIN 425, 3 credits of FIN 427 or FIN 437, and two 300-400-level Finance Electives (see footnote 9). None of the courses for an additional major may be used for a 300-400-level Business Elective and at least 15 credits of an additional major's courses cannot be used elsewhere in the degree. If interested in this option, please contact a Carson College of Business advisor.

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. Students also must earn a grade of C or better in FIN 325 to satisfy degree requirements for the Finance major.

First Year

First Term	Credits
B A 100	3
ECONS 101 [SSCI] or 102 [SSCI] ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3

MATH 201 ²	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3

Second Term	Credits
ECONS 101 or 102 ¹	3
HBM 101 and B A 102, or HBM 105 ¹	2
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ⁵	3
UCORE Inquiry ⁴	4
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
MGTOP 215 ⁶	4
MIS 250	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3
Consider studying abroad this summer ⁷	

Second Term	Credits
ACCTG 231	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] ¹	3 or 4
UCORE Inquiry ⁴	3
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 ⁷	3
Social Science or Humanities Elective ³	3

Second Term	Credits
ACCTG 330	3
FIN 421	3
FIN 425 [M]	3
MKTG 360	3
UCORE Inquiry ⁴	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 ⁷	3
Social Science or Humanities Elective ³	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 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 Social Science or Humanities Electives (12 credits): Any courses with the [SSCI] or [HUM] designation (excluding courses in ACCTG, B A, B LAW, ENTRP, FIN, HBM, I BUS, MGMT, MKTG, MIS, and MKTG), or courses in ANTH, ART, ASIA, CES, CRM J, DTC, ECONS, ENGLISH, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS (excluding ECONS 101, 102, 198, 327, ENGLISH 101, 105, 402, 403, H D 205, HISTORY 105, 305).

⁴ Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

⁵ Alternative to MATH 202 is MATH 140 or 171.

⁶ STAT 212 will be accepted as alternative to MKTOP 215 for transfer students.

⁷ 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.

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; B A 204, 205, and 206, or B A 212, or DATA 115, or concurrent enrollment; ECONS 101 or 198; MKTOP 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, or the major in Economic Sciences. 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, the major in Data Analytics, or the major in Economic Sciences. 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, or the major in Economic Sciences. 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, the major in Data Analytics, or the major in Economic Sciences. Application of finance theory and principles to corporate decisions such as capital budgeting, cost of capital, financing decisions, and valuation.
- 426 The Practice of Corporate Finance 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, the major in Data Analytics, or the major in Economic Sciences. 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, or the major in Economic Sciences. 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, or the major in Economic Sciences. 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, or the major in Economic Sciences. 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, or the major in Economic Sciences. Students manage a portion of the university's endowment. Topics include portfolio risk management, return attribution, private equity, and hedge funds.
- 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, or the major in Economic Sciences. 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, or the major in Economic Sciences. 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, or the major in Economic Sciences. 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, or the major in Economic Sciences. 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. Required preparation must include intermediate macroeconomics and one year of calculus. Required preparation must include intermediate macroeconomics and one year of calculus. (Crosslisted course offered as ECONS 500, FIN 500.)
- 501 Microeconomic Theory I 3** Microeconomic theory, multivariate optimization, consumer and producer theory, competitive partial equilibrium, introduction to imperfect competition. Required preparation must include intermediate microeconomics and one year of calculus. Required preparation must include intermediate microeconomics and one year of calculus. (Crosslisted course offered as ECONS 501, FIN 501.)
- 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. Required preparation must include college calculus and matrix algebra. Required preparation must include college calculus and matrix algebra. (Crosslisted course offered as ECONS 510, FIN 510.)
- 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.
- 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.
- 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. Examine different market structures, analyze and predict firm behavior, including prices and output decisions, along with R&D investments, patents, and advertising; consider complete and incomplete information settings in different industries. (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.)
- 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: B A 204, 205, and 206, or B A 212, or concurrent enrollment; MGTOP 215, STAT 212, STAT 360, or STAT 370; MATH 202, 140, 171, 172, 182, or 220; junior standing. Management of operations, emphasizing production planning, inventory control, scheduling, forecasting, quality management, supply chain management, and facility layout and location.
- 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. Recommended preparation: STAT 443. (Crosslisted course offered as MGTOP 516, STAT 516.) Cooperative: Open to UI degree-seeking students.
- 519 Applied Multivariate Analysis** 3 Multivariate normal distribution, principal components, factor analysis, discriminant function, cluster analysis, Hotelling's T2 and MANOVA. Recommended preparation: STAT 443. (Crosslisted course offered as MGTOP 519, STAT 519.)
- 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.
- 585 Supply Chain Risk Management** 3 Conceptual and analytical approaches for dealing with modern supply chain risks such as natural catastrophes, terrorism, exchange rate risk, political risk, logistics delays, outsourcing, and supplier quality/delivery failures.
- 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.

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

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Director and Don Smith Distinguished Professorship, and Scholarly Associate Professor, J. Harbour; Taco Bell Distinguished Professor, D. Gursoy; W. Terry Umbreit Distinguished 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 Professors, R. Cai, B. Chen, S. Seo, K. Simeon-Rose; Tod & Maxine McClaskey Chair and Scholarly Associate Professor, J. Sandstrom; Associate Career Track Professors, M. Beattie, D. Jha; Assistant Career Track Professor, R. Hammond; Marriott Foundation Industry Relations Manager, A. Alonzo; Executive Chef and MHCIC Director, M. Morgan; Professors Emeritus, R. Harrington, 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, aging business management, or wine and beverage business management.

The Wine and Beverage Business Management program provides students with a comprehensive education tailored for individuals aspiring to excel in the dynamic wine and beverage industry. This multifaceted program combines foundational business principles with specialized knowledge of wine, spirits, and other beverage industries, preparing students for diverse career opportunities in management, marketing, distribution, and service.

The Aging Business Management specialized degree program is tailored to the dynamic realm of hospitality operations catering to aging populations. Join us as we pave the way for a brighter future in aging-related hospitality, where every interaction leaves a lasting, positive impact.

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.**AGING 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 Aging 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

<i>First Term</i>	<i>Credits</i>
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

<i>Second Term</i>	<i>Credits</i>
HBM 101 and B A 102, or HBM 105 ¹	2
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

<i>First Term</i>	<i>Credits</i>
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	

<i>Second Term</i>	<i>Credits</i>
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

<i>First Term</i>	<i>Credits</i>
ECONS 101 or 102 ¹	3
FIN 325	3
HBM 270	3
HBM 358	3
UCORE Inquiry ⁶	3

<i>Second Term</i>	<i>Credits</i>
H D 309 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

<i>First Term</i>	<i>Credits</i>
ENGLISH 402 or 403	3
HBM 401	1
HBM 470	3
UCORE Inquiry ⁶	3
International Experience Requirement or Electives ⁴	3
Management or Programming Elective ⁷	3
<i>Second Term</i>	<i>Credits</i>
300-400-level HBM Elective ⁸	3
HBM 475 [CAPS]	3
International Experience Requirement or Electives ⁴	3
Management or Programming Elective ⁷	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 STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁶ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

⁷ 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.

⁸ 300-400-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.

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

<i>First Term</i>	<i>Credits</i>
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
<i>Second Term</i>	<i>Credits</i>
ECONS 101 or 102 ¹	3
HBM 101 and B A 102, or HBM 105 ¹	2
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ³	3
UCORE Inquiry ⁴	4
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
HBM 280	3
MIS 250	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{5,4}	3
Consider studying abroad this summer ⁶	
<i>Second Term</i>	<i>Credits</i>
ACCTG 231	3
B A 204, 205, and 206, or B A 212	3
MGTOP 215 ⁷	4
UCORE Inquiry ⁴	6
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
B LAW 210	3
FIN 325	3
HBM 358	3
MKTG 360	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{5,4}	3
<i>Second Term</i>	<i>Credits</i>
HBM 381 [M]	3
HBM 494 [M]	3
I BUS 380	3
Social Science or Humanities Elective ⁵	3
300-400-level Business Elective ⁸	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 402 or 403	3
HBM 401	1
HBM 490 or 491 ⁹	3
International Experience Requirement or Electives ⁶	3
MGMT 450	3

<i>Second Term</i>	<i>Credits</i>
ECONS 305 or 323	3
HBM 493 [CAPS] or 495 [CAPS] ⁹	3
International Experience Requirement or Electives ⁶	3
Social Science or Humanities Elective ⁵	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 Alternative to MATH 202 is MATH 140 or 171.

⁴ Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

⁵ Social Science or Humanities Electives (12 credits): Any courses with the [SSCI] or [HUM] designation (excluding courses in ACCTG, B A, B LAW, ENTRP, FIN, HBM, I BUS, MGMT, MGTOP, MIS, and MKTG), or courses in ANTH, ART, ASIA, CES, CRM J, DTC, ECONS, ENGLISH, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS (excluding ECONS 101, 102, 198, 327, ENGLISH 101, 105, 402, 403, H D 205, HISTORY 105, 305).

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. Students should consult with their advisor to determine the best option.

⁷ 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 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].

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
CHEM 101 [PSCI]	4
HBM 101 and B A 102, or HBM 105 ³	2
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ⁴	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
HBM 231	1
HBM 280	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{5,6}	3
Consider studying abroad this summer ⁷	

Second Term	Credits
ACCTG 231	3
B A 204, 205, and 206, or B A 212	3
B LAW 210	3
COM 102 [COMM], DTC 202 [COMM], H D 205 [COMM], or MKTG 279 [COMM] ¹	3 or 4
MGTOP 215 ⁸	4
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

First Term	Credits
FIN 325	3
HBM 358	3
MIS 250	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{5,6}	3
VIT ENOL 313	3

Second Term	Credits
HBM 381 [M]	3
HBM 494 [M]	3
International Experience Requirement or Elective ⁷	3
MKTG 360	3
Social Science or Humanities Elective ⁶	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

First Term	Credits
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

Second Term	Credits
DTC 335, 354, 475, FS/VIT ENOL 422, or MKTG 495	3
HBM 493 [CAPS]	3
International Experience Requirement or Electives ⁷	3
Social Science or Humanities Elective ⁶	3
UCORE Inquiry ⁵	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 For students in the Honors Program: ECONS 198 is an approved substitute for ECONS 101 and 102; H D 205 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.

⁴ Alternative to MATH 202 is MATH 140 or 171.

⁵ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

⁶ Social Science or Humanities Electives (12 credits): Any courses with the [SSCI] or [HUM] designation (excluding courses in ACCTG, B A, B LAW, ENTRP, FIN, HBM, I BUS, MGMT, MGTOP, MIS, and MKTG), or courses in ANTH, ART, ASIA, CES, CRM J, DTC, ECONS, ENGLISH, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS (excluding ECONS 101, 102, 198, 327, ENGLISH 101, 105, 402, 403, H D 205, HISTORY 105, 305).

⁷ 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.

⁸ STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

Minors

Aging Business Management

Please see the Carson College of Business section of this Catalog for additional instructions. To be admitted into the Aging Business 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 Aging Business Management requires a minimum of 19 credits of coursework including:

- ACCTG 220 or 230
- HBM 101, 105, or 401
- HBM 270
- 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 ABM minor courses.
- A minimum of 9 credits of upper-division coursework must be earned in WSU courses or though 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.

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 notice

The minor in Event Management requires a minimum of 19 credits of coursework, including:

- HBM 301
- HBM 383
- HBM 401
- 12 credits from the following: HBM 235, 358, 381, 384, 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 earned in WSU courses or

though 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 notice

The minor in hospitality business management requires a minimum of 19 credits of coursework, including:

- ACCTG 220 or 230
- HBM 101, 105, 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 earned in WSU courses 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 earned in WSU courses 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.

Certificates

Culinary Business

The Certificate in Culinary Business 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 culinary, hospitality or food-related fields who require in-depth knowledge of culinary arts and science applied to food business settings and entrepreneurial activities. Students develop knowledge and skills that are applicable to industries and businesses involved in artisanal food, culinary activities, food and beverage endeavors and aspiring entrepreneurs.

Acceptance into the certificate:

Students are required to provide evidence of sufficient culinary foundations skills and experience based on a review of the Culinary Business certificate acceptance committee. Examples of culinary foundations that will be assessed include areas of knife skills, basic food safety and sanitation, food preparation knowledge, soups/stocks/sauces, baking and pastry, garde manger, etc. These skills

will be assessed from the student's experience and participation in qualified culinary programs. Students lacking these foundational skills can obtain them through the completion of HBM 258 and HBM 298 or 498, modules within the ACF/WSU culinary arts program, or other approved source.

Business majors wanting to complete this certificate are also required to have sufficient culinary foundation skills as well as to complete at least 6 hours of coursework not included in the requirements for their degree plan.

Requirements: 9 core credits from HBM 301, 358, 384, 458, 490, 493, 494; 3 experiential learning credits from FS 201, HBM 350, 496; 6 elective credits from ENTRP 485, 490, HBM 381, 480, or as approved by committee.

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).

105 Navigating Business Careers 2 Course Prerequisite: B A 100 or concurrent enrollment or admitted to a major or minor in the College of Business. Enrollment not allowed if credit already earned in both B A 102 and HBM 101. Establish and clarify major/career goals through career assessments and research on job expectations, employment trends, and essential skills; develop actionable goals and plans to enhance career success; focus on professional development, including the hiring process, resume/cover letter writing, interview strategies, networking, and online branding. Credit not granted for HBM 105 if credit is already earned in both of B A 102 and HBM 101.

131 Introduction to Hospitality Business Management 3 Historical development and organizational structure of the hospitality service industries. Cooperative: Open to UI degree-seeking students.

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. Cooperative: Open to UI degree-seeking students.

- 270 [DIVR] Exploring the Business of Aging 3** Introduction to the unique aspects of managing senior housing communities, focusing on the social model of this hospitality-based business. Field trip required.
- 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 (2-2)** 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.
- 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 or 105; 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 270. 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** 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. 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, M. Cicek, M. Featherman, S. Fotopoulos, J. Gramlich, K. Gunasti, D. Gursoy, J. Harbour, D. Jha, G. Jiang, J. Joireman, J. Kim, J. Murray, M. Mayes, N. Pearson, M. Reyes, J. Rose, J. Sandstrom, A. SaVinhas, 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 Professor, R. Crossler; Dean, D. Compeau; Senior Associate Dean and Professor, T.

Tripp (Vancouver); Executive Director of the Center for Entrepreneurship, P. Warner; Professors, J. Beus, K. Kuhn, A. Sahaym, R. Suddaby; Associate Dean and Associate Professor, L. Sheppard; Associate Professors, K. Butterfield, H. Johnson; R. Johnson, A. Kier (Vancouver), A. Lahiri, R. Saylor (Vancouver), C. Schneider, B. Warnick (Vancouver); Assistant Professors, Y. Kwon, S. Lee, L. Nguyen, L. Zhu; Career Track Professors, J. Compeau, M. Featherman; Career Track Associate Professors, J. Bravo (Tri-Cities), C. Cooney, J. Gladstone (Everett), M. Mayes, R. Moser; Career Track Assistant Professors, A. Brown, J. Gingras, K. Meyer; Professors Emeriti, V. Miskin, C. Morgan, P. Skilton.

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.

Additional majors within the Business Administration Degree

Students already admitted to another major within the Business Administration degree, except for the Business Administration major, can elect to earn an additional major in Entrepreneurship by completing the following courses: ENTRP 426, ENTRP 485, ENTRP 486, ENTRP 489, ENTRP 490, ENTRP 492. None of the courses for an additional major may be used for a 300-400-level Business Elective and at least 15 credits of an additional major's courses cannot be used elsewhere in the degree. If interested in this option, please contact a Carson College of Business advisor.

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

	Credits
First Term	
B A 100	3
ECONS 101 [SSCI] or 102 [SSCI] ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3
MATH 201 ²	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3

	Credits
Second Term	
ECONS 101 or 102 ¹	3

HBM 101 and B A 102, or HBM 105 ¹	2
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ⁵	3
UCORE Inquiry ⁴	4
Complete Carson Career Amplifier Program -- Tier 1	
Apply for Admission into the Major	

Second Year

	Credits
First Term	
ACCTG 230 ¹	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
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3
Consider studying abroad this summer ⁶	

	Credits
Second Term	
ACCTG 231 ¹	3
B A 201, 202, and 203, or B A 211	3
MGTOP 215 ⁷	4
MIS 250	3
UCORE Inquiry ⁴	3
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

	Credits
First Term	
ENTRP 489	3
I BUS 380	3
MGTOP 340	3
MKTG 360	3
UCORE Inquiry ⁴	3
Second Term	
ENGLISH 402 or 403	3
ENTRP 490 [M]	3
FIN 325	3
International Experience Requirement or Electives ^{8,6}	3
Social Science or Humanities Elective ³	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

	Credits
First Term	
ENTRP 426	3
ENTRP 485 [M]	3
300-400-level Business Elective ⁹	3
International Experience Requirement or Electives ^{8,6}	3
Social Science or Humanities Elective ³	3
Second Term	
ENTRP 486 [M] or 496 [M] ¹⁰	3
ENTRP 492 [CAPS]	3
300-400-level Business Elective (MIS 441 recommended) ⁹	3
International Experience Requirement or Electives ^{8,6}	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 Social Science or Humanities Electives (12 credits): Any courses with the [SSCI] or [HUM] designation (excluding courses in ACCTG, B A, B LAW, ENTRP, FIN, HBM, I BUS, MGMT, MGTOP, MIS, and MKTG), or courses in ANTH, ART, ASIA, CES, CRM J, DTC, ECONS, ENGLISH, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS (excluding ECONS 101, 102, 198, 327, ENGLISH 101, 105, 402, 403, H D 205, HISTORY 105, 305).

⁴ Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

⁵ Alternative to MATH 202 is MATH 140 or 171.

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. Students should consult with their advisor to determine the best option.

⁷ STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁸ Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

⁹ 300-400-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.

¹⁰ ENTRP 496 is a year-long course that must be taken both fall and spring semesters.

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.

Additional majors within the Business Administration Degree

Students already admitted to another major within the Business Administration degree, except for the Business Administration major, can elect to earn an additional major in Management by completing the following courses: MGMT 401, MGMT 415, MGMT 483, MGMT 485, MGMT 487, and MIS 448 for the Innovation & Change track, or MGMT 401, MGMT 415, MGMT 450, MGMT 455, MGMT 456 and MGMT 485 for Human Resource Management track. None of the courses for an additional major may

be used for a 300-400-level Business Elective and at least 15 credits of an additional major's courses cannot be used elsewhere in the degree. If interested in this option, please contact a Carson College of Business advisor.

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. Students seeking the Management HR Track must also earn a grade of C or better in MGMT 450, to satisfy the degree requirements of the Management major.

First Year

<i>First Term</i>	<i>Credits</i>
B A 100	3
ECONS 101 [SSCI] or 102 [SSCI] ¹	3
HISTORY 105 [ROOT]	3
MATH 201 ²	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3

<i>Second Term</i>	<i>Credits</i>
ECONS 101 or 102 ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3
HBM 101 and B A 102, or HBM 105 ¹	2
MATH 202 [QUAN] ⁵	3
UCORE Inquiry ³	4
Complete Carson Career Amplifier Program -- Tier 1	
Apply for Admission into the Major	

Second Year

<i>First Term</i>	<i>Credits</i>
ACCTG 230 ¹	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] ¹	3 or 4
MIS 250	3
Consider studying abroad this summer ⁶	

<i>Second Term</i>	<i>Credits</i>
ACCTG 231 ¹	3
B A 204, 205, and 206, or B A 212	3
MGTOP 215 ⁷	4
UCORE Inquiry ³	6
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
FIN 325	3
I BUS 380	3
MGMT 401	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3
Social Science or Humanities Elective ⁴	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 402 or 403	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>	<i>Credits</i>
MGMT 415 or CES 207	3
International Experience Requirement or Electives ⁶	3
Social Science or Humanities Elective ⁴	3
Track Electives [M] ⁸	6

<i>Second Term</i>	<i>Credits</i>
MGMT 491 [CAPS] or ENTRP 492 [CAPS] ⁶	3
International Experience Requirement or Electives ⁶	3
Electives ⁹	8
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 Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

⁴ Social Science or Humanities Electives (12 credits): Any courses with the [SSCI] or [HUM] designation (excluding courses in ACCTG, B A, B LAW, ENTRP, FIN, HBM, I BUS, MGMT, MGTOP, MIS, and MKTG), or courses in ANTH, ART, ASIA, CES, CRM J, DTC, ECONS, ENGLISH, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS (excluding ECONS 101, 102, 198, 327, ENGLISH 101, 105, 402, 403, H D 205, HISTORY 105, 305).

⁵ Alternative to MATH 202 is MATH 140 or 171.

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. Students should consult with their advisor to determine the best option.

⁷ STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁸ Track Electives: Students must complete one of two tracks for the management major. A total of 9 credits are required for each track. The requirements for each track are as follows. Innovation & Change Track: required MGMT 483 [M], 487, and MIS 448; Human Resource Management Track: required MGMT 450, 455, 456 [M].

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)

The Management Information Systems major prepares students for careers in every field of business, using information systems technology

to solve business problems. The major provides excellent training in systems design, development, networking, and support to meet the demands of this fast-growing occupational area.

Additional majors within the Business Administration Degree

Students already admitted to another major within the Business Administration degree, except for the Business Administration major, can elect to earn an additional major in Management Information Systems by completing the following courses: MIS 322, MIS 325, MIS 372, and two 300-400-level MIS Electives (see footnote 10). None of the courses for an additional major may be used for a 300-400-level Business Elective and at least 15 credits of an additional major's courses cannot be used elsewhere in the degree. If interested in this option, please contact a Carson College of Business advisor.

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>	<i>Credits</i>
B A 100	3
ECONS 101 [SSCI] or 102 [SSCI] ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3
MATH 201 ²	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3
<i>Second Term</i>	<i>Credits</i>
ECONS 101 or 102 ¹	3
HBM 101 and B A 102, or HBM 105 ¹	2
HISTORY 105 [ROOT]	3
MATH 202 [QUAN] ⁵	3
UCORE Inquiry ³	4
Complete Carson Career Amplifier Program -- Tier 1	
Apply for Admission into the Major	

Second Year

<i>First Term</i>	<i>Credits</i>
ACCTG 230 ¹	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
MIS 250	3
Consider studying abroad this summer ⁶	
<i>Second Term</i>	<i>Credits</i>
ACCTG 231 ¹	3
B A 201, 202, and 203, or B A 211	3
MGTOP 215 ⁷	4
UCORE Inquiry ³	6
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 402 or 403	3

FIN 325	3
MIS 325	3
MIS 372 [M]	3
Electives ⁸	3

<i>Second Term</i>	<i>Credits</i>
I BUS 380	3
MGTOP 340	3
MIS 322 [M]	3
MKTG 360	3
Social Science or Humanities Elective ⁴	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

<i>First Term</i>	<i>Credits</i>
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3
300-400-level Business Electives ⁹	3
300-400-level MIS Electives ¹⁰	3
International Experience Requirement or Electives ⁶	3
Social Science or Humanities Elective ⁴	3
<i>Second Term</i>	<i>Credits</i>
MGMT 491 [CAPS] or ENTRP 492 [CAPS]	3
300-400-level Business Electives ⁹	3
300-400-level MIS Elective ¹⁰	3
International Experience Requirement and/or Electives ^{8,6}	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 Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

⁴ Social Science or Humanities Electives (12 credits): Any courses with the [SSCI] or [HUM] designation (excluding courses in ACCTG, B A, B LAW, ENTRP, FIN, HBM, I BUS, MGMT, MGTOP, MIS, and MKTG), or courses in ANTH, ART, ASIA, CES, CRM J, DTC, ECONS, ENGLISH, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS (excluding ECONS 101, 102, 198, 327, ENGLISH 101, 105, 402, 403, H D 205, HISTORY 105, 305).

⁵ Alternative to MATH 202 is MATH 140 or 171.

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. Students should consult with their advisor to determine the best option.

⁷ STAT 212 will be accepted as alternative to MGTOP 215 for transfer students.

⁸ Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

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
- ENGR 420 and 421
- 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 earned in WSU courses 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
- HD 205 or MIS 250

And two of the following:

- MGMT 455
- MGMT 456
- 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 earned in WSU courses 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 (with cybersecurity focus).

Additionally, students will:

- Participate in three internship credits (MIS 498; or CPT S 488 and ENGR 489) with a cybersecurity-related experience; or complete a high-impact learning experience in the context of cybersecurity; or complete at least four credits of foreign language or demonstrate fluency in Russian, Chinese, Korean, Arabic, or Persian by earning a 3 or higher (novice-high level) on the Avant STAMP 4S assessment.
- Demonstrate involvement in cybersecurity research (realized via class projects, senior design projects, or through independent study in MIS 499).
- 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.

ENTRP

105 Entrepreneurship for Athletes 1
Overview of athlete focused entrepreneurship, introduction to related business concepts.

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.

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.

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.

415 Managerial Effectiveness Through Diversity 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 Personnel Psychology & Human Resource Management option; junior standing. Current trends and issues regarding workplace diversity, equity, and inclusion; effective management of individual differences and similarities and diversity-related dynamics to maximize the benefits of an increasingly diverse and global workforce.

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 Sustainability and Corporate Social 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. Management systems and performance frameworks for sustainability practices in an organizational setting; the nature and sources of corporate social responsibilities, including risks and impacts associated with business activities on stakeholders and the environment.
- 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.
- 584 Seminar in Entrepreneurship** 3 Course Prerequisite: Admission to the Ph.D. in Business Administration. Advanced, doctoral-level topics in entrepreneurship.
- 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.
- 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.
- 598 Seminar in Management Research** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Admission to PhD programs in business. Classic and contemporary special research topics in the field of 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

No letter-graded course offered by the Carson College of Business may be taken for a Pass, Fail (P, F) grade.

MIS

- 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.
- 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 Global 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.

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.

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.

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

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Schedules of Studies

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

INTERNATIONAL BUSINESS (120 CREDITS)

The major in International Business prepares students for careers with multinational corporations, governmental and intergovernmental agencies both domestic and international. Major requirements include completing a pre-approved study abroad

program comprised of a minimum of one semester of at least 11 weeks in length and 12 transferable credits.

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.

Additional majors within the Business Administration Degree

Students already admitted to another major within the Business Administration degree, except for the Business Administration major, can elect to earn an additional major in International Business by completing the following courses and requirements: I BUS 280, I BUS 453, I BUS 480, 3 credits of ECONS 327 or I BUS 470, the Foreign Language Requirement (see footnote 2), and the Study Abroad Requirement (see footnote 6). None of the courses for an additional major may be used for a 300-400-level Business Elective and at least 15 credits of an additional major's courses cannot be

used elsewhere in the degree. If interested in this option, please contact a Carson College of Business advisor.

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

<i>First Term</i>	<i>Credits</i>
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
<i>Second Term</i>	<i>Credits</i>
ECONS 101 or 102 ¹	3
ENGLISH 101 [WRTG] or 105 [WRTG] ¹	3
Foreign Language Requirement ²	4
HBM 101 and B A 102, or HBM 105 ¹	2
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 ¹	3
B A 204, 205, and 206, or B A 212	3
POL S 102 or 103	3
UCORE Inquiry ⁵	6
<i>Second Term</i>	<i>Credits</i>
ACCTG 231 ¹	3
B A 201, 202, and 203, or B A 211	3
I BUS 280	3
MIS 250	3
UCORE Inquiry ⁵	4
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
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
<i>Second Term</i>	<i>Credits</i>
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

<i>First Term</i>	<i>Credits</i>
ENGLISH 402 or 403	3
I BUS 480	3
UCORE Inquiry ⁵	3
300-400-level International Business Concentration ⁸	3
<i>Second Term</i>	<i>Credits</i>
ECONS 327 or I BUS 470	3
MGMT 491 [CAPS] or ENTRP 492 [CAPS]	3
UCORE Inquiry ⁵	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 Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

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 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)

The marketing major prepares students for careers in marketing management, sales, retail management, marketing research, brand management, and promotion.

Additional majors within the Business Administration Degree

Students already admitted to another major within the Business Administration degree, except for the Business Administration major, can elect to earn an additional major in Marketing by completing the following courses: MKTG 368, MKTG 407, MKTG 495, one 300-400-level Marketing Elective (see footnote 9), and 3 credits of MKTG 461, ENTRP 490, or I BUS 482. None of the courses for an additional major may be used for a 300-400-level Business Elective and at least 15 credits of an additional major's courses cannot be used elsewhere in the degree. If interested in this option, please contact a Carson College of Business advisor.

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

<i>First Term</i>	<i>Credits</i>
B A 100	3
ECONS 101 [SSCI] or 102 [SSCI] ¹	3
HISTORY 105 [ROOT]	3
MATH 201 ²	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3

<i>Second Term</i>	<i>Credits</i>
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 and B A 102, or HBM 105 ¹	2
MATH 202 [QUAN] ⁵	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 ¹	3
B A 201, 202, and 203, or B A 211	3
MIS 250	3
Social Science or Humanities Elective ³	3
UCORE Inquiry and Social Sciences or Humanities Elective ^{3,4}	3
Consider studying abroad this summer ⁶	

<i>Second Term</i>	<i>Credits</i>
ACCTG 231 ¹	3
B A 204, 205, and 206, or B A 212	3

B LAW 210	3
UCORE Inquiry ⁴	7
Complete Carson Career Amplifier Program -- Tier 2	
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 402 or 403	3
I BUS 380	3
MGTOP 215 ⁷	4
MKTG 360	3
300-400-level Business Electives ⁸	3

<i>Second Term</i>	<i>Credits</i>
FIN 325	3
MGTOP 340	3
MKTG 407	3
UCORE Inquiry ⁴	3
300-400-level Marketing Elective ⁹	3
Complete Carson Career Amplifier Program -- Tier 3	

Fourth Year

<i>First Term</i>	<i>Credits</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 ⁶	3
Social Science or Humanities Elective ³	3

<i>Second Term</i>	<i>Credits</i>
MGMT 491 [CAPS] or ENTRP 492 [CAPS]	3
MKTG 495 [M]	3
International Experience Requirement or Elective ⁶	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 Social Science or Humanities Electives (12 credits): Any courses with the [SSCI] or [HUM] designation (excluding courses in ACCTG, B A, B LAW, ENTRP, FIN, HBM, I BUS, MGMT, MGTOP, MIS, and MKTG), or courses in ANTH, ART, ASIA, CES, CRM J, DTC, ECONS, ENGLISH, FOR LANG, HISTORY, HONORS 270, 280, 370, 380, H D, HUMANITY, PHIL, POL S, PSYCH, SOC, and WGSS (excluding ECONS 101, 102, 198, 327, ENGLISH 101, 105, 402, 403, H D 205, HISTORY 105, 305).

⁴ Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

⁵ Alternative to MATH 202 is MATH 140 or 171.

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. Students should consult with their advisor to determine the best option.

⁷ 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, or concurrent enrollment; admitted to a major or minor in the College of Business; junior standing. International political economy; business relationships between nations; corporations and economic institutions.

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.

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 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, major in Data Analytics, 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, or major in Data Analytics. 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 Societal 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 behavioral theories, 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; MKTG 368 with a C or better; 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: By department permission; MKTG 360.
- 498 Marketing Internship** V 2-15 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission; MKTG 360. 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; MKTG 360. 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.
- 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.
- 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 Hohenstuhl Distinguished Professor, A. Kostyukova; Professors, B. Ahning, B. Beyenal, W. Dong, J-S. McEwen, K. Schulz, D. Thiessen, B. J. Van Wie, X. Zhang; Associate Professors, B. Cao, D. Lin, S. Saunders, A. Vasavada, D. Wu; Assistant Professors, Q. Change, C. Lehman-Chong, D. Scalise, W. Schroeder, D. Tolkathe; 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, safely, 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 Science 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 production 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 education 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, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Chemical, Biochemical, Biomolecular Engineering.

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:

- 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, and.
- 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 include: (a) Applications of mathematics, including differential equations and statistics to engineering problems. (b) College-level chemistry and physics courses, with some at an advanced level, as appropriate to the objectives of the program. (c) Engineering application of these sciences to the design, analysis, and control of processes, including the hazards associated with these processes."

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, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Bioengineering and Biomedical Engineering.

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.

In addition to these Outcomes, we will also monitor the program criteria for bioengineering and biomedical and similarly named engineering programs, as set forth by the Biomedical Engineering Cooperating Societies. These criteria are, respectively: "The structure of the curriculum must provide both breadth and depth across the range of engineering and science topics consistent with the program educational objectives and student outcomes. The curriculum must include experience in: (a) Applying principles of engineering, biology, human physiology, chemistry, calculus-based physics, mathematics (through differential equations) and statistics; (b) Solving bio/biomedical engineering problems, including those associated with the interaction between living and non-living systems; (c) Analyzing, modeling, designing, and realizing bio/biomedical engineering devices, systems, components, or processes; and (d) Making measurements on and interpreting data from living systems."

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/>.

Voiland School Administrative Fee

All students who are admitted to the Chemical Engineering or Bioengineering majors are subject to the Voiland School of Chemical Engineering and Bioengineering Administrative Fee each semester. This fee supports the computational infrastructure in the Voiland School. The fee is currently \$28 per semester.

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 - BIOMEDICAL SYSTEMS OPTION (120 CREDITS)

At least 50 of the total credits required for this degree must be in 300-400-level courses.

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.

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 BIO ENG 140, 488, 495, 499, and ENGR 489, all listed BIO ENG courses, required electives, and the prerequisites to these courses must be completed with a grade of C or better.

First Year

First Term	Credits
BIO ENG 140	1
CHEM 105 [PSCI]	4
ENGR 120 ¹	2
HISTORY 105 [ROOT] or 305 [ROOT]	3
MATH 171 [QUAN]	4

Second Term	Credits
BIOLOGY 107 [BSCI]	4
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
MATH 220 or 230	2 or 3
MATH 273 or 283	2
PHYSICS 201 and 211, or 205	4 or 5

Second Term	Credits
BIO ENG 210	3
MATH 315	3
MBIOS 303	4
PHYSICS 202 and 212, or 206	4 or 5
UCORE Inquiry ²	3
Complete Writing Portfolio	

Third Year

First Term	Credits
BIO ENG 310	3
BIO ENG 315	3
BIO ENG 325 [M]	2
C E 211	3
STAT 370 or 423	3

Second Term	Credits
BIO ENG 305	3
BIO ENG 350	3
BIO ENG 360 ³	3
Communication [COMM] or Written Communication [WRTG]	3
E E 261	3

Fourth Year

First Term	Credits
BIO ENG 410 [M]	3
BIO ENG 420 ⁴	3
BIO ENG 430	3
ECONS 101 [SSCI], 102 [SSCI], or 198	3
UCORE Inquiry ²	3

Second Term	Credits
BIO ENG 411 [CAPS]	3
BIO ENG 440	3
Bioengineering Electives ³	3
Technical Electives ⁴	3
UCORE Inquiry ²	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 Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

³ Bioengineering Electives (3 credits): Any 400-level BIO ENG course not used to fulfill major requirements. A maximum of 3 credits is allowed in BIO ENG 488, 495, and 499 combined.

⁴ Technical Electives (3 credits): Approved courses include BIOLOGY 106, 251, CPT S 121, E E 214, 262, ME 116, 212, 216, MSE 201, 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.

BIOENGINEERING - CELLULAR AND MOLECULAR OPTION (120 CREDITS)

At least 50 of the total credits required for this degree must be in 300-400-level courses.

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.

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 BIO ENG 140, 488, 495, 499, and ENGR 489, all listed BIO ENG courses, required electives, and the prerequisites to these courses must be completed with a grade of C or better.

First Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 140	1
CHEM 105 [PSCI]	4
ENGR 120 ¹	2
HISTORY 105 [ROOT] or 305 [ROOT]	3
MATH 171 [QUAN]	4
<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI]	4
CHEM 106 or 116	4
ENGLISH 101 [WRTG]	3
MATH 172 or 182	4

Second Year

<i>First Term</i>	<i>Credits</i>
CHE 201	3
CHEM 345	4
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	3
MATH 315	3
MBIOS 303	4
PHYSICS 202 and 212, or 206	4 or 5
UCORE Inquiry ²	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 310	3
BIO ENG 315	3
BIO ENG 325 [M]	2
MBIOS 301, 305, or 413	3
STAT 370 or 423	3

<i>Second Term</i>	<i>Credits</i>
BIO ENG 305	3
BIO ENG 350	3
BIO ENG 360	3
Bioengineering Elective ³	3
Communication [COMM] or Written Communication [WRTG]	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 410 [M]	3
BIO ENG 456	3
BIO ENG 475	3
ECONS 101 [SSCI], 102 [SSCI], or 198	3
UCORE Inquiry ²	3

<i>Second Term</i>	<i>Credits</i>
BIO ENG 411 [CAPS]	3
BIO ENG 476	3
Bioengineering Elective ³	3
Technical Elective ⁴	3
UCORE Inquiry ²	3

¹ 3 credit 300-400 level engineering course may be substituted for ENGR 120 by approval of advisor.

² Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

³ Bioengineering Electives (6 credits): Any 400-level BIO ENG course not used to fulfill major requirements. A maximum of 3 credits is allowed in BIO ENG 488, 495, and 499 combined. Students completing the Cellular and Molecular Bioengineering option may replace three credits with three credits of a 300-400-level CHE course with advisor approval.

⁴ Technical Electives (3 credits): Approved courses include BIOLOGY 106, 251, CPT S 121, E E 214, 262, ME 116, 212, 216, MSE 201, 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.

BIOENGINEERING - PRE-MED - BIOMEDICAL SYSTEMS OPTION (128 CREDITS)

At least 50 of the total credits required for this degree must be in 300-400-level courses.

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.

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 BIO ENG 140, 488, 495, 499, and ENGR 489, all listed BIO ENG courses, required electives, and the prerequisites to these courses must be completed with a grade of C or better.

First Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 140	1
CHEM 105 [PSCI]	4
ENGR 120 ¹	2
HISTORY 105 [ROOT] or 305 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI]	4
CHEM 106 or 116	4
ENGLISH 101 [WRTG]	3
MATH 172 or 182	4
UCORE Inquiry ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
CHE 201	3
CHEM 345	4
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	3
CHEM 348	4
MATH 315	3
MBIOS 303	4
PHYSICS 202 and 212, or 206	4 or 5
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 310	3
BIO ENG 315	3
BIO ENG 325 [M]	2
BIOLOGY 106	4
C E 211	3
STAT 370 or 423	3

<i>Second Term</i>	<i>Credits</i>
BIO ENG 305	3
BIO ENG 350	3
BIO ENG 360	3
E E 261	3
ENGLISH 402 [WRTG] or 403 [WRTG]	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 410 [M]	3
BIO ENG 420	3
BIO ENG 430	3
ECONS 101 [SSCI] or 102 [SSCI] or 198	3
UCORE Inquiry ³	3
<i>Second Term</i>	<i>Credits</i>
BIO ENG 411 [CAPS]	3
BIO ENG 440	3
Bioengineering Electives ⁴	3
MBIOS 301, 305, 401, or 413	3 or 4
UCORE Inquiry ³	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 Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

³ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

⁴ Bioengineering Electives (3 credits): Any 400-level BIO ENG course not used to fulfill major requirements. A maximum of 3 credits is allowed in BIO ENG 488, 495, and 499 combined.

BIOENGINEERING - PRE-MED – CELLULAR AND MOLECULAR OPTION (128 CREDITS)

At least 50 of the total credits required for this degree must be in 300-400-level courses.

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.

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 BIO ENG 140, 488, 495, 499, and ENGR 489, all listed BIO ENG courses, required electives, and the prerequisites to these courses must be completed with a grade of C or better.

First Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 140	1
CHEM 105 [PSCI]	4
ENGR 120 ¹	2
HISTORY 105 [ROOT] or 305 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI]	4
CHEM 106 or 116	4
ENGLISH 101 [WRTG]	3
MATH 172 or 182	4
UCORE Inquiry ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
CHE 201	3
CHEM 345	4
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	3
CHEM 348	4
MATH 315	3
MBIOS 303	4
PHYSICS 202 and 212, or 206	4 or 5
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 310	3
BIO ENG 315	3
BIO ENG 325 [M]	2
BIOLOGY 106	4
MBIOS 301, 305, 401, or 413	3 or 4
STAT 370 or 423	3

<i>Second Term</i>	<i>Credits</i>
BIO ENG 305	3
BIO ENG 350	3
BIO ENG 360	3
ENGLISH 402 [WRTG] or 403 [WRTG]	3
Technical Elective ³	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIO ENG 410 [M]	3
BIO ENG 456	3
BIO ENG 475	3
ECONS 101 [SSCI], 102 [SSCI], or 198	3
UCORE Inquiry ²	3

<i>Second Term</i>	<i>Credits</i>
BIO ENG 411 [CAPS]	3
BIO ENG 476	3
Bioengineering Electives ⁴	6
UCORE Inquiry ⁵	3

¹ A 3 credit 300-400 level engineering course may be substituted for ENGR 120 by approval of advisor.

² Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

³ Technical Electives (3 credits): Approved courses include BIOLOGY 251, C E 211, CPT S 121, E E 214, 261, 262, ME 116, 212, 216, MSE 201, any 300-400 level BIO ENG, BIOLOGY, CE, CHE, CHEM, CPT S,

E E, MATH, MBIOS, ME, MSE, NEUROSCI, PHYSICS, or STAT course, or other courses as approved by advisor.

⁴ Bioengineering Electives (6 credits): Any 400-level BIO ENG course not used to fulfill major requirements. A maximum of 3 credits is allowed in BIO ENG 488, 495, and 499 combined. Students may replace three credits with three credits of a 300-400-level CHE course or an additional MBIOS 301, 305, 401, or 413 with advisor approval.

⁵ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

CHEMICAL ENGINEERING - GENERAL OPTION (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

<i>First Term</i>	<i>Credits</i>
CHE 101	1
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT] or 305 [ROOT]	3
MATH 171 [QUAN]	4
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI]	4
CHE 110 ²	2
CHEM 106 or 116	4
ENGLISH 101 [WRTG]	3
MATH 172 or 182	4

Second Year

<i>First Term</i>	<i>Credits</i>
CHE 201	3
CHEM 345	4
MATH 273 or 283	2

PHYSICS 201 and 211, or 205
UCORE Inquiry¹

4 or 5
3

Second Term

CHE 211
CHEM 348 or MBIOS 303
MATH 220 or 230
MATH 315
PHYSICS 202 and 212, or 206
Complete Writing Portfolio

Credits
3
4
2 or 3
3
4 or 5

Third Year

First Term

CHE 301
CHE 310
CHE 498
ENGLISH 402 [WRTG] [M] or
403 [WRTG] [M]
UCORE Inquiry¹
Technical Elective^{2,3}

Credits
3
3
1
3
3
3

Second Term

CHE 302
CHE 321
CHE 332
CHE 334

Credits
3
3
3
3

Fourth Year

First Term

CHE 352
CHE 432 [M]
CHE 441
CHE 450
ECONS 101 [SSCI] or 102 [SSCI] or 198

Credits
3
3
3
3
3

Second Term

CHE 433 [M]
CHE 451 [M] [CAPS]
CHE Elective^{2,4}
Technical Elective^{2,3}
Exit Interview

Credits
2
3
6
3

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

² One three credit 300-400-level CHE course must be substituted for CHE 110 if CHE 110 is not completed before CHE 201. The CHE course can be included as three credits of the Technical Electives.

³ 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.

⁴ 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.

Minors

Bioengineering

The minor in bioengineering requires at least 20 credits selected from the courses below. All courses used for the minor must be completed with a grade of C or better. Course work must include a minimum of 12 credits of 300-400-level coursework earned in WSU courses or through WSU-approved education abroad or educational exchange courses. At least 13 credits must be taken in the Voiland School of Chemical Engineering and Bioengineering.

Courses required for the minor may not be taken pass/fail. Courses required for the minor may have prerequisites not part of the minor that still must be satisfied prior to enrollment.

Requirements:

- BIOLOGY 107
- BIO ENG 140 and 360
- One course in numerical methods selected from: BIO ENG 210; CHE 211; CPT S 121, 131; ME 241; or as approved by advisor
- Three courses from one focus area:
 - Biomedical Systems focus - select three courses from: BIO ENG 420, 425, 430, 440, or other as approved by advisor
 - Cellular or Molecular focus - select three courses from: BIO ENG 456, 475, 476, or other as approved by advisor

Chemical Engineering

The minor in Chemical Engineering requires a minimum of 16 credits. A minimum of nine credits must include 300-400-level coursework earned in WSU courses or through WSU-approved education abroad or educational exchange courses. All courses used for the minor must be completed with a grade of C or better and no courses used for the minor may be taken with pass/fail grading. A minimum 2.0 GPA is required for all courses used for the minor.

Requirements include completion of:

1. CHE 101 and CHE 201.
2. One 300-level, 3-credit course in thermodynamics from the following approved courses: BIOENG 315, CHE 301, CHEM 331, ME 301, or another course with departmental approval.
3. One 300-level, 3-credit course in transport phenomena covering at least two modes of transport (e.g., momentum, mass, heat) from the following approved courses: BIOENG 310, CHE 310, ME 303 and ME 304 (must be taken together), or another course with departmental approval. (Note that fulfilling this requirement with ME 303 and 304 will satisfy only 3 credits toward the minor. Also, students who fulfill the transport phenomena requirement with ME 303 and 304 cannot use CHE 332 to fulfill the 6 additional credits below.)
4. 6 additional credits of Chemical Engineering content from courses taken at the 300-, 400-, or 500-level. Note that courses may require prerequisites or departmental approval prior to enrollment, and CHE 488, 489, 498, and 499 may not be used to satisfy this requirement.

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 Problem Solving 3 Course Prerequisite: CHE 201 with a C or better; MATH 315 with a C or better or concurrent enrollment. Methods for analysis and problem solving in bioengineering; introduction to mathematical modeling, programming, and numerical methods for bioengineering applications.

305 Bioengineering Ethics and Professional Development 3 Course Prerequisite: Admitted to the major in Bioengineering. Ethical topics in bioengineering, including responsibilities to society and scientific conduct; topics related to the professional development of bioengineers.

310 Bioengineering Transport Phenomena 3 Course Prerequisite: CHE 201 with a C or better; MATH 315 with a C or better; BIO ENG 210, with a C or better, or concurrent enrollment. Introduction and application of the concepts of momentum, mass, and thermal energy transport in the context of problems of interest in biology, medicine, and engineering.

315 Thermodynamics and Kinetics in Biological Systems 3 Course Prerequisite: BIO ENG 210 with a C or better or concurrent enrollment; CHE 201 with a C or better. Fundamental concepts and laws, property relationships, coupled phenomena, as well as theoretical modeling and experimental analysis applied to biological processes and regulation.

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 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.

325 [M] Introduction to Bioengineering Research and Clinical Instrumentation 2 (1-3) Course Prerequisite: MATH 315 with a C or better; MBIOS 303 with a C or better or concurrent enrollment; PHYSICS 202 and 212, each with a C or better. Principles of measurement systems for bioengineering applications, data analysis, and troubleshooting.

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: BIO ENG 315 with a C or better; BIO ENG 325 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.
- 360 Quantitative Physiology** 3 Course Prerequisite: BIO ENG/CHE 310, OR ME 303 and ME 304; each with a C or better. Mathematical and engineering analysis of major mammalian physiological systems, including excitable cells, cardiovascular, respiratory, and renal systems.
- 410 [M] Bioengineering Capstone Project I** 3 (2-3) Course Prerequisite: BIO ENG 305, BIO ENG 350, and BIO ENG 360, each with a C or better; BIO ENG 456 or BIO ENG 475, OR BIO ENG 420 and BIO ENG 430, each with a C or better or concurrent enrollment; admitted to the major in Bioengineering. Part I of capstone engineering design project; problem definition, design requirements, conceptual design, detail design, and technical writing and presentation.
- 411 [CAPS] Bioengineering Capstone Project II** 3 (2-2) Course Prerequisite: BIO ENG 410 with a C or better; admitted to the major in Bioengineering. Part II of capstone engineering design project; prototype implementation, verification, validation, and delivery.
- 420 Mechanics of Biological Materials** 3 Course Prerequisite: CE 211 with a C or better; senior standing. Mechanical behavior of biological and engineering materials; relationships between external loads and internal stresses and strains within a structure.
- 425 Biomechanics** 3 Course Prerequisite: CE 211 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.
- 430 Bioinstrumentation** 3 (2-3) Course Prerequisite: E E 261 with a C or better; BIO ENG 325 or E E 262 with a C or better. Principles of instrumentation applicable to bioengineering systems; experimental design for measurement systems.
- 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 Physiological Control Systems** 3 (2-3) Course Prerequisite: BIO ENG 360 with a C or better. Feedback control system analysis and design, with applications to physiological and biomedical engineering 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: BIO ENG 350 with a C or better, or BIO ENG 475 with a C or better or concurrent enrollment. Integrating molecular biology and engineering sciences to analyze, change, and design proteins' structure and function. Recommended preparation: Undergraduate cellular bioengineering and biochemical engineering. Credit not granted for both BIO ENG 456 and 556.
- 475 Biochemical Engineering** 3 Course Prerequisite: CHE 321 and 332 each with a C or better, OR BIO ENG 310 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.) Credit not granted for both CHE 475/BIO ENG 475 and CHE 575.
- 476 Applied Molecular and Cellular Bioengineering** 3 Course Prerequisite: BIO ENG 350, OR CHE 310 and CHE 301, each with a C or better. Applying bioengineering and chemical engineering kinetics and transport principles to practical applications in cellular and biological separations, biomanufacturing, tissue engineering, protein design, drug delivery, and bioassays. (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: By instructor permission; junior standing. 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: By instructor permission; BIO ENG 205; junior standing. 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: By instructor permission; sophomore standing. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 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.
- 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. Recommended preparation: Undergraduate cellular bioengineering and biochemical engineering. Credit not granted for both BIO ENG 456 and 556.

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 in chemical engineering thermodynamics; First and Second Laws; property relationships; power, compression, and liquefaction.
- 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 Bioengr. Fundamentals of the phenomena governing the transport of momentum, energy, and mass.
- 321 Kinetics and Reactor Design** 3 Course Prerequisite: CHE 211 and 310 with a C or better; CHE 302 with a C or better or concurrent enrollment; 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; junior standing. 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 Biochemical Engineering** 3 Course Prerequisite: CHE 321 and 332 each with a C or better, OR BIO ENG 310 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.) Credit not granted for both CHE 475/BIO ENG 475 and CHE 575.
- 476 Applied Molecular and Cellular Bioengineering** 3 Course Prerequisite: BIO ENG 350, OR CHE 310 and CHE 301, each with a C or better. Applying bioengineering and chemical engineering kinetics and transport principles to practical applications in cellular and biological separations, biomanufacturing, tissue engineering, protein design, drug delivery, and bioassays. (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: By instructor permission; sophomore standing. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

510 Transport Processes 3 Transport of mass, energy, and momentum; unsteady and steady states as applied to chemical processing; macroscopic and microscopic analyses. Cooperative: Open to UI degree-seeking students.

527 Chemical Thermodynamics 3 Thermodynamic laws for design and optimization of thermodynamic systems, equations of state, properties of ideal and real fluids and fluid mixtures, stability, phase equilibrium, chemical equilibrium; applications of thermodynamic principles. Cooperative: Open to UI degree-seeking students.

529 Chemical Engineering Kinetics 3 Interpretation of kinetic data and design of nonideal chemical reactors; fundamentals of heterogeneous catalysis, catalyst preparation, characterization, and theory. Cooperative: Open to UI degree-seeking students.

549 Biochemical Conversion Laboratory 2 (1-3) Analytical techniques in biomass characterization; bioproduct/biofuel production from renewable biomass including biochemical processes.

574 Protein Biotechnology 3 Provides skills, experiences, and knowledge to promote protein biotechnology research, research career preparation, and intellectual property commercialization. (Crosslisted course offered as MPS 574, CHE 574, MBIOS 574.)

575 Biochemical Engineering 3 Application of chemical engineering principles to the processing of biological and biochemical materials. (Crosslisted course offered as CHE 475, BIO ENG 475.) Credit not granted for both CHE 475/BIO ENG 475 and CHE 575.

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 Communications I 2 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 Communications II 1 Course Prerequisite: CHE 596. 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

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Professor and Interim Department Chair, E. Roalson; Regents Professor, K. Hipps; Professors, C. Berkman, J. Boncella, J. Brozik, B. Clowers, C. Kang, K. Kittilstved, A. Li, U. Mazur, K. Peterson, C. S. Yoo; Associate Professors, X. Guo Q. Zhang; Assistant Professors, J. Bell, L. Moreau, I. Popov, A. Sharma; Career Track Professors, P. Buckley, G. Crouch; Career Track Associate Professors, N. Devarie-Baez, R. Joseph, J. Lessmann, K. Nishida, A. Otoikhian; Career Track Assistant Professors, M. Finnegan, R. Kittilstved, M. Popova; Adjunct Faculty, S. Bryan, A. Clark, P. Cox, S. Conradson, S. Guharay, N. Henson, D. G. Schenter, N. Wall, Z. Wang, M. Xian; Professors Emeriti, S. Clark, M. Cooke, P. Garner, H. Hill, J. Hurst, J. Jones, D. Matteson, B. McFadden, J. McHale, K. McMichael, K. Nash, R. Ronald, S. Wherland, R. Yount.

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 for the B.S.

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.

Student Learning Outcomes for the B.A.

- 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.

Schedules of Studies

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

CHEMISTRY, BACHELOR OF ARTS - 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

	Credits
First Term	
Arts [ARTS]	3
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
MATH 106 ¹	0 or 3

	Credits
Second Term	
BIOLOGY 107 [BSCI]	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 108 ¹	0 or 2
Social Sciences [SSCI]	3

Second Year

	Credits
First Term	
CHEM 220	3
CHEM 222	1
Diversity [DIVR]	3
MATH 140 [QUAN] ¹	4
PHYSICS 101 ²	3
PHYSICS 111 ²	1

	Credits
Second Term	
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

	Credits
First Term	
BIOLOGY 430	3
CHEM 338 ³	3
CHEM 345	4
CHEM 398	1
STAT 212	4

	Credits
Second Term	
CHEM 348	4
CHEM 370 ⁴	3

Communication [COMM] or Written Communication [WRTG] ⁵	3
Equity and Justice [EQJS]	3
Foreign Language, if needed ⁶	0 or 4
Apply to College of Education, Sport, and Human Sciences Teaching Certificate Program	

	Credits
Third Term	
Summer - TCH LRN 317	2

Fourth Year

	Credits
First Term	
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

	Credits
Second Term	
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

	Credits
First Term	
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.

CHEMISTRY, BACHELOR OF ARTS - 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

	Credits
First Term	
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>
CHEM 348	4
CHEM 370 or MBIOS 303	3 or 4
ENGLISH 402 [WRTG] [M]	3
Equity and Justice [EQJS]	3
Electives ³	2

Fourth Year

<i>First Term</i>	<i>Credits</i>
Advanced Chemistry Electives ⁵	2
Foreign Language, if needed, or Electives ^{6,3}	12

<i>Second Term</i>	<i>Credits</i>
Advanced Chemistry Electives ⁵	3
CHEM 485 [CAPS] [M]	3
Foreign Language, if needed, or Electives ^{6,3}	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.

CHEMISTRY, BACHELOR OF SCIENCE - 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

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI] ¹	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 102 [BSCI], 106 [BSCI], or 107 [BSCI]	4
CHEM 106 ¹	4
HISTORY 105 [ROOT]	3
MATH 172	4

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 345	4
Humanities [HUM]	3
MATH 220	2
MATH 273	2
PHYSICS 201	3
PHYSICS 211	1

<i>Second Term</i>	<i>Credits</i>
CHEM 220	3
CHEM 347	3
CHEM 348	4
PHYSICS 202	3
PHYSICS 212	1
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CHEM 222	1
CHEM 330	1
CHEM 332	3
CHEM 370 or MBIOS 303	3 or 4
CHEM 398	1

Diversity [DIVR]	3
Foreign Language (if needed)	0 or 4

<i>Second Term</i>	<i>Credits</i>
CHEM 331	3
CHEM 334 [M]	2
Computational Elective: CPT S 121 or course approved by advisor	3 or 4
Equity and Justice [EQJS]	3
MSE 201	3
Foreign Language, if necessary, or Elective	3 or 4

Fourth Year

<i>First Term</i>	<i>Credits</i>
CHEM 333	1
CHEM 401	3
CHEM 480	3
CHEM 499	2
COM 400 [COMM], ENGLISH 301 [WRTG], or 402 [WRTG] [M]	3
MSE 302	3

<i>Second Term</i>	<i>Credits</i>
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.

CHEMISTRY, BACHELOR OF SCIENCE - 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

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 105 [PSCI] ¹	4
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 102 [BSCI], 106 [BSCI], or 107 [BSCI]	4
CHEM 106 ¹	4
ENGLISH 101 [WRTG]	3
MATH 172	4

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 345	4
Humanities [HUM]	3
MATH 220	2
MATH 273	2
PHYSICS 201	3
PHYSICS 211	1

<i>Second Term</i>	<i>Credits</i>
CHEM 220	3
CHEM 347	3
CHEM 348	4
PHYSICS 202	3
PHYSICS 212	1
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CHEM 222	1
CHEM 330	1
CHEM 332	3
CHEM 370 or MBIOS 303	3 or 4
CHEM 398	1
Diversity [DIVR]	3
Electives	2

<i>Second Term</i>	<i>Credits</i>
CHEM 331	3
CHEM 334 [M]	2
CHEM 425	2
Equity and Justice [EQJS]	3
Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
CHEM 333	1
CHEM 401	3
CHEM 426 [M]	2
CHEM 499	2
Foreign Language or Electives	6

<i>Second Term</i>	<i>Credits</i>
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 work earned in WSU courses 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 Forensic Chemistry 4 (3-3) Course Prerequisite: MATH 103 or a minimum ALEKS math placement score of 45%, or concurrent enrollment in or credit for MATH 105, 106, 107, 108, 140, 171, 172, 182, 201, 202, ENGR 107, STAT 205 or 212. The principles of chemistry applied to forensic science and forensic analysis.

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.

161 Nuclear Reactor Operations I 3 Course Prerequisite: CHEM 101 or 105 or concurrent enrollment in either. Foundational topics in reactor operations at the WSU TRIGA 1 MW nuclear research reactor, including nuclear theory, nuclear physics, radiation safety, health physics, reactor physics reactor kinetics, neutron transport theory, reactor auxiliary systems, and federal regulations. Cooperative: Open to UI degree-seeking students.

162 Nuclear Reactor Operations II 3 Course Prerequisite: CHEM 161 with a C or better. Training at the WSU 1 MW TRIGA nuclear reactor, with continued knowledge development in nuclear reactor theory and operations as preparation for the Nuclear Regulatory Commission licensing exam. Cooperative: Open to UI degree-seeking students.

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.

262 Senior Nuclear Reactor Operations 3 Course Prerequisite: CHEM 162 with a C or better. Facility design, reactor operations, safety analysis, nuclear design, risk assessment, regulatory considerations, and change management controls at the WSU 1 MW TRIGA nuclear reactor.

- 265 Measurement of Radioactive Materials** 3 (2-3) Course Prerequisite: CHEM 161; concurrent enrollment in either CHEM 101 or CHEM 105. Handling, characterization, and analysis of radioactive materials including nuclear theory and physics, radiation safety and detectors, alpha and gamma spectrometry, separation and analysis of radionuclides, and nuclear forensics.
- 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.
- 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.
- 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.
- 440 Biophysical Chemistry** 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. Credit not granted for both CHEM 440 and 540. (Formerly CHEM 338.)
- 470 Advanced Biochemistry** 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. Credit not granted for both CHEM 470 and 570. (Formerly CHEM 370.)
- 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.
- 511 Advanced X-ray Characterization** 3 Foundations in X-ray diffraction, scattering, and spectroscopy-based characterization methods as applied to a wide range of systems relevant to physics, chemistry, and engineering; hands-on experience with data collection and analysis. (Crosslisted course offered as PHYSICS 511, CHEM 511.)
- 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.
- 528 Data Analysis for Chemistry** 3 Data analysis methods for large data sets encountered in chemistry, programing 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. Cooperative: Open to UI degree-seeking students.

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.

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.

538 Qualifier Prep for Physical Chemistry V 1-2 Course Prerequisite: Concurrent enrollment or credit with a grade of B or better in each of CHEM 509; CHEM 531; CHEM 532; CHEM 534; CHEM 564. Review of critical concepts in thermodynamics, quantum mechanics, statistical thermodynamics, spectroscopy, and group theory for those preparing to take the Physical or Materials Chemistry PhD qualifying exam. S, F grading.

540 Biophysical Chemistry 3 The modern tools and insights of physical chemistry are covered by interconnecting these fundamental concepts with key biological phenomena. Credit not granted for both CHEM 440 and 540. (Formerly CHEM 338.)

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 Chemistry of biological systems, medicinal chemistry, protein chemistry, enzyme mechanisms and inhibitors. Recommended preparation includes two semesters of undergraduate organic chemistry and one semester of undergraduate biochemistry.

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.

555 Teaching Chemistry 1 Teaching chemistry; workshops for new graduate teaching assistants in chemistry focusing on tutorials and labs.

564 Molecular Spectroscopy 3 Phenomena which yield information on structures, energy levels, and interactions of molecules in solid, liquid, and gaseous phases.

570 Advanced Biochemistry 3 Exploration of the chemistry of biological systems with regards to structure and function relations, as well as metabolism and energy production. Credit not granted for both CHEM 470 and 570. (Formerly CHEM 370.)

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

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Professor and Interim Department Chair, A. Carraro; Professors, J. C. Adam, T. Ginn; J. Boll, M. A. Hossain, B. T. Jobson, H. Liu, V. P. Walden, H. Wen, V. Yadama; Associate Professors,, I. Chowdhury, Y. Demissie, N. Engdahl, J. Lee, C. Motter; Scholarly Professor, K. Olsen, Assistant Professors, P. Bahmani, H. Koh, J. Li, J. Meng, A. Richey, H. Wang, H. Wu, K. Zhu; Research Professor, K. Englund; Associate Research Professor, S. N. Pressley; Scholarly Assistant Professors,, J. Cheng;; Assistant Research Professors, Y. Deng, M. L. Liu; Professors Emeriti, D. A. Bender, C. S. Claiborn, W. F. Cofer, J. D. Dolan, R. Itani, B. K. Lamb, G. Mount, D. Pollock, 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, under the commission's General Criteria and Program Criteria for Civil Engineering.

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.

Program Educational Objectives

The objectives for graduates of our BSCE program are as follows:

1. Our graduates engage in entry-level engineering or related employment or advanced education.
2. Our graduates demonstrate competence and ongoing development in their technical and professional skills.
3. Our graduates demonstrate continued growth in effective communication.
4. Our graduates pursue their careers with integrity, service, and professionalism as they serve locally and globally.
5. Our graduates continue to develop an awareness of local and global issues as they learn and 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 CE 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 degree of Master of Science in Environmental Science.

Computer Requirement

All incoming Civil and Environmental Engineering students are required to purchase laptop computers. Please contact the department for details and specifications and/or visit: http://www.ce.wsu.edu/laptop_requirements.htm.

Transfer Students

Students who are planning to transfer to civil engineering at Washington State University from other institutions should coordinate their program with the department chairperson to establish an integrated program leading to the bachelor's degree. Inquiries concerning specific questions are welcome. A strong preparation in mathematics and physics is necessary prior to transfer to minimize the time required to complete the degree requirements. The requirements for direct entry into the Department of Civil and Environmental Engineering upon transfer are the same as listed for 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 (125 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 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>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
ENGR 120	2
MATH 171 [QUAN]	4
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
ECONS 101 [SSCI], 102 [SSCI], or 198	3
HISTORY 105 [ROOT]	3
MATH 172	4
MATH 220	2
UCORE Inquiry ¹	3

Second Year

<i>First Term</i>	<i>Credits</i>
CE 211	3
MATH 273	2
PHYSICS 201	3
PHYSICS 211	1
UCORE Inquiry ¹	6

<i>Second Term</i>	<i>Credits</i>
CE 203	2
CE 215	3
CHEM 106, PHYSICS 202/212, SOE 101, or 102 ²	4
ME 212	3
ME 220	1
STAT 360 or 370	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CE 302	2
CE 315	3
CE 317 [M]	4
CE 330	3
CE 341	3
CST M 254	2

<i>Second Term</i>	<i>Credits</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]	3
MATH 315	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
CE 463	3
CE 480 [M]	1
CE Electives ³	9
CE Laboratory Elective ⁴	3

<i>Second Term</i>	<i>Credits</i>
CE 465 [CAPS] [M] ⁵	4
CE Electives ³	9
Complete Experiential Requirement ⁶	0 - 1
Exit Interview	

¹ Must complete 4 of these 5 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM.

² CHEM 106 strongly recommended for students emphasizing environmental engineering; SOE 101 or 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, 407, 415, 418, 419, and 442); Geotechnical (CE 400, 425, and 435); Hydraulics (CE 407, 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, 407, 419, 425, 431, 433, 434, 435, 436, 442, 450, 451, 456, 460, 473, 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 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.

Description of Courses**Civil Engineering****CE**

203 Civil Engineering Computer Applications 2 (1-3) Course Prerequisite: Admitted to the major in Civil 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, or PHYSICS 205 or concurrent enrollment. Engineering mechanics concepts; force systems; static equilibrium; centroids; centers of gravity; shear and moment diagrams; friction; moments of inertia. Cooperative: Open to UI degree-seeking students.

215 Mechanics of Materials 3 Course Prerequisite: CE 211 with a C or better. Concepts of stress, strain, and their relationships; axial loads, torsion and bending; combined stress; properties of materials; columns, repeated loadings. Cooperative: Open to UI degree-seeking students.

302 Introduction to Surveying 2 (1-3) Course Prerequisite: MATH 171; admitted to the major in Civil Engineering or Construction Management; sophomore 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. 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. 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. 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. 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. 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. 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; 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, Computer Sci, Electrical Engr, Materials Science and 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, Bioengineering, Chemical Engr, Civil Engr, Computer Engr, Computer Science, Construction Mgt, Electrical Engr, Materials Science and Engr, or Mechanical 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. 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. Theory and laboratory measurement techniques used in analyzing environmental quality parameters. Required preparation for graduate students must include CE 341. Credit not granted for both CE 415 and CE 515. 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. 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. 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. 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. Compaction theory and methods; deep densification of soils; advanced consolidation theory, preloading, vertical drains, chemical stabilization, grouting; design with geosynthetics. Required preparation for graduate students must include CE 317. Credit not granted for both CE 425 and CE 525. 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; admitted to the major in Civil Engineering. Design of steel structures by load and resistance factor design (LRFD); behavior and design of beams, columns, tension members and connections. Cooperative: Open to UI degree-seeking students.
- 433 Reinforced Concrete Design 3** Course Prerequisite: CE 330 with a C or better; admitted to the major in Civil 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; admitted to the major in Civil 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. 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. 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 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. 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. 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, Construction Mgt, Electrical Engr, Interior Des, Land Arch, Materials Sci and 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; 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 Bioengineering, Chemical Engineering, Civil Engineering, Computer Engineering, Computer Science, Electrical Engineering, Materials Science and Engineering, or Mechanical Engineering; senior standing. Review of topics to prepare for the Civil Engineering Fundamentals of Engineering Examination. S, F grading.
- 473 Pavement Design** 3 Course Prerequisite: CE 317; ECONS 101 or 102; CE 322 or concurrent enrollment; admitted to the major in Civil 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. 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; 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. Contemporary topics in civil engineering.
- 499 Special Problems** V 1-4 May be repeated for credit. Course Prerequisite: By department permission. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Advanced 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 geoengineering. Required preparation must include CE 317. Cooperative: Open to UI degree-seeking students.
- 512 Dynamics of Structures** 3 Equations of motion, free vibration, damping mechanisms, harmonic, impulse, and seismic loading; shock and seismic response spectra, time and frequency domain analysis, modal analysis, structural dynamics in building codes. Cooperative: Open to UI degree-seeking students.
- 514 Advanced Mechanics of Materials** 3 Elastic stress-strain relations, shear center, unsymmetrical bending, curved beams, elastic stability, elastically supported beams, energy methods, thin plates, shells. Cooperative: Open to UI degree-seeking students.
- 515 Environmental Measurements** 3 (1-6) Theory and laboratory measurement techniques used in analyzing environmental quality parameters. Required preparation for graduate students must include CE 341. Credit not granted for both CE 415 and CE 515. Cooperative: Open to UI degree-seeking students.

- 516 Life Cycle Assessment of Transportation Infrastructure** 3 Pavement life cycle, life cycle cost analysis, and other issues related to pavement durability and sustainability. Recommended preparation: CE 211 or equivalent. 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.
- 520 Climate-Resilient Infrastructure Engineering** 3 Techniques and current engineering practices related to climate change; engineering through life cycle of planning, designing, construction, maintenance, and operation activities. Recommended preparation: CE 317 or equivalent. Cooperative: Open to UI degree-seeking students.
- 521 Data Science in the Built Environment** 3 Fundamentals of modern data science and its applications in built environments including transportation, water, and other distributed civil infrastructure systems, including principles, skills, and tools of data wrangling, exploratory data analysis, and data-driven modeling to tackle real-world problems.
- 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. Required preparation for graduate students must include CE 317. Credit not granted for both CE 425 and CE 525. 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.
- 529 Fundamentals of Environmental Engineering** 3 Mass balance, reaction kinetics, chemical equilibria, chemical transport, atmospheric pollution, lithospheric pollution, and hydrospheric pollution with special reference to groundwater. Recommended for graduate students in Engineering and Sciences.
- 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.
- 544 Water Quality** 3 Water quality, pollution, and remediation of regulated and protected water bodies. Recommended for graduate students in Engineering or Applied Sciences.
- 545 Stochastic Analysis and Modeling for Engineers** 3 Sources of uncertainty in modeling and data analysis of natural processes and concepts and methods used to quantify and manage uncertainty (e.g., Bayesian statistics, Monte Carlo, and data mining and assimilation); skills for representing knowledge and judgment, communicating risk, and improving decision-making.
- 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.
- 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 Simulation 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.
- 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. Required preparation must include MSE 402. (Crosslisted course offered as MSE 543, CE 593.) 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. Required preparation must include MSE 402 or 404. (Crosslisted course offered as CE 597, MSE 547.) 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; junior standing. Administrative procedures found within a heavy/civil construction project and respective documentation.

351 Delivery Systems 2 Course Prerequisite: CON E 252. 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. 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. Basics of scoping, takeoff, costing, pricing, and bidding actual projects live alongside real contractors.

The Edward R Murrow College of Communication

murrow.wsu.edu
Goertzen Hall 117
509-335-8535

Dean and Professor, B. Pinkleton; Associate Dean of Faculty Affairs and College Operations, S. Hust; Director of Graduate Studies, R. Thomas; Assistant Dean for Student Affairs, S. Stout.

Communication is a vital force in society. New practices and techniques in communication require instruction and research to 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 an adobe lab for digital content creation, a student run Public Relations and Advertising firm, a writing lab, the

Murrow Innovation Community, a convergence newsroom, 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 nationally acclaimed media outlets Northwest Public Broadcasting, 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 Majors

The Edward R. Murrow College of Communication is home to two academic departments. Each department offers one undergraduate degree. The department of Journalism and Media Production offers the Bachelor of Art in Journalism and Media Production with four major options: Broadcast News, Broadcast Production, Media Innovation, and Multimedia Journalism. The Department of Strategic Communication offers the Bachelor of Art in Strategic Communication with four major options: Advertising, Public Relations, Integrated Strategic Communication, and Risk & Crisis Communication.

Undergraduate Minors

The Edward R. Murrow College of Communication offers a minor in general Communication as well as minors in Public Relations (See Dept. of Strategic Communication); 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 Degrees

The Murrow College currently offers an online applied Master of Arts program in Strategic Communication as well as an online Master of Arts program in Health Communication and Promotion. The residential graduate program consists of a Master of Arts in Communication and a Doctor of Philosophy in Communication.

Graduate Certificate

The Edward R. Murrow College of Communication offers an online 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 regarding undergraduate programs, or the Graduate Coordinator for more information regarding graduate program offerings.

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 earned in WSU courses. 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 when they 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. 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.
- 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 (2-2) 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.
- 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.
- 388 Strategic Sports Writing** 3 Course Prerequisite: Admitted to a major or minor in the College of Communication; junior standing. Development of writing skills and communication strategies for sports promotion; requires interviews and attendance at sports events and news conference outside of class.
- 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.
- 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.
- 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: 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: Application required; COM 101; COM 102; COM 105; COM 138; completion of COM 210 and 300, both with a C or better; admitted to a major in the College of Communication. Taken in conjunction with an internship, students are introduced to NACE Competencies which employers are seeking in candidates; through a reflective process students connect classroom to career while immersed in the internship experience. S, F grading.

- 497 Practicum in Communication** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By college permission only; admitted to a major or minor in the College of Communication. 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
Goertzen Hall 117
509-335-7333

Professor (Career track/Scholar) and Chair, B. Shors; Professors, L. Pintak, A. Tan; Associate Professors, B. Irom, R. Thomas; Assistant Professors, J. Henrichsen, P. Popiel; Associate Professors (Career track/Scholar), M. Marcelo, W. Raney, T. Simmons, L. Waananen-Jones; Assistant Professors (Career track/Scholar), A. Boggs, J. Foley, M. Loveless, S. Pande; Assistant Professor (Career track/Teaching), G. Bedoyan.

The Journalism and Media Production degree equips students with the knowledge and skills needed to thrive in today's rapidly changing media environment. Through a curriculum that integrates theoretical foundations with practical application, students develop critical thinking, ethical awareness, and professional communication skills.

Courses are designed to foster creativity, analytical insight, and technical proficiency, with hands-on experience in labs and studios outfitted with industry-standard equipment and software. Students who are passionate about storytelling, reporting, media creation, and public engagement will find abundant opportunities to refine their craft and prepare for impactful careers across a broad spectrum of media industries.

Develop the skills to inform and engage audiences across broadcast and digital platforms

The Broadcast News major provides students with comprehensive training in writing, reporting, anchoring, filming, and editing news content for television, radio, and online media. Emphasizing both technical proficiency and journalistic integrity, the curriculum prepares students to produce accurate, compelling, and ethically responsible news coverage across a variety of formats.

Graduates are well-equipped for careers such as television news anchors, broadcast reporters in sports or entertainment, digital content producers, and radio correspondents.

Gain the expertise to bring live and recorded productions to life across platforms

The Broadcast Production major offers students hands-on training in producing, directing, and operating advanced video and audio equipment for a wide range of live and recorded programming.

From multi-camera sports and news broadcasts to music performances and other large-scale events, students learn to manage complex productions in both studio settings and other venues.

The curriculum emphasizes creative problem-solving, technical mastery, and collaborative production practices, preparing graduates for careers as television or film producers, directors, production managers, and video editors.

Master the art of storytelling across platforms in a digital media landscape.

The Multimedia Journalism major prepares students to report, write, and produce compelling stories for a wide range of audiences and platforms. Students gain experience in news writing—from features and sports to investigative reporting—while also developing skills in digital media production, including video, audio, and visual storytelling.

Emphasizing journalistic integrity, creativity, and adaptability, the curriculum equips graduates for careers as reporters, editors, magazine writers, photojournalists, digital content producers, podcasters, and documentary storytellers.

Explore the future of media through technology, creativity, and strategy

The Media Innovation major equips students with the skills to design, develop, and distribute content across mobile, web, and emerging media platforms. With a focus on audience engagement and technological fluency, students learn how to create impactful media products that serve the needs of both organizations and the public.

Blending creativity with technical expertise and strategic thinking, the curriculum prepares graduates for roles such as news producers, media researchers, media technicians, media specialists, and technology managers.

Develop the expertise to engage audiences and shape narratives in the world of sports

The Sport Communication minor equips students with both the theoretical foundation and hands-on skills needed to effectively communicate sports to mass media audiences. Students explore key concepts, principles, and tools to foster positive dialogue in sports contexts, while learning how to craft compelling narratives that resonate with diverse audiences.

This program also provides insights into personal brand development for athletes and professionals in the sports and entertainment industries, as well as the strategies used by sports organizations and companies to manage relationships with fans, sponsors, and the media.

Murrow College Student Professional Code of Conduct

Students completing a degree from the Department of Journalism and Media Production in the Edward R. Murrow College of Communication are expected to acknowledge and adhere to the Murrow College Professional Code of Conduct. Student Code of Conduct can be found here: <https://murrow.wsu.edu/murrow-center-for-student-success/student-code-of-conduct/>.

Schedules of Studies

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

BROADCAST NEWS (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 Journalism and Media Production 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
ENGLISH 101 [WRTG]	3
UCORE Inquiry ¹	6

<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>
COM 210	3
COM 300 [M]	3
UCORE Inquiry ¹	6
Electives	3

<i>Second Term</i>	<i>Credits</i>
COMJOUR 350	3
UCORE Inquiry ¹	4
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 Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, PSCI, SSCL. One lab science (BSCI or PSCI) must be completed.

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.

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Additional majors within the Journalism and Media Production 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 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
ENGLISH 101 [WRTG]	3
UCORE Inquiry ¹	6

<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>
COM 210	3
COM 300 [M]	3
UCORE Inquiry ¹	6
Electives	3

<i>Second Term</i>	<i>Credits</i>
COMJOUR 350	3
UCORE Inquiry ¹	4

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 Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, PSCI, SSCI. One lab science (BSCI or PSCI) must be completed.

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 INNOVATION
(120 CREDITS)**

Media Innovation 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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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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Additional majors within the Journalism and Media Production 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. Media Innovation Major Requirements: COM 420; 481; and 490; COMSTRAT 310; COMSTRAT 324 or COMJOUR 333 (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
ENGLISH 101 [WRTG]	3
UCORE Inquiry ¹	6

<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>
COM 210	3
COM 300 [M]	3
UCORE Inquiry ¹	6
Elective	3

<i>Second Term</i>	<i>Credits</i>
COMJOUR 350	3
UCORE Inquiry ¹	4
Electives	9
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COM 320	3
COM 321	3
COMSTRAT 324 [M] or COMJOUR 333 [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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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.

MULTIMEDIA JOURNALISM (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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Additional majors within the Journalism and Media Production 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 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
ENGLISH 101 [WRTG]	3
UCORE Inquiry ¹	6

<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>
COM 210	3
COM 300 [M]	3
UCORE Inquiry ¹	6
Electives	3

<i>Second Term</i>	<i>Credits</i>
COMJOUR 350	3
UCORE Inquiry ¹	4
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 Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, PSCI, SSCI. One lab science (BSCI or PSCI) must be completed.

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. Five of the six courses required for the minor must be from the College of Communication. Required survey course: COM 225. Additional requirements include two foundation courses from: COMSTRAT 270 or COMJOUR 280; COMSTRAT 312 or 380; COM 320; SPMGT 379 or 464; two applied courses from COM 388, COMJOUR 390, COMSTRAT 482, SPMGT 365 or 367; and one portfolio course from COMJOUR 466; 486; 487; or COMSTRAT 477. Nine credits of upper-division work must be earned in WSU courses or through WSU-approved education abroad or educational exchange courses. Student may be admitted in the minor after they have been admitted into their 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 GPA of 2.0 or higher to remain in the minor. Only two courses from the minor may be applied to a student's major(s). Check with the Murrow Center for Student Success 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.

- 280 Introduction to Photojournalism** 3 The history and practice of photojournalism and its impact on society; evolving technology, styles, and ethics of documentary photography and the role of visual storytelling in our understanding of news events.
- 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.
- 365 Entertainment and Commercial Video Production of Fiction Filmmaking** 3 Course Prerequisite: Admitted to a major or minor in the College of Communication; sophomore standing. Hands-on experience in producing, writing, shooting, and editing original material, programs, and segments from concept to completion; work will be shown in class and may appear on websites.
- 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 Media Entrepreneurship** 3 Course Prerequisite: Admitted to a major or minor in the College of Communication; junior standing. Lessons from local and network television guests about their businesses, reaching customers, and entrepreneurial ideas within the evolving media landscape; final project focusing on an entrepreneurial idea.
- 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. 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.

Department of Strategic Communication

murrow.wsu.edu
Goertzen Hall 117
509-335-7333

Associate Dean, Professor, and Chair, S. Hust; Director

of Integrated Strategic Communication (Vancouver) and Scholarly Associate Professor, N. Iyer; Director of Murrow Online and Scholarly Assistant Professor, I. Haider; Dean and Professor, B. Pinkleton; Professors, E. Austin, P. Bolls, P. Borah, J. Willoughby; Associate Professors, T. Gillling, Y. Lee, Y. I. Lee; Assistant Professors, Q. Huang, N. O'Donnell, W. Peng; Scholarly Professor, R. Cooney; Scholarly Associate Professors, B. Atwood, J. Barnes, E. Candello (Vancouver), C. Hawkins-Jedlicka, L. Paxson (Everett), C. Thomas; Scholarly Assistant Professors, M. Galey, I. Haider, M. Schotzko, T. Thompson, A. Willis; Teaching Assistant Professors, T. Edwards, M. Kistler.

Students pursuing a Bachelor of Arts in Strategic Communication develop the skills to communicate creatively and persuasively, building lasting and mutually beneficial relationships between organizations and their key audiences.

This program equips students with the tools to craft strategic messages that resonate with target populations across various media channels, fostering trust, engagement, and loyalty. Through a combination of theoretical foundations and hands-on experience, students learn to navigate complex communication landscapes and effectively manage public perception.

In addition to mastering the art of storytelling, students gain expertise in areas such as media relations, crisis communication, brand development, advertising, and public relations. The curriculum emphasizes the importance of ethical communication practices, ensuring students understand how to communicate responsibly and with social impact.

Graduates of the program are prepared for a wide range of careers in corporate communication, public affairs, advertising, nonprofit organizations, media management, as well as in the sport and health sectors. With the ability to drive organizational success, students are equipped to create innovative, effective communication strategies that promote engagement and positive outcomes in these dynamic industries.

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.

The Advertising major teaches students how to create compelling campaigns that effectively appeal to consumers across a variety of media platforms.

This program provides students with the knowledge and skills needed to design, implement, and evaluate advertising initiatives that resonate with target audiences. Through a combination of creative strategy, consumer psychology, and media management, students learn to craft persuasive messages that drive engagement and brand loyalty.

Students will gain hands-on experience in areas such as digital media planning, advertising sales, social media strategy, and campaign analytics. The curriculum emphasizes both the creative and analytical aspects of advertising, ensuring students develop a well-rounded understanding of how to craft impactful advertising strategies in a fast-evolving media landscape.

Graduates of the program are prepared for a variety of career opportunities in the advertising industry, including roles such as advertising coordinators, digital media planners, social media strategists, ad

sales professionals, and creative directors.

The Public Relations major equips students with the skills to build and maintain positive relationships with key stakeholders and shape a favorable public image for organizations or individuals.

This program focuses on developing strategic communication techniques to manage public perceptions, enhance brand reputation, and foster trust between clients and their audiences. Students will gain expertise in crafting compelling narratives, managing media relations, and executing effective communication campaigns across diverse platforms.

Through both theoretical study and hands-on experience, students learn how to navigate crisis communication, organize impactful events, and engage with the media to secure coverage that aligns with organizational goals. The curriculum emphasizes the importance of ethical communication practices, ensuring students are prepared to manage sensitive situations with professionalism and integrity.

Graduates of the program are well-prepared for careers as public relations specialists, event planners, media relations professionals, lobbyists, development officers, campaign managers, and social engagement managers.

The Risk and Crisis Communication major prepares students to design and implement effective communication strategies to navigate and manage crises at both the individual and societal levels.

This program focuses on equipping students with the skills needed to guide organizations and industries through times of risk and crisis by crafting clear, strategic messages that maintain trust and minimize damage. Students will learn to address complex challenges through crisis communication campaigns that respond to public concerns, manage reputational risks, and protect organizational integrity.

Through a combination of theoretical frameworks and practical application, students will gain expertise in risk assessment, crisis management, media relations, and stakeholder communication. The curriculum emphasizes ethical decision-making and the ability to maintain calm under pressure, preparing students to effectively manage communication during high-stakes situations.

Graduates of the program are prepared for careers as crisis communication, crisis interventionists, health communication coordinators, risk communication specialists, and public information officers.

The Integrated Strategic Communication major prepares students to create impactful communication products that address organizational objectives across multiple media platforms.

This program teaches students how to acquire and analyze information to develop persuasive and effective messages in various formats, including writing, visual content, and spoken communication. Students will learn to craft strategic communications that engage audiences and drive action, leveraging a combination of media channels to achieve desired outcomes.

The curriculum emphasizes a blend of creative, analytical, and strategic skills, focusing on how to integrate different communication methods to create cohesive and effective campaigns. Students will gain expertise in areas such as digital advertising, brand strategy, social media, and consumer analysis,

equipping them to navigate the ever-evolving media landscape.

Graduates of the program are prepared for careers as digital advertising coordinators, social media strategists, brand strategists, and consumer analysts, with the ability to develop and execute integrated communication strategies that connect with diverse audiences.

Health Communication and Promotion minor. A minor in Health Communication & Promotion focuses on how complex health information is communicated to the public. This includes provider-patient communication, public health campaigns, health media, and organizational communication. This minor aims to equip students with the skills to effectively convey complex health information to general audiences. 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.

Public Relations minor. Public relations is all about managing how people see and connect with brands in our fast-paced world. The Public Relations minor teaches skills like persuasive writing, brand awareness, and crisis communication, making it valuable for students from different fields.

The Public relations minor is available to students pursuing a degree outside of Murrow College and to students completing a degree from the Murrow College with the exception of the Public Relations major.

The minor in Public Relations 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. Please meet with a Murrow advisor in the Murrow Center for Student Success to discuss this minor.

Students completing a degree from the Department of Strategic Communication in the Edward R. Murrow College of Communication are expected to acknowledge and adhere to the Murrow College Professional Code of Conduct. Student Code of Conduct can be found here: <https://murrow.wsu.edu/murrow-center-for-student-success/student-code-of-conduct/>.

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, with a "W" counting 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 Communication 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 305; COMSTRAT 310; COMSTRAT 395; COMSTRAT 301; one Advanced Media and Society course from approved list (in footnotes); and one Specialization Elective course (in footnotes) (21 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>
COM 101	3
COM 138	3
ENGLISH 101 [WRTG]	3
UCORE Inquiry ¹	6

<i>Second Term</i>	<i>Credits</i>
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
UCORE Inquiry ¹	4

Second Year

<i>First Term</i>	<i>Credits</i>
COM 210	3
COM 300 [M]	3
UCORE Inquiry ¹	6
Elective	3

<i>Second Term</i>	<i>Credits</i>
COMSTRAT 301	3
COMSTRAT 305	3
COMSTRAT 310	3
COMSTRAT 380	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COM 309	3
COMSTRAT 381	3
COMSTRAT 395	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 Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, PSCI, SSCI. One lab science (BSCI or PSCI) must be completed.

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, with a "W" counting 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 305; COMSTRAT 310; COMSTRAT 395; COMSTRAT 301; one Advanced Media and Society course from approved list (in footnotes) (18 credits).

3. Major Requirements for Integrated Strategic Communication: 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>
COM 101	3
COM 138	3
ENGLISH 101 [WRTG]	3
UCORE Inquiry ¹	6

<i>Second Term</i>	<i>Credits</i>
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
UCORE Inquiry ¹	4

Second Year

<i>First Term</i>	<i>Credits</i>
COM 210	3
COM 300 [M]	3
COMSTRAT 301	3
UCORE Inquiry ¹	6

<i>Second Term</i>	<i>Credits</i>
COM 309	3
COMJOUR 333	3
COMSTRAT 305	3
COMSTRAT 312	3
Electives ²	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COMSTRAT 310	3
COMSTRAT 380	3
COMSTRAT 395	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 Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, PSCI, SSCI. One lab science (BSCI or PSCI) must be completed.

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, with a "W" counting 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 305; COMSTRAT 310; COMSTRAT 395; COMSTRAT 301; one Advanced Media and Society course from approved list (in footnotes); and one Specialization Elective course (in footnotes) (21 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>
COM 101	3
COM 138	3
ENGLISH 101 [WRTG]	3
UCORE Inquiry ¹	6

<i>Second Term</i>	<i>Credits</i>
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
UCORE Inquiry ¹	4

Second Year

<i>First Term</i>	<i>Credits</i>
COM 210	3
COM 300 [M]	3
COMSTRAT 301	3
UCORE Inquiry ¹	6

<i>Second Term</i>	<i>Credits</i>
COMJOUR 333	3
COMSTRAT 305	3
COMSTRAT 310	3
COMSTRAT 312	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COM 309	3
COMSTRAT 383 [M]	3
COMSTRAT 395	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 Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, PSCI, SSCI. One lab science (BSCI or PSCI) must be completed.

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.

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, with a "W" counting 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 305; COMSTRAT 310; COMSTRAT 395; COMSTRAT 301; one Advanced Media and Society course from approved list (in footnotes); and one Specialization Elective course (in footnotes) (21 credits).

3. Major Requirements: Risk and Crisis Communication: COMSTRAT 324; COMSTRAT 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>
COM 101	3
COM 138	3
ENGLISH 101 [WRTG]	3
UCORE Inquiry ¹	6

<i>Second Term</i>	<i>Credits</i>
COM 102 [COMM]	3
COM 105 [HUM]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
UCORE Inquiry ¹	4

Second Year

<i>First Term</i>	<i>Credits</i>
COM 210	3
COM 300 [M]	3
COMSTRAT 301	3
UCORE Inquiry ¹	6

<i>Second Term</i>	<i>Credits</i>
COMSTRAT 305	3
COMSTRAT 310	3
Major Elective ²	3
Specialization Course ³	3
Electives ⁴	3
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	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
COM 486	3
Major Elective ²	3
Electives ⁴	5

¹ Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, PSCI, SSCI. One lab science (BSCI or PSCI) must be completed.

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**

The Health Communication and Promotion Minor requires a minimum of 18 credits. Required courses include COM 210, 309, COMSTRAT 301, 310, 477, and 478. Nine credits of upper-division work must be earned in WSU courses or through WSU-approved education abroad or educational exchange courses. Students may be admitted to the minor once they are admitted to a major. 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.

Public Relations

The minor in Public Relations in the Department of Strategic Communication requires a minimum of 18 credits. Required courses are: COM 210; COMSTRAT 270 or 383, 301, 310, 312, and COMSTRAT 395 or COM 486. Nine credits of upper-division work must be earned in WSU courses or through WSU-approved education abroad or educational exchange courses. A student may be admitted in the minor once they have been admitted into their major with a WSU GPA of 2.7 or higher. Students must maintain a GPA of 2.0 or higher to remain in the minor. Only two courses from the minor may be applied to a student's major(s). Check with the Murrow Center for Student Success 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**

270 Personal Branding for Athletes, Influencers, and Creators 3 Concepts and applications of personal branding including individual branding, representation, social media strategies for success, and the principles of digital storytelling.

275 Strategic Communication Seminar V 1-3 May be repeated for credit; cumulative maximum 9 hours. Various specialty topics in strategic communication.

285 [EQJS] Culture and Communication in the Workplace 3 Core concepts from research in workplace culture applied to daily communications and relationship management in personal and professional settings.

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.

305 The Creative Class: Creativity, Problem Solving, and the Role of the Creatives in the Idea Industry 3 Course Prerequisite: COM 210 with a C or better. Creativity in theory, process, and practice within the context of the idea industry (with an emphasis on advertising and public relations).

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. Development of critical thinking, information gathering, and persuasive writing skills using different forms of argumentation; voice, tone, form, structure are emphasized.

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.

380 Advertising Principles and Practices 3 Advertising history, theory and practice by advertising agencies and organizations.

381 [M] Advertising Creative Strategy and Execution 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.
- 405 Crimson Creative: The Student Firm** 3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: COM 300 with a C or better; COMSTRAT 310; COMSTRAT 312 or 380; admitted to a major in the College of Communication; junior standing. Experience working with clients as a member of an account team; development of leadership skills and a professional portfolio.
- 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: 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.
- 482 Strategic Communication and Applied NIL Branding Strategies for Athletes, Creators, and Entertainers** 3 Course Prerequisite: COMSTRAT 312 or COMSTRAT 380; admitted to a major or minor in the College of Communication; junior standing. Knowledge and skills for understanding the emerging dynamics of Name, Image, and Likeness (NIL) opportunities and creating a personal brand through strategic communication.
- 483 Risk Communication** 3 Course Prerequisite: 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: By permission only; COM 101; COM 102; COM 105; COM 138; COM 210 and 300, both 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.

Department of Criminal Justice and Criminology

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Chair and Associate Professor, M.-A. Neuilly (Wolf); Professors, D. Brody, L. Drapela, C. Hemmens, F. Lutze, D. Makin; Associate Professors, K. DuBois, A. Pedneault, D. Willits; Assistant Professors, C. Franklin, H. Mellinger; Teaching Associate Professor, J. Snyder; Staff Scientist, S. Ghosh; Professor Emeritus, M. Stohr.

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.

The course of study leads to the Bachelor of Arts in Criminal Justice and Criminology, and the Master's Degree (thesis and non-thesis tracks) 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 empowers students to be innovative problem-solvers, ethical decision-makers, and effective communicators in the field of criminal justice. Through interdisciplinary coursework and experiential learning opportunities, students will develop a comprehensive understanding of crime and criminal justice at the local, state, national, and international levels, including justice administration, crime determinants, emerging technologies, and global perspectives. Graduates are well-equipped to address the challenges of a rapidly changing criminal justice and public safety landscape by emphasizing evidence-based decision-making, policy analysis, community engagement, and creative evaluation.

- Goal 1: Criminal Justice Inputs, Outcomes, and

Institutions: Understand common theoretical perspectives on crime as well as general trends, correlates, and measurement issues related to the criminal justice system. Comprehend how criminal justice organizations are organized and managed, and the legal principles upon which criminal justice actors must operate to protect the rights of all members of society.

- Goal 2: Quantitative, Scientific, and Technological Literacy: Read, understand, analyze, and synthesize social scientific data and legal doctrines relevant to the study of crime, the administration of justice, and associated public policies.

- Goal 3: Institutional and Public Communication: Be able to effectively present, convey, and discuss ideas and issues orally and in writing.

- Goal 4: Diversity, Equity, and Justice: Understand and effectively articulate issues related to diversity as they relate to crime, victimization, and the criminal justice system.

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 1 course must be an [M]. The Bachelor of Arts in Criminal Justice and Criminology requires a minimum of 30 credits in CRM J.

First Year

<i>First Term</i>	<i>Credits</i>
CRM J 101 [SSCI]	3
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN]	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
Communication [COMM] or Written Communication [WRTG]	3
CRM J 201	3
Equity and Justice [EQJS] or CRM J 205 [EQJS]	3
HISTORY 105 [ROOT]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
CRM J 311	3
Humanities [HUM]	3
Electives	6

<i>Second Term</i>	<i>Credits</i>
CRM J 321	3
Diversity [DIVR]	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, or Electives ³	9

<i>Second Term</i>	<i>Credits</i>
CRM J 480 [CAPS] [M]	3
Foreign Language, if needed, or Electives ³	10

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² CRM J Electives (12 credits): Any CRM J course not used to fulfill the CRM J core requirements. Must include one [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 300-400 level and earned in WSU courses 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 [EQJS] Advancing Justice: Addressing Power and Inequity in the Justice System** 3 The pursuit of justice and the historical, contemporary, and future issues and challenges facing society and the criminal justice system.
- 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; junior standing. 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; junior standing. 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; junior standing. 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. Recommended preparation: SOC 101, PSYCH 105, or CRM J 101. (Crosslisted course offered as PSYCH 468, CRM J 468, SOC 468.)
- 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. Course Prerequisite: By instructor permission. 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.
- 498 The Complex Social Interaction Bodycam Research Lab** V 1 (0-3) to 4 (0-12) Course Prerequisite: By instructor permission; CRM J 101. Experimental research conducted under the jurisdiction of an approving faculty member; may include analysis of individual, situational, and environmental factors on police interactions, examination of the influence of various contextual factors on community policing dynamics, and critical examination of police decision-making and accountability in complex social interactions. S, F grading.
- 499 Special Problems** V 1-4 May be repeated for credit. Course Prerequisite: By Instructor permission; 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.
- 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.
- 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.

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
Clark 379
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Professor and Department Chair, L. Carpenter-Boggs. CROP SCIENCE: Professors, I. C. Burke, A. H. Carter, K. S. Gill, S. Hulbert, P. W. Jacoby, R. T. Koenig, D. Lyon, K. M. Murphy, M. M. Neff, M. O. Pumphrey; Teaching Professor, S. Rustgi; Associate Professors, R. Brueggeman, M. L. Friesen, C. Neely, Z. Zhang; Assistant Professor, R. Liu; Research Assistant Professor, M. Colley, A. Hauvermale. SOIL SCIENCE: Professor, M. Flury; Associate Professors, D. Griffin LaHue, G. LaHue, T. S. Sullivan; Assistant Professors, J. Antonangelo, H. Neely, Su. Singh; Research Assistant Professor, Sh. Singh; Teaching Associate Professor, C. Perillo; Teaching Assistant Professor, L. Brueggeman. AGRICULTURE AND FOOD SYSTEMS: Professor, J. Goldberger; Associate Professor, A. Warner; Teaching Associate Professors, J. D. Baser, H. Henning; Teaching Assistant Professors, H. Henning, T. Wheeler. ADJUNCT AND AFFILIATE FACULTY: R. Abi-Ghanem, K. Altendorf, K. Bair, S. Bramwell, C. Campbell, P. Castiglione, D. Cobos, D. Collins, C. Coyne, K. Garland-Campbell, L. DeVetter, D. Gelardi, G. Heineck, D. Huggins, B. Irish, D. Jarvis, A. Kiszonas,

M. LeTourneau, R. McGee, J. Payumo, M. Perrigue, C. L. Phillips, C. O. Qualset, C. Reardon, C. Steber, H. Tao, M. Warburton. PROFESSORS EMERITI: J. Burns, C. G. Cogger, J. R. Davenport, J. Durfey, S. Fransen, B. E. Frazier, S. O. Guy, J. B. Harsh, S. S. Jones, S. Kuo, T. Lumpkin, W. Pan, R. Parker, F. Pierce, J. Reganold, W. Schillinger, 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 six 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. 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.

Human Nutrition and Food Systems

Students will study the connection from fields to plates to human health. This major focuses on understanding our obligation to meet the nutritional needs of a growing population by producing sustainable, nutrient-rich foods, that benefit the health of people and the planet.

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 4 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 credits of upper-division work earned in WSU courses 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 earned in WSU courses or through WSU-approved education abroad or educational exchange courses.

Soil Science

A minor in Soil Science requires a minimum of 16 credits, at least 9 of which must be 300-400-level work earned in WSU courses or through WSU-approved education abroad or educational exchange courses. Required courses: SOIL SCI 201, and 1 credit of Soil Science-related experiential learning (SOIL SCI 495, 498, or 499). Electives: SOIL SCI 202, 302, 414, 415, 441, 442, 443, 452, or AFS 418. Only one course will be awarded from the following: SOIL SCI 368, 374, and 468. Courses used for the minor in Soil Science may not be used for the minor in Geospatial Analysis. 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

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. Recommended preparation: CROP SCI 305; PL P 429. (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. 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 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.

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 or HORT 345. Advanced concepts in plant genomics and biotechnology with emphasis on approaches, techniques, and application. Recommended preparation: BIOLOGY 420 or HORT 416. (Crosslisted course offered as HORT 480, CROP SCI 480.)

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. 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.

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. Recommended preparation: CROP SCI 305; PL P 429. (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. 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. Recommended preparation: BIOLOGY 474; MBIOS 478. (Crosslisted course offered as CROP SCI 545, ANIM SCI 545, BIOLOGY 545, HORT 545, PL P 545.) 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.

105 [PSCI] Applied Chemistry in Soil, Agriculture, and Environmental Sciences 3 Integration of basic chemistry principles with applications in soil, agriculture, and environmental sciences with applied laboratory activities that highlight the role of chemistry in soil health, crop production, and environmental quality.

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. Recommended preparation: SOIL SCI 201. (Crosslisted course offered as SOIL SCI 302, AFS 302.)

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. Recommended preparation: Basic knowledge of soils (e.g. SOIL SCI 201 or equivalent; CHEM 106; PHYSICS 102). (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.
- 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.
- 443 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. Course Prerequisite: By instructor permission. Planned and supervised professional work experience. 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 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 department permission. 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. Required preparation must include undergraduate statistics through applied multiple regression. (Crosslisted course offered as SOIL SCI 508, STAT 508.) 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. Recommended preparation: Basic knowledge of soils (e.g. SOIL SCI 201 or equivalent; CHEM 106; PHYSICS 102). (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.
- 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.
- 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
Everett 419
425-405-1719

Director and Scholarly Professor, S. Lapin (Everett); Associate Professor, X. Chen (Pullman); Assistant Professor, A. Kaul (Pullman); Teaching Assistant Professors, B. Choudhury (Global), G. Nurmukhametov (Everett); Lecturers, M. Sivakumaran (Pullman), T. Trbojevic (Everett); Adjunct Professor, R. Crate (Everett).

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 ten specialization options, including the General option, are curricular partnerships between the College of Arts and Sciences and the Voiland College of Engineering and Architecture, Carson College of Business, College of Education, Sport, and Human Sciences, and the College of Agriculture, Human, and Natural Resource Sciences.

Students graduating with a BS in Data Analytics from WSU will be able to:

- Understand the theory and basis of data analytics (including computing, statistics and mathematics) to be able to apply in the practice of data analytics.
- Identify, locate, evaluate, collect, compile and responsibly (ethically, legally, socially, professionally, and securely) use data and associated materials from multiple sources relevant for data analytics.
- Customize and utilize data analytics and data management software packages in order to manage and apply exploratory, descriptive and inferential data analytics techniques to complex data sets.
- Appropriately define data problems, formulate questions, develop and design an analysis plan, and interpret the results of these analyses.
- Effectively communicate data analytics techniques and results in a scientifically and technologically informed way to the academic community, business/industry professionals, and the general public in writing, discussion, digital media, and other communication formats.
- Work with a team of students in consultation with a client to apply a full range of data analytics techniques drawn from computer science, mathematics and statistics to address a real-world application problem.

Schedules of Studies

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

DATA ANALYTICS - 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

First Term	Credits
CPT S 121 or 131, or CS 121 ¹	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

Second Term	Credits
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3

MATH 172	4
Electives	5

Second Year

First Term	Credits
DATA 219	3
ECONS 102	3
MATH 220 or DATA 225	2 or 3
STAT 360	3
UCORE Inquiry ²	4

Second Term	Credits
ACCTG 230	3
DATA 303	1
DATA 319	3
FIN 325	3
UCORE Inquiry ²	3
Electives	2
Complete Writing Portfolio	

Third Year

First Term	Credits
DATA 324 ¹	3
MATH 405	3
STAT 435 [M]	3
UCORE Inquiry ²	3
Electives or MATH 300 ³	3

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
FIN 350	3
STAT 437	3
Electives	6

Fourth Year

First Term	Credits
DATA 422	3
DATA 498 Internship	3
STAT 443	3
UCORE Inquiry ²	3
Electives or B LAW 210, or MATH 300 ³	3

Second Term	Credits
DATA 424 [CAPS] [M]	3
PHIL 450 [HUM]	3
STAT 446	3
Electives or B LAW 210, or MATH 300 ³	7

¹ CS courses offered at Vancouver only.
² Must complete 4 of these 5 UCORE designations: ARTS, BSCI, DIVR, EQJS, PSCI. One lab science (BSCI or PSCI) must be completed.
³ B LAW 210 and MATH 300 are recommended electives.

DATA ANALYTICS - 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

First Term	Credits
CPT S 121 or 131, or CS 121 ¹	4
DATA 115	3

ENGLISH 101 [WRTG] 3
MATH 171 [QUAN] 4

Second Term Credits
HISTORY 105 [ROOT] 3
MATH 220 or DATA 225 2 or 3
UCORE Inquiry² 3
Electives 6

Second Year

First Term Credits
BIOLOGY 106 [BSCI] 4
DATA 219 3
SOIL SCI 201 3
Electives 5

Second Term Credits
Communication [COMM] or Written
Communication [WRTG] 3
DATA 303 1
DATA 319 3
SOE 204 4
UCORE Inquiry² 3
Electives 2
Complete Writing Portfolio

Third Year

First Term Credits
DATA 324 3
STAT 435 [M] 3
UCORE Inquiry² 3
Option Course³ 3 or 4
Electives⁴ 3

Second Term Credits
STAT 437 3
UCORE Inquiry² 3
Electives⁴ 9

Fourth Year

First Term Credits
DATA 422 3
DATA 498 Internship 3
SOIL SCI 368 3
Electives⁴ 6

Second Term Credits
DATA 424 [CAPS] [M] 3
PHIL 450 [HUM] 3
SOIL SCI 468 4
Electives⁴ 6

¹ CS courses offered at Vancouver only.

² Must complete 4 of these 5 UCORE designations: ARTS, DIVR, EQJS, PSCI, SSCI.

³ 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.

⁴ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need to include a writing in the major [M] course to meet University requirements.

DATA ANALYTICS - 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

First Term Credits
CPT S 121 or 131, or CS 121¹ 4
DATA 115 3
ENGLISH 101 [WRTG] 3
MATH 171 [QUAN] 4
Electives 1

Second Term Credits
ECONS 101 [SSCI] 3
HISTORY 105 [ROOT] 3
MATH 220 or DATA 225 2 or 3
Electives 7

Second Year

First Term Credits
ACCTG 230 3
DATA 219 3
STAT 360 3
UCORE Inquiry² 4
Electives 2

Second Term Credits
Communication [COMM] or Written
Communication [WRTG] 3
DATA 303 1
DATA 319 3
MIS 250 3
UCORE Inquiry² 3
Electives 2
Complete Writing Portfolio

Third Year

First Term Credits
DATA 324 3
ECONS 311 3
STAT 435 [M] 3
UCORE Inquiry² 3
Electives 3

Second Term Credits
MIS 372 3
STAT 437 3
UCORE Inquiry² 3
Electives 6

Fourth Year

First Term Credits
DATA 422 3
DATA 498 Internship 3
Choice Pair Course³ 3
Electives 6

Second Term Credits
DATA 424 [CAPS] [M] 3
PHIL 450 [HUM] 3
Choice Pair Course³ 3
Electives 6

¹ CS courses offered at Vancouver only.

² Must complete 4 of these 5 UCORE designations: ARTS, BSCI, DIVR, EQJS, PSCI. One lab science (BSCI or PSCI) must be completed.

³ 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.

DATA ANALYTICS - 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

First Term Credits
CPT S 121 or 131 4
DATA 115 3
ENGLISH 101 [WRTG] 3
MATH 171 [QUAN] 4
Electives 1

Second Term Credits
CPT S 122 or 132 4
HISTORY 105 [ROOT] 3
UCORE Inquiry¹ 3
Electives 5

Second Year

First Term Credits
CPT S 215 or 223 3
MATH 216 3
MATH 220 or DATA 225 2 or 3
STAT 360 3
UCORE Inquiry¹ 4

Second Term Credits
Communication [COMM] or Written
Communication [WRTG] 3
CPT S 315 3
CPT S 317 3
UCORE Inquiry¹ 3
Electives 3
Complete Writing Portfolio

Third Year

First Term Credits
CPT S 322 3
CPT S 415 3
MATH 301 3
STAT 435 [M] 3
UCORE Inquiry¹ 3

Second Term Credits
CPT S 350 3
CPT S 451 3
MATH 364 3
STAT 437 3
UCORE Inquiry¹ 3

Fourth Year

First Term Credits
CPT S 434, 437, or 440 3
DATA 498 Internship 3
MATH 420 3
Electives 6

Second Term Credits
DATA 424 [CAPS] [M] 3
PHIL 450 [HUM] 3
Option Courses² 9

¹ Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, PSCI, SSCI. One lab science (BSCI or PSCI) must be completed.

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 ANALYTICS - 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 ¹	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
Electives	1

<i>Second Term</i>	<i>Credits</i>
HISTORY 105 [ROOT]	3
MATH 220 or DATA 225	2 or 3
UCORE Inquiry ²	3
Electives	7

Second Year

<i>First Term</i>	<i>Credits</i>
DATA 219	3
DTC 201 [ARTS]	3
STAT 360	3
UCORE Inquiry ²	4
Electives	2

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
DATA 303	1
DATA 319	3
DTC 209	3
UCORE Inquiry ²	3
Electives	2
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
DATA 324	3
STAT 435 [M]	3
Option Courses ³	6
Electives	3

<i>Second Term</i>	<i>Credits</i>
STAT 437	3
UCORE Inquiry ²	3
Option Courses ³	6
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
DATA 422	3
DATA 498 Internship	3
Electives	9

<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450 [HUM]	3
Electives	9

¹ CS courses offered at Vancouver only.

² Must complete 4 of these 5 UCORE designations: BSCI, DIVR, EQJS, PSCI, SSCI. One lab science (BSCI or PSCI) must be completed.

³ Option Courses (12 credits): Choose four from: DTC 335, 336, 354, 355, 435, 477, 478.

DATA ANALYTICS - 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 ¹	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 220 or DATA 225	2 or 3
Electives	6

Second Year

<i>First Term</i>	<i>Credits</i>
DATA 219	3
ECONS 102	3
ECONS 301	4
STAT 360	3
UCORE Inquiry ²	4

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
DATA 303	1
DATA 319	3
UCORE Inquiry ²	3
Electives	5
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
DATA 324	3
ECONS 302	3
STAT 435 [M]	3
UCORE Inquiry ²	3
Option Course ³	3

<i>Second Term</i>	<i>Credits</i>
STAT 437	3
UCORE Inquiry ²	3
Option Courses ³	6
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
DATA 422	3
DATA 498 Internship	3
Electives	9

<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450 [HUM]	3
Electives	9

¹ CS courses offered at Vancouver only.

² Must complete 4 of these 5 UCORE designations:

ARTS, BSCI, DIVR, EQJS, PSCI. One lab science (BSCI or PSCI) must be completed.

³ Option Courses (9 credits): Choose three from ECONS 311, 321, 323, 324, 327, 424, 425, 426, 451, 452, 490, STAT 443.

DATA ANALYTICS - 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 ¹	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
HISTORY 105 [ROOT]	3
MATH 220 or DATA 225	2 or 3
UCORE Inquiry ²	3
Electives	5

Second Year

<i>First Term</i>	<i>Credits</i>
DATA 219	3
STAT 360	3
UCORE Inquiry ²	4
Minor Course ³	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
DATA 303	1
DATA 319	3
UCORE Inquiry ²	3
Minor Courses ³	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
DATA 324	3
STAT 435 [M]	3
UCORE Inquiry ²	3
Minor Courses or Electives ³	9

<i>Second Term</i>	<i>Credits</i>
STAT 437	3
UCORE Inquiry ²	3
Minor Courses or Electives ³	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
DATA 422	3
DATA 498 Internship	3
Electives	9

<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450 [HUM]	3
Electives	10

¹ CS courses offered at Vancouver only.

² Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, PSCI, SSCI. One lab science (BSCI or PSCI) must be completed.

³ In consultation with their advisor, students are encouraged to fulfill the requirements for this option by completing a minor, additional major, or dual degree. Post baccalaureate students may use coursework from a prior degree. Courses must include sufficient 300-400-level coursework to meet the University requirement of 40 upper-division credits.

DATA ANALYTICS - 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

First Term	Credits
CPT S 121 or 131, or CS 121	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

Second Term	Credits
BIOLOGY 106 [BSCI]	4
HISTORY 105 [ROOT]	3
MATH 220 or DATA 225	2 or 3
Electives	6

Second Year

First Term	Credits
BIOLOGY 107	4
CHEM 101 [PSCI] or CHEM 105 [PSCI]	4
DATA 219	3
STAT 360	3

Second Term	Credits
CHEM 102 or CHEM 106	4
Communication [COMM] or Written Communication [WRTG]	3
DATA 303	1
DATA 319	3
UCORE Inquiry ¹	3
Electives	2
Complete Writing Portfolio	

Third Year

First Term	Credits
BIOLOGY 301 or MBIOS 301	4
DATA 324	3
STAT 435 [M]	3
UCORE Inquiry ¹	3
Electives	3

Second Term	Credits
STAT 437	3
UCORE Inquiry ¹	3
Recommended Option Course or Electives ²	9

Fourth Year

First Term	Credits
DATA 422	3
DATA 498 Internship	3
Recommended Option Course or Electives ²	3
Electives	6

Second Term	Credits
DATA 424 [CAPS] [M]	3

PHIL 450 [HUM]	3
Electives	9

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, SSCI.

² Recommended Option Courses: BIOLOGY 335, 474, MBIOS 478.

DATA ANALYTICS - 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

First Term	Credits
CPT S 121 or 131, or CS 121 ¹	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
Electives	1

Second Term	Credits
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH 172	4
Electives	4

Second Year

First Term	Credits
CHEM 106	4
DATA 219	3
STAT 360	3
UCORE Inquiry ²	3

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
DATA 303	1
DATA 319	3
MATH 273	2
UCORE Inquiry ²	3
Electives	3
Complete Writing Portfolio	

Third Year

First Term	Credits
DATA 324	3
PHYSICS 201	3
PHYSICS 211	1
STAT 435 [M]	3
UCORE Inquiry ²	3
Electives ³	3

Second Term	Credits
PHYSICS 202	3
PHYSICS 212	1
STAT 437	3
UCORE Inquiry ²	3
Option Course ⁴	3
Electives ³	3

Fourth Year

First Term	Credits
DATA 422	3
DATA 498 Internship	3

Option Course ⁴	1 or 2
Electives ³	8

Second Term	Credits
DATA 424 [CAPS] [M]	3
PHIL 450 [HUM]	3
Electives ³	9

¹ CS courses offered at Vancouver only.

² Must complete 4 of these 5 UCORE designations: ARTS, BSCI, DIVR, EQJS, SSCI.

³ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need to include a writing in the major [M] course to meet University requirements.

⁴ Option Course (4 or 5 credits): Choose one pair from CHEM 331 and 333 or CHEM 332 and 334.

DATA ANALYTICS - 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

First Term	Credits
CPT S 121 or 131, or CS 121 ¹	4
DATA 115	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
Electives	1

Second Term	Credits
HISTORY 105 [ROOT]	3
MATH 220 or DATA 225	2 or 3
SOC 101 [SSCI]	3
Electives	7

Second Year

First Term	Credits
DATA 219	3
POL S 201 or SOC 317	3
STAT 360	3
UCORE Inquiry ²	4
Electives	2

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
DATA 303	1
DATA 319	3
SOC 340 [EQJS]	3
UCORE Inquiry ²	3
Electives	2
Complete Writing Portfolio	

Third Year

First Term	Credits
DATA 324	3
POL S 316	3
STAT 435 [M]	3
UCORE Inquiry ²	3
Option Course ³	3

Second Term	Credits
STAT 437	3

Option Courses ³	6
Electives ⁴	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
DATA 422	3
DATA 498 Internship	3
Electives ⁴	9
<i>Second Term</i>	<i>Credits</i>
DATA 424 [CAPS] [M]	3
PHIL 450 [HUM]	3
Electives ⁴	9

¹ CS courses offered at Vancouver only.

² Must complete 3 of these 4 UCORE designations: ARTS, BSCI, DIVR, PSCI. One lab science (BSCI or PSCI) must be completed

³ Option Courses (9 credits): Choose three from ED PSYCH 400, 404, PHIL 350, POL S 416, PSYCH 105, 333, SOC 230.

⁴ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need to include a writing in the major [M] course to meet University requirements.

Certificates

Advanced Data Science

Completion of the Advanced Data Science Certificate requires a total of 15 credits. Students are required to complete DATA 422, 435, 437, PHIL 450, and three approved credits taken from Business.

This certificate, combined with the Foundations of Data Analytics Certificate, the Intermediate Data Science Certificate, an internship course, and a capstone course, fulfills the major requirements of the Bachelor of Science in Data Analytics. A degree requires additional University requirements. Please consult the Program in Data Analytics section of the Washington State University Catalog for a complete list of degree requirements.

Foundations of Data Analytics

Completion of the Foundation of Data Analytics Certificate requires a total of 18 credits. Students are required to complete CPT S 121, DATA 115, 225, MATH 171, and STAT 212.

This certificate, combined with the Intermediate Data Science Certificate, the Advanced Data Science Certificate, an internship course, and a capstone course, fulfills the major requirements of the Bachelor of Science in Data Analytics. A degree requires additional University requirements. Please consult the Program in Data Analytics section of the Washington State University Catalog for a complete list of degree requirements.

Foundations of Data Science

Admission to the standalone Foundations of Data Science Certificate requires MATH 171 or higher or an ALEKS math placement score of 80%; and CPT S 121, 131, or CS 121. Completion of the Certificate requires a total of 15 credits. Students are required to complete DATA 115, 219, 225, 301, 302, 303, and STAT 360.

Intermediate Data Analytics

Completion of the Intermediate Data Analytics Certificate requires a total of 15 credits. Students are required to complete DATA 219, 301, 302, 303, 319, 324, and STAT 360.

This certificate, combined with the Foundations of Data Analytics Certificate, the Advanced Data Science Certificate, an internship course, and a capstone course, fulfills the major requirements of the Bachelor of Science in Data Analytics. A degree requires additional University requirements. Please consult the Program in Data Analytics section of the Washington State University Catalog for a complete list of degree requirements.

Intermediate Data Science

Admission to the standalone Intermediate Data Science Certificate requires MATH 171 or higher or an ALEKS math placement score of 80%; and CPT S 121, 131, or CS 121. Completion of the Certificate requires a total of 15 credits. Students are required to complete DATA 319, 324, 422, 435, and 437.

Description of Courses

Data Analytics

DATA

115 [QUAN] Introduction to Data Analytics 3 Basic concepts, principles, and tools used in data analytics.

121 Computational Calculus I 3 Course Prerequisite: MATH 106 and MATH 108 with a C or better or a minimum ALEKS math placement score of 83%. Introduction to calculus concepts such as limits, derivatives, and integrals with a focus on computational methods including the application of programming in hands on projects including numerical differentiation, integration, and Taylor series.

122 Computational Calculus II 3 Course Prerequisite: DATA 121, or MATH 171 with a C or better. Computational calculus emphasizing multivariable and vector calculus, optimization, and advanced visualization techniques including topics of partial derivatives, multiple integrals, parametric equations, and optimization algorithms using Python in real-world data analytics scenarios.

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 [COMM] Visualizing Data 3 Introduction to the tools and methods of visually communicating data for diverse audiences and scenarios. (Crosslisted course offered as DTC 209, DATA 209.)

219 Data Structures for Data Analytics 3

Course Prerequisite: CPT S 121, CPT S 131, or CS 121; DATA 115 or concurrent enrollment. Programming techniques including data structures, sorting and searching, object-oriented design, and an introduction to algorithmic analysis.

225 Linear Algebra with Modern Applications 3

Course Prerequisite: MATH 106 or 201 with a C or better, or MATH 140, 171, 202 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%. Solving linear systems, matrices, determinants, subspaces, eigenvalues, orthogonality, machine learning, AI, computer graphics, and economic models. (Crosslisted course offered as MATH 225, DATA 225.) Credit not granted for more than one of MATH 225, 220, and 230.

301 Introduction to R 1 Hands-on knowledge and skills for programming, handling different types of data, data cleaning, and visualization; excellent foundation for courses or projects that involve coding in R. S, F grading.

302 Introduction to Python 1 Hands-on knowledge and skills for working with real data and the Python programming language; an excellent foundation for later coursework in the Data Analytics major. S, F grading.

303 Introduction to SQL - The Structured Query Language 1 Hands-on knowledge and skills for basic-to-advanced aspects of the SQL system. S, F grading.

319 Model-based and Data-based Methods for Data Analytics 3

Course Prerequisite: DATA 219, CPT S 215, CPT S 223, or CPT S 233; MATH 220 or MATH/DATA 225; STAT 360. Modeling methods for data analysis with high dimensional data, including theoretical and practical concerns.

324 [M] Data Repository Systems for Data Analytics 3 Course Prerequisite: CPT S 215, CPT S 223, CPT S 233, or DATA 219; DATA 303; MATH 220, or MATH/DATA 225; admitted to the major in Data Analytics; junior standing. Introduction to repository systems and use of data repositories for data wrangling.

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. (Crosslisted course offered as STAT 360, DATA 360.) Cooperative: Open to UI degree-seeking students.

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.

422 Corporate Data Analytics 3 Course Prerequisite: DATA 324; STAT/DATA 360; STAT/DATA 435 or concurrent enrollment; admitted to the major in Data Analytics; junior standing. Project-based class that integrates the main aspects of data analytics.

424 [CAPS] [M] Data Analytics Capstone 3
Course Prerequisite: CPT S/CS 315 or DATA 319; STAT/DATA 360; DATA 422; STAT/DATA 435 or 437, or concurrent enrollment; admitted to the major in Data Analytics; junior standing. Team-based project that integrates the main aspects of data analytics.

435 [M] Statistical Modeling for Data Analytics 3 (2-2) Course Prerequisite: STAT/DATA 360 or STAT 370, either with a C or better. 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. (Crosslisted course offered as STAT 435, DATA 435.)

437 High Dimensional Data Learning and Visualization 3 Course Prerequisite: STAT/DATA 435. Data visualization, metric-based clustering, probabilistic and metric-based classification, algebraic and probabilistic dimension reduction, scalable inferential methods, analysis of non-Euclidean data. (Crosslisted course offered as STAT 437, DATA 437.)

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 1-6 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission; admitted to the major in Data Analytics; junior standing. Experiential learning and career development through professional practice. S, F grading.

499 Special Problems V 1-3 May be repeated for credit; cumulative maximum 6 hours. 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 Data Science Primer 3 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 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

Director and Professor, J. Peschel (CT); Professors, R. Cherf (CT), J. P. Gruen, J. Kaytes, T. Miyasaka, A. Rahmani; Associate Professors, O. Al-Hassawi, S. Austin (CT), S. Call, J. Day, D. Drake (CT), M. Ghandi, K. Kraszewska, R. Krikac, M. Melcher, A. Pulay, M. Sánchez (CT), V. Vahdat, C. Vielle (CT); Assistant Professors, T. Abuimara, K. Borrmann, M. Cerruti, M. Cowan (CT), H. Dang, D. Edwards (CT), J. Ko, D. Liu, M. Mansoori (CT), J. L. Rice (CT), K. Shrestha, S. Sikder.

The School of Design and Construction (SDC) offers collaborative learning experiences for students in architecture, interior design, landscape architecture, and construction management 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). Further, the undergraduate degrees in architectural studies, landscape architecture, and construction management, as well as the graduate degree in architecture, are STEM designated.

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); Interior Design Student Association (IDSA); American Society of Landscape Architects (ASLA); Design Activism Society (DAS); National Association of Minority Landscape Architects (NAMLA); EUNOIA; Associated Students of Construction Management (ASCM); Associated General Contractors of America (AGC); Design Build Institute of America (DBIA); Mechanical Contractors Association of America (MCAA) and Virtual Design and Construction Club (VDCC).

UNDERGRADUATE MINORS

The School of Design and Construction offers minors in Architectural Studies, Construction Management, Interior Design, and Landscape Architecture. Students may apply to add one or more of these minors after they are admitted to a major.

Certificate Programs and Master of Energy Conscious Construction (MECC) Degree

The School of Design and Construction offers the Energy Conscious Construction (ECC) certificate through the Global and Pullman campuses at both the undergraduate and graduate level. The ECC certificate is an interdisciplinary program in building science and focused on high-performing energy-efficient residential building design and construction.

The Master of Energy Conscious Construction (MECC) is a professionally oriented master's degree offered fully online via the Global Campus.

ARCHITECTURE

The four-year, pre-professional Bachelor of Science in Architectural Studies degree at WSU is STEM designated and provides a thorough foundation in the field of architecture as preparation for continued education in a professional degree program; employment in the architecture profession; 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) and is STEM designated. Completion of this degree satisfies the educational requirement of the pathway to architectural licensure in all U.S. Jurisdictions. 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 ensure this breadth of understanding. The Bachelor of Science in Construction Management degree program is accredited by the American Council for Construction Education (ACCE) and is STEM designated.

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 seventeen (17) 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 methods, materials, and equipment used to construct projects.
- 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 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 plumbing 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, interdisciplinary, 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 oftentimes in interdisciplinary teams.

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 STEM designated 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 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 five themes that include 15 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 in the context of 21st century realities.

Upon successful completion of the BLA at WSU, students will be able to:

1. Identify and characterize the complex nature of problems, questions, and ethics associated with human/ landscape interactions across a broad range of scales
2. 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:

1. Identify appropriate methods of design inquiry and problem-solving processes to produce creative solutions to identified problems and questions
2. Identify, collect, and analyze necessary information using appropriate technologies and analytical techniques as they relate to the identified problem or question.
3. Explore and critically analyze alternative design or planning solutions to the identified problem or question
4. 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:

1. Justify and defend the proposed design/ planning solution within the context of aesthetics, social, political, economic, and environmental systems and resilience.
2. Communicate the entire problem-solving process or method of inquiry in written, oral, and graphic ways using appropriate media

Theme Four: Develop ecological understandings.

Upon successful completion of the BLA at WSU, students will be able to:

1. Understand and apply ecology, botany, and horticulture principles to landscape design
2. Cultivate knowledge of soils and geology and how they affect and are affected by landscape design.
3. Develop awareness of the interrelationships between design, ecosystems, and climate.

Theme Five: Cultivate awareness of professional practices.

Upon successful completion of the BLA at WSU, students will be able to:

1. Understand multiple aspects of practice
2. Become leaders in collaboration and community engagement
3. Integrate and apply diverse perspectives to design solutions
4. 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.

ARCHITECTURAL STUDIES (120 CREDITS)

The Bachelor of Science in 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): ART 101, 201, or 202 [ARTS], COM 102 [COMM], ENGLISH 101 [WRTG], 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

<i>First Term</i>	<i>Credits</i>
COM 102 [COMM]	3
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN] ^{1,2}	3
SDC 100 [ARTS]	3
SDC 120	3

<i>Second Term</i>	<i>Credits</i>
ART 101, 201, or 202	3
HISTORY 105 [ROOT]	3
PHYSICS 101 [PSCI] ¹	3
PHYSICS 111 [PSCI]	1
PSYCH 105 [SSCI] or SOC 101[SSCI]	3
SDC 140	3

Second Year

<i>First Term</i>	<i>Credits</i>
ARCH 201	5
ARCH 210	3
CST M 201	3
SDC 250	3
SDC 300	1

<i>Second Term</i>	<i>Credits</i>
ARCH 203	5
ARCH 209	3
ARCH 215	3
CST M 202	3
SDC 350 [M]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ARCH 301	5
ARCH 309 [M]	3
ARCH 351	3
ARCH 451	3
CST M 332	3

<i>Second Term</i>	<i>Credits</i>
ARCH 303	5
ARCH 352	3

CST M 333	3
UCORE Inquiry ³	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
ARCH 401	6
Supportive Electives ⁴	4
UCORE Inquiry ³	3

<i>Second Term</i>	<i>Credits</i>
ARCH 403 [CAPS]	6
Supportive Electives ⁴	3
UCORE Inquiry ³	3

¹ 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.

² 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.

³ Must complete 3 of these 4 UCORE designations: BSCI, DIVR, EQJS, HUM.

⁴ 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 (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

<i>First Term</i>	<i>Credits</i>
Pre-Professional Program (1st Year)	
Communication [COMM]	3
CST M 102 ¹	2
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
SOE 101 [PSCI]	4

<i>Second Term</i>	<i>Credits</i>
ECONS 102	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
SDC 100 [ARTS]	3
UCORE Inquiry ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
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

<i>Second Term</i>	<i>Credits</i>
ACCTG 220	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>
CE 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>
CST M 460	3
CST M 462	3
UCORE Inquiry ²	3
300-400-level Business Elective ³	3
300-400-level CST M Elective ⁴	3

<i>Second Term</i>	<i>Credits</i>
CST M 473	3
CST M 475 [CAPS] [M]	3
MGMT 301	3
UCORE Inquiry ²	3
300-400-level CST M Elective ⁴	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 Must complete 3 of these 4 UCORE designations: BSCI, DIVR, EQJS, HUM.

³ Business Elective: Any 300-400-level course in Management, Business, International Business, Economics, or Finance.

⁴ Construction Management Elective: Students will work with an advisor to choose electives from the approved list.

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):

ART 101, 201, or 202 [ARTS], COM 102 [COMM], ENGLISH 101 [WRTG], 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; ID 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>
ART 101, 201, or 202	3
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN] ¹	3
SDC 140	3
UCORE Inquiry ²	4

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>
I D 203	4
I D 215	3
I D 297	3
SDC 350 [M]	3
UCORE Inquiry ²	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>
I D 425 or 490	5
Supportive Electives ⁴	7
UCORE Inquiry ²	3

<i>Second Term</i>	<i>Credits</i>
I D 426 [CAPS]	5
SDC 473 [M]	3
UCORE Inquiry ²	3
Portfolio Review ⁵	
Complete Senior Exit Survey	

¹ All first-year students must take the ALEKS math placement exam. Prerequisites may be required depending on the score.

² Must complete 4 of these 5 UCORE designations: BSCI, DIVR, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

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): ARTS 101, 201, or 202 [ARTS], COM 102 [COMM], ENGLISH 101[WRTG], 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>
ART 101, 201, or 202	3
COM 102 [COMM]	3
ENGLISH 101 [WRTG]	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>
LND ARCH 470	4
UCORE Inquiry ⁷	6
Supportive Electives ⁸	3

<i>Second Term</i>	<i>Credits</i>
LND ARCH 450 [M]	3
LND ARCH 485 [CAPS] [M]	4
SDC 473 [M]	3
Supportive Electives ⁸	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 Must complete 2 of these 3 UCORE designations: DIVR, EQJS, HUM.

⁸ 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 earned in WSU courses 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 18 credits, 9 of which must be upper-division and earned in WSU courses 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 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, or any 300-400-level ACCTG, B LAW, ENTRP, FIN, I BUS, MGMT, MGTOP, MIS, or MKTG course. Approved construction emphasis electives include any 300-400-level CST M course.

Enrollment is limited to 25-28 students per calendar year and will be prioritized by academic level or class standing (e.g., seniors, followed by juniors, then sophomores). Application requirements and submission deadlines for the minor are due by April 1st of the spring semester prior to when a student would like to be considered for enrollment in summer courses. Confirmation of acceptance into the minor will be sent to students at their WSU e-mail address.

Interior Design

The minor in Interior Design requires a minimum of 16 credits of which at least 9 must be upper division and earned in WSU courses 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.

Landscape Architecture

Landscape architecture involves designing and implementing opportunities for people to engage with their environment. The Landscape Architecture Minor provides students with a foundation for understanding this interdisciplinary field and for how to interpret places across diverse scales and contexts. The coursework for the minor links design, art, science, humanities, and community engagement.

The Landscape Architecture Minor requires a minimum of 16 credits of which at least 9 must

be upper division and earned in WSU courses 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 LND ARCH 150, 327, 380, 450, and 1 credit from any of the following approved courses: LND ARCH 222, 333, 399, 499; SDC 300, 444, 499; and other courses if approved by the landscape architecture program.

Certificates

Energy Conscious Construction

The Energy Conscious Construction certificate offered through the Global and Pullman campuses is an interdisciplinary program in building science and focused on high-performing energy-efficient residential building design and construction. In addition to collaboration with the School of Mechanical and Materials Engineering and the Department of Civil & Environmental Engineering, the certificate program leverages the expertise of the nationally-recognized WSU Extension Energy Program in Olympia, WA. Completion of the Energy Conscious Construction certificate requires a total of 15 credits. Required courses: ARCH 464 or 495, ARCH 493, ME 483, SDC 441, and SDC 451.

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.

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.

421 Envelope Assemblies 3 Course Prerequisite: Admitted to any major in the College of Engineering and Architecture. Foundational knowledge in enclosure assembly history, types, control layers, life cycle assessment, and impact on building performance culminating in an assembly design for high-performing residential occupancy buildings. Credit not granted for both ARCH 421 and 521.

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.

- 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.
- 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. 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 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.
- 503 Graduate Design Studio II** 6 (0-12) Course Prerequisite: ARCH 501. Advanced study of design problems relating to culture, environment, technology, urban planning, or other topics. Travel for site visit required.
- 510 Graduate Design Studio III** 6 (0-12) Course Prerequisite: ARCH 403 with a C or better. 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) Course
Prerequisite: ARCH 510 with a C or better. 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.
- 521 Envelope Assemblies** 3 Foundational knowledge in enclosure assembly history, types, control layers, life cycle assessment, and impact on building performance culminating in an assembly design for high-performing residential occupancy buildings. Credit not granted for both ARCH 421 and 521.
- 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.
- 564 Architectural Structures IV** 3 Deflection theory; classical and computer analysis for statically indeterminate architectural structure systems.

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 or Civil Engineering. Visual literacy and details in construction documents using drawing techniques.

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 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; BLAW 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 or concurrent enrollment; admitted to the major in Construction Management; junior standing. Role and function of safety and health in the construction industry including OSHA compliance, requirements and regulations.

370 Estimating I 3 (2-2) 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.

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. 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 or Civil Engineering. Methods, principles, and concepts required to plan and schedule construction projects; introduction to scheduling software.

466 Heavy/Civil Estimating 3 Course Prerequisite: 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.

473 Human Productivity in Construction 3 Course Prerequisite: CST M 460 with a C or better; admitted to the major in Construction Management. 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; junior standing. Simulation of real world competition for Design-Build and/or CM at Risk (CM/GC) projects.

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 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

590 Teaching Practicum V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Doctoral standing in Design. Supervised teaching experience integrating application of design knowledge and approaches. S, F grading.

598 Topics in Design V 1-3 May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: Doctoral standing in Design. Topical issues in design responding to the shifting demands and needs of the design professions.

600 Special Projects or Independent Study V 1-18 May be repeated for credit. Independent study, special projects, and/or internships. Students must have graduate degree-seeking status and should check with their major advisor before enrolling in 600 credit, which cannot be used toward the core graded credits required for a graduate degree. S, F grading.

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

Interior Design

ID

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: ID 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: ID 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 ID 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: ID 197; ID 201; ID 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.

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: ID 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: ID 321 with a C or better; ID 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.

397 Design Communication III 3 (2-2) Course
Prerequisite: ID 203 with a C or better; ID 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: ID 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: ID 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: ID 425 or ID 490 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. 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.

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.

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.

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.

102 [EQJS] Social Justice in the Built Environment 3 Historical context and current debates on urbanism including environmental racism, gentrification, redlining, postcolonialism, and public monuments.

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.

220 [ARTS] Design Through Literature 3 Explorations in using the methods and venues of art to translate literary themes into three-dimensional objects and spaces using non-digital media and techniques; requires no prior knowledge of art or design.

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.

441 Building Energy Codes, Standards, and Rating Systems 3 Course Prerequisite: Admitted to any major in the College of Engineering and Architecture; junior standing. Navigation and application of the current Washington residential energy code; employment of rating systems that exceed code requirements. Credit not granted for both SDC 441 and SDC 541.

444 Integrated Study Tour V 1-3 May be repeated for credit; cumulative maximum 6 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.

451 Energy Modeling I 3 Course Prerequisite: Admitted to any major in the College of Engineering and Architecture; junior standing. Creation, analysis, and results interpretation of energy models for small scale housing typologies. Recommended preparation: Basic knowledge in 3D modeling software such as Sketchup or Revit. Credit not granted for both SDC 451 and SDC 551.

452 Energy Modeling II 3 Course Prerequisite: Admitted to any major in the College of Engineering and Architecture; junior standing. Creation, analysis, and results interpretation for multi-zone mid-scale housing typologies. Recommended preparation: Basic knowledge in 3D modeling software such as Sketchup or Revit. Credit not granted for both SDC 452 and SDC 552.

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: By department permission; sophomore standing. 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. 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.

511 Field Inspection and Energy Auditing 4 Course Prerequisite: Admitted to the graduate certificate program in Energy Conscious Construction. Performance evaluation using field measurement equipment and comparing real life performance to that estimated during design.

513 Comprehensive Design Experience 4 Course Prerequisite: Admitted to the graduate certificate program in Energy Conscious Construction. Design and evaluation of high-performing energy-efficient residential buildings by applying principles of building science and addressing issues of energy, carbon, and materials.

541 Building Energy Codes, Standards, and Rating Systems 3 Navigation and application of the current Washington residential energy code; employment of rating systems that exceed code requirements. Credit not granted for both SDC 441 and SDC 541.

551 Energy Modeling I 3 Creation, analysis, and results interpretation of energy models for small scale housing typologies. Recommended preparation: Basic knowledge in 3D modeling software such as Sketchup or Revit. Credit not granted for both SDC 451 and SDC 551.

552 Energy Modeling II 3 Creation, analysis, and results interpretation for multi-zone mid-scale housing typologies. Recommended preparation: Basic knowledge in 3D modeling software such as Sketchup or Revit. Credit not granted for both SDC 452 and SDC 552.

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.

Plemons (Tri-Cities); Associate Professors (CT), T. deVries (Global), R. Gregory (Pullman), B. Grell (Vancouver), W. Luers (Vancouver), M. Rabby (Vancouver); Assistant Professors, D. Beverly-Porter (Pullman), J. Clapper (Pullman), E. Ortiz (Pullman), J. Sanders (Pullman); Assistant Professors (CT), A. Brave (Pullman), P. Mudd (Tri-Cities), S. Park (Pullman), J. Riddle (Pullman), V. Varay (Pullman); Lecturers, T. Buffington (Pullman), C. Dreger (Vancouver), L. Roper (Pullman); Academic Advisors, T. Fordyce (Vancouver), A. Rocha (Pullman).

Students in Digital Technology and Culture (DTC) develop critical and creative thinking skills, cultural competencies, and digital expertise. The program offers courses in web design, animation, 3D modeling, multimedia and graphic design, social media, video production, game creation, augmented and virtual reality, and other emerging fields of study. Along with technical skills, students gain critical perspectives from diverse sources that prepare them for the complex needs of contemporary society on both a local and global level.

There is a strong focus on praxis – whereby students explore technological, cultural, and media theories and histories alongside multimedia creation. In addition, there is a focus on community-based learning – where students develop digital media projects in a collaborative environment for community-based organizations.

DTC students emerge from the program with diverse technical and media production expertise as well as essential skills like written and oral communication, teamwork, project management, and social ethics.

Digital Technology and Culture Options

There are five options for the degree of Bachelor of Arts in Digital Technology and Culture. Each requires 42 credit hours of major-specific coursework to complete.

Creative Media and Digital Culture (Vancouver) is for students who want careers in web design and development; game studies and design; 2 and 3D animation; digital publishing, social media and SEO strategy; or physical computing, including virtual and augmented reality. Students graduate with a deep knowledge of the theories relating to digital technologies, as well as strong essential skills like written and oral communication, teamwork, project management, and ethics.

Digital Cinema, Sound, and Animation (Pullman) is for students who are interested in learning more about moving image creation and critical commentary. This option focuses on the examination of the history, production, and cultural impact of time-based technologies like sound, film, and animation. Courses in this option explore topics like podcasting, soundscapes, 3D animation, cinema history, video production, and related media histories and theories.

Digital Design (Pullman, Tri-Cities) is focused on visual communication and adaptive methodologies in design for diverse communities. Students pursuing this option learn more about methods and approaches in graphic design, multimedia design, content creation, and information visualization. This option also integrates static, moving, and

interactive media theories, histories, and production to provide students with a comprehensive understanding of the contemporary design field.

Game Studies (Pullman) is for students interested in a praxis approach to critical play studies and game creation. Students in this option explore the histories and theories associated with interactive media and video games. They also create games for diverse audiences using a range of software. Graduates of this option will be well versed in front-end design, narrative construction, as well as basic game and interactive media mechanics.

Web Design and Development (Pullman) explores the principles of web design, web coding, user experience (UX), content management, information architecture, usability, accessibility, and more. Students in this option will learn HTML, CSS, and scripting languages such as JavaScript or PHP. Graduates of this track will be able to create and manage websites through all stages of development, from planning and setup, to developing and managing code and content.

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.

Digital Technology and Culture Programmatic Outcomes

A graduate with a Bachelor of Arts in Digital Technology and Culture will be able to:

- Demonstrate culturally responsive competencies in working with digital media and technology for ethical and effective human interactions.
- Employ design principles in the creation of various forms of digital media and technology.
- Explore, analyze, and critique the ways digital media and technology function in multiple cultural contexts using diverse methodologies and perspectives.
- Demonstrate understanding of the histories of technological development, from local to global perspectives, and their implications for a variety of mediums.
- Utilize an interdisciplinary perspective to understand contemporary and future cultural impacts of digital media and technology.
- Communicate effectively, to diverse audiences, how and why digital media make meaning.

Campus Contact Information

- Pullman campus: Morrill Hall 108; 509-335-0698; dtc@wsu.edu; dtc.wsu.edu/.
- Tri-Cities campus: Campus Registrar's Office, Floyd 269; 509-372-7351; tricitie.registrar@wsu.edu; tricitie.wsu.edu/cas/.
- Vancouver campus: Science & Engineering Building (VSCI), Room 130; 360-546-9620; casadvising@wsu.edu; cas.vancouver.wsu.edu/creative-media-digital-culture/.

Department of Digital Technology and Culture

dtc.wsu.edu/
Morrill Hall 108 (Pullman campus)
509-335-0698
dtc@wsu.edu

Professors, K. Christen (Pullman), D. Grigar (Vancouver), G. Turner-Rahman (Pullman); Professor (CT), J. Barber (Vancouver); Associate Professors A.

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)

This option is for students who want careers in web design and development; game studies and design; 2 and 3D animation; digital publishing, social media, and SEO strategy; or physical computing, including virtual and augmented reality. Students graduate with a deep knowledge of the theories relating to digital technologies, as well as strong essential skills like written and oral communication, teamwork, project management, and ethics. In addition to the learning outcomes for the DTC department, upon graduation, students in the Creative Media and Digital Culture option will also be able to:

- 1) Recognize various forms of language processing and their implications for media authoring;
- 2) 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; and
- 3) Synthesize media forms for multimedia contexts.

This option is available on the Vancouver campus. A student may be admitted to the DTC – Creative Media and Digital Culture Option upon making their intention known to the department. This option requires 42 credits of major-specific course work.

First Year

<i>First Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Foreign Language, if needed, or Electives ^{1,2}	6

<i>Second Term</i>	<i>Credits</i>
DTC 101 [ARTS]	3
ENGLISH 101 [WRTG]	3
Foreign Language, if needed, or Electives ^{1,2}	6
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
DTC 201	3
Social Sciences [SSCI]	3
Electives ¹	5

<i>Second Term</i>	<i>Credits</i>
DTC 336	3
Physical Sciences [PSCI] with lab ³	4
Electives ¹	8
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
DTC 355	3
DTC 356 [M]	3
Equity and Justice [EQJS]	3

Approved Non-DTC Upper-Division Courses ⁴	6
<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
DTC 375 [M]	3
DTC Electives ⁵	6
Approved Non-DTC Upper-Division Course ⁴	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
DTC Electives ⁵	6
Electives ¹	9
<i>Second Term</i>	<i>Credits</i>
DTC 497 [CAPS]	3
Electives ¹	12

¹ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need to include a writing in the major [M] course to meet University requirements.

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 To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁴ Approved Non-DTC Upper-Division Courses (9 credits): Any 300-400 level courses outside of DTC approved by the DTC advisor or a faculty member. These courses are meant to expand a student's interdisciplinary perspective on media, technology, and culture.

⁵ DTC Electives (12 credits): Any DTC course not included in the degree requirements, except for DTC 498 and DTC 499, is eligible to be a DTC elective.

DIGITAL TECHNOLOGY AND CULTURE - DIGITAL CINEMA, SOUND, AND ANIMATION OPTION (PULLMAN ONLY) (120 CREDITS)

This option is focused on moving image creation and critical cinema commentary. This option focuses on the examination of the history, production, and cultural impact of time-based technologies like sound, film, and animation. Courses in this option explore topics like podcasting, soundscapes, 3D animation, cinema history, video production, and related media.

This option is available on the Pullman campus. A student may be admitted to the DTC – Digital Cinema, Sound, and Animation Option upon making their intention known to the department. This option requires 42 credits of major-specific coursework.

First Year

<i>First Term</i>	<i>Credits</i>
DTC 101 [ARTS]	3
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN]	3
Foreign Language, if needed, or Electives ^{1,2}	6

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
DTC 201	3

HISTORY 105 [ROOT]	3
Foreign Language, if needed, or Electives ^{1,2}	6

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
DTC 206 [EQJS] or 475 [DIVR]	3
Humanities [HUM]	3
Electives ¹	5

<i>Second Term</i>	<i>Credits</i>
DTC 208	3
Physical Science [PSCI] with lab ³	4
Social Sciences [SSCI]	3
Electives ¹	5
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
DTC 335	3
DTC 354 [M]	3
Equity and Justice [EQJS] or Diversity [DIVR] ⁴	3
Electives ¹	6

<i>Second Term</i>	<i>Credits</i>
DTC 301 [M]	3
DTC Electives ⁵	6
Electives ¹	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
DTC 491	3
DTC Electives ⁵	6
Electives ¹	6

<i>Second Term</i>	<i>Credits</i>
DTC 497 [CAPS]	3
DTC 498 or 435	3
Electives ¹	9
Senior Exit Survey	

¹ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need to include a writing in the major [M] course to meet University requirements.

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 To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁴ Depending on whether a student takes DTC 206 [EQJS] or DTC 475 [DIVR] for their degree requirement, they should take a UCORE option that fulfills the opposite requirement in their third year.

⁵ DTC Electives (12 credits): Any DTC course not included in the degree requirements is eligible to be a DTC elective.

DIGITAL TECHNOLOGY AND CULTURE - DIGITAL DESIGN OPTION (PULLMAN AND TRI-CITIES ONLY) (120 CREDITS)

This option is focused on visual communication and adaptive methodologies in design for diverse communities. Students pursuing this option

learn about methods and approaches in graphic design, multimedia design, content creation and information visualization using industry standard digital tools and platforms. This option also integrates static, moving, and interactive media theories, histories, and production to provide students with a comprehensive understanding of the contemporary design field.

This option is available on the Pullman and Tri-Cities campuses. A student may be admitted to the DTC – Digital Design Option upon making their intention known to the department. This option requires 42 credits of major-specific coursework.

First Year

First Term	Credits
DTC 101 [ARTS]	3
English 101 [WRTG]	3
Quantitative Reasoning [QUAN] ^{1,2}	3
Foreign Language, if needed, or Electives	6
Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
DTC 201	3
HISTORY 105 [ROOT]	3
Foreign Language, if needed, or Electives ^{1,2}	6

Second Year

First Term	Credits
Biological Sciences [BSCI] with lab ³	4
DTC 206 [EQJS] or 475 [DIVR]	3
Humanities [HUM]	3
Electives ¹	5
Second Term	Credits
DTC 209 or 354	3
Physical Sciences [PSCI] with lab ³	4
Social Sciences [SSCI]	3
Electives ¹	5
Complete Writing Portfolio	

Third Year

First Term	Credits
DTC 336	3
DTC 355 or 375 [M] ⁴	3
Equity and Justice [EQJS] or Diversity [DIVR] ⁵	3
Electives ¹	6
Second Term	Credits
DTC 301 [M]	3
DTC Electives ⁶	6
Electives ¹	6

Fourth Year

First Term	Credits
DTC 436	3
DTC Electives ⁶	6
Electives ⁶	6
Second Term	Credits
DTC 497 [CAPS]	3
DTC 498 or 478 ⁷	3
Electives ¹	9
Senior Exit Survey	

¹ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need

to include a writing in the major [M] course to meet University requirements.

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 To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁴ Students who elect to take DTC 355 for this requirement will need to incorporate another Writing in the Major [M] course into their DTC Electives or General Electives.

⁵ Depending on whether a student takes DTC 206 [EQJS] or DTC 475 [DIVR] for their degree requirement, they should take a UCORE option that fulfills the opposite requirement in their third year.

⁶ DTC Electives (12 credits): Any DTC course not included in the degree requirements is eligible to be a DTC elective. One DTC elective course (3 credits) may be substituted by DTC 498 or 499.

⁷ Students who elect to take DTC 478 need to have taken DTC 355 as a prerequisite.

DIGITAL TECHNOLOGY AND CULTURE - GAME STUDIES OPTION (PULLMAN ONLY) (120 CREDITS)

This option is focused on critical play studies and game creation. Students in this option explore the histories and theories associated with interactive media and video games. They also create games for diverse audiences using a range of software. Graduates of this option will be well versed in front-end design, narrative construction, as well as basic game and interactive media mechanics.

This option is available on the Pullman campus. A student may be admitted to the DTC – Game Studies Option upon making their intention known to the department. This option requires 42 credits of major-specific coursework.

First Year

First Term	Credits
DTC 101 [ARTS]	3
ENGLISH 101 [WRTG]	3
Quantitative Reasoning [QUAN]	3
Foreign Language, if needed, or Electives ^{1,2}	6
Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
DTC 201	3
HISTORY 105 [ROOT]	3
Foreign Language, if needed, or Electives ^{1,2}	6

Second Year

First Term	Credits
Biological Sciences [BSCI] with lab ³	4
DTC 206 [EQJS] or 475 [DIVR]	3
Humanities [HUM]	3
Electives ¹	5
Second Term	Credits
DTC 354 [M]	3
Physical Sciences [PSCI] with lab ³	4
Social Sciences [SSCI]	3
Electives ¹	5
Complete Writing Portfolio	

Third Year

First Term	Credits
DTC 335	3
DTC 392	3
Equity and Justice [EQJS] or Diversity [DIVR] ⁴	3
Electives ¹	6
Second Term	Credits
DTC 301 [M]	3
DTC Electives ⁵	6
Electives ¹	6

Fourth Year

First Term	Credits
DTC 492	3
DTC Electives ⁵	6
Electives ¹	6
Second Term	Credits
DTC 497 [CAPS]	3
DTC 498 or 476	3
Electives ¹	9
Senior Exit Survey	

¹ Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need to include a writing in the major [M] course to meet University requirements.

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 To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁴ Depending on whether a student takes DTC 206 [EQJS] or DTC 475 [DIVR] for their degree requirement, they should take a UCORE option that fulfills the opposite requirement in their third year.

⁵ DTC Electives (12 credits): Any DTC course not included in the degree requirements is eligible to be a DTC elective. One DTC elective course (3 credits) may be substituted by DTC 498 or 499.

DIGITAL TECHNOLOGY AND CULTURE - WEB DESIGN AND DEVELOPMENT OPTION (PULLMAN ONLY) (120 CREDITS)

This option explores the principles of web design, web coding, user experience (UX), content management, information architecture, usability, accessibility, and more. Students in this option will learn HTML, CSS, and scripting languages such as JavaScript or PHP. Graduates of this track will be able to create and manage websites through all stages of development, from planning and setup, to developing and managing code and content.

This option is available on the Pullman campus. A student may be admitted to the DTC – Web Development Option upon making their intention known to the department. This option requires 42 credits of major-specific coursework.

First Year

First Term	Credits
DTC 101 [ARTS]	3
ENGLISH 101 [WRTG]	3

Quantitative Reasoning [QUAN]	3
Foreign Language, if needed, or Electives ^{1,2,3}	6

<i>Second Term</i>	<i>Credits</i>
DTC 201	3
DTC 202 [COMM]	3
HISTORY 105 [ROOT]	3
Foreign Language, if needed, or Electives ^{1,2,3}	6

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ⁴	4
DTC 206 [EQJS] or 475 [DIVR]	3
Humanities [HUM]	3
Electives ^{1,2}	5

<i>Second Term</i>	<i>Credits</i>
DTC 330 or 331	3
Physical Sciences [PSCI] with lab ⁴	4
Social Sciences [SSCI]	3
Electives ^{1,2}	5
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
DTC 301 [M]	3
DTC 355	3
Equity and Justice [EQJS] or Diversity [DIVR] ⁵	3
Electives ^{1,2}	6

<i>Second Term</i>	<i>Credits</i>
DTC 477	3
DTC Electives ^{6,1}	6
Electives ^{1,2}	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
DTC Electives ^{6,1}	6
Electives ^{1,2}	9

<i>Second Term</i>	<i>Credits</i>
DTC 497 [CAPS]	3
DTC 498 or 478 ⁷	3
Electives ^{1,2}	9
Senior Exit Survey	

¹ Electives or DTC Electives must include an additional [M] course to meet the University requirements of two [M] courses.

² Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need to include a writing in the major [M] course to meet University requirements.

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 To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁵ Depending on whether a student takes DTC 206 [EQJS] or DTC 475 [DIVR] for their degree requirement, they should take a UCORE option that fulfills the opposite requirement in their third year.

⁶ DTC Electives (12 credits): Any DTC course not included in the degree requirements is eligible to be a DTC elective. One DTC elective course (3 credits) may be substituted by DTC 498 or 499.

⁷ Students who elect to take DTC 478 need to have taken DTC 355 as a prerequisite.

Minors

Digital Technology and Culture

A minor in DTC requires 18 credits including DTC 101, 201, 336, 355, and 375, plus one more 3-hour course from the following: DTC 335, 356, 435, 477, 478, ART 331, 332, 333, 363, 434, or 435. 9 credits of upper-division work must be earned in WSU courses or through WSU-approved education abroad or educational exchange courses.

Certificates

Game Studies and Design (Pullman and Vancouver only)

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 (Pullman only)

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 ART 102 plus 9 credits chosen from the following options: DTC 336, 436; ART 332, 433.

Social Media (Pullman and Vancouver only)

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 and Culture 3 Inquiry into digital media, including origins, theories, forms, applications, and impact with a focus on authoring and critiquing multimodal texts.

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 [COMM] Visualizing Data 3 Introduction to the tools and methods of visually communicating data for diverse audiences and scenarios. (Crosslisted course offered as DTC 209, DATA 209.)

301 [M] Professional Preparation 3 Development of materials and skills to prepare for entry into technology or media professions.

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 3D 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.

337 Illustration Beyond Boundaries: Concept Design and Character Development 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: DTC 101; DTC 201. Translation of creative vision into effective imagery for both personal projects and professional applications through critique, research, and conceptual thinking.

338 Special Topics in Digital Technology and Culture V 1-3 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 Introduction to Web Design and Development 3 Introduction to design, development, and coding for the world wide web and interactive media.

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 Histories 3 History and theory of video games with a focus on innovation and cultural impact.

435 Advanced Animation 3 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 [DIVER] Digital Diversity 3 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 Web Design and Development 3 Course Prerequisite: DTC 355. Advanced web development and coding for creating interactive media and websites.

478 Usability and Interface Design 3 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.

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.

496 Senior Studio 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: Completion of Writing Portfolio; admitted to the major in Digital Technology and Culture; senior standing. Individual multimedia project production with special focus on project management, disciplinary-specific workflows (cinema and animation, game design, web design and development, digital design), planning, creative exploration and execution.

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: By department permission; admitted to the major in Digital Technology and Culture; junior standing. 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, B. Mandal; Regents Professor, R. C. Mittelhammer; Professors, R. G. Batina, M. Brady, J. H. Cook, B. W. Cowan, A. Espinola-Arredondo, T. R. Fortenberry, G. I. Galinato, R. K. Gallardo, H. A. Love, J. Luckstead, T. L. Marsh, V. A. McCracken, F. Munoz-Garcia, S. Ortigueira, J. Yan, J. K. Yoder; Associate Professor, J. Bai; Assistant Professors, W. Blundell, P. Carlin, X. Liu, S. Manian, S. Park; Research Professor,

E. L. Jessup; Professor (Career Track), M. J. Gibson; Associate Professor (Career Track), A. J. Prera; Assistant Professors (Career Track), C. Clark, J. Wagner; WSU Extension Professor, J. S. Neibergs; Professors Emeriti, D. Bernardo, K. Casavant, P. Kuzyk, D. Moore, R. E. Rosenman, C. R. Shumway, P. R. Wandschneider.

The School of Economic Sciences offers programs leading to the degrees of Bachelor of Science in Economic Sciences and Bachelor of Arts in Economic Sciences. 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 for international student VISA purposes. The B.S. degree is classified as CIP Code 45.0603: Econometrics and Quantitative Economics. The B.A. degree is classified as CIP Code 45.0602: Applied Economics.

Undergraduate Program

The course of study for the Bachelor of Science in Economic Sciences and the Bachelor of Arts in Economic Sciences is sufficiently broad to accommodate students with a variety of interests and career goals. It provides training for students interested in agricultural business, business and financial markets, policy and law, and quantitative methods. 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 four concentrations:

- The *agricultural business* concentration 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 and financial markets* concentration 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. It provides students with analytical and quantitative training in the substantial overlap between economics and finance.
- The *policy and law* concentration provides students with the analytical skills used in law school and policymaking including those relevant in tax, law, regulation, program, and policy arenas.
- The *quantitative methods* concentration 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 concentrations, 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

1. Graduates will be well trained in critical, integrative, and evaluative thinking. Graduates will 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.

2. Graduates will understand economic concepts and quantitative methods. Graduates will be able to apply economic concepts, together with quantitative methods and technical information relating to the decision environment, to assist policymakers and target groups in evaluating economic tradeoffs and in making rational economic decisions.

3. Graduates will have strong communication skills. Graduates will be capable of communicating the results of economic analyses in a clear, compelling, and informative manner.

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 Economics 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 agencies, 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 on 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 academia, government agencies, 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.

ECONOMIC SCIENCES, BACHELOR OF SCIENCE (120 CREDITS)

Students are admitted to Economic Sciences upon making their intention known to the department. Admitted students must meet the following two benchmarks to remain in good standing:

1. Minimum WSU cumulative GPA of 2.0.
2. Cumulative GPA of 2.0 or higher in ECONS 301, 302, and 311.

First Year

<i>First Term</i>	<i>Credits</i>
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
UCORE Inquiry ¹	6

<i>Second Term</i>	<i>Credits</i>
ECONS 102	3
ECONS 215	3
ENGLISH 101 [WRTG]	3
MATH 172	4
UCORE Inquiry ¹	3

Second Year

<i>First Term</i>	<i>Credits</i>
ECONS 301	4
ECONS 310	4
H D 205 [COMM]	4
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
Complete Writing Portfolio	
ECONS 302	3
ECONS 311 [M]	3
ECONS Concentration ²	3
ECONS Elective ³	3
UCORE Inquiry ¹	4

Third Year

<i>First Term</i>	<i>Credits</i>
ECONS Concentration ²	6
ECONS Elective ³	6
ENGLISH 301 or 402	3

<i>Second Term</i>	<i>Credits</i>
ECONS 495, 497, or 499	3
ECONS Concentration ²	3
ECONS Elective ³	6
Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
ECONS Concentration ²	3
ECONS Elective ³	6
Electives	6

<i>Second Term</i>	<i>Credits</i>
ECONS 490 [M] [CAPS]	3
ECONS Concentration ²	3
ECONS Elective ³	3
Electives	3

¹ Must complete 5 of these 6 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

² Economic Concentrations (18 credits): Agricultural Business (ECONS 335, 350, 352, 450, 451, and 452) Business and Financial Markets (choose from ECONS 320, 327, 329, 335, 352, 420, 424, 425, and 452), Policy and Law (choose from ECONS 322, 323, 324, 327, 330, 428, and 431), Quantitative Methods (choose from ECONS 315, 420, 424, 425, 431, 525, 526 and 527), or Independent (upon approval of advisor).

³ Economic Electives (24 credits): ECONS courses that are not used to fulfill major requirements. Choose from the following, based on your concentration: Agricultural Business (choose from ECONS 181, 320, 322, 323, 324, 327, 329, 330, 404, 420, 424, 425, 428, and 431), Business and Financial Markets (choose from ECONS 181, 322, 323, 324, 330, 350, 404, 428, 431, 450, and 452), Policy and Law (choose from ECONS 181, 320, 329, 335, 350, 352, 404, 420, 424, 425, 428, 450, and 452), Quantitative Methods (choose from ECONS 181, 320, 322, 323, 324, 326, 327, 329, 330, 335, 350, 352, 404, 428, 450, 452).

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 earned in WSU courses 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 earned in WSU courses or through WSU-approved education abroad or educational exchange courses. Specific course requirements are ECONS 101 and 102 (or ECONS 198 and 181); one of ECONS 305, 321, or 323; one of ECONS 320, or 404; one of ECONS 326 or 327; and one of ECONS 352, or MGTOP 470. 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 earned in WSU courses or through WSU-approved education abroad or educational exchange courses. ECONS 101 and 102 (or ECONS 198 and 181), and 302 or 320 are required. In addition, ECONS 301 or 305, and two 300-level or higher ECONS electives are required (only three hours of ECONS 497 or 499 may be used to fulfill the upper-division ECONS electives requirement). A 2.0 GPA is required in the minor and no courses may be taken pass/fail.

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 earned in WSU courses 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, PHIL 370, POL S 430, PSYCH 466, SOE 335, or 438); environmental (ARCH 490, 494, BIOLOGY 330, 372, CE 401, CROP SCI 360, SOE 110, 285, 300, 303, or 483); social/cultural (ANTH 203, 309, ANTH/SOC 418, SOC 331, 332, 415, SOE 312, WGSS 332, or WGSS 460); economic (ECONS 330, 427, 428, 430, 431, or I BUS 380); 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 earned in WSU courses 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.

Certificates

Agricultural Leadership

The School of Economic Sciences offers a Certificate in Agricultural Leadership that requires 16 credits. Required courses are ECONS 101; 3 credits of ECONS 497; and H D 205. Two additional courses are required from the following: AFS 336; ANIM SCI 205, 285; COMSTRAT 312; CROP SCI 360; ECONS 350, 351, 426, 450, 451; H D 315; or POL SCI 442. Students must maintain an overall GPA of 2.6 in those courses that count towards the certificate.

Description of Courses

Economic Sciences

ECONS

101 [SSCI] Fundamentals of Microeconomics 3 Course Prerequisite: 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 related to the benefits of specialization and trade, how prices are determined, government intervention in the economy, business competition, and inequality.

102 [SSCI] Fundamentals of Macroeconomics 3 Course Prerequisite: 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.

181 [EQJS] History of Economic Thought on Inequality 3 Explore the debates around economic inequality through the centuries as they apply to race, class, and gender; reason through moral questions such as the notions of freedom, the role of government, capitalism, socialism, greed, and fair market prices.

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.

215 Data Management, Analysis, and Visualization 3 Course Prerequisite: ECONS 101 or ECONS 198. Hands-on laboratory instruction in data management, analysis, and visualization, primarily using Microsoft Excel.

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.

310 [QUAN] Statistics for Economists 4 (3-3) Course Prerequisite: MATH 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%. How economists reason with statistics including topics of data collection, data description, sampling, and inferential techniques commonly used by economists.

- 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. Applications of statistical techniques, including regression analysis, to economic models; analysis of economic data, forecasting and policy analysis are emphasized.
- 315 Machine Learning for Economists** 3 Course
Prerequisite: ECONS 215; ECONS 310 or STAT 212; ECONS 311. Theory and methods of machine learning with applications to the study of economic and other phenomena.
- 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. Impact of tax and spending policy on savings, labor, education, housing, and health; philosophies of government; individual versus group incentives; the prisoner's dilemma; calculating welfare effects of policy; designing better policy.
- 323 Labor Economics** 3 Course
Prerequisite: ECONS 101 or 198. Determinants of wages and wage inequality; technological change and automation; immigration; returns to schooling; labor unions; labor-market discrimination.
- 324 [M] The Economics of Health Care** 3 Course
Prerequisite: ECONS 101 or 198. Theoretical and practical study of healthcare markets; implications of health policy; optimal delivery of medical care. Cooperative: Open to UI degree-seeking students.
- 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 Resources Economics and Policy** 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 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 and Financial Economics and Policy** 3 Course
Prerequisite: ECONS 301; ECONS 302. Modeling dynamic decisions; derivatives, bond tranches, and swaps; financial crises, bubble mania, and wildcat banking; helicopter money and real effects of money; instability of financial markets; regulating banks.
- 424 Strategy and Game Theory** 3 Course
Prerequisite: ECONS 301. Analyze and predict strategic behavior of firms, consumers, and political parties in their everyday interactions; use simultaneous and sequential games, both under complete and incomplete information. 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.
- 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.
- 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.
- 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.
- 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; junior standing. Integration of economic theory and field courses; assessment.
- 495 Instructional Practicum** V 1-3 Course
Prerequisite: By department permission. 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. 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. Required preparation must include intermediate macroeconomics and one year of calculus. Required preparation must include intermediate macroeconomics and one year of calculus. (Crosslisted course offered as ECONS 500, FIN 500.)

- 501 Microeconomic Theory I** 3 Microeconomic theory, multivariate optimization, consumer and producer theory, competitive partial equilibrium, introduction to imperfect competition. Required preparation must include intermediate microeconomics and one year of calculus. Required preparation must include intermediate microeconomics and one year of calculus. (Crosslisted course offered as ECONS 501, FIN 501.)
- 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. Required preparation must include college calculus and matrix algebra. Required preparation must include college calculus and matrix algebra. (Crosslisted course offered as ECONS 510, FIN 510.)
- 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 Develop mathematical skills essential for introductory graduate work in economics, including matrix algebra and calculus. 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** 3 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.
- 573 Health Economics** 3 Course Prerequisite: ECONS 511. Recent developments in theoretical and empirical health economics, focusing primarily on issues affecting the United States, including risky health behaviors, health insurance, medical innovation, and health care markets.
- 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.

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. Examine different market structures, analyze and predict firm behavior, including prices and output decisions, along with R&D investments, patents, and advertising; consider complete and incomplete information settings in different industries. (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.)

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/elms
Cleveland 351
509-335-9117

Chair and Associate Professor, K. Rodela; Assistant Chair and Associate Professor Y. Rhee; Professor, S. Kruse; Associate Professors, K. Huggins, S. Licen; Assistant Professors, S. Calderone, C. Gang, J. Walls, E. Wendling; Teaching Associate Professors, K. Cowin, T. Crawford; Teaching Assistant Professors, J. Kowalkowski, 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, Sport, and Human Sciences, 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, Sport, and Human Sciences. 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,

Sport, and Human Sciences 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

First Term	Credits
ENGLISH [WRTG]	3
SPMGT 101 [DIVR] or Diversity [DIVR]	3
UCORE Inquiry ¹	6
Electives	3
Second Term	Credits
COM 102 [COMM] or HD 205 [COMM]	3 or 4
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
UCORE Inquiry ¹	7

Second Year

First Term	Credits
ACCTG 220	3
SPMGT 276	3
SPMGT 394	1
UCORE Inquiry ¹	3
Electives	6

Second Term	Credits
Area of Specialization ^{2,3}	6
SPMGT 290	3
SPMGT 394	1
Electives	6
Complete Writing Portfolio	

Third Year

First Term	Credits
Area of Specialization ^{2,3}	6
SPMGT 365	3
SPMGT 367 [M]	3
SPMGT 374 or SPMGT 377	3
SPMGT 394	2

Second Term	Credits
Area of Specialization ^{2,3}	6
SPMGT 374 or SPMGT 377	3
SPMGT 379	3
SPMGT 464	3

Fourth Year

First Term	Credits
Area of Specialization ^{2,3}	3
ENGLISH 402 [M]	3
SPMGT 468 [M]	3
SPMGT 489 [CAPS]	3
SPMGT 490	1
Electives	2

Second Term	Credits
SPMGT 491 ⁴	10-12

¹ Must complete 5 of these 6 UCORE designations: ARTS, BSCI, EQJS, HUM, PSCI, SSCI. One lab science (BSCI or PSCI) must be completed.

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 earned in WSU courses 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.

571 Dissertation Preparation for Education Leaders 3 Course Prerequisite: Admitted to the Educational Leadership EdD program. Knowledge, skills, and dispositions for completing the final culminating activities of a program of graduate study including preliminary examinations and dissertation proposal and defense. Recommended preparation: ED AD 591, ED PSYCH 508, ED RES 563, 564.

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.

586 Leadership Theory for Educational Organizations 3 Course Prerequisite: Admitted to the Educational Leadership EdD program. History and application of educational leadership theories.

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 [EQJS] 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. Review of the different manifestations of communication within sport management; identify stakeholders of sport organizations and develop strategies to communicate efficiently with them.
- 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; all graded sport management coursework must be complete, including SPMGT 464, 468, and 489; admitted to the major in Sport Management; 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. 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.
- 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 Leadership and Decision-Making in Sport** 3 Examines sport leaders in both public and private sport entities; examines effective decision-making skills, ethical decision-making, and explores leadership and strategies for improving oneself as a leader, manager, and supervisor.
- 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.

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702 Master's Special Problems, Directed Study, and/or Examination V 1-18 May be repeated for credit. Independent research in special problems, directed study, and/or examination credit for students in a non-thesis master's degree program. Students must have graduate degree-seeking status and should check with their major advisor/committee chair before enrolling for 702 credit. S, U grading.

School of Electrical Engineering and Computer Science

school.eecs.wsu.edu
EME 102
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The e 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, Computer Science, or Cybersecurity, 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 program of study leading to a bachelor of science in electrical engineering is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Electrical and Electronics Engineering. The program of study leading to a bachelor of science in computer engineering is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Computer Engineering. The program of study leading to a bachelor of science in software engineering is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria

and Program Criteria for Software Engineering. The bachelor of science computer science program is accredited by the Computing Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Computer Science. 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); 1) Our graduates have professional careers in the computing industry or academia or are engaged in advanced studies (B.S. Computer Science); and 1) Our graduates have professional careers in the cybersecurity industry or academia or are engaged in advanced studies (Cybersecurity). 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 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 and produce solutions; 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 and produce solutions; 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.

Graduates will have a solid technical background in mathematics and sciences.

The program offers courses in a wide variety of topics including design and analysis of algorithms, software engineering, artificial intelligence, machine learning, operating systems, computer networks and security, theory of computation, computer graphics, parallel and distributed systems, and database systems. The coursework is supplemented by several general purpose computing labs dedicated to computer science students, and specialized labs for courses such as operating systems, software engineering, and computer networking. The additional basic material common to all branches of computer science is concentrated in the late sophomore and early junior year, and maximum flexibility is permitted in the late junior and 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.

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 and produce solutions; 7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Cybersecurity

The cybersecurity degree program is designed to meet the fast growing demand for computer scientists with expertise in cybersecurity. In addition to learning in foundational computer science courses, students will learn crosscutting concepts and skills in confidentiality, integrity, privacy, risk, adversarial thinking, and security analytics. The curriculum emphasizes hands-on coursework and experiential learning and covers topics on security related to data, software, hardware, connection, cyber systems, and cybersecurity threats impacting organizations and society. The program trains students, for example, to design and build secure information networks, secure applications, secure systems, secure critical infrastructures, and secure methods for transporting data. The program prepares graduates for careers in cyber defense as well as cyber operations. The program of study culminates with a single-semester capstone project that typically has an industry sponsor and provides students with valuable experience in applying their skills to the collaborative development of cybersecurity solutions.

Cybersecurity Student Learning Outcomes

Students in cybersecurity will have acquired the following skills and knowledge by the time of graduation: 1) an ability to anticipate, identify, analyze, and solve cybersecurity problems by applying principles of computing, engineering, science, and other relevant disciplines; 2) an ability to design, implement, and evaluate a computing-based security solution to threats and vulnerabilities in data, software, hardware, connection, or cyber system while considering cyber law, ethics, rights and policies; 3) an ability to communicate effectively in a variety of professional contexts; 4) an ability to recognize ethical and professional responsibilities in computing and engineering situations and make informed judgments based on legal and ethical principles and with consideration of global, economic, environmental, and societal impacts; 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 apply computer science theory and software development fundamentals to produce computing-based cybersecurity solutions; 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.

COMPUTER ENGINEERING (124 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 80% 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, 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>	<i>Credits</i>
CHEM 105 [PSCI]	4
CPT S 121	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
CPT S 122	4
MATH 172	4
MATH 216	3
PHYSICS 201	3
PHYSICS 211	1

Second Year

<i>First Term</i>	<i>Credits</i>
CPT S 223	3
E E 214	4
MATH 220	2
MATH 273	2
PHYSICS 202	3
PHYSICS 212	1

<i>Second Term</i>	<i>Credits</i>
E E 234	4
E E 261	3
E E 262	1
HISTORY 105 [ROOT]	3
MATH 315	3
UCORE Inquiry ¹	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</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>	<i>Credits</i>
CPT S 360	4
E E 334	3
Engineering Science Elective ²	3
STAT 360	3
UCORE Inquiry ¹	3 or 4

Fourth Year

<i>First Term</i>	<i>Credits</i>
CPT E Technical Electives ³	3
E E 415	3
ECONS 101 [SSCI] or 102 [SSCI]	3
Senior Design Elective I ⁴	3
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
CPT E Technical Electives ³	6
E E 302	3
E E 416 [CAPS] [M]	3

UCORE Inquiry¹ 3
Complete CPT E Exit Interview and Survey

¹ Must complete 4 of these 5 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM.

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, 327, 350, 355, 411, 422, 430, 437, 440, 442, 443, 451, 452, 455, 460, 466; E E 331, 341, 351, 431, 432, 434, 439, 451, 464, 466, 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.

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 78% 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, one of CHEM 105, 106, PHYSICS 201 and 211, 202 and 212, and BIOLOGY 106, or 107, 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

First Term	Credits
CPT S 101	1
CPT S 121 or 131 ¹	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
PHIL 201	3

Second Term	Credits
CPT S 122 or 132 ¹	4
HISTORY 105 [ROOT]	3
MATH 172	4
MATH 216	3

Second Year

First Term	Credits
CPT S 223 or 233 ¹	3
CPT S 260	3
MATH 220 or 225	2 or 3
MATH 273 or 301	2 or 3
Lab Science Requirement [BSCI] or [PSCI] ²	4

Second Term	Credits
CPT S 317	3
CPT S 322 [M]	3
CPT S 355	3
CPT S Technical Elective ³	3
Lab Science Requirement [BSCI] or [PSCI] ²	4
Complete Writing Portfolio	

Third Year

First Term	Credits
CPT S 302	3
CPT S 327	3
CPT S 350	3
CPT S 360 or 370 ¹	4
ENGLISH 402 [WRTG]	3

Second Term	Credits
STAT 360	3
UCORE Inquiry ⁴	3
Computer Science Electives ⁵	6
CPT S Technical Elective ³	3

Fourth Year

First Term	Credits
CPT S 421	3
UCORE Inquiry ⁴	6
CPT S Technical Electives ³	6

Second Term	Credits
CPT S 423 [CAPS] [M]	3
UCORE Inquiry ⁴	3
Computer Science Electives ⁵	9
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 adhere to one path option.

² Lab Science Requirement: Choose from CHEM 105 [PSCI], 106, PHYSICS 201 [PSCI] and 211, 202 [PSCI] and 212, BIOLOGY 106 [BSCI], 107 [BSCI]. Graduation requirements stipulate one each of [BSCI], and [PSCI]. Transfer students may fulfill the credit requirement with course equivalencies of 6 semester credits. Courses should include sufficient credits to meet the University requirement of 120 credits.

³ 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, 442, 455, 460, 464, 466; Data and Information Management: CPT S 315, 415, 451, 471, 475; Software: CPT S 321, 323, 422, 443, 479, 480, 484, 487, 489; Artificial Intelligence and Machine Learning: CPT S 434, 437, 440; Scientific and Visual Computing: CPT S 430, 442, 453; Cybersecurity: CPT S 424, 425, 426, 427, 428, 429, 431, 439.

⁴ Must complete 4 of these 5 UCORE designations: ARTS, DIVR, EQJS, HUM, SSCI.

⁵ Computer Science Electives: Five additional courses (15 credits) at the 300-400-level that are not used as Technical Electives. At least 9 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 of CPT S 499, and a combined 3 credits of CPT S 488 and ENGR 489.

CYBERSECURITY (120 CREDITS)

Students are admitted to the Cybersecurity 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 78% 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 CPTS 121 or 131 and CPTS 122 or 132 and CPTS 223 or 233. In addition, students must also complete MATH 171, 216, and MATH 220 or 225, 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, excluding MATH 216, CPTS 223/233. In addition, complete the following courses: a [SSCI] course such as ECONS 101 or 102, ENGLISH 101, PHIL 201 or MATH 301, and the [PSCI] requirement of Lab Science Requirement³, 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, 499, and ENGR 489, all courses must be completed with a grade of C or better.

First Year

First Term	Credits
CPT S 101	1
CPT S 121 or 131 ¹	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
UCORE Inquiry ²	3

Second Term	Credits
CPT S 122 or 132 ¹	4
HISTORY 105 [ROOT]	3
MATH 216	3
UCORE Inquiry ²	3

Second Year

First Term	Credits
CPT S 223 or 233 ¹	3
CPT S 260 or E E 234	3 or 4
Lab Science Requirement [BSCI] ³	4
MATH 220 or 225	2 or 3
UCORE Inquiry ²	3

<i>Second Term</i>	<i>Credits</i>
CPT S 317	3
CPT S 321, 323, or 355 ⁴	3
CPT S 322 [M]	3
MATH 301 or PHIL 201	3
UCORE Inquiry ²	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CPT S 302	3
CPT S 327	3
CPT S 350	3
CPT S 360 or 370 ¹	4
ENGLISH 402 [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
CPT S 427	3
CPT S 451 or 415	3
STAT 360	3
Computer Science Electives ⁵	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
CPT S 428	3
CPT S 455	3
Lab Science Requirement [PSCI] ³	4
Computer Science Electives ⁵	6

<i>Second Term</i>	<i>Credits</i>
CPT S 426	3
CPT S 432 [CAPS] [M]	3
CPT S 439	3
Computer Science Electives ⁵	6
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. Transitivity allowed between tracks before taking CPTS 223/233. The C/C++ track is not available in Everett.

² Must complete 4 of these 5 UCORE designations: ARTS, DIVR, EQJS, HUM, SSCI.

³ Lab Science Requirement: Choose from CHEM 105 [PSCI], 106, PHYSICS 201 [PSCI] and 211, 202 [PSCI] and 212, BIOLOGY 106 [BSCI], 107 [BSCI]. Graduation requirements stipulate one each of [BSCI], and [PSCI]. Transfer students may fulfill the credit requirement with course equivalencies of 6 semester credits. Courses should include sufficient credits to meet the University requirement of 120 credits.

⁴ CPT S 323 is only available in Tri-Cities.

⁵ Computer Science Electives: 18 credits (minimum 12 credits 300-400 level CPTS courses) and must include one of CPTS 434, 437, 440, or 475. May include a maximum of 3 credits each of CPTS 490 and 499, or 3 credits of CPT S 499, and a combined 3 credits of CPT S 488 and ENGR 489. Approved non-CPTS courses are: 300-400-level EE courses, CE 463, DTC 335, EM 464, MATH 172, MBIOS 478, MSE 302, PHYSICS 303, 443, and STAT 436.

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 80% or higher; or completion of MATH 106 and 108, 171 or a higher calculus course with a grade of C or better, or completing the Calculus AP with a score of 2 or higher.

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
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
E E 234	4
E E 261	3
E E 262	1
ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 315	3
UCORE Inquiry ¹	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 ²	3

<i>Second Term</i>	<i>Credits</i>
E E 302	3
E E 341	3

E E 361	3
STAT 360	3
E E Area Elective ³	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
E E 415	3
ENGLISH 402 [WRTG]	3
E E Area Electives ³	6
Technical Elective ⁴	3

<i>Second Term</i>	<i>Credits</i>
E E 416 [CAPS] [M]	3
E E Area Elective ³	3
Technical Elective ⁴	3
UCORE Inquiry ¹	6
Complete E E Exit Interview and Survey	

¹ Must complete 4 of these 5 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM.

² Engineering Science Elective (3 credits): Choose from CE 211, ME 212, 301, MSE 302.

³ E E Area Electives (12 credits) from the areas of Digital Computing: CPT S 360, 437, 466, E E 324, 334, 434, 466; Microelectronics: E E 351, 431, 434, 466, 476, 496; Power: E E 362, 485, 486, 491, 492, 493, 494; Systems: E E 432, 451, 464, 489. Must include 9 credits of 400-level E E courses and at least one from E E 324, 351, 362, 489. E E 483 special topics course may also be considered as an E E Area Elective with department approval.

⁴ Technical Electives (6 credits) from ASTRONOM 435, CE 321, 463, CHEM 331, 333, 345, E M 464, ENGR 320, MATH 320, 325, 340, 364, 401, 402, 415, 420, 421, 440, 441, 448, 453, 464, 466, ME 241, 301, 304, 401, MSE 302, 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. Additional Technical Elective choices include 3 credits of E E 499, or a combined 3 credits of E E 488 and ENGR 489. Credit allowed for only one of CE 321, MATH 448, or ME 241 and only one of CE 463, E M 464, or ENGR 320. Courses used to satisfy other requirements cannot also be used as Technical Electives.

SOFTWARE ENGINEERING (122 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 78% 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 or 225, 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).

No courses listed in this schedule of study may be taken on a pass/fail basis. With the exception of CPT S 488, 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 101	1
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>
Biological Sciences [BSCI]	3
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 or 225	2 or 3
Math Requirement ²	2 or 3
PHYSICS 201/211 [PSCI] or CHEM 105 [PSCI]	4
<i>Second Term</i>	<i>Credits</i>
CPT S 321	3
CPT S 355	3
ECONS 101 [SSCI] or ECONS 102 [SSCI]	3
UCORE Inquiry ³	6
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>
CPT S 327	3
CPT S 350	3
CPT S 487	3
MATH/CPT S 453 or STAT 419	3
STAT 360	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
CPT S 421	3
CPT S 422 [M]	3
CPT S 428 or 481	3
CPT S 484	3
Software Engineering Option Course ⁴	3
<i>Second Term</i>	<i>Credits</i>
CPT S 423 [CAPS]	3
Data and Information Management Elective ⁵	3

Software Engineering Option Courses ⁴	6
UCORE Inquiry ³	3
Complete S 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 adhere to one path option.

² Math Requirement: minimum 5 credits from the following: MATH 273, MATH 301, PHIL 201, STAT 212.

³ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

⁴ 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. Software Engineering Option Courses may include a maximum of 3 credits CPT S 499, or a combined 3 credits of CPT S 488 and ENGR 489.

⁵ 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 earned in WSU courses 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, earned in WSU courses or through WSU-approved education abroad or educational exchange courses, excluding CPT S 302, 401, 488, 490, and 499. 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 earned in WSU courses 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, 323, 422, 428, 476, 478, 484, or 487. Credit not granted for both CPT S 323 and 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 credits must be 300-400-level and earned in WSU courses 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, 425, 426, 429, 439, 455, 460, 464, 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, or 432) 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 EECS, and to juniors and seniors admitted to other degree programs requiring these computer science courses.

CPT S

101 Introduction to Electrical Engineering and Computer Science 1 Introduction to programs within the School of Electrical Engineering and Computer Science discussing resources, opportunities, and knowledge and skills necessary to succeed within EECS majors.

- 111 [QUAN] Introduction to Computer Programming 3** (2-3) Course Prerequisite: 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 223 or 233 with a C or better, OR CPT S 121 or 131 and E E 261 with C or better; admitted to a major in EECS or Data Analytics; junior standing. Professional development; ethical and professional responsibilities in computing and engineering. (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, Data Analytics, or Cybersecurity. The process of automatically extracting valid, useful, and previously unknown information from large repositories. Recommended preparation: prior Python programming. (Crosslisted course offered as CPT S 315, CS 315.)
- 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 a major or minor in EECS 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 a major or minor in EECS 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 a major or minor in EECS or 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 a major or minor in EECS 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 Fundamentals of Cyber Security and Cryptography 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; admitted to a major or minor in EECS or Data Analytics. 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 a major or minor in EECS 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 a major or minor in EECS 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 a major or minor in EECS 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 a major or minor in EECS or Data Analytics. Implementation of systems programs, concepts of computer operating systems; laboratory experience in using operating system facilities. Taught in Java programming language.
- 411 Introduction to Parallel Computing 3** Course Prerequisite: CPT S 215, 223, or 233, with a C or better; admitted to a major or minor in EECS 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, Data Analytics, or Cybersecurity. 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 each of CPT S 322; CPT S 360 or 370; one 400-level CPT S course taken at WSU; admitted to a major in EECS; senior standing. 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 a major or minor in EECS or Data Analytics. Dependable software systems; software verification and validation, testing; CASE environments; software management and evolution.
- 423 [CAPS] [M] Software Design Project II** 3 (1-6) Course Prerequisite: CPT S 421 with a C or better; admitted to a major in EECS. Laboratory/group design project for large-scale software development, requirements analysis, estimation, design, verification techniques.
- 424 Cyber Law, Ethics, Rights, and Policies** 3 Course Prerequisite: CPT S 327 with a C or better; admitted to a major or minor in EECS or Data Analytics. Laws, ethics, rights, and governmental regulations as applied to the field of cybersecurity from technological and social perspectives.
- 425 Cyber Forensics and Anti-Forensics** 3 Course Prerequisite: CPT S 327 with a C or better; admitted to a major or minor in EECS or Data Analytics. Recovery and investigation of material found in various cyber environments (e.g., device, memory, operating systems, etc.) and ways to defeat forensic processes and tools.
- 426 Hardware, Hardware Security, and Hardware Reverse Engineering** 3 Course Prerequisite: CPT S 327 with a C or better; admitted to a major or minor in EECS or Data Analytics. Hardware hacking and reverse engineering approaches routinely used against electronic devices and embedded systems; introduction to the basic procedures necessary to perform reverse engineering of hardware components to determine their functionality, inputs, outputs, and stored data.
- 427 Cyber Security of Wireless and Distributed Systems** 3 Course Prerequisite: CPT S 327 with a C or better; admitted to a major or minor in EECS or Data Analytics. Cellular and wireless system security, incidence response cycles, fault tolerance, and distributed computer security.
- 428 Software Security and Reverse Engineering** 3 Course Prerequisite: CPT S 327 with a C or better; admitted to a major or minor in EECS or Data Analytics. 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.
- 429 Virtualization and Offensive Cyber Operations** 3 Course Prerequisite: CPT S 327 with a C or better; admitted to a major or minor in EECS or Data Analytics. Virtualization and offensive cyber operations including the building of multiple software systems that operate as independent systems running on multiple native hardware items and conducting campaigns aimed at compromising computational capacities of an adversary.
- 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. Required preparation must include differential equations and a programming course. (Crosslisted course offered as MATH 448, MATH 548, CPT S 430, CPT S 530.) Credit not granted for more than one of MATH 448/548 or CPT S 430/530.
- 431 Security Analytics and DevSecOps** 3 Course Prerequisite: CPT S 327 with a C or better; admitted to a major or minor in EECS or Data Analytics. Security analytics at an enterprise deployment scale using social, data, graph avenues of evaluation, and topics of supply chain cybersecurity, risk management frameworks, and security of developer operation pipelines.
- 432 [CAPS] [M] Cybersecurity Capstone Project** 3 Course Prerequisite: CPT S 327; CPT S 427; CPT S 428; CPT S 455, each with a C or better; admitted to the major in Cybersecurity; senior standing. Group design project for large-scale cybersecurity development incorporating analysis, application ability, industrial skills, and adherence to cybersecurity standards.
- 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 a major or minor in EECS or 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 a major or minor in EECS 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 a major or minor in EECS or Data Analytics. Data taxonomy, sampling, plotting, using and extending a visualization package, designing visualization and domain-specific techniques.
- 439 Cybersecurity of Critical Infrastructure Systems** 3 Course Prerequisite: CPT S 327 and admitted major or minor in CPT S, Software Engr, Cybersecurity, or Data Analytics; OR E E 234 and 361 and admitted major or minor in E E; OR CPT S 327 and E E 234 and admitted major or minor in Cpt Engr. Security topics as they relate to critical infrastructure systems vital to any nation including industrial control systems, cyber physical systems, SCADA, DCS, IoT, IIoT, and the knowledge to secure such systems. (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 a major or minor in EECS or 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 to a major or minor in EECS 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 a major or minor in EECS or 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 a major or minor in EECS 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 a major or minor in EECS 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. Required preparation must include linear algebra. Recommended preparation: MATH 301. (Crosslisted course offered as MATH 453, CPT S 453.) Cooperative: Open to UI degree-seeking students.

- 455 Introduction to Computer Networks and Security** 3 Course Prerequisite: CPT S 360, 370, or E E 234, with a C or better; admitted to a major or minor in EECS or Data Analytics. Concepts and implementations of computer networks; architectures, protocol layers, internetworking, addressing case studies, and discussion of security constraints at all layers of the OSI stack from attacker and defender perspectives. (Crosslisted course offered as CPT S 455, E E 455.)
- 456 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. (Crosslisted course offered as MATH 466/566, CPT S 456/556.) Cooperative: Open to UI degree-seeking students.
- 460 Operating Systems and Computer Architecture** 3 Course Prerequisite: CPT S 360 with a C or better; admitted to a major or minor in EECS 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 a major or minor in EECS 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 a major or minor in EECS 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 a major or minor in EECS 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; admitted to a major or minor in EECS or Data Analytics. 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. Recommended preparation for 575: Familiarity with algorithm design and analysis, basic linear algebra, and basic probability and statistics. Credit not granted for both CPT S 475 and CPT S 575.
- 478 Software Process and Management** 3 Course Prerequisite: CPT S 322 with a C or better; admitted to a major or minor in EECS 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 a major or minor in EECS or Data Analytics. Mobile application development; user interface; location and maps; sensor; camera; cross platform mobile application development tools.
- 480 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 a major or minor in EECS or Data Analytics. Intensive introduction to the python language; user interface, building and using extension modules; C interfacing; construction of a major project.
- 481 Software Maintenance** 3 Course Prerequisite: CPT S 321 and 322 with a C or better; admitted to a major or minor in EECS or Data Analytics. Software maintenance, refactoring, reengineering, reverse engineering. Credit not granted for both CPT S 481 and 581.
- 483 Topics in Computer Science** V 1-4 May be repeated for credit. Course Prerequisite: Admitted to a major or minor in EECS 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 a major or minor in EECS 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 a major or minor in EECS or 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 a major or minor in EECS or 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 to a major or minor in EECS 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 a major or minor in EECS 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: By department permission only; Computer Science major. 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. 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 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. (Crosslisted course offered as CPT S 515, CS 515.)
- 516 Algorithmics** 3 Discrete structures, automata, formal languages, recursive functions, algorithms, and computability.
- 519 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. (Crosslisted course offered as MATH 529, CPT S 519.)
- 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 Software Security and Reverse Engineering** 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. Required preparation must include differential equations and a programming course. (Crosslisted course offered as MATH 448, MATH 548, CPT S 430, CPT S 530.) Credit not granted for more than one of MATH 448/548 or CPT S 430/530.
- 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.
- 554 Advanced Graph Theory** 3 Advanced treatment of the theory of graphs including matchings, colorings, extremal graph theory, graph algorithms, algebraic and spectral methods, and random graph models. Required preparation: MATH 453 or equivalent. (Crosslisted course offered as MATH 554, CPT S 554.) 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.)
- 556 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. (Crosslisted course offered as MATH 466/566, CPT S 456/556.) Cooperative: Open to UI degree-seeking students.
- 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.
- 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. Recommended preparation for 575: Familiarity with algorithm design and analysis, basic linear algebra, and basic probability and statistics. Credit not granted for both CPT S 475 and CPT S 575.
- 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. Credit not granted for both CPT S 481 and 581.
- 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. Course Prerequisite: By department permission. 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. (Crosslisted course offered as CPT S 800, CS 800.) S, U grading.

Electrical Engineering

Enrollment in 300 and 400-level electrical engineering courses is restricted to admitted majors or minors in EECS, and to juniors and seniors admitted to other degree programs requiring 400-level engineering courses.

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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.

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 223 or 233 with a C or better, OR CPT S 121 or 131 and E E 261 with C or better; admitted to a major in EECS or Data Analytics; junior standing. Professional development; ethical and professional responsibilities in computing and engineering. (Crosslisted course offered as CPT S 302, E E 302.) Credit not granted for both CPT S/E E 302 and CPT S 401.

311 Electronics 3 Course Prerequisite: E E 261 with a C or better; admitted to a major or minor in EECS, 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 a major or minor in EECS, 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 a major or minor in EECS, 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 a major or minor in EECS. 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 a major or minor in EECS, 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 a major or minor in EECS. 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 a major or minor in EECS. 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 a major or minor in EECS. 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 a major or minor in EECS. Experiments in simulation, modeling, transformers, rotating machines, and transmission lines.

415 Design Project Management 3 (1-6) Course Prerequisite: C or better in each of E E 234, 341, 352, and 361, OR C or better in each of E E 334, 352, and CPT S 360; C or better or concurrent enrollment in E E 302; admitted to a major in EECS. 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 a major or minor in EECS; 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 a major or minor in EECS. 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 a major or minor in EECS. 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 a major or minor in EECS. Application Specific Integrated Circuit and Digital System Design methods, semi-custom, full-custom, and field-programmable devices; digital system architectures, electronics, and tests.

439 Cybersecurity of Critical Infrastructure Systems 3 Course Prerequisite: CPT S 327 and admitted major or minor in CPT S, Software Engr, Cybersecurity, or Data Analytics; OR E E 234 and 361 and admitted major or minor in E E; OR CPT S 327 and E E 234 and admitted major or minor in Cpt Engr. Security topics as they relate to critical infrastructure systems vital to any nation including industrial control systems, cyber physical systems, SCADA, DCS, IoT, IIoT, and the knowledge to secure such systems. (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 a major or minor in EECS, 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 and Security** 3 Course Prerequisite: CPT S 360, 370, or E E 234, with a C or better; admitted to a major or minor in EECS or Data Analytics. Concepts and implementations of computer networks; architectures, protocol layers, internetworking, addressing case studies, and discussion of security constraints at all layers of the OSI stack from attacker and defender perspectives. (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 a major or minor in EECS, 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 a major or minor in EECS. 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 a major or minor in EECS. 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 a major or minor in EECS. 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 a major or minor in EECS. 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 a major or minor in EECS. 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 a major or minor in EECS. 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 a major or minor in EECS. 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 a major or minor in EECS. 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 a major or minor in EECS. 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: By department permission only; Electrical Engineering major. 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 a major or minor in EECS. 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. 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 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. (Crosslisted course offered as E E 536, ECE 536).
- 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.)
- 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. (Course offered as MATH 567, E E 567.) Cooperative: Open to UI degree-seeking students.
- 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. (Crosslisted course offered as E E 800, ECE 800.) S, U grading.

School of Engineering and Applied Sciences - WSU Tri-Cities

tricity.wsu.edu/engineering/
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Academic Director and Professor: C. Mo; Professors: A. Hossain, S. Hudson, J. Iannelli; Associate Professors: Y. Demissie, J. Heyne, J. Miller; Assistant Professors: M. Elmahallawy, S. Li, B. Liu; Professor, Career Track: M. Saad, Associate Professors, Career Track: L. De La Torre, D. Lowry, Y. Zhang; Assistant Professors, Career Track: C. Morton, C. Yang; Research Assistant Professor: Z. (Harrison) Yang; Visiting Faculty: N. Corrigan; Professor Emeritus: M. Osman; Associate Professor Emeritus: R. Lewis.

The School of Engineering and Applied Sciences (SEAS), an academic unit within WSU's Voiland College of Engineering and Architecture, offers Bachelor's, Master's, and Doctoral degree programs.

The undergraduate programs lead to the degrees of Bachelor of Science in Civil Engineering (BSCE), Computer Science (BSCS), Cybersecurity (BSCyber), Electrical Engineering (BSEE), and Mechanical Engineering (BSME). An internship program is available for all students to gain industrial experience during their academic careers. The undergraduate curricula provide students with firm foundations to meet the challenges of their individual career paths confidently and to adapt to ever changing technologies rapidly.

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. Through integrated undergraduate and graduate advising, qualified students may be admitted into accelerated Master's programs. The graduate programs prepare students for advanced research to qualify to join research organizations and peer universities.

Engineers and computer scientists integrate knowledge, experience, judgment, and creativity to elevate societies. Located at Washington State University's campus in the Tri-Cities, SEAS directly serves students in the southeastern region of Washington and graduates them as professionals

who can advance the operations of regional as well as national and international engineering and computer science companies and organizations.

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, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Civil Engineering.

The mission of the BSCE program is to provide a premier undergraduate education in civil engineering that prepares our graduates to contribute effectively to the profession and society, for advanced study, and for life-long learning; to conduct world-class disciplinary and interdisciplinary research that is integrated with both graduate and undergraduate education in selected areas of excellence; and to serve a diverse constituency through technology transfer, public service, and outreach.

The 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

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 CE 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 stimulate their creative ability. An engineering internship program is available for students to gain industrial experience during their academic careers. 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 school's objectives.

COMPUTER SCIENCE

Computer Scientists study, plan, develop, and deploy computer- and software-based systems that impact essentially every aspect of our lives. These systems encompass artificial intelligence, analysis and design of algorithms, computer networks and cybersecurity, computer vision and graphics, database systems, human computer interaction, machine learning, numerical analysis, operating systems, parallel and distributed systems, programming languages, software engineering, and theory of computing. For instance, these systems generate applications that perform efficiently on handheld devices, uphold privacy and security objectives, and delight consumers.

The BSCS is accredited by the Computing Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Computer Science.

The coursework in computer science prepares students for a variety of careers that involve the extensive use of computers. Graduates in Computer Science 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 education objectives for the BSCS 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 the BSCS program 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, an understanding of professional, ethical, legal, security, and social issues and responsibilities
- 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.

CYBERSECURITY

The BS in Cybersecurity degree program is designed to meet the fast growing demand for computer scientists with expertise in cybersecurity. In addition to learning in foundational computer science courses, students will learn crosscutting concepts and skills in confidentiality, integrity, privacy, risk, adversarial thinking, and security analytics. The curriculum emphasizes hands-on coursework and experiential learning and covers topics on security related to data, software, hardware, connection, cyber systems, and cybersecurity threats impacting organizations and society. The program trains students, for example, to design and build secure information networks, secure applications, secure systems, secure critical infrastructures, and secure methods for transporting data. The program prepares graduates for careers in cyber defense as well as cyber operations. The program of study culminates with a single-semester capstone project that typically has an industry sponsor and provides students with valuable experience in applying their skills to the collaborative development of cybersecurity solutions.

Cybersecurity Student Learning Outcomes

Students in cybersecurity will have acquired the following skills and knowledge by the time of graduation: 1) an ability to anticipate, identify, analyze, and solve cybersecurity problems by applying principles of computing, engineering, science, and other relevant disciplines; 2) an ability to design, implement, and evaluate a computing-based security solution to threats and vulnerabilities in data, software, hardware, connection, or cyber system while considering cyber law, ethics, rights and policies; 3) an ability to communicate effectively in a variety of professional contexts; 4) an ability to recognize ethical and professional responsibilities in computing and engineering situations and make informed judgments based on legal and ethical principles and with consideration of global, economic, environmental, and societal impacts; 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 apply computer science theory and software development fundamentals to produce computing-based cybersecurity solutions; 7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

ELECTRICAL ENGINEERING

Electrical engineers study, plan, and design systems that rely on electrical power. These systems include smart phones and tablets, computers, navigation, and radar equipment, wired and wireless communication hardware, power generation

installations, electric motors, the nation's power grid, and even the microchips within personal electronic devices.

The curriculum in electrical engineering provides students with fundamental knowledge in the areas that support essentially all electrical engineering fields. Emphasized are the basic theory and concepts that prepare students for engagement in the multifaceted activities of the profession including research, design, development, operations, management, teaching, and consulting. To this end, laboratory experience provides students with familiarity with electrical, electronic and computing equipment as well as experimental techniques. An engineering internship program is available for students to gain industrial experience during their academic careers. The program culminates in a two-semester senior design project that typically involves industry cooperation, and trains students in the application of their knowledge and skills to solve real-world problems.

The BSEE program is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Electrical and Electronics Engineering.

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

Mechanical engineers study, design, and develop systems that address: (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 application of machines to lighten the burden of human work, (c) the efficient use of energy and resources, (d) the processing of

materials into products useful to people, and (e) the integration of machines and algorithms for autonomous systems. Engines, vehicles, airplanes, solar and wind energy installations, the international space station, these are typical mechanical engineering 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 BSME program is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Mechanical Engineering.

The program interweaves computer applications throughout its courses. The undergraduate curriculum emphasizes foundation third-year courses that are fundamental to all aspects of mechanical engineering. These courses focus on both analysis and design with accompanying laboratory courses that provide opportunities for hands-on experiences. 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. An engineering internship program is available for students to gain industrial experience during their academic careers. The undergraduate program culminates in a two-semester senior capstone design project that typically involves industry cooperation and trains students in the application of their knowledge and skills to solve real-world problems. Graduates are prepared to enter the field as engineers or to continue into a graduate program.

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

Voiland College of Engineering and Architecture

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Dean and Professor, P. Pande; Associate Dean for Research and Graduate Studies and Professor, H. Beyenal; Associate Dean for Academic Affairs and Associate Professor, K. Sivakumar; Associate Dean for Student Success and Associate Research Professor, S. Pressley; Assistant Dean, K. Beddoes.

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 credits, 9 of which must be upper-division earned in WSU courses 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 and computer science disciplines; concepts from trigonometry to calculus 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.

420 Multidisciplinary Engineering Design I 3 (1-4) Course Prerequisite: ENGR 320; 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: ENGR 420; 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.

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: By department permission; sophomore standing. 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.

581 Graduate Research Methods 1 Responsible conduct of research and other topics required to be successful in the Engineering graduate program.

School of Engineering and Computer Science - WSU Vancouver

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Academic Director and Associate Professor, X. Zhao; Professors, H. Gurocak, D. Kim, S. Solovitz, F. Zhao; Associate Professors, X. Chen, T. Karacolak, J. H. Kim, P. Sekhar, H. Tan, S. Wallace, X. Zhang; Assistant Professors, J. Campos do Prado, H. Gao, C. Qin, A. Wisniewska; Scholarly Professors, J. Lynch, H. Rad; Scholarly Associate Professor, P. Bonamy, B. McCamish; Scholarly Assistant Professors, A. Majdara, G. Williams; Lecturer, F. Kabir; Adjunct Faculty, D. Lowe, K. Morgan, C. Stone.

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 program in Electrical Engineering is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Electrical and Electronics Engineering. The undergraduate program in Mechanical Engineering is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Mechanical Engineering. The undergraduate program in Computer Science is accredited by the Computing Accreditation Commission of ABET, <https://www.abet.org>, under the commission's General Criteria and Program Criteria for Computer Science.

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 have the ability, knowledge, and skills for a successful career in computer science.
- You will adapt to the changing landscape of computer science.
- You will advance, engage with, and respond to issues of justice, ethics, diversity, equity, and inclusion in professional and civic settings.
- You will act as a responsible professional, contributing to the greater benefit of society.

Student Learning Outcomes

Our graduates will have an ability 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.

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. 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 offers both thesis and non-thesis options. The thesis option requires 30 credit hours, including 21 hours of graded course work and 9 credits of thesis research (CS

700). The non-thesis option requires 31 credit hours, including 27 hours of graded course work and 4 credits of independent research (CS 702). The program offers critical technologies that span core areas of Computer Science. The coursework and research are in the general areas of big data and data science; artificial intelligence and machine learning; systems and networks; security; and computing theory. Sophisticated facilities are available for instruction and research, including a high-performance computing cluster with 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 offers both thesis and non-thesis programs. The thesis option requires a minimum of 30 credit hours, which includes 21 hours of graded coursework beyond the bachelor's degree, plus a minimum of 4 thesis credits (ECE 700). The remaining five credits can be additional ECE 700 thesis credits or 500-level ECE classes. The non-thesis option requires a minimum of 31 credit hours. This includes 27 hours of graded coursework beyond the bachelor's degree, plus a minimum of 4 ECE 702 credits. The MSEE 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; power systems; power electronics and motor drives; 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 pursuing the thesis option.

A Bachelor of Science degree from an accredited program in electrical engineering provides a good background for the MSEE graduate program. Students with bachelor's 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 offers thesis and non-thesis programs, which require a minimum of 30 credit hours. The thesis program requirement includes 21 hours of graded coursework beyond the bachelor's degree, plus a minimum of 4 thesis credits (MECH 700). The remaining five credits can be additional MECH 700 thesis credits or 500-level MECH classes. The non-thesis program requirement includes 26 hours of graded coursework beyond the bachelor's degree, plus a minimum of 4 independent research credits (MECH 702). 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's 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.

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. The prerequisites for MATH 171 include MATH 106 with a C or better and MATH 108 with a C or better, or a minimum ALEKS math placement score of 83%.

To keep their status as Computer Science majors and to remain in good academic 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 maintain a cumulative GPA of 2.0 or higher.

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
MATH 171 [QUAN]	4
UCORE Inquiry ¹	3

<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
MATH 220	2

PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI] or Elective ²	4
CS 220 or 224	3
CS 261	3
MATH 273 or 301	2-3
Science Elective with Lab ³	4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CS 317	3
CS 360	4
CS Option Course ⁴	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 ⁴	3
UCORE Inquiry ¹	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
CS 420 [CAPS] [M]	3
CS 450	3
CS Option Courses ⁴	6
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
CS 402 [M]	3
CS 421	3
CS Option Course ⁴	3
CS Security Option Course ⁵	3
CS Systems Option Course ⁶	3
Complete CS Exit Survey	

¹ Must complete 4 of these 5 UCORE designations: ARTS, DIVR, EQJS, HUM, SSCI.

² If the [BSCI] requirement will be satisfied via the Science Elective requirement, 4 elective credits from any discipline may be selected. See also footnote 3.

³ Science Elective with Lab: science course selected from the following: PHYSICS 202/212, CHEM 105, 106, BIOLOGY 106, or 107.

⁴ 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 credits from the following list: MATH 315, 320, 325, 364, 420, 448, 453, 466, ECE 324, 366, 424, and DATA 319. Other computer science-related courses may be substituted, as approved by the department.

⁵ 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.

⁶ CS Systems Option Courses: 3 credits of systems 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 Systems Option Courses must be chosen from the following courses: CS 455, 460, and 466.

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 keep their status as Electrical Engineering majors and to remain in good academic standing, students must pass ECE 214, 234, 251, 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 2.0 or higher.

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 cumulative GPA.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 105 [PSCI]	4
ECE 101	2
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
ECE 214	3
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 251	4
MATH 220	2
MATH 273	2
PHYSICS 202	3
PHYSICS 212	1

<i>Second Term</i>	<i>Credits</i>
ECE 234	3
ECE 260	4
ECONS 101 [SSCI] or 102 [SSCI]	3
MATH 315	3
UCORE Inquiry ¹	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ECE 321	3
ECE 325	4
ECE Elective ²	3
ENGLISH 402 [WRTG]	3
STAT 360	3

<i>Second Term</i>	<i>Credits</i>
ECE 311	3
ECE 341	3
ECE 370	3
ECE Electives ²	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
ECE 451	2
ECE Electives ²	9

<i>Second Term</i>	<i>Credits</i>
ECE 405 [M]	3
ECE 452 [M] [CAPS]	3
ECE Electives ²	9
UCORE Inquiry ¹	3

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

² ECE Electives must be chosen from CS 330, 466, ECE 302, 316, 324, 327, 345, 349, 366, 411, 414, 421, 424, 425, 461, 466, 471, 476, 483, 495, 496, MECH 441, 467, 468, or be pre-approved by a faculty advisor.

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 keep their status as Mechanical Engineering majors and remain in good academic standing, students must pass 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 2.0 or higher.

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>
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
MECH 103	2
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 101 [WRTG]	3
MATH 172	4
MATH 220	2
MECH 101	2
UCORE Inquiry ¹	3

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>	<i>Credits</i>
MECH 310	4
MECH 314	3
MECH 348	3
MECH 404	3
400-level MECH Option Courses/Technical Electives ²	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
MECH 402	3
MECH 414	3
MECH 416 [M]	2
400-level MECH Option Courses/Technical Electives ²	6

<i>Second Term</i>	<i>Credits</i>
MECH 417 [CAPS]	3
UCORE Inquiry ¹	3
400-level MECH Option Courses/Technical Electives ²	9

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

² Technical Electives or 400-level MECH Option Courses: The program emphasizes fundamentals and provides flexibility in selecting a course of study through six technical electives (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) Renewable Energy: MECH 441, ECE 421, choice of two courses from ECE 489, MECH 405, 431, 439, 450, 483.

Minors

Computer Science (Vancouver only)

The minor in computer science consists of 19 to 20 credits, 9 of which must be 300-400-level credit earned in WSU courses or through WSU-approved education abroad or educational exchange courses. Completion of the minor requires CS 121 or 251; CS 122 or DATA 319; CS 220, 223, 224, or 261; and 9 credits of electives. At least 6 of these elective credits must be 300-400 level courses with a CS prefix; up to 3 credits may be selected from MATH 315, 320, 325, 364, 420, 448, 453, 466, ECE 324, 424, and DATA 319.. 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) one from the following three courses: MECH 303, 309, or 348, and (3) remaining credits from MECH 300-400-level courses. 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.)

220 Object-Oriented Design

3 Course prerequisite: CS 122 with a C or better Software design with object-oriented programming; object-oriented programming concepts; front-end application development.

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, Data Analytics, or Cybersecurity. The process of automatically extracting valid, useful, and previously unknown information from large repositories. Recommended preparation: prior Python programming. (Crosslisted course offered as CPT S 315, CS 315.)

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 220 or 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 with UML.

330 Numerical Computing

3 Course Prerequisite: CS 251 with a C or better, or CS 261 with a C or better; MATH 172 or 182 with a C or better; MATH 220 with a C or better. Power and limitation of numerical solutions; design, analysis and implementation of numerical algorithms; visualization and rendering.

351 Introduction to Database Systems

3 Course Prerequisite: CS 215 with a C or better, CS 220 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 220 or 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 261 with a C or better, or ECE 234 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, Data Analytics, or Cybersecurity. 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; admitted to the major in Computer Science; 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.

421 Software Design Project II

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 251 with a C or better, or CS 261 with a C or better. 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.

437 Introduction to Machine Learning

3 Course prerequisite: CS 223 with a C or better; STAT 212 or concurrent enrollment, or STAT 360 or concurrent enrollment. Machine learning concepts, algorithms, and applications; machine learning models and workflows; use of real-world data sets to solve classification, regression, and clustering problems; issues specific to real world data analysis such as feature selection, dimensionality reduction, or cleaning.

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, CS 166 with a C or better, or MATH 301 with a C or better. Analysis of data structures and algorithms; computational complexity and design of efficient data-handling procedures.

452 Compiler Design

3 Course Prerequisite: CS 317 with a C or better; CS 355 with a C or better. Design of lexical analyzers, syntactic analyzers, intermediate code generators, code optimizers and object code generators.

- 453 Cloud Data Management** 3 Course
Prerequisite: CS 351 with a C or better or concurrent enrollment. 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 220, 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 to a major or minor in EECS 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. 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 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. (Crosslisted course offered as CPT S 515, CS 515.)
- 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.
- 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.
- 558 Wireless 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.
- 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. (Crosslisted course offered as CPT S 800, CS 800.) 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 MATH 171 or concurrent enrollment, 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.

- 251 Programming for Electrical Engineers 4** (3-3) Course Prerequisite: MATH 108 or MATH 171 with a C or better; or concurrent enrollment in MATH 171; or minimum ALEKS math placement score of 78%. Introduction to the C and MATLAB programming languages and application to engineering problem solving; data structures, input/output functions; flow control, and pointers in C; matrix operations, plots, and working with data files in MATLAB; laboratory use of integrated development environments and debugging tools.
- 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.
- 311 Introduction to Power and Energy Systems 3** Course Prerequisite: ECE 321. Structures and configurations of systems for power configuration, transmission, and distribution; single-phase and three-phase systems, per unit system; major power system components (power transformers, generators, transmission lines, and loads) and their representations/models for system analysis; analysis and design of conventional and alternative energy sources.
- 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** 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.
- 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 Electric Machines 3** (2-3) Course Prerequisite: ECE 321; ECE 370. Power transformers and stationary electric machine analysis methods and design; new systems and applications.
- 414 Introduction to Digital Signal Processing 3** (2-3) Course Prerequisite: ECE 341. Discrete and fast Fourier Transforms, Z-Transform, sampling, discrete convolution, digital filter design and effects of quantization.
- 421 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 260. 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 System Analysis and Design 3** (2-3) Course Prerequisite: ECE 311 or ECE 411. Power flow analysis, power system economics, symmetrical faults, symmetrical components, unsymmetrical faults, transient stability, and power systems analysis using commercial computer simulation software to enhance understanding in the laboratory.
- 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** Course Prerequisite: ECE 370. Antenna types and radiation, wire antennas, antenna arrays broadband and aperture antennas; theory and simulation of antenna performance.
- 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.
- 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 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 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. (Crosslisted course offered as E E 536, ECE 536).

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.

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.

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. (Crosslisted course offered as E E 800, ECE 800.) 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 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] 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 Manufacturing Processes 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 Internet of Things with Microcontrollers** 3 Course Prerequisite: MECH 304. Microcontroller programming for Internet of Things (IoT) and network connectivity, IoT capable smart product design.
- 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 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 Renewable Energy** 3 Course Prerequisite: 4 credits of PHYSICS 202, or PHYSICS 202 and 212; MATH 273; MECH 212 or ECE 260. 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 105; 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 May be repeated for credit; cumulative maximum 9 hours. 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. 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 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.
- 521 Advanced Fluid Mechanics** 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** 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.**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. (Crosslisted course offered as ME 800, MECH 800.) S, U grading.

Engineering and Technology Management Program

etm.wsu.edu
Carpenter Hall 533
509-335-5595

Program Director, L. Magpili; Faculty: Associate Professors, K. Bachman, J. Jones; Adjunct Instructors, R. Crick, R. Johnson, J. Rogers, A. Tahani, A. Villagra.

Washington State University's Engineering and Technology Management (ETM) program prepares

engineers and industry professionals to make strategic and operational decisions to become leaders in the management of engineering, technology, operations, and projects. The graduate-level courses provide practicing engineers and technical professionals with knowledge, tools, and skills enabling innovative thinking, technical decision-making, and effective leadership. The interdisciplinary ETM degree blends engineering, operations, and business principles, preparing graduates to step into leadership roles across industries. The degree requires 27 semester credits (9 courses) of graduate coursework and a 3-credit capstone project that applies course outcomes to a real-world challenge.

Convenience and quality for students and their employers are at the forefront of ETM goals. Designed for working professionals, the ETM program is fully online and built for flexibility without sacrificing quality. Live, interactive classes via Zoom bring students face-to-face with expert faculty and fellow students from across the globe. Students collaborate on team projects, participate in breakout sessions, and engage in lively, real-time discussions. Can't attend live? Every session is recorded and archived, so materials can be reviewed anytime during the semester.

Students can pursue a dual degree with Engineering and Technology Management and other graduate programs such as Electrical Power Engineering PSM and PharmD.

For students interested in a modular approach or wishing to develop depth in a specific area, the ETM program offers six concentrations and six graduate-level certificates. Graduate certificates can be completed in a shorter duration with three required courses (nine credits).

Graduate Certificates:

- Constraints Management
- Industrial Leadership
- 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. Prospective students must provide:

- at least one academic or professional reference (not required for admission to the certificate program),
- a resume showing relevant work experience,
- a three- to five- paragraph personal statement outlining the significance of the ETM Master's degree to their career goals and work history.

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 Engineering and Technology Management Master's Degree Program empowers graduates to become successful professionals equipped with advanced technical and management skills. Through a dynamic, application-focused curriculum, students become work-ready in real

time, able to immediately apply new knowledge and tools to their current roles while preparing to advance into leadership positions 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 Foundations** 3 Course Prerequisite: Junior standing. Project management fundamentals including traditional methods, agile practices, key terminology, project manager responsibilities, project scope and life cycle components, stakeholders, communication plan, work breakdown structure, risk identification, and project control using MS Project.
- 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. Recommended preparation: an undergraduate course in statistics. Credit not granted for both E M 480 and E M 580.
- 485 Design of Experiments** 3 Design for quality improved products; processes and services using designed experiments, including robust/parameter design. Recommended preparation: Undergraduate statistics. Credit not granted for both E M 485 and E M 585.
- 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.
- 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. Recommended preparation: an undergraduate course in statistics. Credit not granted for both E M 480 and E M 580.
- 585 Design of Experiments** 3 Design for quality improved products; processes and services using designed experiments, including robust/parameter design. Recommended preparation: Undergraduate statistics. Credit not granted for both E M 485 and E M 585.
- 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. Sciacchitano, 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, certificates, 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, Sport, and Human Sciences 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 seek 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 in:

- 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>.

English, BA Program-level Student Learning Outcomes

(specific skills and knowledge that students are expected to demonstrate upon successful completion of a learning experience / program of study)

Students graduating with a Bachelor of Arts in English will be able to:

- Textual Analysis -- identify and understand relations among text (content and elements), reader, and author to evaluate how they support an advanced understanding of the text as a whole.
- Effective Communication -- communicate effectively using appropriate modalities (creative, critical, and/or rhetorical expression) and technologies that contribute to literary and cultural discourses.
- Historical Awareness -- recognize how historical context(s), including equity, oppression, and diversity, inform(s) the production of meaning.
- Audience -- display an awareness of audience and tailor their message to satisfy audience expectations both within and outside the university.
- Option Specific -- demonstrate competency in an additional learning outcome specific to their option:
- Creative Writing -- display an awareness of the creative process of discovery and the significance of selecting from strategies within and across literary genres and traditions, and apply those to analyze literature and compose creative works.
- English Teaching -- display awareness of educational research and theory and apply those to design instructional materials that are appropriate to context and topic.
- Literary Studies -- contribute to literary discourses through detailed analysis of texts, with an awareness of how historical contexts have shaped Anglophone literatures and cultures from their beginnings to the transnational and global literatures of the present day.
- Rhetoric & Professional Writing -- demonstrate awareness of linguistic choices in oral and written delivery, use communicative tools appropriate to context and for different audiences, and consider language diversity.
- Linguistics -- analyze language data, quantitatively and qualitatively, based on their knowledge of the structural and sociocultural properties of language.

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.

ENGLISH - 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 39 credits, approximately half in creative writing and related professional courses, the remainder in supporting literature courses approved by the advisor.

First Year

First Term	Credits
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	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
ENGLISH 351 or 353	3
Equity and Justice [EQJS]	3
Social Sciences [SSCI]	3
Electives	6

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
ENGLISH 352	3
300-400-level Literature Elective ²	3
Electives	3
Complete University Writing Portfolio	

Third Year

First Term	Credits
ENGLISH 302 [M]	3
ENGLISH 343, 354, 357, 402 [M], 498, or 499	3
300-400-level Literature Elective ²	3
Electives	6

Second Term	Credits
ENGLISH 451 [M], 452 [M], or 453	3
Writers of Color Course ³	3
300-400-level Electives	9

Fourth Year

First Term	Credits
300-400-level Creative Writing or Literature Elective ⁴	3
400-level Literature Elective ²	3
300-400-level Electives	6
Electives	3
Complete Senior Exit Survey	

Second Term	Credits
ENGLISH 446 [CAPS]	3
ENGLISH 451 [M], 452 [M], or 453	3
300-400-level Creative Writing or Literature Elective ⁴	3
Electives	4

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² Literature Electives: Approved courses include ENGLISH 305, 306, 309, 311, 315, 317, 322, 332, 341, 366, 370, 371, 372, 373, 382, 409, 419, 470, and 480-489.

³ Writers of Color Courses: Choose from ENGLISH 220, 222, 310, 311, 315 [M], 316, 322 [M], 341 [M], 345 [M], 489, or CES 331.

⁴ Approved courses include any 300-400-level ENGLISH courses not used to fulfill other requirements.

ENGLISH - 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 27 credits of core classes, and 12 credits of Integrative electives to include a maximum of 3 credits of 200-level coursework and a minimum of 3 credits of 400-level coursework.

First Year

First Term	Credits
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3

Humanities [HUM]	3
Electives ²	3

Second Term	Credits
Arts [ARTS]	3
Physical Sciences [PSCI] with lab ¹	4
Quantitative Reasoning [QUAN]	3
Social Sciences [SSCI]	3
Electives ²	3

Second Year

First Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
Equity and Justice [EQJS]	3
Integrative Elective ³	3
Electives ²	3

Second Term	Credits
Critical and Theoretical Approaches course ⁴	3
ENGLISH 302 [M]	3
Humanities in Practice and Production course ⁵	3
Electives ²	6
Complete University Writing Portfolio	

Third Year

First Term	Credits
Global and Decolonial Approaches course ⁶	3
Historical Approaches course ⁷	3
Integrative Elective ³	3
Foreign Language, if needed, or Electives ⁸	4
Electives ²	3

Second Term	Credits
Intersectional Approaches courses ⁹	6
Foreign Language, if needed, or Electives ⁸	3 or 4
Electives ²	6

Fourth Year

First Term	Credits
Ecology and Place course ¹⁰	3
300-400-level Integrative Elective ³	3
400-level Integrative Electives ³	6
Electives ²	3
Complete Senior Exit Survey	

Second Term	Credits
Integrative Capstone [CAPS]	3
Public and Professional Writing and Applications course ¹¹	3
400-level Integrative Elective ³	3
Electives ²	3

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need to include a writing in the major [M] course to meet University requirements.

³ Integrative Electives: (18 credits) Approved courses include ENGLISH, WGSS, and/or HUMANITY courses at the 200, 300, or 400 level. No more than one 200-level course may be applied to the Integrative Electives requirement. At least one Integrative Elective course must be at the 400-level.

⁴ Critical and Theoretical Approaches course (3 credits): choose from ENGLISH/ANTH 256 [SSCI],

ENGLISH 301 [WRTG], 307 [M], 308 [M], 326, 360, 410 [CAPS], 460 [M]; WGSS 385/SOC 382 [EQJS], WGSS 481 [M], 485 [M].

⁵ Humanities in Practice and Production course (3 credits): choose from ENGLISH 212 [ARTS], 251 [ARTS], 323, 339 [ARTS], 342 [ARTS], 343, 357, 361, 365 [WRTG], 402 [WRTG] [M], 461[M]; DTC/ENGLISH 354 [ARTS] [M].

⁶ Global & Decolonial Approaches course (3 credits): choose from ENGLISH 222, 371, 372, 373, [HUM], 489 [EQJS]; CES 373/ENGLISH 341 [M], CES 353/ENGLISH 345 [M], CES 405/ENGLISH 410 [CAPS]; HUMANITY 410, HUMANITY 450/HISTORY 465, WGSS 340.

⁷ Historical Approaches course (3 credits): choose from ENGLISH 210 [HUM], 305 [HUM], 306 [HUM], 307 [M], 366 [HUM], 368 [HUM], 370, 371, 372, 401, 454; HUMANITY 302 [HUM] [M], 303 [M], 335, 350, 410; HUMANITY 450/HISTORY 465.

⁸ 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.

⁹ Intersectional Approaches courses (6 credits): choose from ENGLISH 260, 322 [DIVR] [M], 362 [EQJS], 363, 369, CES 220/ENGLISH 220 [HUM], CES 315/ENGLISH 315 [M], CES 353/ENGLISH 345 [M], CES 373/ENGLISH 341 [M], ENGLISH/WGSS 309, ENGLISH/WGSS 317, WGSS 211/ENGLISH 211 [HUM], WGSS 300/ENGLISH 310/SOC 300 [EQJS] [M]; WGSS 338 [HUM], WGSS 340, WGSS 385/SOC 385 [EQJS], WGSS 481 [M], 485 [M].

¹⁰ Ecology and Place course (3 credits): choose from ENGLISH 219 [HUM], 409, 419, 495 [M]; AMER ST 472/CES 462/ENGLISH 472 [EQJS]; CES 373/ENGLISH 341 [M]; HUMANITY 304 [HUM]; WGSS 460.

¹¹ Public and Professional Writing and Applications course (3 credits): choose from ENGLISH 323, 324 [M], 326, 342 [ARTS], 357, 358, 365 [WRTG], 402 [WRTG] [M], 405, 461 [M], 498, 499; HUMANITY 280 [ARTS].

ENGLISH - LINGUISTICS OPTION (120 CREDITS)

A student may be admitted to the English – Linguistics Option upon making their intention known to the department.

Requirements for this degree include 45 credits: 15 credits of Linguistics core courses, 6 credits of Linguistics core electives, 12 credits of Linguistics emphasis electives, and the remaining 12 credits from a set of option-specific electives variously distributed depending on the special emphasis selected by the student and their advisor.

First Year

First Term	Credits
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
Electives ²	3
Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
ENGLISH/ANTH 256 [SSCI]	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4

Second Year

First Term	Credits
Arts [ARTS]	3
Diversity [DIVR]	3
Linguistics MATH, CPT S, PSYCH, or STAT Elective ³	3
Linguistics PHIL Elective ⁴	3
Foreign Language, if needed, or Elective ^{2,5}	3 or 4
Second Term	Credits
ENGLISH 444	3
Equity and Justice [EQJS]	3
Linguistics Core Electives ⁶	3
Foreign Language, if needed, or Elective ^{2,5}	3 or 4
Electives ²	3
Complete University Writing Portfolio	

Third Year

First Term	Credits
ENGLISH 456 [M]	3
300-400-level FOR LANG Elective ⁷	3
Linguistics Emphasis Elective ⁸	3
Electives ²	6
Second Term	Credits
ENGLISH 443	3
300-400-level FOR LANG Elective ⁷	3
Linguistics Emphasis Elective ⁸	3
Electives ²	6

Fourth Year

First Term	Credits
Linguistics Core Electives ⁶	3
Linguistics Emphasis Elective ⁸	3
Electives ²	9
Complete Exit Survey	
Second Term	Credits
ENGLISH 457	3
Integrative Capstone [CAPS]	3
Linguistics Emphasis Elective ⁸	3
300-400-level Electives ²	7

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² Electives: Students in this major are encouraged to pursue a second major, minor, or certificate and should speak to their advisor about complementary options.

³ Linguistics MATH, CPT S, PSYCH, or STAT Electives: 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.

⁴ Linguistics PHIL Electives: Minimum of 3 credits in PHIL 201, 401, 443, 499.

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 Linguistics Core Electives: minimum of 6 credits to be selected from ENGLISH 112, 454, 458, or 499.

⁷ Linguistics FOR LANG Electives: minimum of 6 credits in 300-400-level FOR LANG courses.

⁸ Linguistics Emphasis Electives: minimum of 12 credits 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, COM 321, 421, any unused FOR LANG course, PSYCH 490, 492, TCH LRN 333, and TCH LRN 414.

ENGLISH - 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

First Term	Credits
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Electives	4
Second Term	Credits
Arts [ARTS]	3
Physical Sciences [PSCI] with lab ¹	4
Quantitative Reasoning [QUAN]	3
Social Sciences [SSCI]	3
Electives	3

Second Term	Credits
Arts [ARTS]	3
Physical Sciences [PSCI] with lab ¹	4
Quantitative Reasoning [QUAN]	3
Social Sciences [SSCI]	3
Electives	3

Second Year

First Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
Equity and Justice [EQJS]	3
HUMANITY Elective ²	3
Electives	3
Second Term	Credits
Diversity [DIVR]	3
Two from ENGLISH 370, 371, 372, or 373	6
Electives	6
Complete University Writing Portfolio	

Third Year

First Term	Credits
ENGLISH 302 [M]	3
Two from ENGLISH 370, 371, 372, or 373	6
300-400-level Literature or Humanities Elective ³	3
Foreign Language, if necessary, or Elective	3 or 4
Second Term	Credits
300-400-level Literature or Humanities Electives ³	6
Foreign Language, if necessary, or Electives	12

Fourth Year

First Term	Credits
ENGLISH 494 or 400-level Literature or Humanities Elective ⁴	3
Writers of Color Course ⁵	3
300-400-level Literature or Humanities Elective ³	3
300-400-level Electives	6
Complete Senior Exit Survey	

<i>Second Term</i>	<i>Credits</i>
ENGLISH 494 or 400-level Literature or Humanities Elective ⁴	3
Integrative Capstone [CAPS]	3
Electives	6

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² HUMANITY 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 Approved 300 - 400-level Literature or Humanities Electives: Approved courses include ENGLISH 305, 306, 309, 311, 315, 317, 322, 332, 341, 366, 370, 371, 372, 373, 409, 419, 470, 480-489; HUM 302 [M], 304, 335, 350, 410, 450. Will need to include [M] course to meet University Requirements.

⁴ Approved 400-level Literature or Humanities courses include ENGLISH 409, 419, 470, 480-489, HUM 410, 450, or as approved by advisor.

⁵ Writers of Color Courses: Choose from ENGLISH 220, 222, 310, 311, 315 [M], 316, 322 [M], 341 [M], 345 [M], 489, or CES 331.

ENGLISH - RHETORIC AND PROFESSIONAL WRITING OPTION (120 CREDITS)

A student may be admitted to the English – Rhetoric and Professional Writing Option upon making their intention known to the department.

Requirements in this degree include 18 credits of 300 - 400-level core courses, and 18 credits of approved electives. Students have the option to take an additional 6 credits – with the approval of advisor – of any English or Humanities course at any level.

First Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
Social Sciences [SSCI]	3
Foreign Language, if necessary, or Elective	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
HISTORY 105 [ROOT]	3
Foreign Language, if necessary, or Electives	9

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 301 [WRTG]	3
Equity and Justice [EQJS]	3
HUMANITY Elective ²	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
ENGLISH 360	3
ENGLISH 362	3
ENGLISH 370, 371, 372, or 373	3
Physical Sciences [PSCI] with lab ¹	4
Complete University Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 302 [M]	3
300-400-level Rhetoric / Professional Writing Electives ³	6
Electives	6

<i>Second Term</i>	<i>Credits</i>
300-400-level Rhetoric / Professional Writing Electives ³	6
Electives	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level Rhetoric / Professional Writing Electives ³	6
300-400-level Electives	6
Complete Senior Exit Survey	

<i>Second Term</i>	<i>Credits</i>
ENGLISH 460 [M] or 461 [M] ⁴	3
Integrative Capstone [CAPS]	3
Electives	9

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² HUMANITY 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 Rhetoric / Professional Writing Electives: Choose from CES 405, DTC 336, 354, 355 [M], 375 [M], 476, ENGLISH 308 [M], 358, 361, 363, 365, 401, 402 [M], 405, 458, 461 [M], and 495.

⁴ Prerequisite of ENGLISH 402 [M] or 403 [M] required for ENGLISH 461 [M].

ENGLISH - TEACHING OPTION WITH CERTIFICATION (120 CREDITS)

A student may be admitted to the English – Teaching Option with Certification upon making their intention known to the department.

Requirements in this degree include 18 credits of core English Teaching courses and 18 credits of approved electives.

An additional 40 credits of Teaching and Learning and Educational Psychology credits are required for certification.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
Foreign Language, if necessary, or Elective	3 or 4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	3
Quantitative Reasoning [QUAN]	4
Foreign Language, if necessary, or Elective	3 or 4

Second Year

<i>First Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
Diversity [DIVR]	3
ENGLISH 201, 301, or 302 [M]	3
Equity and Justice [EQJS]	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
American Literature Elective ²	3
ENGLISH 305 or 306	3
ENGLISH 325	3
ENGLISH 326	3
English or Humanities Elective ³	3
Complete University Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 324 [M]	3
English Literature Elective ⁴	3
English or Humanities Elective ³	3
TCH LRN 301	3
Writers from Marginalized Groups Elective ⁵	3
Apply to College of Education, Sport, and Human Sciences Teacher Certification Program	

<i>Second Term</i>	<i>Credits</i>
ENGLISH 323	3
Integrative Capstone [CAPS]	3
TCH LRN 317	2
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

Fourth Year

<i>First Term</i>	<i>Credits</i>
ED PSYCH 468	3
English or Humanities Elective ³	3
TCH LRN 467 [M]	3
TCH LRN 469	2
TCH LRN 470	3
Complete Exit Survey	

<i>Second Term</i>	<i>Credits</i>
TCH LRN 415	16

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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 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.

⁵ Writers from Marginalized Groups Elective: Choose from ENGLISH 309, 311, 314 [M], 317, 321, 322 [M], 341 [M], 345 [M], or 409.

ENGLISH - 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. Requirements in this degree include 18 credits of core English Teaching courses and 18 credits of approved electives.

First Year

First Term	Credits
Arts [ARTS]	3
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3

Second Term	Credits
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

First Term	Credits
Diversity [DIVR]	3
Equity and Justice [EQJS]	3
Foreign Language, if necessary, or Electives	4
Electives	2

Second Term	Credits
American Literature Elective ²	3
ENGLISH 305 or 306	3
ENGLISH 326	3
Foreign Language, if necessary, or Elective	4
Electives	5
Complete University Writing Portfolio	

Third Year

First Term	Credits
ENGLISH 325	3
English or Humanities Electives ³	3
Writers from Marginalized Groups Elective ⁴	3
Electives	6

Second Term	Credits
ENGLISH 324 [M]	3
English or Humanities Electives ³	3
Integrative Capstone [CAPS]	3
300-400-level Electives	6

Fourth Year

First Term	Credits
ENGLISH 323	3
English or Humanities Electives ³	3
300-400-level Electives	9
Complete Senior Exit Survey	

Second Term	Credits
English Literature Elective ⁵	3
300-400-level Electives	4
Electives	9

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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 211, 220, 260, 309, 310, 311, 315, 316, 317, 322 [M], 341 [M], 345 [M], 409, or CES 331. 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 earned in WSU courses or through WSU-approved education abroad or educational exchange courses. Required courses include ENGLISH 251 or 252; 9 credits to be chosen from ENGLISH 343, 351, 352, 353, 354, 357, 358, 359, 446, 451, 452, 453; 3 credits of any 300-400 level ENGLISH course; and 1 credit of ENGLISH 358, 498, or 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 earned in WSU courses or through WSU-approved education abroad or educational exchange courses; ENGLISH 302 is required.

Humanities Minor

The Department of English administers the Humanities minor. For details, see the separate entry under "Humanities."

Linguistics

The student must complete 18 credits to earn the minor in Linguistics, 9 of which must be 300-400-level earned in WSU courses 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.

Rhetoric and Professional Writing

The rhetoric and professional writing minor requires 18 credits, 9 of which must be earned in WSU courses or through WSU-approved education abroad or educational exchange courses. Required courses include ENGLISH 301, 402 or 403, and 460 or 461. In addition, 9 credits are required, including at least 3 credits at the 400-level and no more than 3 credits at the 200-level, from ENGLISH 255, 256, 353, 357, 360, 361, 362, 365, 401, 405, 460 or 461 (whichever was not taken as a required course), and 495.

Certificates

Editing and Publishing

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/design track (DTC 336, 354, 355, 436, or 477), literary track (ENGLISH 359, 451, 452, or 453), or scholarly/popular track (ENGLISH 255, 363, 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

To earn the Professional Science and Technology Writing Certificate, students must complete ENGLISH 402, and 495, and three electives (9 credits) from ANIM SCI 280, 285, ANTH 260, 309, BIOLOGY 110, 125, 135, 330, 393, 394, 401, BIOLOGY/WGSS 307, CES 465, CPT S 401, 415, ENGLISH 365, 405, 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

To earn the Professional Writing Certificate, students must complete five courses: ENGLISH 301, 402, and 498, at least one of the following: ENGLISH 405 or 461, and one elective from the following options: DTC 478, ENGLISH 353, 357, 360, 362, 365, 401, 405 (if not taken as a requirement), and 461 (if not taken as a requirement). ENGLISH 498 can only be taken after the other four courses have been completed with a cumulative GPA of 3.0 or better. The certificate can be earned through the Global Campus and/or on-campus offerings. The university undergraduate certificate fee will apply.

Social and Environmental Justice

This interdisciplinary certificate is open to enrolled WSU Vancouver undergraduate students in all majors.

To qualify for the certificate, students must complete a total of 15 credits including a 3-credit internship course in coordination with their advisor and the Collective for Social and Environmental Justice (CSEJ) Director, and 12 credits in two or more disciplines from the list of qualifying courses below.

The 3-credit internship is to be arranged in the student's major or minor program area using the appropriate internship course designation. In cases where a discipline-specific internship course is not available, UNIV 398 Internship may be used. Students will coordinate with their major or minor advisor and the CSEJ Director for placement. Internship credit for the certificate also requires

four additional cohort meeting sessions offered each term, organized by the CSEJ Director and Certificate Committee.

The remaining 12 credits can include any of the following: ANTH 205, 307, 334, CES 373, CRM J 205, 403, ENGLISH 373, H D 334, 410, HISTORY 230, 250, 298, 308, 331, 332, 409, 426, 436, POL S 314, 430, SOC 102, 340, 415, SOE 312, TCH LRN 330, WGSS 300, and 481.

To complete the certificate, the student (in consultation with their advisor) must describe a coherent social or environmental justice theme for their course of study.

Teaching English as a Foreign Language

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.
- 201 [WRTG] Writing and Research 3** Course Prerequisite: ENGLISH 101, 105, or 298. Designed to develop students' researching skills for writing across the disciplines. Credit not granted for both ENGLISH 201 and 298.
- 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. (Crosslisted course offered as ENGLISH 219, HUMANITY 219.)
- 220 [HUM] Social Justice Literature 3** Survey of modern multicultural literature concerned with social justice, including African American, Asian Pacific American, Latinx, 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 [ARTS] 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.
- 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. (Crosslisted course offered as ENGLISH 256, ANTH 256.)
- 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. Credit not granted for both ENGLISH 298 and 201.
- 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 department permission. 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 [HUM] 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 [EQJS] [M] Intersections of Race, Class, Gender, Sexuality, and Dis/ability** 3 Course Prerequisite: SOC 101 or WGSS 101. Study of intersections among race, class, gender, sexuality, and dis/ability 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.)
- 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 Queer Literature** 3 Queer literature with focus on the history of literature about minoritized genders and sexualities and exploration of current authors. (Crosslisted course offered as ENGLISH 317, WGSS 317.)
- 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, 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] Indigenous Literature** 3 Literature, by Indigenous authors and about Indigenous communities, reflecting on dominant images and counter-images, 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 Latinx Literatures** 3 A survey of Latinx literature, examining both dominant representations and sites of resistance. (Crosslisted course offered as CES 353, ENGLISH 345.)
- 351 Creative Writing: Fiction** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: ENGLISH 251 or 252. Workshop approach to writing fiction.
- 352 Creative Writing: Poetry** 3 Course Prerequisite: ENGLISH 251 or 252. Workshop approach to poetry writing.
- 353 Creative Writing: Creative 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 [EQJS] 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.
- 369 Rhetorics of Disability/Accessibility** 3 The language of disability/accessibility and inclusive composing practices.
- 370 The Making of English: Literature, Language and Culture Before 1600** 3 Literature before 1600, highlighting the making of English through its interaction with other cultures/languages including Anglo-Saxon.
- 371 17th and 18th Century Transnational Literature in English** 3 Literary and cultural texts in English from 1600 to 1800 including British and colonial American literatures within their transnational contexts.
- 372 19th Century Literature of the British Empire and the Americas** 3 Literary and cultural texts in English from 1800 to 1900 focusing on global British literature and literatures of the Americas.
- 373 [HUM] Empire, Gender, and Postcoloniality in Global Literature** 3 Literary/cultural texts and theory focusing on postcolonial conditions (and their gendered operations) in the shadow of empire and imperialism. (Crosslisted course offered as ENGLISH 373, WGSS 373.)

- 401 History of Rhetoric** 3 Survey of influential theories of rhetoric, ancient to modern.
- 402 [WRTG] [M] Technical and Professional Writing** 3 Course Prerequisite: ENGLISH 101 or 298; junior standing. Research writing: defining, proposing, reporting progress; presenting a final product; other professional writing needs. Credit not granted for both ENGLISH 402 and 403.
- 403 [M] Technical and Professional Writing ESL** 3 Course Prerequisite: ENGLISH 101 or 105; junior standing; pass University Writing Portfolio. For non-native speakers of English. Special grammatical and rhetorical problems. Credit not granted for both ENGLISH 402 and 403.
- 405 Advanced Professional Writing and Editing** 3 Course Prerequisite: ENGLISH 402. Other background may substitute. See department. Professional writing and editing; textual alterations, design, and layout, including internship experience.
- 409 Gender, Race, and Environmental Literature** 3 Course Prerequisite: Junior standing. Diversity of writings by queer writers, women writers, and writers of color exploring 20th and 21st century environmental issues of the American West and Pacific Rim through the lens of ecofeminism and environmental justice. (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 Contemporary Novel** 3 Course Prerequisite: Junior standing. The novel in English in the literary and cultural context of the Anthropocene, the time during which humans have had a substantial impact on our planet.
- 443 Phonetics and Phonology** 3 Technical introduction to the analysis of the speech patterns and sound systems across human languages. Recommended Preparation: ENGLISH 256. Credit not granted for both ENGLISH 443 and 543. Cooperative: Open to UI degree-seeking students.
- 444 Morphology and Syntax** 3 Technical introduction to the analysis of word and sentence structure from a cross-linguistic perspective. Recommended preparation: ENGLISH 256. Credit not granted for both ENGLISH 444 and 544.
- 446 [CAPS] Form and Theory in Creative Writing** 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: Creative Nonfiction** 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 and literary nonfiction.
- 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.
- 472 [EQJS] 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, ENGLISH 472.)
- 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 [EQJS] Contemporary 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 [M] 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: By department permission. 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. 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 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.
- 503 Seminar in Writing Studies Research Methods and Methodologies** 3 Theory and practice of writing studies research with a focus on methodologies, methods, and research ethics.
- 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 the History of Global Rhetorics** 3 Study of Global rhetorical histories and 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 Contemporary 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 Phonetics and Phonology** 3 Technical introduction to the analysis of the speech patterns and sound systems across human languages. Recommended Preparation: ENGLISH 256. Credit not granted for both ENGLISH 443 and 543. Cooperative: Open to UI degree-seeking students.
- 544 Morphology and Syntax** 3 Technical introduction to the analysis of word and sentence structure from a cross-linguistic perspective. Recommended preparation: ENGLISH 256. 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 Contemporary British and Postcolonial Literatures** 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. Course Prerequisite: By department permission. 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, D. W. Crowder, R. T. Curtiss, A. Felsot, J. Owen, J. D. Stark, D. B. Walsh, R. S. Zack; Associate Professors, J. Guterriez Illan, B. Hopkins, D. G. James, T. Northfield; Assistant Professors, P. Basu, S. Bossert, E. Murray, L. Nottingham, R. Olsson, W. S. Wheeler, G. Zhu; Adjunct Faculty, J. Andreas, G. Angelella, J. E. Banks, L. D. Hansen, A. Jensen, L. Kraft, C. Looney, T. A. Murray, D. Onstad, R. A. Schmidt-Jeffris, R. Weidenmann; Professors Emeriti, J. F. Brunner, V. Hebert, V. Jones, W. S. Sheppard.

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 entomological 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 student employment in all aspects and levels of the discipline. Courses provide needed training for students in agriculture, data sciences, education, veterinary medicine, microbiology, public health, environmental sciences, life 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://catalog.wsu.edu/General/Academics/DegreeProgram/10642>; Master of Science in Entomology, and Doctor of Philosophy (Entomology). Additional information can be obtained on the web at <http://entomology.wsu.edu>.

Preparation for Graduate Study

As preparation for work toward an advanced degree in entomology, a student should have completed an undergraduate major in one of the biological or physical sciences, forestry, agriculture, or a closely related field. Potential students with majors in other disciplines are considered on an individual basis. Background work should include courses in the biological and physical sciences, genetics, ecology, entomology, and the plant and animal sciences.

Graduate Programs

The Department of Entomology offers graduate programs leading to Doctoral and Master of Science degrees.

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. Faculty are housed both on campus and at Research and Extension Centers throughout the state. We also 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 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.

362 Practical Beekeeping 1 (0-3) Course Prerequisite: ENTOM 361. A lab course with field trips and regular interaction with live honey bees covering practical skills including care and management of hives, diagnosis of common problems, honey processing, and the business of beekeeping.

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.)

461 Pollinator Ecology 3 Course Prerequisite: BIOLOGY 372, ENTOM 343, ENTOM 361, or SOE 300. Critical roles of pollinators in ecology, with focus on pollinator behavior, plant-pollinator interactions, and the impact of policy, agriculture, and environment changes on pollinator communities.

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.)

520 Biological Control of Arthropods and Insect Conservation 2 The science and application of biological control of insects and mites in agriculture teamed with an overview of insect decline and conservation and their growing importance to humankind.

539 Taxonomic Entomology 4 (2-6) Survey of approximately 200 major families; collecting and preservation techniques. Cooperative: Open to UI degree-seeking students.

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. Recommended for graduate-level course: 12 credit hours of biology or ecology courses. Credit not granted for both IPM 452 and 552.

552 Pesticides and the Environment 3 Immediate and prolonged effects of pesticides on human and other animals; legal and moral repercussions of pesticide use. Recommended for graduate-level course: 12 credit hours of biology or ecology courses. Credit not granted for both IPM 452 and 552.

School of the Environment

environment.wsu.edu

Webster Physical Science Bldg, 1226

509-335-3009

Student Svs: Webster 1227, 509-335-8538

Director and Career-Track Professor, A. B. King; Associate Director for Undergraduate Education and Career-Track Associate Professor, K. M. Whitman; Associate Director for Research and Graduate Studies and Professor, L. A. Shipley; Professors, S. M. Bollens, A. K. Fremier, C. K. Keller, S. P. Long, M. Ostrom, C. T. Robbins, J. Vervoort; Associate Professors, H. D. Adams, C. M. Cooper, C. S. Goldberg, J. Harrison, S. Henderson, M. Kramer, J. McIntyre, A. Meddens, K. Moffett, S. Roley, G. Rollwagen-Bollens, R. D. Sayler, M. Swanson, D. H. Thornton; Career-Track Associate Professors, M. Berger, J. Padowski, M. Pelch; Assistant Professors, H. Haemmerli, J. Haemmerli, J. Manning, J. Scott, D. Singh; Career-Track Assistant Professors J. Menard, J. Rosso, A. Stahl; Lecturers, M. Billings, M. Ritts, W. Schlosser, B. Walker, S. Woodley; 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, P. Larson, B. Moore, 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 integrating 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 of 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 and Natural Resource Sciences
- Geology

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>
Equity and Justice [EQJS]	3
SOE 312 [DIVR]	3
SOE 474 [CAPS] [M] or 480 [CAPS] ³	3

Earth Sciences or Professional Electives^{2,3} 6
Exit Survey⁶

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

First Term	Credits
BIOLOGY 106	4
HISTORY 105 [ROOT]	3
MATH 106 or electives ¹	3
SOE 110 [BSCI]	4

Second Term	Credits
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

First Term	Credits
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
Second Term	Credits
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

First Term	Credits
COM 102 [COMM] or H D 205 [COMM]	3 or 4
Equity and Justice [EQJS]	3
SOIL SCI 368	3
Professional Electives ⁵	7

Second Term	Credits
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

First Term	Credits
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

Second Term	Credits
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

First Term	Credits
BIOLOGY 106 [BSCI]	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 106 or Electives ¹	3

Second Term	Credits
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>
Equity and Justice [EQJS]	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 OPTION (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

First Term	Credits
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH 106 or Electives ¹	2-3
SOE 100	1

Second Term	Credits
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

First Term	Credits
CHEM 345	4
ECONS 101 [SSCI]	3
SOE 204	4
SOE 300 or BIOLOGY 372	3 or 4
SOE 301	3

Second Term	Credits
Arts [ARTS]	3
MATH 140 [QUAN], 171 [QUAN], or STAT 212 [QUAN]	4
MBIOS 303	4
SOE 302	3
Foreign Language, if needed ²	0 - 4
Complete Writing Portfolio	

Third Year

First Term	Credits
BIOLOGY 301	4
SOE 310	4
SOIL SCI 368	3
STAT 412	3
Foreign Language, if needed ²	0 - 4

Second Term	Credits
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

First Term	Credits
Advanced Wildlife Elective ³	3
Animal Systematics Course ⁵	4
Equity and Justice [EQJS]	3
Plant Course ⁶	3
SOE 441	4

Second Term	Credits
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

First Term	Credits
BIOLOGY 106 [BSCI]	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 106 or electives ¹	3
SOE 100	1

Second Term	Credits
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

First Term	Credits
COM 102 [COMM] or H D 205 [COMM]	3 or 4
Equity and Justice [EQJS]	3
SOE 204	4
SOE 300 or BIOLOGY 372	3 or 4
SOE 301	3

Second Term	Credits
CHEM 102 or 106	4
SOE 302	3
SOE 312 [DIVR]	3
STAT 212 [QUAN]	4
Foreign Language, if needed ²	0 - 4
Complete Writing Portfolio	

Third Year

First Term	Credits
SOE 210	4
SOE 310	4
SOIL SCI 368	3
STAT 412	3
Foreign Language, if needed ²	0 - 4

Second Term	Credits
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 earned in WSU courses 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 earned in WSU courses 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 earned in WSU courses 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 earned in WSU courses 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 earned in WSU courses 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, 280, 411, 412, 463, 465, 476;

Water Methods & Analysis: CE 315, 341, 351, 407, 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 324, SOC 331, 332, SOE 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)**
Enrollment not allowed if credit already earned for SOE 101. Exploration of the many ways in which geoscience supports society, and an examination of how the properties of rocks and minerals relate to features such as volcanoes and mountain ranges on the Earth's surface. Credit not granted for both SOE 101 and 102.
- 103 [PSCI] The Solar System: An Introduction to Planetary Science 3** Study of the geological processes and environments on planets and moons of our solar system.
- 105 [PSCI] 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%.
- 106 [PSCI] Exploring the Dinosaurs of Jurassic Park 3** An exploration of dinosaurs from the 1993 movie 'Jurassic Park' comparing their cinematic depiction with current research and evidence including dinosaur biology, behavior, and their depiction in popular culture.
- 110 [BSCI] The Environment, Human Life, and Sustainability 4 (3-3)** Interactions between humans and their environment; multidisciplinary introduction to environmental concepts and concerns.
- 200 Making the Most of Your EES Major 1**
Exploration of professional pathways and career preparation in the environmental sciences; includes career goals and skills, development of graduation plans, undergraduate research, campus and community engagement, resume building.
- 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 Field Skills for Earth Scientists 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)** Evolution of the Earth across its 4.6-billion-year history; important milestones in the story of our dynamic planet and the biological and geological processes that have shaped the Earth in the past and continue to shape it today.
- 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. Geologic concepts at intersections of human society and the environment; complex and nuanced socio-scientific questions impacting communities in the Pacific Northwest. 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. Cooperative: Open to UI degree-seeking students.
- 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 or BIOLOGY 372. 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.
- 316 [DIVR] Sustaining Human Societies and the Natural Environment Study Abroad Program in New Zealand 3** Exploration of the relationship between human beings and the natural environment including socio-ecological history and contemporary dynamics of New Zealand's South Island.
- 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 Rivers, Reefs, and the Sedimentary Record 3 (2-3)** How sedimentary rocks are formed through different processes and what they can tell us about climate and tectonic histories. 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 and Critical Minerals 3 (2-3)** Course Prerequisite: SOE 350. Study of magmatic and volcanic processes and how they generate critical minerals required for the green energy transition.

- 357 Introduction to Metamorphic Rocks and Minerals and How They Impact Our World** 3 (2-3) Course Prerequisite: SOE 350. 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.
- 404 [CAPS] [M] The Ecosystem** 3 Course Prerequisite: SOE 110; BIOLOGY 106; BIOLOGY 372 or SOE 300, or concurrent enrollment in either; 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.
- 408 [CAPS] [M] Advanced Earth Science Field Methods** 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.
- 410 [CAPS] It's About Time: Understanding Timescales of Change in Geology and Environmental Science** 3 Course Prerequisite: Junior standing. Examination of geologic timescales through reading and discussion of scientific articles.
- 411 [M] Limnology and Aquatic Ecosystem Management** 4 (3-3) 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.
- 413 Application of Ecological Economics in Natural Resource Management** 3 Course Prerequisite: ECONS 101; SOE 300. An exploration of the value of nature to society, in monetary and other metrics.
- 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. Recommended preparation: Basic knowledge of soils (e.g. SOIL SCI 201 or equivalent; CHEM 106; PHYSICS 102). (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.
- 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.
- 426 Ecology of the Columbia River** 3 Course Prerequisite: BIOLOGY 372. Interdisciplinary approach to the interconnections between the physical, geological, chemical, biological, and social dimensions of this large, iconic aquatic ecosystem. Credit not granted for both SOE 426 and 526.
- 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. Recommended preparation: SOE 204 or sufficient background in spreadsheets.
- 464 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** 3 Course Prerequisite: BIOLOGY 372. Biological, ecological and environmental impact of microbes in aquatic systems. Credit not granted for both SOE 465 and SOE 565.
- 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] [M] 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 Collaborative Governance and Dispute Resolution 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.
- 479 Geoscience for Sustainable Development 3** Course Prerequisite: SOE 101, SOE 102, or SOE 210; junior standing. Exploration of how the geosciences contribute to a sustainable future including topics of climate change, access to fresh water, and the energy transition. Credit not granted for both SOE 479 and 579.
- 480 [CAPS] How to Build a Habitable Planet 4** (3-3) 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 [CAPS] 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. Credit not granted for both SOE 486 and SOE 586.
- 487 Human Dimensions of Natural Resources 3** An introduction to qualitative research methods and natural resource sociology; examples center around wildfire but are applicable to multiple natural resource management fields.
- 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. 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 College Science Teaching 3** Theory, implementation, and application of empirically validated instructional strategies for college-level science that improve learning, retention, student self-regulation, and graduation rates.
- 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.
- 515 Research Frontiers in Forest Ecology and Management 1** Collaborative inquiry into literature and novel research in forest ecology and management. 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. Recommended preparation: Basic knowledge of soils (e.g. SOIL SCI 201 or equivalent; CHEM 106; PHYSICS 102). (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.
- 518 Computing Essentials for Geoscience Graduate Students 3** Basic proficiency using computational tools in geoscience for reading, writing, analysis of large datasets, modeling of processes, and supporting interpretations. Cooperative: Open to UI degree-seeking students.
- 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. Credit not granted for both SOE 426 and 526.
- 531 Fundamentals of Environmental Toxicology 3** Fundamentals of toxicology; environmental fate and biological effects of chemical pollutants in air, water, and food. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.

- 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.
- 539 Native Science, Tribal Environmental Policy, and Collaboration** 3 Native science, tribal environmental policy, and collaboration as pertaining to tribes of the Pacific Northwest region of the United States.
- 540 Agroecology** 3 Social and ecological aspects of agriculture and human food systems.
- 541 Orogenic Systems** 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. Cooperative: Open to UI degree-seeking students.
- 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). Cooperative: Open to UI degree-seeking students.
- 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.
- 562 Watershed Biogeochemistry** 3 Sources, transformations, fates and impacts of biogeochemically important compounds as they move downstream through watersheds to the coastal zone.
- 565 Aquatic Microbial Ecology** 3 Biological, ecological and environmental impact of microbes in aquatic systems. Credit not granted for both SOE 465 and SOE 565.
- 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 Environments of Stability or Collapse for Organisms and Ecosystems** 3 Dynamics and resilience of natural and human-modified ecosystems and of their organisms, as driven by their microclimates and environmental feedback with water, heat, and energy balances, variability, and vulnerability; ecosystem and organism examples matched to student interests.
- 579 Geoscience for Sustainable Development** 3 Exploration of how the geosciences contribute to a sustainable future including topics of climate change, access to fresh water, and the energy transition. Credit not granted for both SOE 479 and 579.
- 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.
- 586 Applied Remote Sensing: From Drones to Satellites** 3 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. Credit not granted for both SOE 486 and SOE 586.
- 592 Advanced Topics in Environmental and Natural Resource Sciences** V 1-4 May be repeated for credit; cumulative maximum 6 hours. Cooperative: Open to UI degree-seeking students.
- 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. Cooperative: Open to UI degree-seeking students.
- 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.

School of Food Science

sfs.wsu.edu

Food Science & Human Nutrition Bldg, 106

509-335-4763

food.science@wsu.edu

Director and Professor, S. Y. Lee; Professors, G. Ganjyal, C. Ross, M. Zhu; Associate Professors, Y. Lee, S. Smith, G. Unlu; Assistant Professors, K. Huang, C. Murphy; Teaching Assistant Professor, T. Bernhard; UI Affiliates: Professors, C. Bohach, S. Minnich, G. Moller.

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 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 (<https://creamery.wsu.edu/>) 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/undergraduate-student-learning-outcomes/>.

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 their 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 specific 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 <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 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.

FOOD SCIENCE - 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>
BIOLOGY 107 [BSCI]	4
CHEM 106	4
ENGLISH 101 [WRTG] or 105 [WRTG]	3
UCORE Inquiry ¹	3

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 345	4
H D 205 [COMM] or COM 102 [COMM]	4 or 3
PHYSICS 101	3
PHYSICS 111	1
UCORE Inquiry ¹	3
Emphasis Electives ²	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 140 or 333	3
CHEM 470 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 350	3
FS 416	3
FS 417	2
STAT 212	4
Food Science Electives ³	3

<i>Second Term</i>	<i>Credits</i>
FS 418	1
FS 432	3
FS 433	1
FS 450	3
Emphasis Electives ²	3

Food Science Electives ³	2
UCORE Inquiry ¹	3

Fourth Year

First Term	Credits
FS 442	3
FS 443 [M]	1
FS 460	3
FS 461 [M]	1
UCORE Inquiry ¹	3
Emphasis Electives ²	3
Food Science Electives ³	2
Second Term	Credits
FS 470	3
FS 489 [CAPS]	3
Emphasis Electives ²	3
Food Science Electives ³	5

¹ Must complete 4 of these 5 UCORE designations: ARTS, DIVR, EQJS, HUM, SSCI.

² Emphasis Electives (12 credits required): Approved courses include ACCTG 220, 230; AFS 101, 435, 201, 401; CROP SCI/HORT 102; ECONS 101, 102, 351; ENGLISH 402 [M] or 403 [M]; ENTOM 101, 150; HBM 258; MGMT 301; MKTG 360; SOIL SCI 101; or VIT ENOL 113; or as approved by advisor.

³ 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, 440, 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 earned in WSU courses 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.

202 [BSCI] Science on Your Plate - Laboratory 1 (0-3) Course Prerequisite: FS 201 or concurrent enrollment. Basic processing and analysis of common foods; tour of WSU Creamery and Dairy Farm; how to make cheese, ice cream, yogurt, and kefir.

220 Food Safety and Quality 3 Course Prerequisite: CHEM 105; CHEM 106; BIOLOGY 107. 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.

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; leaning 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 3 (2-3) Course Prerequisite: CHEM 106; FS 110 or 201; STAT 212 or concurrent enrollment. 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. Recommended preparation: FS 304 and 465. (Crosslisted course offered as FS 405, ANIM SCI 405.) 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. Recommended preparation: BIOLOGY 102 or 107; CHEM 102; CHEM 105; CHEM 106; STAT 212. Credit not granted for both FS 409 and 509. 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: 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; professional development and job preparation. 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. Recommended preparation: FS 110 or VIT ENOL 113. Credit not granted for both FS 429 and FS 529. 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: MATH 140 or 171; 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.
- 440 Food Laws** 2 Course Prerequisite: FS 110, FS 201, or FS 220. Government statutes and regulations that contribute to a safe, nutritious, and wholesome food supply; 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. (Formerly FS 516.) Credit not granted for both FS 440 and FS 540. Cooperative: Open to UI degree-seeking students.
- 442 Food Processing** 3 Course Prerequisite: FS 110; FS 220; FS 432; concurrent enrollment in FS 443; STAT 212 or concurrent enrollment. Specialized techniques, concepts and practices of food processing. (Formerly FS 303.) Cooperative: Open to UI degree-seeking students.
- 443 [M] Food Processing Lab** 1 (0-3) Course Prerequisite: Concurrent enrollment with FS 442. Application of specialized techniques, concepts and practices of food processing. Field trip required. (Formerly FS 302.) Cooperative: Open to UI degree-seeking students.
- 450 Advanced Instrumental and Sensory Analysis of Food** 3 (2-3) Advanced evaluation of the chemical and physical properties of foods including both sensory and instrumental analysis. Credit not granted for both FS 450 and 550. Cooperative: Open to UI degree-seeking students.
- 460 Food Chemistry** 3 Course Prerequisite: CHEM 345; CHEM 470 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: CHEM 370 or 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. Recommended preparation for graduate students: CHEM 370 or MBIOS 303; MBIOS 304; MBIOS 101 or 305. Credit not granted for both FS 465 and FS 565. 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. Recommended preparation: FS 416; FS 432; FS 460. Credit not granted for both FS 470 and FS 570. 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. Cooperative: Open to UI degree-seeking students. 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. 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. Recommended preparation: BIOLOGY 102 or 107; CHEM 102; CHEM 105; CHEM 106; STAT 212. Credit not granted for both FS 409 and 509. Cooperative: Open to UI degree-seeking students.
- 510 Functional Foods and Health** 3 Benefits of foods beyond basic nutrition; bioactive compounds in functional foods relating to health promotion. Recommended preparation: BIOLOGY 101; BIOLOGY 102, or BIOLOGY 106; BIOLOGY 107; CHEM 370 or 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; CHEM 370 or MBIOS 303. 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. Recommended preparation: FS 110 or VIT ENOL 113. Credit not granted for both FS 429 and FS 529. 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.

540 Food Laws 2 Government statutes and regulations that contribute to a safe, nutritious, and wholesome food supply; 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. (Formerly FS 516.) Credit not granted for both FS 440 and FS 540. Cooperative: Open to UI degree-seeking students.

550 Advanced Instrumental and Sensory Analysis of Food 3 (2-3) Advanced evaluation of the chemical and physical properties of foods including both sensory and instrumental analysis. Credit not granted for both FS 450 and 550. 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. Recommended preparation for graduate students: CHEM 370 or MBIOS 303; MBIOS 304; MBIOS 101 or 305. Credit not granted for both FS 465 and FS 565. Cooperative: Open to UI degree-seeking students.

570 Advanced Food Technology 3 Physical principles of food preservation and recent advances in food technology. Recommended preparation: FS 416; FS 432; FS 460. Credit not granted for both FS 470 and FS 570. 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.

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 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 for 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. Kawula; Associate Director and Associate Professor, V. Vadyvaloo; Regents Professor, D. R. Call; Professors, T. Marsh, M. K. Njenga, J. Yoder; Associate Professors, F. Lankester, E. Lofgren, S. T. Mwangi, A. Omsland; Assistant Professors, P. Fernandez, B. Gunn, M.A. Islam, M. Letko, S. Omulo, E. Osoro, B. Ramay, S. Seifert; Affiliate Professors, T. Bankhead, K. Brayton, S. Broschat, A. Nicola, S. Noh; Affiliate Assistant Professors, 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, computational, 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 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 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 GAHP 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.

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, L. Gordillo, L. Heidenreich, N. Kawamura, S. Peabody, J. Sanders, J. Spohnholz; Associate Professors, B. Farley, L. Hatter, C. Stratton, R. Sun, J. Thigpen, X. Wang, A. Wright; Assistant Professors, R. Booth, A. Chastain, M. Gaynair, I. González-Soto, S. Green Soto, H. McNamee; Career Track Faculty, J. Dodson, R. Ellis, K. Faunce, S. Fountain, R. Franklin, S. Herzog, J. LoSavio, B. Miller, N. Overtoom, E. Smelyansky, C. Weller, K. Whalen, A. Whelchel; Instructors, J. Marshall, L. Turner-Rahman; Staff, F. Hill, C. Mickas, 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.

Undergraduate Program Learning Outcomes

Develop Historical Knowledge with Breadth of Time and Space:

- Interpret the human past with recognition of how different temporal, spatial and human diversity contexts shape society.
- Interpret the human past by analyzing change, continuity, and causality.

Conduct and Articulate Research:

- Identify, locate, and critically evaluate appropriate sources for the task at hand.
- Critically examine evidence, discerning fact from opinion, and recognize bias in evidence.
- Organize, synthesize, and effectively use primary and secondary sources to support an argument through a variety of mediums.
- Ethically and responsibly identify and cite all source information.

Communicate Effectively:

- Communicate fluently to diverse audiences through written, oral, visual and other formats, using the latest available technology.
- Explain the significance of a project and its conclusions.
- Demonstrate the contested nature of history and the historical record through the contextualization of sources.

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 (129 CREDITS)

Students who wish to earn a teaching credential must apply to the Teacher Preparation Program in the College of Education, Sport, and Human Sciences. 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.

To graduate, 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	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
Equity and Justice [EQJS]	3
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
HISTORY 469 [M]	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
Integrative Capstone [CAPS]	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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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 upper-division European History course; and one upper-division non-West History 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.

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.

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.

To graduate, 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>
Biological Sciences [BSCI] with lab ¹	4
Equity and Justice [EQJS]	3
HISTORY Electives ²	6
Electives	3

<i>Second Term</i>	<i>Credits</i>
Physical Sciences [PSCI] with lab ¹	4
Electives	3
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>
Foreign Language, if needed, or Elective	3 or 4
HISTORY Electives ²	9
Electives	3

<i>Second Term</i>	<i>Credits</i>
HISTORY 300 [M]	3
HISTORY Electives ²	3
Electives ³	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
HISTORY 469 [M]	3
HISTORY Electives ²	6
Electives ³	6

<i>Second Term</i>	<i>Credits</i>
Integrative Capstone [CAPS]	3
Electives ³	9
Complete History Department's Exit Survey	

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² History Electives – 30 credits required, minimum 15 credits at 300 - 400 level; must include 6 hours U.S. history (HISTORY 110, 111, 201, 216, 235, 250, 280, 298, 308, 311, 312, 313, 314, 316, 318, 319, 324, 328, 360, 361, 320, 321, 322, 390, 398, 409, 410, 415, 417, 423, or 486), 6 hours European history (HISTORY 101, 102, 340, 341, 342, 343, 344, 345, 347, 349, 350, 354, 356, 359, 367, 368, 386, 391, 444, 462, or 463) and 9 hours Non-Western/Global history (HISTORY 120, 121, 230, 270, 271, 272, 273, 275, 291, 325, 330, 331, 332, 333, 334, 335, 337, 339, 366, 371, 372, 373, 374, 377, 387, 388, 435, 436, 474, 475, 476, 483, 492, or 495).

³ 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; 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.

To graduate, a grade of C or better is required in all History courses used to fulfill the requirements for this major.

First Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
COM 102 [COMM] or other [COMM] course	3
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3 or 4

<i>Second Term</i>	<i>Credits</i>
ANTH 101 [DIVR] or 203 [DIVR]	3
Arts [ARTS]	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
SOC 101	3
Pre-Law Option ²	3
HISTORY Electives ³	6
Electives	4

<i>Second Term</i>	<i>Credits</i>
Pre-Law Option ²	6
Foreign Language, if needed, or Elective	3 or 4
HISTORY Electives ³	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
HISTORY 300 [M]	3
Pre-Law Option ²	6
Foreign Language, if needed, or Elective	3 or 4
HISTORY Elective ³	3

<i>Second Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
HISTORY Electives ³	6
POL S 300	3
300-400-level Electives	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level Pre-Law Option ²	3
HISTORY Electives ³	6
300-400-level Electives	6

<i>Second Term</i>	<i>Credits</i>
HISTORY 469 [M]	3
Integrative Capstone [CAPS]	3
HISTORY Elective ³	3
300-400-level Electives	3
Complete History Department's Exit Survey	

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² Pre-Law requirements – 18 credits required: Political Science: 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].

³ History Electives – 30 credits required, minimum 15 credits at 300 - 400 level; must include 6 hours U.S. history (HISTORY 110, 111, 201, 216, 235, 250, 280, 298, 308, 311, 312, 313, 314, 316, 318, 319, 324, 328, 360, 361, 320, 321, 322, 390, 398, 409, 410, 415, 417, 423, or 486), 6 hours European history (HISTORY 101, 102, 340, 341, 342, 343, 344, 345, 347, 349, 350, 354, 356, 359, 367, 368, 386, 391, 444, 462, or 463) and 9 hours Non-Western/Global history (HISTORY 120, 121, 230, 270, 271, 272, 273, 275, 291, 325, 330, 331, 332, 333, 334, 335, 337, 339, 366, 371, 372, 373, 374, 377, 387, 388, 435, 436, 474, 475, 476, 483, 492, or 495).

SOCIAL STUDIES - EDUCATION OPTION (135 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, Sport, and Human Sciences. 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.

To graduate, 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] (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

<i>Second Term</i>	<i>Credits</i>
ANTH 101 [DIVR] or 203 [DIVR]	3
HISTORY 102	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ²	4
SOC 102 [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
200-level HISTORY course ³	3
ECONS 102	3
HISTORY 110	3
POL S 101 [SSCI]	3
Foreign Language, if needed ⁴	0-4

<i>Second Term</i>	<i>Credits</i>
ENGLISH 201 [WRTG], 301 [WRTG], 302 [M], or 402 [WRTG] ⁵	3
HISTORY 111	3
HISTORY 120	3
HISTORY 308, 410, or ANTH 320	3
Foreign Language, if needed ⁴	0-4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
European History Elective ⁶	3
HISTORY 121	3
HISTORY 300 [M] or SOC 320	3
TCH LRN 301	3

<i>Second Term</i>	<i>Credits</i>
ANTH/POL S/PSYCH/SOC Elective ⁷	3
Geography Elective ⁸	3
HISTORY 279	3
HISTORY 324	3
HISTORY 469 [M]	3

<i>Third Term</i>	<i>Credits</i>
TCH LRN 317 (Summer Session)	2

Fourth Year

<i>First Term</i>	<i>Credits</i>
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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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 upper-division History Elective (3 credits required).

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, and 384. 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 upper-division History Elective (3 credits required).

¹⁰ American upper-division History Elective (3 credits required).

SOCIAL STUDIES – TEACHING OPTION WITHOUT CERTIFICATION (120 CREDITS)

Students may be admitted to the Social Studies – Teaching Option without Certification upon making their intention known to the department. To graduate, 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] (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

<i>Second Term</i>	<i>Credits</i>
ANTH 101 [DIVR] or 203 [DIVR]	3
HISTORY 102	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ²	4
SOC 102 [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
200-level HISTORY course ³	3
ECONS 102	3
HISTORY 110	3
POL S 101	3
Foreign Language, if needed ⁴	0-4

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 111	3
HISTORY 120	3
HISTORY 308, 410, or ANTH 320	3
Foreign Language, if needed ⁴	0-4
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Concentration Courses ⁵	6
Equity and Justice [EQJS]	3
European History Elective ⁶	3
HISTORY 121	3
HISTORY 300 [M]	3

<i>Second Term</i>	<i>Credits</i>
ANTH/POL S/PSYCH/SOC Elective ⁷	3
Geography Elective ⁸	3
HISTORY 279 or Electives (Vancouver campus only) ⁹	3
HISTORY 324	3
HISTORY 469 [M]	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
American History Elective ¹⁰	3
Concentration Courses or Electives ^{5,9}	7
Integrative Capstone [CAPS] ¹	3
Non-Western/Global History Elective ¹¹	3

<i>Second Term</i>	<i>Credits</i>
Concentration Courses or Electives ^{5,9}	12
HISTORY 380	3
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 or SCIENCE 101 [SCI] and SCIENCE 102 [SCI]. SCIENCE 101 [SCI] is offered Fall semester and is a prerequisite for SCIENCE 102 [SCI]. SCIENCE 102 [SCI] is offered Spring semester.

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 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, 378, 379, 387, 474, 475, 476; Atlantic History: HISTORY 230, 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, 355, 356, 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, 224, 232, 281, 320, 321, 322, 355, 384, 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 285, 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 credits of US history, 6 credits of European history, and 9 credits of Non-Western/Global history required in the major.

⁶ European upper-division History Elective (3 credits required).

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, and 384. 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 Electives should include sufficient 300-400-level courses to meet University requirement of 40 credits of upper division coursework.

¹⁰ American upper-division History Elective (3 credits required).

¹¹ Non-Western/Global upper-division History Elective (3 credits required).

Minors

History

A minor in history requires 18 hours, 9 of which must be in 300-400-level work earned in WSU courses 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.

The minor prepares students to contextualize current events within a historical framework and apply historical methodologies in other fields. The minor complements a variety of majors, including Anthropology, Digital Technology and Culture, and Political Science. The minor provides students with a strong background in evidence-based writing and research.

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. A minor in Modern Asia requires 18 credits from the courses listed below, 9 of which must be in 300-400-level work earned in WSU courses 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.

ASIA 111, 121, 123, 201, 301, 303, 320, 322; HISTORY/ASIA 270, 271, 272, 273, 275, 371, 372, 373, 374, 377, 378, 379, 387, 474, 475, 476, 483, and 499.

Modern Global Issues

The minor in Modern Global Issues examines modern world events/themes/issues in the United States, Europe, and the non-Western world.

A minor in Modern Global Issues requires 18 credits from the courses listed below, 9 of which must be upper division work earned in WSU courses 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. Required courses are HISTORY 105 or HISTORY 305; HISTORY 121. Four elective courses (12 credits) may be taken from the following:

- Gender: HISTORY 335, 369, 399
- Race & Ethnicity: HISTORY 235, 250, 273, 280, 339, 360, 361
- Conflict: HISTORY 319, 334, 364, 366, 378, 436, 474
- Inequality: HISTORY 230, 315, 332, 342, 410, 426, 436
- Environment: HISTORY 294, 409

- Pop Culture & Information Technology: HISTORY 309, 320, 322

Religious Studies

A minor in Religious Studies requires 18 credits from the course list below, 9 of which must be in 300-400-level work earned in WSU courses 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, ART 201, 202, 302, ENGLISH 305, 306, 308, 341, 483, 484, 485, 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 upper-division work earned in WSU courses 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 285, 314, 316, 318, 319, 340, 341, 345, 349, 366, 368, 385, 386, 387, 388, 390, 391.

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 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 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.

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

220 [HUM] 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 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.)

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 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.

311 [M] Studies in East Asian Film 3 (2-3) Variable content seminar. In-depth study of East Asian cinema that brings together the analysis of cinematography, cultural, and sociopolitical backgrounds, and the impact and influences within an international context. Taught in English. (Crosslisted course offered as CHINESE 311, JAPANESE 311, ASIA 311.)

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.
- 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.)
- 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.)
- 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.)
- 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.)
- 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 [SSCI] 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, ASIA 483.)
- 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.
- ## 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.
- 199 Historian's Toolbox** 1 Exploration of history as an academic discipline and the tools it uses. S, F grading.
- 201 Asian Pacific American History** 3 Historical experience of Asian/Pacific Americans since the 19th century. (Crosslisted course offered as CES 211, HISTORY 201.)
- 202 Topics in Chicana Histories** 1 May be repeated for credit. Early twentieth century Chicana activists and their engagement with a variety of movements.
- 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.)
- 224 [EQJS] Baseball and American Social Movements** 3 How the game of baseball has shaped, intersected with, and reflected historical social movements for racial, gender, labor, and immigrant justice and anti-colonial liberation in the United States and its empire. Recommended preparation: HISTORY 111.
- 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 Revolution and the Arts** 3 The history of Latin American revolutions and their influence on the Arts.
- 235 [HUM] African American History** 3 History of African Americans in the U.S. with emphasis upon major themes of the Black experience. (Crosslisted course offered as CES 235, HISTORY 235.)
- 250 [EQJS] Peoples of the United States** 3 Examination of the peoples of the United States from the beginnings of the colonial era to the present.
- 270 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.)

- 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.
- 280 Communities of Color and the Pacific Northwest** 3 Exploration of racial and ethnic diversity of the Pacific Northwest, highlighting contributions, histories, cultural impact, political movements, and community formation across the state. (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.
- 285 US-Indian Wars** 3 Examination of the history of U.S. warfare against Indigenous nations from colonial era to Native American citizenship in 1924.
- 291 History of World Trade** 3 The evolution of the institutions, conditions, and consequences of world trade after 1000.
- 292 [EQJS] Cultural Appetites: Food in World History** 3 What food selection and preparation reveals about cultural integration around the world from the medieval era to the present. (Formerly HISTORY 492.)
- 294 Global Environmental History** 3 Historical dynamics of human communities and their ecological settings.
- 298 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.
- 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.
- 307 Religion and American Culture** 3 American religions from pre-contact times to the present focusing on the evolution of religious faiths.
- 308 [DIVR] Native American History** 3 Traces American Indian history from time immemorial 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.
- 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.
- 313 Early American History to 1750** 3 The cultures and interactions of Native Americans, Europeans, and Africans; development of colonial American societies and institutions.
- 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.
- 316 Civil War and Reconstruction** 3 The Civil War as a problem in historical causation and social, political, and economic impact of the war.
- 318 [HUM] United States, 1914-1945** 3 America through World War I, cultural tensions of the Twenties, and the crises of Depression and WWII.
- 319 [HUM] American History, 1945-1980** 3 International and domestic impact of the Cold War, Civil Rights Movements, Vietnam War, and Watergate.
- 320 [ARTS] Modern U.S. History Through Film** 3 Analysis of modern American history through the lens of film.
- 321 [DIVR] U.S. 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] U.S. Popular Culture Since 1930** 3 Movies, radio, television, sports, music, and other popular arts in historical context; explores diverse cultural influences on the development of American popular culture while examining its influence on cultures around the world.
- 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.
- 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.
- 328 The American West** 3 Multicultural exploration of the frontier experience and western America; environment, economic development, gender, class and race emphasized.
- 330 History of Mexico** 3 War of independence, 19th century Mexico and the liberal-conservative struggle; modern Mexico since the Revolution of 1910.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 345 Inquisitors, Heretics, and Witches in the Early Modern World** 3 Political, cultural, and religious history of Europe, 1500-1650.
- 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).
- 349 Europe and Two World Wars, 1914-1945** 3 Political, intellectual, economic, and international aspects of European life during and between two world wars.

- 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.)
- 354 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.
- 355 [HUM] Peasants, Potions, Rituals and Rumors: European Popular Culture, 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.
- 359 [HUM] Modern Britain** 3 Britain and the Empire from the Napoleonic wars to the present.
- 360 [EQJS] 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.)
- 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.
- 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.
- 365 Teaching the Holocaust** 3 Course Prerequisite: HISTORY 380. An exploration of Holocaust resources to provide History and Social Studies teachers with appropriate pedagogy to teach this topic in an informed and respectful manner; includes primary sources, literature, and film.
- 366 History of the Cold War, 1944-present** 3 Exploration of the 50 year cold conflict between the US and USSR and its political, social, economic, and cultural consequences for the world.
- 367 Modern France** 3 The history of France from the revolution of 1789 to the present.
- 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.
- 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.)
- 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.)
- 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.)
- 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.)
- 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.)
- 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.
- 383 [DIVR] 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.
- 384 [EQJS] The World Through Sports History** 3 Exploration of the ways in which sports, games, athletics, and athletes have contributed to the development of global or transnational processes of power and inequality.
- 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.
- 393 Geographical History of the US** 3 Perspectives on the geographical history of the U.S. from early times to the present.
- 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.
- 397 Careers Course** 1 Preparation for careers in history with guidance in resume development, graduate school applications, etc. S, F grading.
- 398 [EQJS] 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 [EQJS] 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.)
- 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.
- 426 [EQJS] Workers Across North America** 3 Course Prerequisite: Junior standing. International interactions between workers and labor unions in Mexico, Canada and the U.S. (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.
- 462 History of Imperial Russia** 3 History and culture of Imperial Russia from Peter the Great to the 1905 revolution.
- 463 [M] History of the Soviet Union** 3 The Russian revolutions and the Soviet regime: 1905 to the present.
- 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 [SSCI] 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, 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.)
- 495 [CAPS] Space, Place, and Power in History: Historical Geography in Global Perspective** 3 Course Prerequisite: Junior standing. Introduction to the discipline of historical geography; geographical and spatial approaches to European, North American, and Asian history.
- 498 History Internship** V 1-12 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By department consent; admitted to the major or minor in History. Participation as an 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. 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.
- 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.
- 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.
- 540 Seminar in History** 3 May be repeated for credit.
- 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.
- 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 an intern in public or private sectors. Credit not granted for both HISTORY 498 and HISTORY 598.
- 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; Professor, A. Lampman; Associate Professor, J. Schultz; Assistant Professors, C. Criss, T. Schmaus; 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 life-long love of learning through a series of courses and independent work. Honors students acquire the broad foundations of liberal learning in the natural and social sciences, the arts and humanities, and cultures of the world. In addition, the Honors College requires 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 HABILE certificate for students in the Honors and Business Innovation and Leadership Experience requires core courses plus pre-approved electives, along with the co-curricular business requirements associated with the Carson Career Amplifier Program.

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 201 MESI Workshop Series
- HONORS 211 Introduction to Community Engagement
- HONORS 212 Active and Immersive Community Engagement

- HONORS 298 Approaches to Global Leadership
- HONORS 301 University Scholars Lecture Series
- HONORS 398 Honors Thesis Proposal Seminar
- HONORS 430 Education Abroad Research
- HONORS 499 Special Problems

¹Students typically take the math required by their major. Honors College accepts: MATH 105, 106 and 108 combined, 140, 171, 172, 202, 251 and 252 combined, and 273, 283, PHIL 201, POL S 201, PSYCH 311, 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: By Honors College permission only; must be an Honors student. 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.

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

horticulture.wsu.edu

Clark Hall 249

509-335-9502

Regents Professor, B. W. Poovaiah; Professors, L. W. DeVetter, K. M. Evans, D. S. Main, C. A. Miles, S. Musacchi, M. J. Pavek, C. P. Peace, M. D. Whiting; Associate Professors, S. P. Ficklin, L. A. Kalcsits, P. M. McCord, C. A. Torres; Assistant Professor, J. M. Blauer; Associate Research Professors, S. Jung, S. Serra; Assistant Research Professors, H. Zhang, P. Zheng; Assistant Teaching Professors, R. A. Little, R. M. Sharpe; Adjunct/Affiliate Faculty, C. Benedict, B. R. Bondada, G. M. Chorak, T. S. Collins, C. J. Coyne, M. Feldman, F. Gonzalez Tapia, I. Hanrahan, J. Harbertson, L. A. Honaas, P. E. Jacoby, M. Keller, J. C. Kuhl, R. McGee, M. M. Moyer, R. Navarre, L. Porter, D. R. Rudell Jr., B. Sallato-Carmona, J. Waite, T. D. Waters; Professors Emeriti, M. Ahmedullah, P. K. Andrews, L. K. Chalker-Scott, 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, 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, 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 Human Nutrition and Food Systems. 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.

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.

Minors

Horticulture

A minimum of 16 credits in courses carrying a HORT subject is required, of which at least 9 credits must be in 300-400-level courses and earned in WSU courses or through WSU-approved education abroad or educational exchange courses. A maximum of 3 hours of the 16 credits may be from the following courses: HORT 399, 495, 499.

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.

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.

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.

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.

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. 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.
- 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. Recommended preparation: BIOLOGY 420. Credit not granted for both HORT 416 and HORT 516. 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. Recommended preparation: HORT 202. Credit not granted for both HORT 418 and HORT 518. Field trip required. 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. Recommended preparation: HORT 310 or HORT 313. Credit not granted for both HORT 421 and HORT 521.
- 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.)
- 430 Plant Molecular and Cellular Biology 4 (3-3)** Course Prerequisite: BIOLOGY 106, 107, 120 or HORT 202; junior standing. Structure, function, and metabolism of the plant cell and organelles including cell reproduction, energy flow, metabolic and developmental integration as well as response to the environment and how they relate to agriculture; includes basic laboratory techniques. Recommended preparation: BIOLOGY 420.
- 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 or HORT 345. Advanced concepts in plant genomics and biotechnology with emphasis on approaches, techniques, and application. Recommended preparation: BIOLOGY 420 or HORT 416. (Crosslisted course offered as HORT 480, CROP SCI 480.)
- 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. 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.
- 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.
- 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. Recommended preparation: BIOLOGY 420. Credit not granted for both HORT 416 and HORT 516. 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. Recommended preparation: HORT 202. Credit not granted for both HORT 418 and HORT 518. Field trip required. 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. Recommended preparation: HORT 310 or HORT 313. Credit not granted for both HORT 421 and HORT 521.
- 522 Transcriptomics: Data Analysis and Applications 3** An in-depth exploration of transcriptomic data, from acquisition and preprocessing to analytical methods for understanding gene activity, regulation, functional interpretation and hypothesis generation; provides hands-on experience with computational tools and techniques, including RNA-seq data analysis, differential expression analysis, co-expression analysis, regulatory networks, and pathway analysis.
- 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. Recommended preparation: BIOLOGY 474; MBIOS 478. (Crosslisted course offered as CROP SCI 545, ANIM SCI 545, BIOLOGY 545, HORT 545, PL P 545.) 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.

Department of Human Development

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Interim Chair and Professor, D. Handy; Professors, C. Bolkan, M. Cleveland, B. Cooper, M. Diversi, P. Pendry, Y. Sano; Associate Professors, C. Bletscher, R. Cooper, J. Hewa, M. K. Patton, S. Perone, A. Salazar, S. Waters, R. Weaver, E. Weybright, A. Whitehall; Assistant Professors, M. Cheng, L. Colón, J. Duckworth, R. Dueben, K. Forsythe, L. Krupke, J. Putney, S. Reisz, N. Scalise, G. Shrestha; Adjunct Instructors, M. Garcia, S. Grant, N. Kaivan, D. Rock, K. Smathers, M. Strey; Professors Emeriti, B. Boyd, M. K. Deen, J. Dillman, L. Hill, J. Hiller, S. Horton, J. Lanigan, A. Lawrence, L. Linden, J. McReynolds, D. Nelson, L. Parker, K. Peterson, T. Power, K. Rodgers, E. Soliday, G. Tan, 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 several disciplines.

Human Development majors may choose to focus their studies in one of three options: Lifespan Development, Family and Consumer Sciences Education, or Early Childhood Education. All options lead to a Bachelor of Arts in Human Development.

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 human services professions. Students are ready for careers in public and private human service agencies, and local, state and federal government.

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 organizations that serve the needs of families in the community.

The *Early Childhood Education option* focuses on children birth-age five. 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 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.

HUMAN 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

First Term	Credits
H D 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3
UCORE Inquiry ¹	6
Written Communication [WRTG]	3

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
H D 204	3

HISTORY 105 [ROOT]	3
UCORE Inquiry ¹	4
Elective ²	3

Second Year

First Term	Credits
H D 220	3
H D 306	3
UCORE Inquiry ¹	3
Elective ²	5

Second Term	Credits
H D 300 or 302	3
H D 341	3
H D 350 [DIVR]	3
Electives ²	6
Complete Writing Portfolio	

Third Year

First Term	Credits
H D 235	1
H D 300, 302, or 403	3
H D 310 [M]	3
H D 482	3
Electives ²	5

Second Term	Credits
H D 300, 302, or 403	3
H D 342	4
Electives ²	8

Fourth Year

First Term	Credits
H D 445 ³	3
Integrative Capstone [CAPS]	3
Electives ²	9

Second Term	Credits
H D 410	3
H D 446 ⁴	6
Electives ²	6

¹ Must complete 4 of these 5 UCORE designations: ARTS, BSCI, EQJS, HUM, PSCL. One lab science (BSCI or PSCL) must be completed.

² Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need to include a writing in the major [M] course to meet University requirements.

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.

HUMAN DEVELOPMENT - 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>
BIOLOGY 140 [BSCI]	3
ENGLISH 101 [WRTG]	3
H D 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3 or 4
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 201 [WRTG] ²	3
H D 204	3
HISTORY 105 [ROOT]	3
UCORE Inquiry ¹	6

Second Year

<i>First Term</i>	<i>Credits</i>
AMDT Elective ³	3
H D 220	3
H D 306	3
Electives	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 404	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 Must complete 3 of these 4 UCORE designations: ARTS, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed. Recommend one from AMDT 210 or CHEM 101.

² 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.

³ Select two from: AMDT 210, 211, or 417.

HUMAN DEVELOPMENT - 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 45 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>
H D 101 [SSCI]	3
Quantitative Reasoning [QUAN]	3
UCORE Inquiry ¹	6
Written Communication [WRTG]	3

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
H D 300, 301, or 302	3
HISTORY 105 [ROOT]	3
UCORE Inquiry ¹	4
Elective ²	3

Second Year

<i>First Term</i>	<i>Credits</i>
H D 204	3
H D 220	3
UCORE Inquiry ¹	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
H D 306, 307, 308, or 309	3
H D 350 [DIVR]	3
Lifespan H D Elective ³	3
Electives ²	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
H D 306, 307, 308, or 309	3
H D 310 [M]	3
Lifespan H D Elective ³	3
Electives ²	6

<i>Second Term</i>	<i>Credits</i>
H D 306, 307, 308, or 309	3
Lifespan H D Elective	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	8

¹ Must complete 4 of these 5 UCORE designations: ARTS, BSCI, EQJS, HUM, PSCI. One lab science (BSCI or PSCI) must be completed.

² Electives must include sufficient 300-400-level coursework to meet the University requirement of 40 credits of upper-division coursework. May need to include a writing in the major [M] course to meet University requirements.

³ Lifespan H D Electives (9 credits): Students must complete three courses from the WSU Catalog Human Development course listing, not used to complete other requirements.

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.

Minors

Gerontology

The minor in gerontology requires a minimum of 18 credits and a minimum GPA of 2.6 or better in course work used to fulfill the minor. Required courses include H D 405 and 15 credits selected from HBM 270, 497; H D 308, 360, 384, 385; KINES 264; MGMT 101, 301; PSYCH 320, 363, 490; SOC 351, 356. Course work for the minor must include a minimum of 9 credits of 300-400-level work earned in WSU courses or through WSU-approved education abroad or educational exchange courses.

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 work earned in WSU courses or through WSU-approved education abroad or educational exchange courses.

Leadership

The interdisciplinary Leadership Minor, offered through the Center for Transformational Learning & Leadership, is open to all students interested in developing high-demand applicable leadership skills. Students will learn leadership theories, examine the ethics and social responsibility of leadership, consider the centrality of diversity, equity, and inclusion to leadership, and develop leadership skills through engagement in service-learning and self-selected leadership experiences. Students can explore discipline specific leadership development through elective courses. All students will take three leadership core classes including H D 205 or H D 305; H D 315; and H D 415 or H D

416. Students will take one class in each of three categories (ethics; diversity, equity, & inclusion; and leadership electives). In addition to the above courses, students will participate in an approved self-selected leadership experience where they will explore leadership theories and develop leadership skills through hands-on experiential learning, culminating in a required leadership portfolio completed through a one-credit HD 499 course. The minor requires a minimum of 19 credits. At least 9 credits must be upper-division earned in WSU courses or through WSU-approved education abroad or educational exchange courses. A minimum cumulative GPA of 2.6 is required in courses applied to the minor.

Leadership Core (3 courses required): H D 205 or 305; 315; 415 or 416.

Ethics Elective (1 course required): ASIA 320; B A 211; COM 440; CRM J 450; CST M 467; MGMT 487; NAV SCI 402; NURS 309; PHIL 103, 360, 365, 370, 450; SPMGT 365; WGSS 462/PHIL 462.

Diversity, Equity, & Inclusion (1 course required): ANTH 220, 316; CES 101, 291, 440, 462, 464, 489; COM 321; CRM J 205; H D 350, 403; HISTORY/WGSS 399; NURS 455; PSYCH 309; SOC 340; WGSS 120; WGSS/ENGLISH/SOC 300/310/300; WGSS/SOC 385.

Leadership Electives (1 course required): AERO 311; AMDT 440; HBM 381; H D 334; I BUS 280, 480; KINES 315; MGMT 301, 401; MIL SCI 301; NAV SCI 206; NURS 405, 408; POL S 442; PSYCH 308; SOC 341; UNIV 295, 497.

Leadership Experience (1 credit H D 499): Leadership Minor students must complete at least one applied leadership experience lasting one semester or more (Fall, Spring, or Summer Session). Not all leadership experience requires an official title or leadership position. Students must confirm leadership experience by the start of the semester in which it will be completed by emailing the Leadership Minor faculty advisor (ctl. leader@wsu.edu) and enrolling in one (1) credit of H D 499, which will be taken during the approved leadership experience. At the conclusion of H D 499, students will produce a leadership portfolio that will highlight their experience, career goals, and leadership development. Students must complete H D 315 prior to the leadership experience.

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.

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.

Required courses: H D 204, 301, 302, 320, 350, 403, one other 300-400 level H D course, H D 498.

Gerontology Certificate

The Department of Human Development and the Program in Aging offer a Certificate in Gerontology. The certificate reflects a high standard of training and experience in this specific area of human development. The requirements include H D 405, 497, 498, an internship that reflects the area of certification, and 15 credits taken from an approved list of courses. Students must maintain an overall GPA of 2.6 or better in those courses that count toward the certificate.

Required courses: H D 405, 497, and 498. Elective Courses, 15 credits minimum from the following: BIOLOGY 140; HBM 270, 497; H D 308, 360, 384, 385; KINES 264; MGMT 101, 301; PSYCH 320, 363, 490; SOC 351, 356.

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.

Mindful Emotional and Social Intelligence

The Mindful Emotional and Social Intelligence (MESI) certificate is open to all students and offers a transformational program combining academic coursework, community engagement, and evidence-based mindful practices to support the development of emotional and social intelligence for personal and professional engagement.

To earn the certificate, students must complete 15 or more credits distributed as follows: (A) 9-10 credits in MESI-related core courses, consisting of either H D 205 or H D 305, H D 370, and H D 415; (B) 3 credits examining social issues with either the DIVR or EQJS UCORE designation; (C) 2 or more credits of H D 475, a repeatable 1-credit Mindful Emotional and Social Intelligence Seminar course that features the development and practical application of MESI skills, or an approved alternative course that features MESI content and skill development. 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 advisor from the Center for Transformational Learning and Leadership to plan an appropriate schedule of studies. See an advisor from the Center for Transformational Learning and Leadership for approval of the certificate and any proposed alternative courses in the (C) category above. Students may earn only one of either this certificate or the MESI certificate in Honors.

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. Course Prerequisite: By department permission.
- 300 Child and Family Violence, Abuse, and Neglect 3** Course Prerequisite: Sophomore standing Overview of causes, consequences, and treatment of those who experience violence, abuse, and neglect, particularly for vulnerable populations such as children, intimate partners, disabled, and elderly. 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.
- 305 Developing Effective Communication and Life Skills 3** Course Prerequisite: Junior standing. Enhancing interpersonal communication, leadership, and team skills through action-based learning.
- 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.
- 309 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. (Formerly H D 405.)
- 310 [M] Research Methods 3** Overview of research techniques in human development; methods of evaluating research products.
- 315 Leadership Theories and Practice 3** Theories and models of leadership from different disciplines, cultures, and periods of history; emphasis on active learning and real-world applications.
- 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 [EQJS] 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: By department permission only; H D 235; H D 306; H D 341 or concurrent enrollment; sophomore standing. 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.
- 370 Introduction to Mindfulness 3** Theory and practice of mindfulness including guided practice, emotional intelligence, self and social awareness and responsibility, well-being and relational mindfulness.
- 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.
- 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: By department permission only; junior standing. Typically, TCH LRN 415 concurrent enrollment. Placement by interview only at approved sites. 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.
- 416 Leading Change 3** Course Prerequisite: Junior standing. Interdisciplinary theories and practical applications related to leading change in multiple contexts, including at the personal, interpersonal, community, societal, cultural, and international levels; service learning and group projects to effect change within an organizational or community context.
- 418 [CAPS] Health Equity 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: By department permission only; H D 341; junior standing. 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: By department permission only; H D 342; H D 445; junior standing. Supervised teaching; emphasis on skill building in working with diverse groups of children and building partnerships with families.
- 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.
- 475 Mindful Emotional and Social Intelligence Seminar** 1 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: H D 205 or H D 305, with a C or better. Weekly seminar featuring examination and development of Mindful Emotional and Social Intelligence (MESI) skills and competencies to support thriving; application of MESI skills in approved student-selected real-world settings. S, F grading.
- 479 Program Development and Evaluation** 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 1-6 May be repeated for credit; cumulative maximum 15 hours. Course Prerequisite: By department permission; sophomore standing.

- 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 Independent Internship Placement Preparation** 1 Course Prerequisite: By department permission only; H D 497 with a C or better; H D majors or H D certificate students; junior standing. Independent course conducted under the jurisdiction of an approving internship coordinator; investigation of career goals, interviewing and professional presentation, internship competencies, and internship procurement. S, F grading.

- 497 Professional Preparation Seminar** 3 Course Prerequisite: By department permission only; admitted to a major or certificate in the Department of Human Development; junior standing. Human service career preparation through examining related careers, career self-assessment, professional presentation, professional ethics, professional competencies, and internship procurement.

- 498 Internship in Human Development** V 1 (0-3) to 9 (0-27) May be repeated for credit; cumulative maximum 9 hours. Course Prerequisite: By department permission only; H D 497 with a grade of C or higher; 2.60 GPA minimum in all other H D courses; department approved and documented internship; admitted to the major or a certificate in Human Development. 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 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 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.

- 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.

- 570 Adult Development and Aging** 3 In-depth examination of theories and research, developmental issues, and prevention/intervention approaches across adulthood to later life, including exploration of how early life experiences shape later life within the context of larger social and policy environments.

- 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.
- 538 Program Implementation** 3 Dissemination and Implementation (D&I) Science and how it connects with Prevention Science; translation of research to practice in improvement of implementation, sustainment, and scale-up of prevention programs.
- 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

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, 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 9 must be 300-400-level earned in WSU courses 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.)
- 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. (Crosslisted course offered as ENGLISH 219, HUMANITY 219.)
- 280 [ARTS] Quests and Callings** 3 Creative expression and critical interpretation of the hero's journey and the pursuit of one's calling across cultures in literature, art, mythology, and film.
- 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
Clark Hall 249
509-335-9502

Integrated Plant Sciences Director and Professor, S. P. Ficklin; Crop and Soil Sciences Department Chair and Professor, R. Koenig; Plant Pathology Department Chair and Professor, T. Murray; Horticulture Department Interim Chair and Professor, S. P. Ficklin; Entomology Department Chair and Professor, L. Lavine; 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, B. Jaeckel; Adjunct Faculty, C. Campbell, D. Cobos.

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.

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/>.

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	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
Equity and Justice [EQJS]	3
STAT 212 [QUAN]	4

<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.

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
Equity and Justice [EQJS]	3
MATH 140 [QUAN] ²	4
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

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107	4
ECONS 101 [SSCI] or 102 [SSCI]	3
Equity and Justice [EQJS]	3
HORT 351	4
Sustainability Elective ²	2 or 3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 420	3
ENTOM 343 [M]	3
HORT 310	3
HORT 320	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
ENTOM 351	3
Environmental HORT Elective ³	3
SOIL SCI 441	3
Electives	6

Third Term
(Summer Session) HORT 399

Credits
1 MATH 140 [QUAN], 171 [QUAN], 202 [QUAN], or STAT 212 [QUAN] 3 or 4

Fourth Year

<i>First Term</i>	<i>Credits</i>
HORT 313	3
HORT 418 [M]	3
Pest Management Elective ⁴	2 or 3
PL P 300 or PL P 429	2 or 3
Electives	5

<i>Second Term</i>	<i>Credits</i>
Advanced Fruit or Vegetable Elective ⁵	3
HORT 416 ⁶	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 or 4 credits): HORT 345, 421, 430, or 480, VIT ENOL 414, 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

<i>First Term</i>	<i>Credits</i>
BIOLOGY 107 [BSCI] or 120 [BSCI]	4
Communication [COMM] or Written Communication [WRTG] ¹	3 or 4
HISTORY 105 [ROOT]	3
HORT / CROP SCI 102	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106, 107, or 120	4
ENGLISH 101 [WRTG]	3
HORT / CROP SCI 202	4

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 101 [PSCI] or 105 [PSCI]	4
Equity and Justice [EQJS]	3
HORT 330	3
Humanities [HUM]	3
SOIL SCI 201	3

<i>Second Term</i>	<i>Credits</i>
CHEM 102 or 106	4
HORT 357	3
HORT 358	1
Horticulture Elective ²	3
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Diversity [DIVR]	3
ENTOM 343 [M]	3
Horticulture Elective ²	3
Electives	2

<i>Second Term</i>	<i>Credits</i>
ENTOM 351	3
HORT 331	3
HORT 351	4
Social Sciences [SSCI]	3
Electives	3

<i>Third Term</i> (Summer Session) HORT 399	<i>Credits</i>
	1

Fourth Year

<i>First Term</i>	<i>Credits</i>
Advanced Plant Science Elective ³	3
Horticulture Elective ²	3
PL P 300 or 429	2 or 3
Electives	6

<i>Second Term</i>	<i>Credits</i>
Advanced Plant Science Elective ³	3
HORT 416 ⁴	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 345, 418, 430, 445, 480, SOE 300, 450, 454, 464, 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
Equity and Justice [EQJS]	3
Humanities [HUM]	3
Complete Writing Portfolio	

Third Year

First Term	Credits
AGTM 315	3
CROP SCI 301	3
CROP SCI 305	3
ECONS / BUSINESS Electives ²	3
ENTOM 343 [M]	3

Second Term	Credits
AGTM 412	3
CROP SCI / HORT Elective ³	3
SOIL SCI 441	3
SOIL SCI 442	2
Electives	2

Third Term	Credits
(Summer Session) CROP SCI 495, 498, or 499	3

Fourth Year

First Term	Credits
AGTM Electives ⁴	3
CROP SCI 411 [M] ⁵	3
PL P 429	3
Electives	6

Second Term	Credits
CROP SCI 401 [M]	3
CROP SCI 412	1
Integrative Capstone [CAPS]	3
Electives	7

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, B. Tanner, 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, M. Varnum, A. Vasavada; Assistant Professors, G. Giannotti, S. Hidalgo Sotelo, E. Qualls-Creekmore, K. Delevich, R. Mohamed.

The Department of Integrative Physiology and Neuroscience (IPN) offers a course of study leading to the degree of Doctor of Philosophy in Biomedical Sciences 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 Biomedical Sciences 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 Biomedical Sciences 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 vitae
- The Personal Statement is one of the most important and informative aspects of the application. This statement is read carefully by the Admissions Committee and by other faculty members who are interested in recruiting a student in any given year. These readers are looking to understand your motivation for pursuing a PhD in Biomedical Science Integrative Physiology and to ensure that your interests are a good match for the current research interests of Biomedical Science Integrative Physiology faculty at WSU (you can find details of faculty interests on the Biomedical Science Integrative Physiology Program website). In your statement, you can identify specific faculty (minimum of three) that you want to do lab rotations with and note how their research fits with your previous experience and/or interests. You can also use this statement to provide evidence that you understand the demands of graduate school and can handle such demands. Please limit this statement to 500 words.

- Turning in a document over the maximum word length may cause your application to be disqualified from consideration.
- TOEFL scores (minimum score 100), IELTS scores (minimum score 7), or Duolingo (minimum score 115) required for applicants whose native language is not English. See <https://gradschool.wsu.edu/international-requirements/> for more information on language exemptions.

Inquiries should be directed to the Program in Biomedical Sciences 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.

¹ COM 102 or H D 205 recommended.

325 Foundations of Medical Physiology 3

Course Prerequisite: BIOLOGY 106; BIOLOGY 107. 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 325, VET PH 325.)

326 Foundations of Medical Physiology Lab 1 (0-3)

Course Prerequisite: Concurrent enrollment in NEUROSCI 325 or VET PH 325. Optional laboratory component of NEUROSCI/VET PH 325. Practical analysis of organ function and health using medical diagnostic equipment and clinical cases. (Crosslisted course offered as NEUROSCI 326, VET PH 326. Formerly NEUROSCI 426, VET PH 426.)

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. Cooperative: Open to UI degree-seeking students. S, F grading.

555 General and Cellular Physiology 4 (3-3)

Physiochemical mechanisms of cellular function. Recommended preparation: Concurrent enrollment in MBIOS 513.

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.
509-335-7619

Program Director, Arvin Sahaym; Academic Coordinator, Tiffany Boswell.

Individual Interdisciplinary Doctoral Program

Graduate study leading to the Individual Interdisciplinary Doctor of Philosophy degree is offered as an interdepartmental curriculum by graduate faculty from across WSU. The interdisciplinary nature of the research must span two distinct disciplines, typically drawing on faculty expertise from two 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 3.0 GPA for master's work.

Any faculty member who is recognized as a graduate faculty in their home department may participate in training students in the Individual Interdisciplinary Doctoral Program (IIDP). When admitted, the student's home department becomes the IIDP program.

Before completing an application, 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.

1. Write a statement of purpose of no more than three pages that covers: a. Identification and justification for the two (or more) essential academic disciplines of interest from which the primary coursework will be drawn; b. The proposed interdisciplinary research topic that clearly demonstrates the synergy between the academic disciplines and how they are each needed to answer the research question(s)

2. Written commitment from at least two faculty members (at least one from each academic discipline of interest) to serve on the doctoral

advisory committee, one of whom will serve as the chair. This commitment will also confirm that the student's research question(s) would be best addressed outside of a single discipline (i.e., using an interdisciplinary approach). The requisite additional committee members can be added after the student has initiated the program.

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 two or more 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 the IIDP academic coordinator at iidp.graduate.school@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.

508 Special Topics in Interdisciplinary Studies V 1-3

May be repeated for credit. Course Prerequisite: Admitted to the Interdisciplinary (IIDP or MSIS) program. Recent research developments, issues, applications, and practical training for graduate students in the graduate interdisciplinary programs.

591 Interdisciplinary Studies 1

Contemporary issues in interdisciplinary education and research. Open to all interested students.

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.

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 IIPD 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 Professor, K. Carboneau; Professors, O. Adesope, A. Cox, P. Erdman, B. French, M. Trevisan, S. Ulrich-French; Associate Professors, R. Catena, C. Connolly, S. Dai, R. Danielson, C. Gotch, K. Hildenbrand, Z. Strong; Assistant Professors, T. Loria, A. McMahon, O. Sunday; Teaching Assistant Professors, D. Craig, L. Krumpal; Teaching Associate Professors, K. Holmstrom, S. Landis, P. Morgan; Scholar Assistant Professors, S. Choe, Z. Wang; Scholar Associate Professor, K. Pietz.

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 Department of Kinesiology and Educational Psychology, housed in the College of Education, Sport, and Human Sciences, Sport, and Human Sciences has excellent facilities for undergraduate/graduate study and research, including one research center (The Learning Performance and Research Center) and nine unique research labs.

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 focuses on an array of educational and psychological measurement projects. The MERIT Laboratory engages in 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 individuals, and (3) finding evolutionary links to modern female injury risk. 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 Digital Mind and Motion Laboratory conducts research on the integration of digital health devices, including mobile applications, wearable technologies, and virtual reality systems, to promote physical activity, mindfulness, and nutritional behaviors. Through interdisciplinary methods, the lab investigates how these technologies can enhance user engagement and support sustainable health practices among diverse populations. The Interdisciplinary Music Performance & Learning Lab focuses on how individuals acquire and refine musical motor skills. The knowledge generated by this primary focus is subsequently applied towards developing novel training approaches that enhance music education outcomes. The Applied Biomechanics and Pathomechanics Lab (ABPL) investigates soft tissue behavior in response to external mechanical forces to better understand musculoskeletal injury mechanisms and inform prevention strategies. The ABPL studies strength-based and biomechanical interventions aimed at enhancing tissue resilience, optimizing movement, and reducing injury risk. 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, Sport, and Human Sciences. 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, Sport, and Human Sciences 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 Coordinator of Clinical Education. See the website for specific information, requirements, and contact information.

Educational Psychology is the study of how humans learn and retain knowledge, primarily in

formal educational settings like classrooms, as well as informal settings like museums and libraries. 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 organizations, 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
- 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>
CHEM 101 [PSCI] or 105 [PSCI]	4
Communication [COMM]	3
KINES 162 or PHYSICS 101 and 111	3 or 4
UCORE Inquiry ²	3
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>
KINES 312 [M]	3
KINES 380	3
KINES 390	1
UCORE Inquiry ²	3
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 ³	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 Equity and Justice [EQJS] requirement), or as approved by advisor. Must include sufficient 300-400-level courses to meet the University requirement of 40 upper-division credits.

² Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

³ 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>
ENGLISH 101 [WRTG]	3
KINES 138	3
KINES 199	3
PSYCH 105 [SSCI]	3
STATS 212 [QUAN]	4
UCORE Inquiry ¹	3

Second Term

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 140 [BSCI]	3
H D 205 [COMM]	4
HISTORY 105 [ROOT]	3
KINES 262	4
UCORE Inquiry ¹	3

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

Second Term

<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	

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

Second Term

<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 ²	3
ATH T 535 or Electives	3
ATH T 592 or Electives ³	3

Second Term

<i>Second Term</i>	<i>Credits</i>
ATH T 464	3
ATH T 531 or Electives	3
ATH T 560 ³	0 - 3
ATH T 592 or Electives ³	3
KINES 411	3

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

² ATH T 499 topic must be approved by advisor.

³ ATH T 560 and 592 coursework required for Master's in Athletic Training (MAT) degree.

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 earned in WSU courses or through WSU-approved education abroad or educational exchange courses.

Certificates**Leadership in Coaching**

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 interpersonal 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 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.
- 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.
- 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.

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.

512 Data Management and Visualization 3 The art and science of displaying and summarizing relationships, identifying patterns, trends, and distributions in datasets.

519 Teaching in Higher Education 3 Overview of the knowledge, skills, and dispositions needed to become an effective college teacher.

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).

523 Multimedia Learning 3 Course Prerequisite: ED PSYCH 502. Metacognitive and motivational factors of learning; design principles for multimedia learning from the theories and research in cognitive psychology and the learning sciences.

524 Conceptual Change 3 Examination of the theoretical, psychological, conceptual, and pedagogical means by which students come to think differently about conceptual knowledge.

542 Cross-cultural Research in Counseling and Assessment 3 Cross-cultural research methods, concepts, and findings in counseling and assessment.

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 RES 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 RES 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, multi-dimensional 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 PSYCH 507; 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.

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).

362 Qualitative Biomechanics 3 Course
Prerequisite: C or better in BIOLOGY 315 or KINES 262; KINES 162, PHYSICS 101, or PHYSICS 201; 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.
- 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.
- 384 Applied Exercise Prescription for Health and Performance 3** Course Prerequisite: KINES 311 with a C or better. Application of exercise prescription principles with a client, from ACSM and NSCA guidelines for assessment and testing, and health score interpretation; movement and active participation in movement activities is expected from all students.
- 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.
- 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 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. 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.
- 484 [CAPS] [M] Exercise Prescription and Medical Conditions 3** Course Prerequisite: BIOLOGY 251 with a C or better; BIOLOGY 315 or KINES 262 with a C or better; admitted to Kinesiology or Sports Medicine major; junior standing; Kinesiology majors must take KINES 484 during the term prior to enrolling in KINES 485. An integrated culmination of the knowledge, understanding, and skills for teaching movement activities to individuals with medical conditions.
- 485 Kinesiology Internship V 1-12** 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: Enrolled in Kinesiology graduate program. 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 Get Fit! 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 (0-2) 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 Couch to 5K 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.

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.

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.

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.

148 Intermediate Basketball 1 (0-2) May be repeated for credit; cumulative maximum 4 hours. S, F grading.

150 Pickleball for Beginners 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, V. Navarro-Daniels; Professors, M. Bloodworth-Lugo (Vancouver), L. Guerrero, C. Lugo-Lugo (Vancouver); Associate Professors, M. Hubert, X. Liu, J. Streamas; Assistant Professors, E. Avalos, S. Ginsburg, H. Rendon, J. Shinozuka, X. Williams; Career Track Professors, J. Bonzo, S. Davis; Career Track Associate Professors, R. Abo, W. Cao, K. Niimi, M. Previto, I. Webber; Career Track Assistant Professors, J. Arellano-Serratos (Tri Cities), L. Höller, R. Wyse; Lecturers, B. De Quintana Lasa, J. Pérez, C. Shull; Adjunct Instructor, A. Mastumoto (Vancouver) Academic Advisor for Foreign Languages and Cultures, L. Heustis; Academic Advisor for Humanities, E. Torres; Academic Advisor for Social Sciences, C. Heim; Academic Coordinator, K. Rollins; Emeritus Professors, J. Grenier-Winther, K. Jennings, F. Manzo-Robledo, R. Ong, A. Rodriguez-Vivaldi.

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. Core Competencies Certificates in Language and Culture are offered in Chinese, French, German,

Japanese, and Spanish. A certificate in Latinx studies is available as well.

The School offers a Doctor of Philosophy program in American Studies and Culture, but the program is not accepting new students at this time.

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 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 Enterprise computers. The upper mezzanine level (balcony) holds 9 Windows computers and a 55″ HD-TV with a dedicated HD-DVD & Blu-Ray player.

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 CUE 502, 509-335-8731, or the School, 509-335-4135.

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 formulate a relevant research plan; access information tools to get relevant answers.
- Articulate and utilize the basic tools and texts of the interdiscipline.
- 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 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, Spanish, and Spanish translation. Cultural minors are also possible in Film Studies, French Area Studies, German Area Studies, Global Studies, and Latin American Area Studies. Two-year programs of study leading to Language Certificates in Italian, 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 CUE 502, 509-335-4136 for Foreign Language Studies and 509-335-4506 for Comparative Ethnic Studies, or the School of Languages, Cultures, and Race, 509-335-4135.

Student Learning Outcomes – All Foreign Language Majors

Students graduating with a foreign language major from the FLC will be able to:

- Communicate effectively in the foreign language in a variety of speaking situations.
- Communicate effectively in the foreign language via proficient, articulate, and well-organized writing.
- Demonstrate comprehension of the spoken foreign language in a variety of listening situations.
- Demonstrate comprehension of a wide range of foreign language written materials.
- Demonstrate a clear understanding of the culture(s) of the foreign language studied.

These outcomes will be determined as met/not met as students achieve a language-specific benchmark in each of the traditional four skills (reading, writing, speaking, listening)

French and Spanish

Student Learning Outcomes for European Languages (French and Spanish programs) Majors:

The program outcomes promote linguistic proficiency and intercultural competence:

1. 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 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.

- Spanish Traditional Majors: 6 (ACTFL Intermediate High)

- French Traditional Majors: 5 (ACTFL Intermediate Mid)

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.

- Spanish Traditional Majors: 6 (ACTFL Intermediate High)
- French Traditional Majors: 5.5 (ACTFL Intermediate Mid-High)

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.

Listening:

- Spanish Traditional Majors: 8 (ACTFL Advanced Mid)
- French Traditional Majors: 6 (ACTFL Intermediate High)

Reading:

- Spanish Traditional Majors: 8 (ACTFL Advanced Mid)
- French Traditional Majors: 7 (ACTFL Advanced Low)

2. 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.

Chinese and Japanese

Student Learning Outcomes for Asian Languages (Chinese and Japanese programs) Majors:

The program outcomes promote linguistic proficiency and intercultural competence:

1. 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.

- Chinese Traditional Majors: (Under evaluation)
- Japanese Traditional Majors: 4 (ACTFL Intermediate Low)

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.

- Chinese Traditional Majors: (Under evaluation)
- Japanese Traditional Majors: 4 (ACTFL Intermediate Low)

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.

- Chinese Traditional Majors: (Under evaluation)
- Japanese Traditional Majors: 4 (ACTFL Intermediate Low)

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.

- Chinese Traditional Majors: (Under evaluation)
- Japanese Traditional Majors: 4 (ACTFL Intermediate Low)

2. 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 CUE 502, 509-335-8731, or the School, 509-335-4135.

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 CUE 502, 509-335-8731, or the School, 509-335-4135.

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.

Professional Majors

French, German, Japanese, Spanish

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 of Languages, Cultures, and Race is in the unique position to provide WSU students with the linguistic proficiency and intercultural competence that will allow them to become true and effective global business leaders and entrepreneurs.

1. Linguistic proficiency:

Speaking: Students are able to handle a variety of communicative tasks. They are able to participate in basic professional conversations on topics related to formal introductions, education, description of companies, products or services relevant to their specific career, as well as traveling for business. They can also speak about some topics related to employment, marketing, management, advertising and relevant current events within their professional area. In addition, they are equipped to conduct mundane business practices in person or by phone, such as scheduling or canceling appointments.

- French Professional Majors: 4.5 (ACTFL Intermediate Low-Mid)
- German Professional Majors: 4.5 (ACTFL Intermediate Low-Mid)
- Japanese Professional Majors: 4 (ACTFL Intermediate Low)
- Spanish Professional Majors: 6 (ACTFL Intermediate High)

Writing: Students are able to meet basic work writing needs. They demonstrate the ability to narrate, describe and express viewpoints in major time frames about professional topics such as companies, products, and services, employment, marketing, management, advertising and current events as they relate to their specific career. In addition, they can write a complete résumé including details about their education and past professional experience and compose business letters on specific issues.

- French Professional Majors: 5 (ACTFL Intermediate Mid)

- German Professional Majors: 4.5 (ACTFL Intermediate Low-Mid)
- Japanese Professional Majors: 4 (ACTFL Intermediate Low)
- Spanish Professional Majors: 6 (ACTFL Intermediate High)

Listening: Students are able to understand short conventional spoken narratives and descriptive dictated texts related to simple topics/practices relevant to their professional area with basic understanding of time structures, 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.

- French Professional Majors: 5 (ACTFL Intermediate Mid)
- German Professional Majors: 5.5 (ACTFL Intermediate Mid-High)
- Japanese Professional Majors: 4 (ACTFL Intermediate Low)
- Spanish Professional Majors: 7 (ACTFL Advanced Low)

Reading: Students are able to understand short conventional written narrative and descriptive texts such as education, description of companies, products or services, employment, marketing, management, advertising and current events relevant to their professional area, with basic understanding of past, present, and future events 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.

- French Professional Majors: 6 (ACTFL Intermediate High)
- German Professional Majors: 5 (ACTFL Intermediate Mid)
- Japanese Professional Majors: 4 (ACTFL Intermediate Low)
- Spanish Professional Majors: 7 (ACTFL Advanced Low)

2. Intercultural competence:

Students will demonstrate knowledge and understanding of other cultures and their norms as they relate to professional dealings.

Student Learning Outcomes

By the time they graduate from our 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 the validity of one's own behaviors and norms in the professional world by contrasting and comparing them with those of the target culture.
- Perceive and value diversity and reinterpret 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. The program is not accepting new students at this time.

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 (SLCR). 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. Completion of the Foreign Language Exit Survey is also required.

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
Equity and Justice [EQJS]	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
Communication [COMM] or Written Communication [WRTG]	3
Humanities [HUM]	3
Physical Sciences [PSCI] with lab ²	4
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>
CHINESE 306, 307, or 308	3
300-400-level Electives ³	3
Electives ³	9

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	
Complete Foreign Language Exit Survey	

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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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. Students must complete CES Foundational courses and a series of CES Comparative courses from the list of offering outlined below. Students must also satisfy the University's Writing and UCORE requirements, 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
Equity and Justice [EQJS]	3
HISTORY 105 [ROOT]	3
Social Sciences [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ¹	4
CES Foundational ²	3
Foreign Language and/or Electives	6
Humanities [HUM]	3

<i>Second Term</i>	<i>Credits</i>
CES Foundational ²	3
Foreign Language and/or Electives	6
Physical Sciences [PSCI] with lab ¹	4
Electives	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
CES 301 [M]	3
CES Comparative ³	3
CES Foundational ²	6
Electives	4

<i>Second Term</i>	<i>Credits</i>
CES Comparative ³	3
CES Comparative (300-400-level) ³	6
300-400-level Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
CES 462	3
Electives	12

<i>Second Term</i>	<i>Credits</i>
CES 440 [CAPS]	3
300-400-level Electives	12

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² CES Foundational (12 credits) selected from: CES 111, 131, 151, 171, 204, 211, 235, 240, 254, 255, 291, 313, 314, 330, 331, 335, 336, 338, 353, 357, 358, 359, 372, 373, 379, 411, 413, 435, 436, 454, 470. Coursework must include a total of two CES [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division

³ CES Comparative (12 Credits) selected from: CES 101, 207, 209, 216, 220, 222, 244, 260, 264 280, 308, 325, 380, 405, 406, 407, 426, 444, 461, 463, 465. Coursework must include a total of two CES [M] courses and sufficient 300-400-level coursework to meet the University requirement of 40 upper division.

FRENCH (120 CREDITS)

A minimum of 33 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 (SLCR). 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 33 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. Completion of the Foreign Language Exit Survey is also required.

First Year

<i>First Term</i>	<i>Credits</i>
FOR LANG 101 [HUM], 110 [DIVR], 120 [DIVR], or 220	3

FRENCH 101, 102, 203, or Elective ¹	4 or 3
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
Equity and Justice [EQJS]	3
FRENCH 102, 203, or Elective ¹	3 or 4
FRENCH 105 or Elective	1
Quantitative Reasoning [QUAN]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
FRENCH 203 or Elective ¹	3
FRENCH 205 or Elective	1
SLCR Culture Course ²	3
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
FRENCH 110 [HUM] or 120 [HUM]	3
FRENCH 204 ¹	3
FRENCH 205 or Elective	1
Physical Sciences [PSCI] with lab ³	4
Electives ⁴	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
FRENCH 305 or Elective	1
FRENCH 306, 307, or 308 [M]	3
Electives ⁴	9

<i>Second Term</i>	<i>Credits</i>
FRENCH 305 or Elective	1
FRENCH 306, 307, or 308 [M]	3
FRENCH 320	3
FRENCH 361 [COMM]	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	
Complete Foreign Language Exit Survey	

¹ Student must complete FRENCH 203 with a C or better or, meet proficiency requirement, to enroll in FRENCH 204. A [DIVR] may be need if FOR LANG 101 or 220 is taken instead of FOR LANG 110 or 120.

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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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. A [DIVR] may be need if FOR LANG 101 or 220 is taken instead of FOR LANG 110 or 120.

FRENCH - SECONDARY EDUCATION OPTION (120 CREDITS)

Students who wish to earn a teaching credential must apply to the Teacher Preparation Program in the College of Education, Sport, and Human Sciences. 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.

A minimum of 39 credits beyond the 102 level (or equivalent level in competence) in language is required to complete the French Secondary Education major. 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 of Language Culture and Race 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 39 credits required for the teaching major, a minimum of 15 FRENCH-designated credits 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. Completion of the Foreign Language Exit Survey is also required.

First Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 101 [WRTG]	3

FOR LANG 101 [HUM], 110 [DIVR], or 120 [DIVR]	3
FRENCH 120 [HUM]	3
FRENCH 203 ¹	3
FRENCH 205 or Elective ²	1
<i>Second Term</i>	<i>Credits</i>
ENGLISH 201 [WRTG]	3
Equity and Justice [EQJS]	3
FRENCH 204	3
FRENCH 205 or Elective ²	1
HISTORY 105 [ROOT]	3

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
FRENCH 305 or Elective	1
FRENCH 306, 307, or 308 [M]	3
Quantitative Reasoning [QUAN]	3
Social Sciences [SSCI]	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 [COMM]	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>
FOR LANG 440	3
FRENCH 305 or Elective	1
FRENCH 306, 307, or 308 [M]	3
FRENCH 310, 320 [M], 350, or 361 [COMM]	3
Electives	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
Complete Foreign Language Exit Survey	

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. A [DIVR] may be needed if FOR LANG 101 is taken instead of FOR LANG 110 or 120.

³ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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)

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, European Area Studies, and Asia Pacific Studies. 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 (SLCR). 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. Completion of the Foreign Language Exit Survey is also required.

First Year

First Term	Credits
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	4
JAPANESE 105 or Elective	1
Second Term	Credits
Equity and Justice [EQJS]	3
HISTORY 105 [ROOT]	3
JAPANESE 102, 203, or Elective	4
Japanese Related courses ²	3
Quantitative Reasoning [QUAN]	3

Second Year

First Term	Credits
JAPANESE 203 or Elective	4
JAPANESE 205 or Elective	1
Physical Sciences [PSCI] with lab ¹	4
Social Sciences [SSCI]	3
Electives ³	3
Second Term	Credits
Arts [ARTS]	3
Communication [COMM] or Written Communication [WRTG]	3
Humanities [HUM]	3
JAPANESE 204 ⁴	4
JAPANESE 205 or Elective	1
Complete Writing Portfolio	

Third Year

First Term	Credits
Area Studies Courses ⁵	3
Japan Related courses ²	3
JAPANESE 306, 307, 308, or 361	3
Electives ³	6
Second Term	Credits
FOR LANG 440 or Electives ³	4
JAPANESE 305 or Elective ³	1
JAPANESE 306, 307, 308, or 361	3
Japanese Related courses ²	3
Electives ³	3

Fourth Year

First Term	Credits
FOR LANG 441 or 300-400-level Electives ³	3
Japan Related courses ²	3

JAPANESE 305 or Elective ³	1
JAPANESE 306, 307, 308, or 361	3
Electives ³	6

Second Term

	Credits
Area Studies Courses ⁵	3
Integrative Capstone [CAPS]	3
300-400-level Electives ³	9
Language Proficiency Exam	
Complete Foreign Language Exit Survey	

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

² Japan Related courses: 12 credits required from JAPANESE 111, 131, 120, 123, 320 [M] and 322 [DIVR]; ASIA 275, 311, 330 [M], 374, and 377 [DIVR]; or as approved by advisor. At least 9 credits must be taken from the upper-division level. Core Language course credits (for JAPANESE 306, 307, 308, and 361) may not be used twice. Students who do not take JAPANESE 320, 322, or ASIA 377 must take another course to fulfill University Diversity [DIVR] requirement. Two Writing in the Major [M] courses are required.

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 Student must complete JAPANESE 203 with a C or better, or meet proficiency requirement to enroll in JAPANESE 204.

⁵ Area Studies courses: 6 credits required from ASIA 302 [M], 378, 379, 387; FOR LANG 410, 440, 441; or as approved by advisor. Two Writing in the Major [M] are required.

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

First Term	Credits
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3
Social Sciences [SSCI]	3

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3

Equity and Justice [EQJS]	3
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab ¹	4

Second Year

First Term	Credits
PSYCH 306	3
Foreign Language, if necessary, or Electives	12

Second Term	Credits
Arts [ARTS]	3
Diversity [DIVR]	3
PSYCH 308	3
Foreign Language, if necessary, or Electives	6
Complete Writing Portfolio	

Third Year

First Term	Credits
H D 406	3
MGMT 301	3
PSYCH 311	4
Area 1 Electives ²	3
Electives	3

Second Term	Credits
Area 1 Electives ²	3
Area 2 Electives ³	3
Area 3 Electives ⁴	3
Electives	6

Fourth Year

First Term	Credits
Area 1 Electives ²	3
Area 2 Electives ³	3
Area 3 Electives ⁴	3
Electives	6

Second Term	Credits
Integrative Capstone [CAPS]	3
Area 3 Electives ⁴	3
Electives	9

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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

First Term	Credits
Arts [ARTS]	3
Biological Sciences [BSCI] with lab ¹	4
ENGLISH 101 [WRTG]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
Equity and Justice [EQJS]	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
Primary Concentration	3
Secondary Concentration	3
Social Sciences [SSCI]	3
Foreign Language, if necessary, or Elective	6

Second Term	Credits
Diversity [DIVR]	3
Primary Concentration	3
Secondary Concentration	3
Electives	4
Complete Writing Portfolio	

Third Year

First Term	Credits
300-400-level Primary Concentration ²	3
Primary Concentration	3
Secondary Concentration	3
Electives	6

Second Term	Credits
300-400-level Primary Concentration ²	3
300-400-level Secondary Concentration ²	3
Integrative Capstone [CAPS]	3
Electives	6

Fourth Year

First Term	Credits
300-400-level Primary Concentration ²	6
300-400-level Secondary Concentration ²	3
Electives ²	6

Second Term	Credits
300-400-level Primary Concentration ²	3
Electives ²	12

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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

First Term	Credits
Arts [ARTS]	3
Biological Sciences [BSCI] with lab ¹	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Quantitative Reasoning [QUAN]	3

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
ENGLISH 101 [WRTG]	3
Equity and Justice [EQJS]	3
Physical Sciences [PSCI] with lab ¹	4
Social Sciences [SSCI]	3

Second Year

First Term	Credits
Area 1	3
Area 2	3
Foreign Language, if necessary, or Electives	7

Second Term	Credits
Area 1	3
Area 3	3
Diversity [DIVR]	3
Foreign Language, if necessary, or Electives	6
Complete Writing Portfolio	

Third Year

First Term	Credits
300-400-level Area 1 ²	3
Area 2	3
Area 3	3
Electives	6

Second Term	Credits
300-400-level Area 2 ²	3
300-400-level Area 3 ²	3
Integrative Capstone [CAPS]	3
Electives	6

Fourth Year

First Term	Credits
300-400 Any Area ²	9
Electives ²	6

Second Term	Credits
300-400 Any Area ²	3
Electives ²	12

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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 33 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. Credit for SPANISH 101, 102, 203 and Spanish 105, 205, 305, and 405 may not be applied 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 (SLCR). 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 33 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.

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. Completion of the Foreign Language Exit Survey is also required.

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 ^{1,2}	4 or 3
<i>Second Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning [QUAN]	3
SPANISH 102, 203 or Elective ^{1,2}	3 or 4
SPANISH 105 or Elective ^{2,1}	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 ^{1,2}	3
SPANISH 205 or Elective ^{2,1}	1
Electives ¹	3
<i>Second Term</i>	<i>Credits</i>
Humanities [HUM]	3
Physical Sciences [PSCI] with lab ³	4
SPANISH 204 or 208 ⁴	3
SPANISH 205 or Elective ^{2,1}	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 ⁵	3
Electives or FOR LANG 440 if teaching major ¹	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
SPANISH 305 or elective ^{2,1}	1
SPANISH 308	3
SPANISH Film/Literature/Culture Elective ⁵	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	10

<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	6
Exit Proficiency Exam	
Complete Foreign Language Exit Survey	

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 Course does not count toward the major requirement of at least 33 credits of SPANISH.

³ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁴ Student must complete SPANISH 203 with a C or better, or meet proficiency requirement to enroll in SPANISH 204.

⁵ 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 – LATIN AMERICAN AND LATINX STUDIES OPTION (120 CREDITS)

The Bachelor of Arts in Foreign Languages and Cultures / Spanish - Latin American and Latinx Studies option is a cross-disciplinary program designed for students who have interests in both the acquisition of Spanish language and the study of Latin American and Latinx cultures, literatures, and film. The Bachelor of Arts in Foreign Languages and Cultures / Spanish - Latin American and Latinx Studies promotes the study of Latin American societies and Latinx communities in the United States from systematic, interdisciplinary, comparative, and transnational approaches, through a learning process based on the intersectionality of notions such as social class, ethnicity, race, gender, migration, "local" realities, late capitalism, colonialism, postcolonial condition, among others. Students will learn how nowadays Latin American national identities were

built and how those identities are simultaneously preserved and negotiated in Latino communities in the U.S.

The Bachelor of Arts in Foreign Languages and Cultures / Spanish - Latin American and Latinx Studies is preparatory for careers and future study in teaching, social work, law school, community development and nonprofit work along with graduate programs in Spanish, Hispanic Studies, Latin American Studies, Latinx Studies, American Studies, History, Ethnic Studies, Immigration Studies, Law, among other fields.

To earn a Bachelor of Arts in Foreign Languages and Cultures / Spanish - Latin American and Latinx Studies students will complete:

- A minimum of 33 credits beyond the 203 level (or the equivalent level in competence) in Spanish language courses (including 15 credits in Latin American Literature, Film, and Culture.) 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.

- A minimum of 27 credits in Comparative Ethnic Studies (CES) courses focused on Latino Culture and Literature including 12 credits of 300-400 level course work. (NOTE: CES 151 and CES 201 are pre-requisite and are mandatory.)

- 6 credits in Internship/Service Learning/Study Abroad

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 61 credits. Students are admitted to the Bachelor of Arts in Foreign Languages and Cultures / Spanish - Latin American and Latinx Studies upon making their intentions known to the School of Languages, Cultures and Race. However, no course in which C- or lower 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. 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/>. Completion of the Foreign Language Exit Survey is also required.

First Year

<i>First Term</i>	<i>Credits</i>
CES 151 [HUM] ¹	3
SPANISH 101	4
SPANISH 105, 205, or Elective	1
Written Communication [WRTG]	3
100-level SPANISH course taught in English	3

<i>Second Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
HISTORY 105 [ROOT]	3
Quantitative Reasoning	3
SPANISH 102	4
SPANISH 105, 205, FOR LANG 210, or Elective	1

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
CES 201 ¹	3
Communication [COMM] or Written Communication [WRTG]	3
SPANISH 203 ²	3
SPANISH 205 or Elective	1
<i>Second Term</i>	<i>Credits</i>
CES courses ⁴	3
FOR LANG 370	3
Physical Sciences [PSCI] with lab ³	4
SPANISH 204	3
SPANISH 205, FOR LANG 210, or elective Complete Writing Portfolio	1

Third Year

<i>First Term</i>	<i>Credits</i>
CES courses ⁴	6
Social Sciences [SSCI]	3
SPANISH 305 or Elective	1
SPANISH 306, 307, or 308 (choose 2) ⁵	6
<i>Second Term</i>	<i>Credits</i>
CES courses ⁴	3
SPANISH 305, FOR LANG 210, or Elective	1
SPANISH 306, 307, or 308 (choose 1) ⁵	3
SPANISH 320 [DIVR], 321 [DIVR], 350 [DIVR], or 351 [ARTS] ⁶	3
SPANISH 407 or 408 [M]	3
SPANISH 450 [M] [CAPS], 451 [M] [CAPS], 452 [M] [CAPS], or 453 [M] ⁷	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
CES courses ⁴	6
SPANISH 305, 405, or Elective	1
SPANISH 310 [ARTS] or 311 [ARTS] ⁶	3
SPANISH 407 or 408 [M]	3
SPANISH 450 [M], 451 [M], 452 [M], or 453 [M] ⁷	3
<i>Second Term</i>	<i>Credits</i>
CES courses ⁴	3
FOR LANG 495 (Internship, Service Learning, or Study Abroad)	6
SPANISH 305, 405, or Elective	1
SPANISH 320 [DIVR], 321 [DIVR], 350 [ARTS], or 351 [ARTS] ⁶	3
SPANISH 450, 451, 452, or 453 ⁷	3
Complete Foreign Language Exit Survey	

¹ CES 151 satisfies the [HUM] UCORE requirement and one of the two CES pre-requisites of the program. The second CES pre-requisite of the program is CES 201.

² Student must meet proficiency requirement to enroll in SPANISH 203.

³ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁴ All Spanish – Latin American and Latinx Studies majors must complete 21 credits of CES courses, including 12 credits of upper-division CES courses from CES 254, 255, 353, 357, 358, 359, 454.

⁵ SPANISH 306, 307, or 308 cannot be repeated for credit. The student must take 2 of these courses in the 3rd year/1st term, and the remaining course in the 3rd year/2nd term.

⁶ SPANISH 310 [ARTS], 311 [ARTS], 320 [DIVR], 321 [DIVR], 350 [ARTS], or 351 [ARTS] cannot be repeated for credit. The student must take at least one [ARTS] and one [DIVR] course. Both [ARTS] and [DIVR] are needed to satisfy CAS UCORE requirements.

⁷ Either SPANISH 450, 451, or 452 satisfies the [CAPS] UCORE requirement. As the student must take two [M] courses, the second SPANISH course at 450-level may be either another [CAPS] or SPANISH 453 if the student is interested in linguistics.

SPANISH – SECONDARY EDUCATION OPTION (120 CREDITS)

Students who wish to earn a teaching credential must apply to the Teacher Preparation Program in the College of Education, Sport, and Human Sciences. 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.

A minimum of 39 credits beyond the 102 level (or the equivalent level in competence) in the language is required to complete the Spanish Secondary Education Major. 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 39 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. Completion of the Foreign Language Exit Survey is also required.

First Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 101 [WRTG]	3
FOR LANG 101 [HUM], 110 [DIVR], or 120 [DIVR]	3
Humanities [HUM] (SPANISH 120 suggested)	3
SPANISH 203 ¹	3
SPANISH 205 and/or Elective ²	2
<i>Second Term</i>	<i>Credits</i>
ENGLISH 201 [WRTG]	3
Equity and Justice [EQJS]	3
HISTORY 105 [ROOT]	3
SPANISH 204 or 208	3
SPANISH 205 and/or Elective ²	2

Second Year

<i>First Term</i>	<i>Credits</i>
Biological Sciences [BSCI] with lab ³	4
Quantitative Reasoning [QUAN]	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>
FOR LANG 440	3
Social Sciences [SSCI]	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>
Capstone [CAPS] course ⁵	3
ED PSYCH 468	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
Complete Foreign Language Exit Survey	

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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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.

⁵ Suggested Capstone [CAPS] courses include FOR LANG 410 and SPANISH 450, 451, and 452.

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 32 credits, as follows: 1) Language Foundation (14 credits) -- FRENCH 101, 102, 203, and 204 or 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 (6 credits) -- FRENCH 420 [CAPS]; and FOR LANG 495, Internship / Service Learning / Undergraduate Research / Study Abroad (for 8 weeks minimum). In addition, students must complete two Writing in the Major [M] courses (FRENCH 308 and 320). 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 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 32 credits, as follows: 1) Language Foundation (14 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 (6 credits) -- GERMAN 420 [CAPS];

and FOR LANG 495, or GERMAN 380 or 480, or Study Abroad (for 8 weeks minimum). In addition, students must complete two Writing in the Major [M] courses (GERMAN 308 and an [M] course from the student's main major). 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 except for FOR LANG 495 and GERMAN 380 and 480. 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. Completion of the Foreign Language Exit Survey is also required.

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) Language for Specific Purposes (3 credits) -- JAPANESE 361; 3) Lower-level Culture/Literature course taught in English (3 credits) -- one from ASIA 275, JAPANESE 111, 120, 123, and 131; 4) Upper-level Language/Culture/Literature/History courses taught in English (15 credits, at least 6 credits must be language courses) -- from CHINESE 311, JAPANESE 306, 307, 308, 320, 322, ASIA 330, 374, 377, and FOR LANG 495; and 5) 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. Completion of the Foreign Language Exit Survey is also required.

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 32 credits, as follows: 1) Language Foundation (14 credits) -- SPANISH 101, 102, 203, and one of 204, 208, or 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 (6 credits) -- Integrative Capstone [CAPS]; and FOR LANG 495, Internship / Service Learning / Undergraduate Research / Study

Abroad (for 8 weeks minimum). In addition to the 32 credits required, students must complete two Writing in the Major [M] courses (SPANISH 420 and an [M] course from the student's primary major.) 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. Completion of the Foreign Language Exit Survey is also required.

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, ART 301, CES 372, 373, 379, 470, 475, HISTORY 410, or MUS 265). At least 9 of the credits must be earned in WSU courses 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 French, German, or Spanish, a student must complete a minimum of 19 credits of course work in one language area. A foundation of the target language, 102, 203 and 204 (10 credits), is required. The remaining 9 credits must be 300-400-level course work in the target language, of which 3 credits must be earned in WSU courses, while the remaining 6 credits must be earned in WSU courses or through WSU-approved education abroad.

To fulfill requirements for a minor in Chinese or Japanese, 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.

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 at the 300-400 level and earned in WSU courses or through WSU-approved education abroad or educational exchange courses.

Film Studies

The Film Studies Minor introduces students to the critical study of cinema. 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 credits of upper-division work earned in WSU courses or through WSU-approved education abroad or educational exchange courses. Two core courses (6 credits) are required providing the foundation for the study of film based in the Humanities and constitute an introduction to the various disciplines in which film analysis is anchored: FOR LANG 110; and one from PHIL 210, SOC 372, or DTC 208.

An additional 12 elective credits offering a multidisciplinary approach to film studies and foster analysis from various perspectives: historical, philosophical, social, and cultural are required. Some courses offer a global perspective on cinema by focusing on the cinematic production of a specific country or geographical area.

Approved courses include CES 222, 338, 358, 379, CHINESE/ASIA/JAPANESE 111, CHINESE 311, CRM J/POL S 381, DTC 354, 355, 491, ENGLISH 339, 340, FRENCH 110, 310, 410, GERMAN 110, 310, HISTORY 320, RUSSIAN 410, 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. Courses counting toward the Film Studies minor may not be counted toward a major or minor in a language, unless approved by the film studies coordinator or advisor.

Learning Goals:

- To enhance knowledge of the history of film
- To emphasize analysis of film in an

interdisciplinary manner (through arts, architecture, literature, history, philosophy, and language) 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 film
- To enhance understanding of the societal and cultural roles and impact of film

French Area and Culture Studies

A minimum of 19 credits is required (options in French or Francophone Studies). A foundation of the target language, FRENCH 102 and 203 (7 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 earned in WSU courses 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 at the 300-400-level earned in WSU courses 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 19 credits is required. A foundation of the target language, GERMAN 102 and 203 (7 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 earned in WSU courses 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 earned in WSU courses 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 earned in WSU courses 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 earned in WSU courses 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, ART 202, CES 244, ECONS 101, 198, POL S 103, or SOC 415. Choose one from ANTH 316, or POL

S 428. Choose one from: COM 105, COM 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, ART 301, CES 380, CROP SCI 360, ENGLISH 373, HISTORY 294 or 495 or approved upper-level World History course, HONORS 370, 380, 390, IBUS 380 or 470, POL S 429, SOC 230 or 334, 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, COM 421, HISTORY 291, SOE 312.

Japanese Area and Culture Studies

A minimum of 17 credits is required. A foundation of the target language, including both JAPANESE 203 (4 credits) and JAPANESE 204 (4 credits), is required. One of the three additional required courses must be a language course taken from JAPANESE 306, 307, 308, and 361. Additional elective that may apply to the minor include JAPANESE 320, 322; CHINESE/ ASIA 311, 330; ASIA/ART 302; ASIA/HISTORY 374, 377, 379, 387. A minimum of 9 credits with a letter grade must be earned in WSU courses at the 300-400 level. All courses must be passed with a grade of C or better. 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, or French and Francophone Area Studies). For courses taken in Study Abroad Programs or as other transfer credits, please check with your advisor.

Latin American and Spanish Area Studies

A minimum of 19 credits is required. A foundation of the target language, SPANISH 102 and 203 (7 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 earned in WSU courses 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 work earned in WSU courses 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.

Spanish Language Translation

The minor in Spanish Language Translation requires completion of a minimum of 18 credits, 9 of which must be upper-division work earned in WSU courses or through WSU-approved education abroad or educational exchange courses, plus the Spanish exit proficiency (STAMP) exam. Specific course requirements include SPANISH 306, 308, and 365; two from SPANISH 320, 321, 350, 351, 361, 362, 363, 408, 450, 451, 452, 453; one from ENGLISH 112, 255, 256, 326, 357, 364, 456, 457, 472, 495. A grade of B or better is required in all courses that apply to this minor.

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, ART 301, CES 372, 373, 379, 470, 475, 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 Chinese Language and Culture

WSU's Core Competencies in Chinese Language and Culture certificate program encompasses the study of the Chinese language and culture from novice to low-intermediate levels. Earning the certificate acknowledges that students have mastered the fundamentals of the Chinese language and cultures.

The certificate program can be a standalone option or allow students to enter a Chinese minor or major degree program at WSU. It is ideal for individuals who wish to gain insight into the Chinese language and culture or engage in China-related areas.

Required courses are CHINESE 101, 102, 203, and 261.

To fulfill requirements for the certificate, a student must complete a minimum of 15 credits of coursework in the language area.

No more than 4 credits earned at other institutions may apply towards the certificate, and no more than 4 credits may be taken pass/fail. Courses earned at another institution will be evaluated by the SLCR for course equivalencies and allowance in the certificate. All courses must be completed with a grade of C or better.

The University undergraduate certificate fee will apply.

Core Competencies in French Language and Culture

WSU's Core Competencies in French Language and Culture certificate program encompasses the study of the French language and culture from novice to low-intermediate levels. It acknowledges that students have mastered the fundamentals of the French language and cultures.

The certificate program can be a standalone option or allow students to enter a French minor or major degree program at WSU. It is ideal for individuals who wish to gain insight into the French language and culture or engage in areas related to France or the Francophone world.

Required courses are FRENCH 101, 102, 203, 204, and one additional course selected by the student from: FRENCH 110, 120, 410, or 420.

To fulfill requirements for the certificate, a student must complete a minimum of 15 credits of coursework in the language area.

No more than 4 credits earned at other institutions may apply towards the certificate, and no more than 4 credits may be taken pass/fail. Courses earned at another institution will be evaluated by the SLCR for course equivalencies and allowance in the certificate. All courses must be completed with a grade of C or better or a Satisfactory with 73% or above.

If a student transfers 101 and 102 from another institution, only 102 will count toward the certificate and the student will have to take 203, 204, and TWO additional courses from the options listed above.

The University undergraduate certificate fee will apply.

Conversation Courses (105, 205, 305, and 405) do not count towards the certificate.

For courses taken in Study Abroad Programs, please consult with the Foreign Languages advisor.

Core Competencies in German Language and Culture

WSU's Core Competencies in German Language and Culture certificate program encompasses the study of the German language and culture from novice to low-intermediate levels. It acknowledges that students have mastered the fundamentals of the German language and cultures.

The certificate program can be a standalone option or allow students to enter a German minor or the professional major degree program at WSU. It is ideal for individuals who wish to gain insight into the German language and culture or engage in areas related to Germany or the German-speaking world.

Required courses are GERMAN 101, 102, 203, 204, and one additional course selected by the student from: GERMAN 110 120, 321, or 420.

To fulfill requirements for the certificate, a student must complete a minimum of 16 credits of coursework in the language area.

No more than 4 credits earned at other institutions may apply towards the certificate, and no more than 4 credits may be taken pass/fail. Courses earned at another institution will be evaluated by the SLCR for course equivalencies and allowance in the certificate. All courses must be completed with a grade of C or better or a Satisfactory with 73% or above.

If a student transfers 101 and 102 from another institution, only 102 will count toward the certificate in German. The student will be required to take 203, 204, and TWO additional courses from the list above (in addition to 102) totaling 16 credits.

The University undergraduate certificate fee will apply.

Conversation Courses (105, 205, 305, and 405) do not count towards the certificate.

For courses taken in Study Abroad Programs, please consult with the Foreign Languages advisor.

Core Competencies in Japanese Language and Culture

WSU's Core Competencies in Japanese Language and Culture certificate program encompasses the study of the Japanese language and culture from novice to low-intermediate levels. It acknowledges that students have mastered the fundamentals of the Japanese language and cultures.

The certificate program can be a standalone option or allow students to enter a Japanese minor or major degree program at WSU. It is ideal for individuals who wish to gain insight into the Japanese language and culture or engage in Japan-related areas.

Required courses are JAPANESE 101, 102, 203, and 204.

To fulfill requirements for the certificate, a student must complete a minimum of 15 credits of coursework in the language area.

If students have transferred credits for JAPANESE 101 and 102 from another institution, only the credits for 102 will count toward the certificate and JAPANESE 306, 307 or 308 is required for them.

No more than 4 credits earned at other institutions may apply towards the certificate, and no more than 4 credits may be taken pass/fail. Courses earned at another institution will be evaluated by the SLCR for course equivalencies and allowance in the certificate. All courses must be completed with a grade of C or better or a Satisfactory with 73% or above.

The University undergraduate certificate fee will apply.

Conversation Courses (105, 205, 305, and 405) and Special Topics courses (480) do not count towards the certificate.

For courses taken in Study Abroad Programs, please consult with the Foreign Languages advisor.

Core Competencies in Spanish Language and Culture

WSU's Core Competencies in Spanish Language and Culture certificate program encompasses the study of the Spanish language and culture from the novice to low-intermediate levels. It acknowledges that students have mastered the fundamentals of the Spanish language and cultures.

The certificate program can be a stand-alone option or allow students to enter a Spanish minor or major degree program at WSU. It is ideal for individuals who wish to gain insight into the Spanish language and culture or engage in areas related to the Spanish or Latin American world.

Required Courses: SPANISH 101, 102, 203, 204, and one additional course selected by the student from FOR LANG 300*, SPANISH 110, 111, 120, 121, 307* or 420.

*FOR LANG 300 and SPANISH 307 are part of the Summer faculty-led study abroad program in Valencia, Spain.

To fulfill requirements for the certificate, a student must complete a minimum of 16 credits of coursework in the language area.

No more than 4 credits earned at other institutions may apply towards the certificate, and no more than 4 credits may be taken pass/fail. Courses earned at another institution will be evaluated by the School of Language, Culture, and Race for course equivalencies and allowance in the certificate. All courses must be completed with a grade of C or better or a Satisfactory with 73% or above.

If a student transfers SPANISH 101 and 102 from another institution, only SPANISH 102 will count toward the certificate and the student will have to take one additional course from the list of options listed above.

The University undergraduate certificate fee will apply.

Conversation courses (SPANISH 105, 205, 305, and 405) do not count towards the certificate.

For courses taken in Study Abroad programs, please consult with the Foreign Languages advisor.

Italian Language

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.

Latinx Studies

The Latinx Studies Certificate provides an interdisciplinary and comparative approach for students interested in Latinx communities in Washington state and around the U.S. This certificate will strengthen students' academic portfolios and

professional opportunities by offering critical knowledge in Latinx histories, cultures, literatures, politics, and social dynamics.

The certificate program can be a standalone option or allow students to enter a CES minor or major degree program, or the Spanish language major in Latin American and Latinx Studies at WSU. It is ideal for individuals who wish to gain insight into Latinx culture, history, and politics, as well as those considering further study through the B.A. in Spanish – Latin American and Latinx Studies.

Students must complete a minimum of 15 credits from CES 101 or 201; CES 151; and three additional Latinx-focused electives from the following options: CES 254, 255, 353 [M], 357, 358 [M], 359, 426, 454. No more than 3 credits earned at other institutions may apply towards the certificate, and no more than 3 credits may be taken pass/fail. Courses earned at another institution will be evaluated by the School of Languages Cultures and Race for course equivalencies and allowance in the certificate. Students must maintain a cumulative GPA of 2.5 in all certificate-related courses. The University undergraduate certificate fee will apply.

Race and Ethnicity in the Corporate World

This interdisciplinary certificate is open to enrolled WSU students majoring or minoring in Comparative Ethnic Studies or Business. The certificate requires completion of a minimum of 15 credits, including CES 101 or 201; CES 207; one course from HBM 235, IBUS 435, or IBUS 453; and two courses, at least one of which must be a 300-400-level course, from CES 244, 260, 301, 440, 446, 462, 465, 491.

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.)

264 Racial Justice Movements 3 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 264, CES 264. Formerly offered as AMER ST 474, CES 464.)

471 Race, Popular Culture, and Post-Civil Rights America 3 An examination of sports, television, film, music, and other examples of popular culture as resistance. (Crosslisted course offered as AMER ST 471, CES 461.)

472 [EQJS] 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, ENGLISH 472.)

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.)

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.

Cross-Disciplinary Arts and Sciences

CAS

299 Interest Cluster Discussion Section 1 May be repeated for credit. Course Prerequisite: By permission only. For students enrolled in courses identified for a specific interest cluster; consult academic advisor. Integrative discussion that incorporates multiple disciplinary perspectives on a particular topic. S, F grading.

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: By department permission; 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: By department permission; junior standing. Supervised student experiential activities as paid or unpaid intern in business, education, health, non-profit, industry, or other organizations.

501 Be REAL 1 Skills for mental resilience including managing stress and emotions, and coping with challenging situations. S, F grading.

Comparative Ethnic Studies

CES

101 [EQJS] 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 U.S.

151 [HUM] Introduction to Latinx Studies 3 Examination of the history, culture, political and economic status of Latinx in the U.S.

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 [EQJS] Critical Studies in Whiteness 3 Political and cultural practices that define whiteness through history, popular culture and everyday life.

207 [DIVR] 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.

208 [DIVR] Race and Speculative Narratives 3 Reading and analysis of speculative fiction alongside theories and histories of race, racism, and anti-racism.

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] Social Justice Literature 3 Survey of modern multicultural literature concerned with social justice, including African American, Asian Pacific American, Latinx, 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 U.S. 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] Latinx Worlds: Cultures, Power, Identity 3 Comparison of the contemporary and historical experiences of Latinx in the United States, and their relations with other ethnic minority groups and the majority populations.

255 Latinx Diasporic Communities in the U.S. 3 Exploration of historical movements, settlement, and interactions within the United States of different Latinx groups.

260 [HUM] Race and Racism in U.S. Popular Culture 3 Examines images, ideologies, and identities; introduces key concepts and methods; focuses on race, gender, sexuality and class.

264 Racial Justice Movements 3 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 264, CES 264. Formerly offered as AMER ST 474, CES 464.)

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 Communities of Color and the Pacific Northwest 3 Exploration of racial and ethnic diversity of the Pacific Northwest, highlighting contributions, histories, cultural impact, political movements, and community formation across the state. (Crosslisted course offered as CES 280, HISTORY 280.)

291 [EQJS] Antisemitism and Jewishness 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 U.S. 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 Pacific Islander History and Culture 3 Survey of the histories, cultures, and movements for sovereignty of Pacific peoples, focusing on the relations to the United States.

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 Black Washington 3 Histories of Black communities in Washington including social movements, immigration, religion, politics, culture, and the many social, economic, and everyday contributions of Black Washingtonians.

331 Black Lives Matter and the Cultural Imagination 3 Through literature, social media, film, music, and television, an examination of the role that cultural movements have played in the Black Lives Matter movement.

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 [EQJS] 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.)

336 Black Popular Culture 3 Histories of African American pop culture; examines how African American cultural specificities emerge and transform American popular imaginations.

- 338 [ARTS] 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 Latinx Literatures 3** A survey of Latinx literature, examining both dominant representations and sites of resistance. (Crosslisted course offered as CES 353, ENGLISH 345.)
- 357 Latinx and U.S. Popular Culture 3** Examination of the participation and representation of Latinx bodies in different aspects of U.S. popular culture.
- 358 [ARTS] [M] U.S. Latinx in Film 3 (2-3)** Critical analysis of Latinx in contemporary U.S. mainstream movies and independent films.
- 359 Latinx Politics 3** Histories, role, and goals of Latinx politics; explores political movements, coalitional politics, representation, voting, and other political 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] Indigenous Literature 3** Literature, by Indigenous authors and about Indigenous communities, reflecting on dominant images and counter-images, 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 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 and 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 and 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 U.S. popular culture.
- 426 [EQJS] Workers Across North America 3** Course Prerequisite: Junior standing. International interactions between workers and labor unions in Mexico, Canada and the U.S. (Crosslisted course offered as CES 426, HISTORY 426.)
- 435 Black Feminism 3** Course Prerequisite: Junior standing. Explores the history, praxis, movements, and politics of Black feminism; examines the intellectual traditions, social movements, and contemporary debates surrounding Black feminism.
- 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.
- 444 White Power Movements and Ideologies 3** Course Prerequisite: Junior standing. Critical assessment of white supremacist and nationalist movements and ideologies around the globe.
- 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 U.S. women of Latin American ancestry, Latinas.
- 461 Race, Popular Culture, and Post-Civil Rights America 3** An examination of sports, television, film, music, and other examples of popular culture as resistance. (Crosslisted course offered as AMER ST 471, CES 461.)
- 462 [EQJS] 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, ENGLISH 472.)
- 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.)
- 465 [HUM] 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 Indigenous Communities 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.
- 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. 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.

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 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 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 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] Studies in East Asian Film** 3 (2-3) Variable content seminar. In-depth study of East Asian cinema that brings together the analysis of cinematography, cultural, and sociopolitical backgrounds, and the impact and influences within an international context. Taught in English. (Crosslisted course offered as CHINESE 311, JAPANESE 311, ASIA 311.)
- 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. 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.

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] Understanding World Cinema** 3 Taught in English. Variable content course. Introduction to understanding world cinema from aesthetic, cultural, and historical perspectives.
- 120 [DIVR] Introduction to World 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 World Cinema and Lecture Series** 1 (0-3) An introduction to world cinema through universal themes and their varied cinematic portrayals. S, F grading.
- 220 [HUM] 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 Studies in World Cinema** 3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: One [HUM]; one [ARTS]; junior standing. Taught in English. Variable content course. In-depth study of world cinema that brings together the analysis of cinematography, cultural and sociopolitical backgrounds, and the impact and influences within an international context.
- 440 Methods of Teaching World 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. 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.
- 540 Methods of Teaching World 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** 3 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 3** 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** 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. 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.

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 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 3** 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 3** 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 May be repeated for credit; cumulative maximum 6 hours. 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. 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.

Italian

ITALIAN

101 First Semester 3 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 3 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 3 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 3 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. 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.

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 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 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.

311 [M] Studies in East Asian Film 3 (2-3) Variable content seminar. In-depth study of East Asian cinema that brings together the analysis of cinematography, cultural, and sociopolitical backgrounds, and the impact and influences within an international context. Taught in English. (Crosslisted course offered as CHINESE 311, JAPANESE 311, ASIA 311.)

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 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. 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.

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.

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] Understanding Peninsular Spanish Film 3 Introduction to understanding Spanish film from aesthetic, cultural, and historical perspectives. Taught in English.

111 [ARTS] Understanding Latin American Film 3 Introduction to understanding Latin American film from aesthetic, cultural, and historical perspectives. 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 3 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 3** 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 3** 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, SPANISH 208 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, SPANISH 208 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 [WRTG] Intermediate Grammar and Writing 3** Course Prerequisite: SPANISH 204 with a C or better, SPANISH 208 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] Studies in Peninsular Spanish Film 3** Course Prerequisite: SPANISH 306, 307, or 308. In-depth study of Spanish cinema that brings together the analysis of cinematography, cultural and sociopolitical backgrounds, and the impact and influences within an international context. Variable content seminar. Taught in Spanish. Cooperative: Open to UI degree-seeking students.
- 311 [ARTS] Studies in Latin American Film 3** Course Prerequisite: SPANISH 306, 307, or 308. Variable content seminar. In-depth study of Latin American cinema that brings together the analysis of cinematography, cultural and sociopolitical backgrounds, and the impact and influences within an international context. Taught in Spanish. Cooperative: Open to UI degree-seeking students.
- 320 [DIVR] 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.
- 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 [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: One [HUM]; one [ARTS]; two SPANISH 300-level courses excluding SPANISH 305; junior standing. Seminar on important themes in Spanish studies. Taught in Spanish.
- 451 [CAPS] [M] Seminar in Spanish Studies - Authors 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: One [HUM]; one [ARTS]; two SPANISH 300-level courses excluding SPANISH 305; junior standing. Seminar on important authors in Spanish studies. Taught in Spanish.
- 452 [CAPS] [M] Seminar in Spanish Studies - Literary Genres 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: One [HUM]; one [ARTS]; two SPANISH 300-level courses excluding SPANISH 305; junior standing. In-depth study of literary genres within 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. 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.
- 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.

Department of Mathematics and Statistics

math.wsu.edu
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Department Chair and Regents Professor, N. Dasgupta; Professors, V. K. Jandhyala, A. Khapalov, B. Krishnamoorthy, H. Li, V. S. Manoranjan, J. McDonald, C. Moore, A. Panchenko, L. Schreyer, E. Schwartz, D. B. Slavitt, M. Tsatsomeros, H. Yin; Associate Professors, T. Asaki, X. Chen, A. Dimitrov, M. G. Hudelson, S. Liu, N. Strigul, K. Vixie, N. Voulgarakis, Y. Wang, X. Wang, A. Wilhelm; Assistant Professors, C. Cai, D. DeFord, A. Kaul; Adjunct Professors, K. D. Cooper, K. DeBower (VAN), M. Dunaway (VAN), O. Ramyantseva (VAN), M. Fong Wilson (VAN); Scholarly Professors, H. D. Johnson, S. Lapin; Scholarly Associate Professors, R. Learn (TC), J. Martin, E. K. Sablan; Scholarly Assistant Professors, A. Cortez, T. Dejong, D. Reiss; Teaching Professors, P. Krouss, L. R. Sotomayor, Teaching Associate Professors, C. Jacobs, E. Remaley, S. Selmi (TC), D. Zhang; Teaching Assistant Professors, J. Eld, F. McGrade, D. Mitchell, M. Morgan, P. Moyo, G. Nurmakhmetov (EVRT), L. Oliver, C. Sakabe, J. Sung (VAN), X. Wen; Lecturers, B. Emehiser, D. Nichols, E. Sawyer, M. Sivakumaran; Professors Emeriti, J. R. Alldredge, K. S. Cooper, D. W. DeTemple, R. H. Dillon, M. Evans, A. C. Genz, M. A. Jacroux, R. A. Johnson, M. J. Kallagher, D. C. Kent, L. Knott, R. Mifflin, C. B. Millham, F. G. Pascual S. C. Saunders, M. F. Schumaker, K. Vincent, D. S. Watkins, W. A. Webb, H. C. Wiser, D. J. Wollkind.

The Department of Mathematics and Statistics offers courses of study leading to the degree of Bachelor of Science in Mathematics with options to emphasize in 6 areas (denoted options), a Bachelor of Science in Data Analytics, a MS in Mathematics with two options, MS in Statistics, a Ph.D. in Mathematics with three options, a Ph.D. in Statistical Science, an Undergraduate Certificate in Quantitative Biology, a Graduate Certificate in Teaching and Learning, an Undergraduate Minor in Mathematics, an Undergraduate Minor in Statistics, and a Graduate Minor in Statistics. The flexibility of the degrees allow students to get experience in diverse areas such as, statistics and data analytics, math and computer programming, statistics and economics, math and biology, etc.

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 their fields of interest. 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 transdisciplinary undergraduate degree in data analytics - a multi-disciplinary field of study comprising mathematics, statistics, computer sciences, and the study of data itself - is also available. See <https://catalog.wsu.edu/Pullman/Academics/Info/2456> for more details on this program.

In addition, an undergraduate certificate in Quantitative Biology is available. Students not seeking undergraduate degrees in Mathematics or Statistics may also pursue a Minor in Mathematics and/or a Minor in Statistics.

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 necessary prerequisite(s). With only a few exceptions, WSU undergraduate students are required to take the WSU Math Placement Assessment prior to enrolling in their first college-level mathematics course. See <http://www.math.wsu.edu/placement/welcome.php> placement for more information.

At the graduate level, diverse research interests within our department expose students to multiple disciplines, and students often combine multiple areas into unique research projects. 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 Mathematics – Teaching Option, and a MS in Statistics. In addition, a graduate certificate in Teaching College Mathematics is available; and for students seeking a PhD in another field at WSU, a minor in Statistics 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. 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.

MATHEMATICS - 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

First Term	Credits
Arts [ARTS]	3
Biological Sciences [BSCI] with lab	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

Second Term	Credits
CPT S 121	4
ECONS 101 [SSCI]	3
HISTORY 105 [ROOT]	3
MATH 172 or 182	4
MATH 220, 225, or 230	2 or 3

Second Year

First Term	Credits
Humanities [HUM]	3
MATH 273 or 283	2
MATH 301	3
MATH 405	3
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1

Second Term	Credits
ECONS 102	3
Equity and Justice [EQJS]	3
MATH 315	3
STAT 360	3
Electives ¹	3
Complete Writing Portfolio	

Third Year

First Term	Credits
MATH 300 [M]	3
MATH 420	3
STAT 443	3
Foreign Language, if needed, or Electives ¹	6

Second Term	Credits
ENGLISH 402 [WRTG] [M]	3
STAT 412 or 423	3
STAT 446	3
Foreign Language, if needed, or Electives ¹	6

Fourth Year

First Term	Credits
MATH 401 [M]	3
MATH 416	3
Electives ¹	9

Second Term	Credits
Diversity [DIVR]	3
MATH 464 [CAPS]	3
STAT 447	3
Electives ¹	6
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.

MATHEMATICS - APPLIED MATHEMATICS 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, 225, or 230	2 or 3
Social Sciences [SSCI]	3

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>
Equity and Justice [EQJS]	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.

MATHEMATICS - 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, 225, or 230	2 or 3
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 273	2
MATH 325	3
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>
Equity and Justice [EQJS]	3
MATH 300 [M]	3
MATH 330	3
MATH 403	3
300-400-level MATH Elective	3

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
MATH 320	3
STAT 360 or 443	3
300-400-level MATH Elective	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
MATH 401 [M]	3
MATH 431	3
TCH LRN 464	3
TCH LRN 465	3
TCH LRN 466	2

<i>Second Term</i>	<i>Credits</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>	<i>Credits</i>
TCH LRN 415 (Student Teaching)	16
Exit Interview	

MATHEMATICS - 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>	<i>Credits</i>
Biological Sciences [BSCI] with lab	4
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
MATH 171 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
ENGLISH 101 [WRTG]	3
MATH 172	4
MATH 220, 225, or 230	2 or 3
PSYCH 105 [SSCI]	3

Second Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 201 [WRTG] or 301 [WRTG]	3
Equity and Justice [EQJS]	3
MATH 273	2
MATH 325	3
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
MATH 301	3
MATH 315	3
MATH 398	1
Electives	6
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
MATH 300 [M]	3
MATH 330	3
MATH 403	3
Foreign Language, if necessary, or Electives	6

<i>Second Term</i>	<i>Credits</i>
MATH 320 [M]	3
STAT 360 or 443	3

300-400-level MATH Electives ¹	3
Foreign Language, if necessary, or Electives	6

Fourth Year

<i>First Term</i>	<i>Credits</i>
MATH 401 [M]	3
MATH 431	3
Electives	9

<i>Second Term</i>	<i>Credits</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.

MATHEMATICS - 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>	<i>Credits</i>
Biological Sciences [BSCI] with lab	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
CPT S 121	4
HISTORY 105 [ROOT]	3
MATH 172 or 182	4
MATH 220, 225, or 230	2-3

Second Year

<i>First Term</i>	<i>Credits</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>	<i>Credits</i>
Diversity [DIVR]	3
Equity and Justice [EQJS]	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, 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, 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.

MATHEMATICS - 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

First Term	Credits
Arts [ARTS]	3
Biological Sciences [BSCI] with lab	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4

Second Term	Credits
CPT S 121	4
HISTORY 105 [ROOT]	3
MATH 172 or 182	4
MATH 220, 225, or 230	2 or 3
Social Sciences [SSCI]	3

Second Year

First Term	Credits
Foreign Language, if needed, or Electives	4
Humanities [HUM]	3
MATH 273 or 283	2
MATH 301	2
PHYSICS 201 [PSCI]	3
PHYSICS 211 [PSCI]	1

Second Term	Credits
Equity and Justice [EQJS]	3
MATH 315	3
MATH 398	1
STAT 360	3
Foreign Language, if needed, or Electives	4
Complete Writing Portfolio	

Third Year

First Term	Credits
Diversity [DIVR]	3
MATH 300 [M]	3

MATH 420	3
Theoretical Mathematics Option Course ¹	3
Electives	3

Second Term	Credits
ENGLISH 402 [WRTG] [M]	3
MATH 421 [M]	3
Theoretical Mathematics Option Course ¹	3
Electives	6

Fourth Year

First Term	Credits
MATH 401 [M]	3
Theoretical Mathematics Option Course ¹	3
Electives	9

Second Term	Credits
MATH 402 [M]	3
MATH 464 [CAPS]	3
Electives	9
Exit Interview	

¹ Theoretical 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 credits including MATH 171, 172, and one of 220 or 273. An additional 9 credits from a combination of 300-400-level mathematics credits or STAT 360, 370, 423, 443, 446, and 447 must be earned in WSU courses or through WSU-approved education abroad or educational exchange courses. Courses required for the minor may not be taken pass/fail and a minimum cumulative 2.0 GPA is required 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 credits. 9 credits of upper-division work must be 300-400-level and earned in WSU courses 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**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.

103 Algebra Methods and Introduction to Functions 3 Course Prerequisite: MATH 100 with an S, a minimum ALEKS math placement score of 40%, or transfer credit for Intermediate Algebra equivalent to MATH 101. 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 103, or 251, each with a C or better, STAT 212 with a C or better, or a minimum ALEKS math placement score of 45%, or transfer credit for Intermediate Algebra equivalent to MATH 101. Nature and scope of modern mathematics, and its relationships to other disciplines.

106 College Algebra 3 Course Prerequisite: MATH 103 with a C or better, a minimum ALEKS math placement score of 70%, or transfer credit for Intermediate Algebra equivalent to MATH 101. 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 Course Prerequisite: A minimum ALEKS math placement score of 78% or concurrent enrollment in MATH 171. Individualized instruction on mathematical skills to enhance the mathematical background necessary for success in MATH 171. S, F grading.

111 Mathematics Tutorial for Pre-calculus 1 Course Prerequisite: Concurrent enrollment in either MATH 106 or 108. Individualized instruction on mathematical skills to enhance the mathematical background necessary for success in MATH 106 and 108. 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. Single variable calculus, 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 103 with a C or better, a minimum ALEKS math placement score of 65%, or transfer credit for Intermediate Algebra equivalent to MATH 101. 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 106 or 201 with a C or better, or MATH 140, 171, 202 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%. 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 106 or 201 with a C or better, or MATH 140, 171, 202 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%. 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 201 with a C or better, or MATH 140, 171, 202 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%. Solving linear systems, matrices, determinants, subspaces, eigenvalues, orthogonality, machine learning, AI, computer graphics, and economic models. (Crosslisted course offered as MATH 225, DATA 225.) Credit not granted for more than one of MATH 225, 220, and 230.
- 230 Honors Introductory Linear Algebra 3** Course Prerequisite: MATH 106 or 201 with a C or better, or MATH 140, 171, 202 or higher or concurrent enrollment, or a minimum ALEKS math placement score of 80%. An introduction to linear algebra with an emphasis on conceptual development. Credit not granted for more than one of MATH 230, 220, and 225.
- 251 Fundamentals of Elementary Mathematics I 3** (2-2) Course Prerequisite: MATH 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%, or transfer credit for Intermediate Algebra equivalent to MATH 101. 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 172 with a B or better, or MATH 182 with a C or better. 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. 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 with a C or better. Topics in 2D and 3D geometry including technology-based reasoning and exploration, deductive arguments, transformational and proportional reasoning, and non-Euclidean geometries.
- 315 Differential Equations 3** Course Prerequisite: MATH 273 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 140, 171, or 202, each with a C or better. 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, or MATH 301 or concurrent enrollment. 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 252 with a C or better, or STAT 360 with a C or better. 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.
- 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 215, 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. Required preparation must include probability and statistics and programming experience. Credit not granted for both MATH 416 and MATH 516. 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.
- 431 [DIVR] Intersections of Culture and Mathematics** 3 Course
Prerequisite: MATH 106, 201, 251, or higher, each with a C or better, or a minimum ALEKS math placement score of 80%. 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; junior standing. Pre-algebra, algebra functions and geometry examined from an advanced perspective, for secondary and lower level college teachers.
- 440 Applied Partial Differential Equations** 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'Alembert's formula. Required preparation must include differential equations. Credit not granted for both MATH 440 and MATH 540. Cooperative: Open to UI degree-seeking students.
- 441 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. Required preparation must include differential equations. Credit not granted for both MATH 441 and MATH 541. 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. Required preparation must include differential equations and a programming course. (Crosslisted course offered as MATH 448, MATH 548, CPT S 430, CPT S 530.) Credit not granted for more than one of MATH 448/548 or CPT S 430/530.
- 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. Required preparation must include linear algebra. Recommended preparation: MATH 301. (Crosslisted course offered as MATH 453, CPT S 453.) 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. Recommended preparation: One 3-credit 400-level STAT or probability course. (Crosslisted course offered as STAT 456, MATH 456.) Credit not granted for more than one of STAT/MATH 456 or STAT 556.
- 464 [CAPS] Linear Optimization** 3 Course
Prerequisite: MATH 273 or MATH 283; junior standing. 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 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. (Crosslisted course offered as MATH 466/566, CPT S 456/556.) 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. Required preparation must include differential equations. Credit not granted for both MATH 486 and MATH 586. 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. 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 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. Cauchy's theorem, argument principle, maximum modulus principle, Hadamard's three circles theorem, Phragmen-Lindelof theorem, Riemann mapping theorem, Weierstrass factorization theorem, Runge's theorem, analytic continuation, Jensen's formula, Hadamard factorization theorem. 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 Field extensions, splitting fields, Galois extensions, the Galois group of a polynomial, finite fields, cyclic extensions, cyclotomic extensions, and infinite Galois extensions. Cooperative: Open to UI degree-seeking students.
- 506 Commutative Algebra** 3 Rings, modules, localization, primary decomposition, integral dependence, Noetherian rings, discrete valuation rings, and Dedekind domains. Required preparation must include a course in algebraic structures. 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.
- 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. Required preparation must include probability and statistics and programming experience. Credit not granted for both MATH 416 and MATH 516. 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. (Crosslisted course offered as MATH 529, CPT S 519.)
- 531 [DIVR] 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 and Statistics** 1 May be repeated for credit; cumulative maximum 3 hours. Course Prerequisite: Graduate standing in Mathematics or Statistical Science. Theory and practice of mathematics and statistics instruction at the collegiate level.
- 536 Statistical Computing** 3 (2-3) Generation of random variables, Monte Carlo simulation, bootstrap and jackknife methods, EM algorithm, Markov chain Monte Carlo methods. Recommended preparation: STAT 530, 548, 556, or equivalent. (Crosslisted course offered as STAT 536, MATH 536.) Cooperative: Open to UI degree-seeking students.
- 540 Applied Partial Differential Equations** 3 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'Alembert's formula. Required preparation must include differential equations. Credit not granted for both MATH 440 and MATH 540. Cooperative: Open to UI degree-seeking students.
- 541 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. Required preparation must include differential equations. Credit not granted for both MATH 441 and MATH 541. 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. Required preparation must include differential equations and a programming course. (Crosslisted course offered as MATH 448, MATH 548, CPT S 430, CPT S 530.) Credit not granted for more than one of MATH 448/548 or CPT S 430/530.
- 554 Advanced Graph Theory** 3 Advanced treatment of the theory of graphs including matchings, colorings, extremal graph theory, graph algorithms, algebraic and spectral methods, and random graph models. Required preparation: MATH 453 or equivalent. (Crosslisted course offered as MATH 554, CPT S 554.) 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 Introduction of partial differential equations, including various classical methods to find explicit solutions for linear partial differential equations; differential tools are introduced to solve the classical Laplace equation, the heat equation and the wave equations. Recommended preparation includes an undergraduate course in ordinary differential equations and a semester of analysis or advanced calculus. Cooperative: Open to UI degree-seeking students.
- 561 Partial Differential Equations II** 3 Introduces modern methods to study various problems for partial differential equations, including the well-posedness and ill-posedness, asymptotic behavior and stability of solutions, finite-time blowup, the maximum principle and the applications to nonlinear partial differential equations. Recommended preparation includes an undergraduate course in ordinary differential equations and a semester of analysis or advanced calculus. 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. Required preparation must include multivariate calculus, genetics, and statistics. (Crosslisted course offered as MATH 563, BIOLOGY 566.) 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. (Crosslisted course offered as MATH 466/566, CPT S 456/556.) 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. (Course offered as MATH 567, E E 567.) 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. Recommended preparation: Calculus III and one 3-credit 400-level probability course. (Crosslisted course offered as STAT 548, MATH 568.) 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.
- 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.
- 585 Topics in Mathematical Biology** V 1-3 May be repeated for credit. Advanced topics in mathematical biology. Recommended preparation: graduate standing and an undergraduate course in ordinary differential equations such as MATH 315. 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. Required preparation must include differential equations. Credit not granted for both MATH 486 and MATH 586. 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 May be repeated for credit. 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 the Theory and Applications of Discrete Math, Linear Algebra, and Number Theory** 1 May be repeated for credit; cumulative maximum 10 hours. Current research in theoretical and applied aspects of discrete math, 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 10 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

212 [QUAN] Introduction to Statistical Methods 4 (3-2) Course Prerequisite: MATH 103, 105, or 251, each with a C or better, or credit for MATH 106, 108, 140, 171, 201, 202, 252, or a minimum ALEKS math placement score of 45%, or transfer credit for Intermediate Algebra equivalent to MATH 101. 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. (Crosslisted course offered as STAT 360, DATA 360.) 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. Recommended preparation: One 3-hour 300-level STAT course. Credit not granted for both STAT 410 and STAT 510.

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, 225, or 230; 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 Course Prerequisite: MATH 140, 171, or 202, each with a C or better, or MATH 172 or 182. Hypothesis testing; linear, multilinear, and nonlinear regression; analysis of variance for designed experiments; quality control; statistical computing. Recommended preparation: One 3-credit 300-level STAT course. Credit not granted for both STAT 423 and STAT 523. Credit not normally granted for both STAT 423 and 430.

435 [M] Statistical Modeling for Data Analytics 3 (2-2) Course Prerequisite: STAT 360 or STAT 370, either with a C or better. 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. (Crosslisted course offered as STAT 435, DATA 435.)

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. (Crosslisted course offered as STAT 437, DATA 437.)

443 Applied Probability 3 Course Prerequisite: MATH 172 or MATH 182; MATH 220, MATH 225, 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. Recommended preparation: One 3-credit 400-level STAT or probability course. (Crosslisted course offered as STAT 456, MATH 456.) Credit not granted for more than one of STAT/MATH 456 or STAT 556.

508 Environmental Spatial Statistics 3 Theoretical introduction and practical training in spatial data analysis for graduate students in the environmental sciences. Required preparation must include undergraduate statistics through applied multiple regression. (Crosslisted course offered as SOIL SCI 508, STAT 508.) 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. Recommended preparation: One 3-hour 300-level STAT course. Credit not granted for both STAT 410 and STAT 510.

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. Recommended preparation: STAT 443. (Crosslisted course offered as MGTOP 516, STAT 516.) Cooperative: Open to UI degree-seeking students.

519 Applied Multivariate Analysis 3 Multivariate normal distribution, principal components, factor analysis, discriminant function, cluster analysis, Hotelling's T2 and MANOVA. Recommended preparation: STAT 443. (Crosslisted course offered as MGTOP 519, STAT 519.)

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. Recommended preparation: One 3-credit 300-level STAT course. Credit not granted for both STAT 423 and STAT 523. Credit not normally granted for both STAT 423 and 430.

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.

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. Recommended preparation: STAT 530, 548, 556, or equivalent. (Crosslisted course offered as STAT 536, MATH 536.) 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. Recommended preparation: Calculus III and one 3-credit 400-level probability course. (Crosslisted course offered as STAT 548, MATH 568.) 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. Recommended preparation: One 3-credit 400-level STAT or probability course. (Crosslisted course offered as STAT 456, MATH 456.) Credit not granted for more than one of STAT/MATH 456 or STAT 556.

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. Cooperative: Open to UI degree-seeking students.

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. P. Beckman, S. Bose, J. L. Ding, P. Dutta, D. P. Field, J. W. Leachman, Q. Li, Y. Lin, J. Liu, K. Matveev, S. Mesarovic, M. G. Norton, C. Pezeshki, L. V. Smith, J. Zhang, W. Zhong; Associate Professors, S. Banerjee, K. R. Chen, B. A. Gozen, N. Perez-Arancibia, M. K. Song, J. P. Swensen; Assistant Professors, N. Boddeti, M. Hosseinzadeh, M. Luo, S. Mojmunder, K. Qiu, A. Zare; Teaching Associate Professor, N. Biswas; Teaching Assistant Professors, E. Larsen, J. Steffens, S. Sumaiya; Research Professors, A. Du, N. Smith; Bremerton: Scholarly Associate Professors, B. Asgharian, A. Rathnayake; 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: 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>, under the commission's General Criteria and Program Criteria for Mechanical Engineering.

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>, under the commission's General Criteria and Program Criteria for Materials Engineering.

The mission of the materials science and engineering program is to provide excellence in education, research, and service in the field of Materials Science and Engineering through educational programs that graduate students with strong backgrounds in scientific and engineering problem-solving methods. Materials science and engineering is the application of methods and principles of the pure sciences to study engineering materials. The undergraduate program focuses on (a) the relationship of the microscopic structure, e.g. crystal structure and defects to the macroscopic properties of materials, e.g. strength; (b) experimental techniques for characterizing physical, chemical and structural properties of materials; (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 the Materials Science Engineering major, students must have scored 83% or higher on the ALEKS math placement exam, or received a score of 2 or higher on an AP Calculus exam, or completed MATH 106 and 108 with a C or better, or completed MATH 171 or a higher-level calculus course with a C or better.

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 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 engineering and computer science courses, in addition to ME, MSE, physics, chemistry, and math courses listed in the schedule of studies.

Graduation Requirement

Receive a letter grade of C or better in all major courses.

Any further questions should be addressed to the Undergraduate Student Services office located in Sloan 205 or contact an MME academic advisor.

First Year

<i>First Term</i>	<i>Credits</i>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
ME 116	2
MSE 201	3

<i>Second Term</i>	<i>Credits</i>
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 172	4
MSE 202	3
Technical Elective ¹	3

Second Year

<i>First Term</i>	<i>Credits</i>
MATH 220	2
MATH 273	2
ME 220	1
MSE 316	3
PHYSICS 201	3
PHYSICS 211	1
UCORE Inquiry ²	3

<i>Second Term</i>	<i>Credits</i>
MATH 315	3
MSE 241	3
MSE 331, 332, or 333 ³	3
PHYSICS 202	3
PHYSICS 212	1
UCORE Inquiry ²	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
ECONS 102 [SSCI]	3
MSE 302	3
MSE 321	3
MSE 323	2
MSE 413	3
STAT 370	3

<i>Second Term</i>	<i>Credits</i>
MSE 318	3
MSE 320 [M]	3
MSE 331, 332, or 333 ³	3
UCORE Inquiry ²	3
Technical Elective ¹	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
ENGLISH 402 [WRTG] [M]	3
ME 312	3
ME 416 [CAPS]	3
MSE Electives ⁴	6

<i>Second Term</i>	<i>Credits</i>
MSE 425; or MSE 488 and ENGR 489	3
MSE Elective ⁴	3
Technical Elective ¹	3
UCORE Inquiry ²	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 Must complete 4 of these 5 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM.

³ Choose two courses from MSE 331, 332, or 333.

⁴ 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 scored 83% or higher

on the ALEKS math placement exam, or received a score of 2 or higher on an AP Calculus exam, or completed MATH 106 and 108 with a C or better, or completed MATH 171 or a higher-level calculus course with a C or better.

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 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 engineering and computer science courses, in addition to ME, MSE, physics, chemistry, and math courses listed in the schedule of studies.

Graduation Requirement

Receive a letter grade of C or better in all major courses.

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>
CHEM 105 [PSCI]	4
ENGR 120	2
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
UCORE Inquiry ¹	3

<i>Second Term</i>	<i>Credits</i>
ECONS 102 [SSCI]	3
ENGLISH 101 [WRTG]	3
MATH 172	4
ME 116	2
UCORE Inquiry ¹	3

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>	<i>Credits</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 ²	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
ME 415 [M]	3
UCORE Inquiry ¹	3
Concentration Courses ^{3,4}	6
Restricted Elective ²	3
<i>Second Term</i>	<i>Credits</i>
ME 406 [M]	3
ME 416 [CAPS]	3
UCORE Inquiry ¹	3
Concentration Course ^{3,4}	3
Complete Exit Survey	
Complete Fundamentals of Engineering Exam	

¹ Must complete 4 of these 5 UCORE designations: ARTS, BSCI, DIVR, EQJS, HUM.

² Restricted Electives (at least 6 credits): Choose from ME 310 and 311 or ME 312, ME 401, ME 405.

³ 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.

⁴ Technical Electives for concentrations: Any 400-500-level ME, MSE, E E, or CPT S course not listed as a major requirement, MSE 318, 331, 332, and 333, and BIO ENGR 425. Additionally, a combined maximum of 3 credits total from ME 488 and ENGR 489 as part of an internship or practicum may be earned towards a Technical Elective.

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, 318, 321, 331, 332, 333, 404, 406, 413, ME 310, 311, 312, or E E 496. 9 credits of upper-division work must be earned in WSU courses 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 credits of upper-division work must be earned in WSU courses 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 with a C or better or concurrent enrollment; 4 credits of PHYSICS 201 with a C or better or concurrent enrollment, or PHYSICS 201 and 211 both with a C or better, 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; STAT 370; 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, both with a C or better; OR MSE 202 with a C or better. 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: MATH 315; ME 216; ME 220; ME 304 or concurrent enrollment; ME 313; 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: ME major; ME 304; ME 316; ME 348; ME 415; sr standing; OR MSE major; MSE 320; MSE 413 or concurrent; one of MSE 331, 332, or 333; jr standing; OR MSE major; MSE 202 with a C; MSE 318 with a C; MSE 413 or concurrent; jr standing. Integrative design in mechanical engineering; multidisciplinary design project considering both technical and non-technical contexts; organizational dynamics and communications.
- 419 Air Conditioning** 3 Course
Prerequisite: ME 304. Principles of heat and moisture transfer; air motion and purity in buildings; design of systems. Cooperative: Open to UI degree-seeking students.
- 432 Wind Energy Engineering** 3 Course
Prerequisite: ME 303 with a C or better; ME 348 with a C or better or concurrent enrollment; STAT 360 or 370 with a C or better. Introduction to wind energy engineering concepts including aerodynamics, controls, resource estimation, turbine design, and wind farm design.
- 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.
- 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.
- 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 or concurrent enrollment. 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: By department permission; admitted to the major in Mechanical Engineering. 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. 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 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.
- 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.) 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. Recommended preparation: Basic knowledge of materials, engineering, chemistry. (Crosslisted course offered as MSE 531, ME 531.)
- 532 Finite Elements 3** Theory of finite elements; applications to general engineering systems considered as assemblages of discrete elements. (Crosslisted course offered as CE 532, ME 532.) Cooperative: Open to UI degree-seeking students.
- 534 Mechanics of Composite Materials 3** Analysis of micromechanical and macromechanical behavior of composite materials with emphasis on fiber-reinforced composite; prediction of properties; stiffness and strength theories; laminated beams and plates; dynamic behavior; environmental effects. (Crosslisted course offered as ME 534, MSE 534.) Cooperative: Open to UI degree-seeking students.
- 537 Fracture Mechanics and Mechanisms 3** Fracture mechanics and mechanisms and the microstructural origins of toughness in metals, polymers and composites. (Crosslisted course offered as MSE 537, ME 537.) 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. (Crosslisted course offered as ME 800, MECH 800.) S, U grading.

Materials Science and Engineering

MSE

- 201 Materials Engineering Fundamentals 3** Course Prerequisite: CHEM 105 with a C or better or concurrent enrollment. Introduction to the fundamental concepts of materials engineering.
- 202 Materials Science Fundamentals 3** Course Prerequisite: CHEM 106 with a C or better 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 with a C or better or concurrent enrollment; 4 credits of PHYSICS 201 with a C or better or concurrent enrollment, or PHYSICS 201 and 211 both with a C or better, 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 with a C or better; 4 credits of PHYSICS 202 with a C or better, or PHYSICS 202 and 212 both with a C or better or concurrent enrollment, or PHYSICS 206 with a C or better 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 with a C or better; STAT 370 with a C or better. 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 with a C or better; MSE 202 with a C or better 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 with a C or better. Properties of x-rays, scattering and diffraction; crystal structures; x-ray diffraction methods, transmission electron microscopy and scanning electron microscopy.
- 323 [M] Materials Characterization Lab 2** (1-3) Course Prerequisite: MSE 321 with a C or better or concurrent enrollment. Laboratory exercises on materials characterization: x-ray, TEM, SEM.
- 331 Metallic Materials** 3 Course Prerequisite: MSE 201 with a C or better. Major alloy systems and manufacturing processes; materials selection.
- 332 Polymeric Materials** 3 Course Prerequisite: MSE 201 with a C or better. 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 with a C or better. Processing, characteristics, microstructure, and properties of ceramic materials.
- 404 Engineering Composites** 3 Course Prerequisite: MSE 201 with a C or better. Basic concept in design and specifications of engineering composites.
- 406 Biomaterials** 3 Course Prerequisite: MSE 201 with a C or better. 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.
- 413 Mechanical Behavior of Materials** 3 Course Prerequisite: CE 215 and MSE 201, both with a C or better; OR MSE 202 with a C or better. 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 with a C or better; MSE 323 with a C or better; admitted to MSE; senior standing, OR MSE 318 with a C or better; MSE 323 with a C or better; two from MSE 331, 332, or 333 with a C or better; admitted to MSE; 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. 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.
- 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. 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.
- 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.) 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. 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. Recommended preparation: MATH 540. Cooperative: Open to UI degree-seeking students.
- 523 Advanced Ceramics and Applications** 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. 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. Recommended preparation: Basic knowledge of materials, engineering, chemistry. (Crosslisted course offered as MSE 531, ME 531.)
- 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.
- 538 Special Topics** V 1-3 May be repeated for credit. Selected topics of current interest in advanced materials science.
- 543 Polymer Materials and Engineering** 3 Preparation and structure-property relationship of polymer materials with emphasis on fracture mechanics and toughening. Required preparation must include MSE 402. (Crosslisted course offered as MSE 543, CE 593.) 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. Required preparation must include MSE 402 or 404. (Crosslisted course offered as CE 597, MSE 547.) 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.
- 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. S, F grading. 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 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.

Elson S. Floyd College of Medicine

medicine.wsu.edu/
412 E. Spokane Falls Blvd, Spokane, WA 99202
509-358-7944

Dean, J. Record; Vice Dean for Clinical Affairs, J. Haney; Vice Dean for Admissions, Student Affairs, and Alumni Engagement, L. E. Harrison; Vice Dean for Research and Professor, S. McPherson; Interim Vice Dean for Educational Affairs, L. Sood; Senior Associate Dean, Center for Interprofessional Health Education Research & Scholarship (CIPHERS), D. DeWitt; Interim Associate Dean for Accreditation, Assessment, and Evaluation, M. Lacy; Associate Dean of Leadership Development, L. Francis; Associate Dean for Community, Health Equity, and Belonging D. Garcia; Associate Dean for Faculty Development and Continuing Professional Development, R. Nandagopal; Associate Dean for Curriculum, S. Smith; Everett Regional Dean, A. Haddock; Spokane Regional Dean, C. Heine; Tri-Cities Regional Dean, F. Williams; Vancouver Regional Dean, J. Marcin; Assistant Dean for Student Affairs, L. Burch-Windrem; Assistant Dean for Faculty Affairs and Associate Professor, T. Chauvin; Assistant Dean for Student Learning, S. Hecker; Assistant Dean for Student Programs – Medicine Student Affairs and Assistant Professor, K. Lindquist; Assistant Dean for Simulation-Based Education, C. Martin; Assistant Dean for Clerkship – Curriculum, S. Scott; Chair and Professor, Department of Community and Behavioral Health, N. Chaytor; Chair and Professor, Nutrition and Exercise Physiology, G. Duncan; Chair and Professor, Department of Speech and Hearing Sciences, A. Meredith; Chair and Professor, Department of Translational Medicine and Physiology, K. Roberts.

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 Dean Dr. James Record, the College of Medicine is driven by its mission to serve Washington and beyond through collaboration and problem-solving in education, research, and health care with a focus on rural communities, Tribal Nations, and people who have been historically marginalized. 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 primarily located on the WSU Spokane campus with three regional medical campuses in Everett, Tri-Cities, and Vancouver. Employing a community-based model in which medical 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 medical 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 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. They employ a full range of model systems as well as human subjects research. The department provides research opportunities to graduate students in participating Ph.D. programs and to medical students.

The Department of Community and Behavioral Health extends the reach of the college's mission by improving health outcomes through community-informed research and the development of evidence-based policies and practices. 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 also delivers the professional Certificate in Medical Ethics program.

The Department of Medical Education and Clinical Sciences delivers the MD program and graduate medical education programs, training medical students and residents to be insightful and compassionate physicians. The College of Medicine's graduate medical education programs, also known as residency programs, are available in three locations: internal medicine in Everett, family medicine in Pullman, and pediatrics in Spokane. Both the undergraduate and graduate medical education programs immerses learners 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 health care issues. Students and residents learn to recognize problems in health care delivery, innovate solutions, and mobilize change that improves the health of entire populations. The department also delivers the Leadership in Medicine and Healthcare Certificate, and the Master of Healthcare Administration and Leadership comprised of three professional certificates. These programs provide training to current and future health care leaders in key leadership skills and professional competencies.

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 Master of Science Coordinated Program in Dietetics, Nutrition and Exercise Physiology (MS CPD) prepares you to enter the field of nutrition and dietetics as an entry-level Registered Dietitian Nutritionist (RDN) through coordinated didactic coursework and experiential supervised practice, also preparing students for the registration examination for dietetics administered through the Commission on Dietetic Registration (CDR) in partnership with the Academy of Nutrition and Dietetics (AND). The department offers degrees at the B.S., M.S., and Ph.D. levels.

The Department of Speech and Hearing Sciences offers programs leading to a B.A. in Speech and Hearing Sciences and a M.S. in Speech and Hearing Sciences in speech-language pathology. In addition to the traditional undergraduate sequence, a post-baccalaureate course sequence leading to the M.A. degree is available for students who already have a bachelor's degree. 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., post-baccalaureate, and M.S. levels.

Department of Community and Behavioral Health

medicine.wsu.edu/about/departments-units/community-behavioral-health
Health Education and Research Building (HERB)
509-368-6664
cbh@wsu.edu

Chair and Professor, N. Chaytor; Professors, M. McDonell, S. McPherson, J. Roll, J. Kennedy; Associate Professors, E. Burduli, O. Oluwoye; Assistant Professors, A. Miguel, C. Smith, K. Hirschak, A. Hing, K. Siddiqi, L. Kriegel; Research Assistant Professors, J. Jett, E. Leickly; Scholarly Assistant Professors, S. Parent, E. Wood; Scholarly Associate Professors, M. Peavy, L. Thomas; Research Professors T. May, D. Weeks.

WSU's Department of Community and Behavioral Health (CBH) is composed of scholars at the Elson S. Floyd College of Medicine who investigate psychological, social, and societal factors that affect human health. We improve health outcomes by conducting community-informed research and developing evidence-based policies and practices.

We practice responsive community engagement and advocacy at the local, regional, national,

and international levels. We aspire to create a more inclusive and just health system through interventions, programs, and policies that reduce health disparities, reject stigma, and improve community health. We are reflexive and accountable to the communities we serve.

The research interests of the faculty include health disparities, addiction/substance use treatment, including contingency management, mental illness, health care policy, biomedical ethics and genomics, medical ableism, neurocognitive effects of type 1 diabetes, HIV prevention, maternal and perinatal health, community mental health, and implementation science.

Education Programs

- **Medical Ethics:** The Certificate in Medical Ethics 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.
- **Bachelor of Science in Public Health, Community and Behavioral Health Option:** In collaboration with the Public Health program, the Community and Behavioral Health option focuses on addiction science, including the fundamentals of behavioral health, the theoretical basis of substance use disorder, the complex interactions between physical and mental health, and the behavioral antecedents and correlates of chronic health conditions. Please see the requirements for this option under the Public Health listing.

Certificates

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, and 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.

Department of Medical Education and Clinical Sciences

medicine.wsu.edu/about/departments-units/medical-education-clinical-science
Spokane Academic Center, Room 401
509-368-6578

Chair, and Clinical Associate Professor, J. Haney. WSU Spokane: Clinical Professors, H. F. Andersen, L. Schecter; Clinical Associate Professors, C. Anderson, J. Bowman, M. Chavez, D. Conley, D. Cooper, C. Davis, W. Dittman, J. Haney, C. Heine, B. Hsu, K. Isaacs, A. Kim, A. Kumar, S. Logani, S. McKennon, R. Moon, H. Mroch, R. Nandagopal, J. O'Connor, S. Toro-Posada, J. Vassall, C. White; Clinical Assistant Professors, S. Ahmad, K. Beine, K. Berger, S. Bering, J. Breems, B. Chia, N. R. Chow, T. DeCato, L. Deters, L. Fralich, L. Francis, C. Gerhardt, D. Goshorn, A. Grossman, L. Harrison, S. Hecker, S. Helbling, S. Intzes, K. Janout, J. Jerdon, E. S. Johnson, T. Julsen, J. Kaczmark, J. Kohring, D. Kopp, J. Litvack, L. Manriquez, C. Martin, A. M. McCarthy, R. Miller, C. Moon, R. Muntean, S. Nall, A. Nguyen, A. Prentiss, K. Reed, J. Reichard, S. Schneider, B. Sestero, S. Siddiqui, L. Sood, J. Troiano, J. M. Walker, S. Weeks; Clinical Instructor, K. Rubin; Clinical Research Professor, T. May; Affiliate Associate Professor, W. Kabasenché. Affiliate Assistant Professor, R. Ronnestad; Teaching Associate Professor, B. Mason. WSU Everett Clinical Campus: Clinical Assistant Professors, R. Beckley, K. Gilligan, D. Goulet, S. Quade, K. Wyrick. WSU Pullman: Clinical Assistant Professor, S. Lampa. Seattle: Associate Professor, P. Johansson; Assistant Professor, A. Fyfe-Johnson, C. Muller, A. Suchy-Dicey, A. Zamora-Kapoor; Research Associate Professor, E. Strachan; Research Assistant Professors, S. Amiri, L. Hebert, C. Nikolaus, J. Williams-Nguyen. Associate Instructors, G. Ferguson, A. Petras; Staff Scientist, C. Noonan. WSU Spokane Clinical Campus: Associate Chair and Clinical Associate Professor, C. Heine; Clinical Associate Professors, R. Moon, H. Mroch; Clinical Assistant Professors, E. Burns, J. Keeve. WSU Tri-Cities Clinical Campus: Associate Chair and Clinical Professor, F. Williams; Clinical Assistant Professors, K. Berger, P. Carrera, K. Kakumba, J. Kiki. WSU Vancouver Clinical Campus: Associate Chair and Clinical Associate Professor, J. Marcini; 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 Healthcare Leadership and the Certificate in Medical Ethics for the Elson S. Floyd College of Medicine. The department also offers the Master of Healthcare Administration and Leadership degree. 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:

- Demonstrates knowledge of established and evolving concepts in medicine including biomedical, clinical, epidemiological, health systems, and social-behavioral perspectives in the care of patients and communities.

Patient Care and Health Promotion:

- Provides evidence-based care that is compassionate, culturally-appropriate, and effective for illness prevention, health promotion, management, and treatment of disease, and improvement in quality of life, including end-of-life care.

Professionalism and Self-Awareness:

- Demonstrates commitment and adherence to principles of the profession, and awareness of how one's own interests, personal biases, vulnerabilities, and limitation of knowledge.

Practice-Based and Life-Long Learning:

- Demonstrates the ability to appraise, assimilate, and incorporate scientific evidence and innovate, as needed, to evaluate and improve patient care practices based on continuous self-evaluation and life-long learning.

Systems-Based and Inter-Professional Practice:

- Demonstrates 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:

- Demonstrates effective information exchange and collaboration with patients, patients' families, peers, other health professionals, and the community to enhance care.

Master of Healthcare Administration and Leadership

Offered by the College of Medicine through the WSU Global campus, the Master of Healthcare Administration and Leadership degree is earned following the completion of three certificates (the Foundations of Leadership, the Essentials of Healthcare, and the Managing the Business of Healthcare) and a capstone course.

- Foundations of Leadership (MED HAL 501, 502, 503, and 504)
- Essentials of Healthcare (MED HAL 505, 506, 507, and 508)
- Managing the Business of Healthcare (ACCTG 550, B A 501, 502, and 504, and MGMT 593)
- MED HAL 600

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 WSU College of Medicine. To graduate with the Doctor of Medicine degree, MD 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 530-699).

8. Make a minimum attempt at the United States Medical Licensing Exams (USMLE) Step 1 Exam. If successful, make a minimum of one attempt at the USMLE, Step 2(CK) Clinical Knowledge Exam.

9. Pass all Leadership in Medicine and Healthcare courses (MED LMH 501, 502, 503, 511, 512, 513, 521, 522, 523, 531, 532, and 533).

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's 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 College of Medicine and, for some of these, annually thereafter.

2. Data Security and Privacy (HIPAA) Training: MD degree candidates must remain in compliance with the college's HIPAA training requirement and information security requirements.

3. Demonstrate consistent evidence of professionalism as assessed by COM standards for professionalism outlined in the Student Handbook and all assessment packages, and as reviewed and approved by the SEPAC.

4. 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. Degrees may be conferred if needed due to special circumstances (e.g., illness, Leave of Absence) as per WSU degree conferral regulations. Students completing requirements for a degree prior to their scheduled degree conferral date will be conferred the degree on the official Commencement Day. If special circumstances arise, students may request that the SEPAC Committee provides a written confirmation to the Dean 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>
MED FMS 502
MED LMH 502
MEDSCHLR 500

<i>Third Term</i>
MED FMS 503
MED LMH 503
MEDSCHLR 500

<i>Fourth Term</i>
MEDSCHLR 520 ¹

Second Year

<i>First Term</i>
MED FMS 511
MED LMH 511
MEDSCHLR 540 ¹

<i>Second Term</i>
MED FMS 512
MED LMH 512
MEDSCHLR 540 ¹

<i>Third Term</i>
MED FMS 513
MED LMH 513
MEDSCHLR 540 ¹

<i>Fourth Term</i>
MED CLIN 521

Third Year

<i>First Term</i>
MED CLIN 522
MED LMH 521

<i>Second Term</i>
MED CLIN 523
MED LMH 522

<i>Third Term</i>
Clinical Rotation ²
MED CLIN 524
MED LMH 523

<i>Fourth Term</i>
Clinical Rotations ²

Fourth Year

<i>First Term</i>
Clinical Rotations ²
MED LMH 531

<i>Second Term</i>
Clinical Rotations ²
MED LMH 532

<i>Third Term</i>
Clinical Rotation ²
MED LMH 533

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

<i>Credits</i>
13
1
1

<i>Credits</i>
12
1
1

<i>Credits</i>
3

<i>Credits</i>
13
1
1

<i>Credits</i>
13
1
1

<i>Credits</i>
11
1
1

<i>Credits</i>
8

<i>Credits</i>
14
1

<i>Credits</i>
14
1

<i>Credits</i>
4
10
1

<i>Credits</i>
8

<i>Credits</i>
12
1

<i>Credits</i>
8-12
1

<i>Credits</i>
4
1

CLIN 537, and either MED CLIN 538 or MED CLIN 539, and 24 credits from MED CLIN 530-699. 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

Essentials of Healthcare

The Essentials of Healthcare Certificate consists of 12 credits and provides students the opportunity to explore concepts of leadership related to the delivery of value-based care. Quality measures and their application, key pieces of legislation related to health policy, political contexts of policy development, and the skill of assessing information sources are analyzed. In the U.S. health system, effectiveness and cost related to desired outcomes, as well as constraints, are presented. Students consider the need for advocacy in health equity and examination of structural bias. Students must successfully complete MED HAL 505, 506, 507, and 508. This certificate, combined with the Foundations of Leadership Certificate, the Managing the Business of Healthcare Certificate, and a capstone course, form the Master of Healthcare Administration and Leadership degree.

Foundations of Leadership

The Foundations of Leadership Certificate consists of 12 credits and provides students the opportunity to enhance their leadership and managerial skills. Following a self-assessment in leadership, each student develops a personal learning path for improving their emotional intelligence, a key characteristic of successful leaders. These skills help students act as change agents in healthcare, effectively leading through transformational change. Students must successfully complete MED HAL 501, 502, 503, and 504. This certificate, combined with the Essentials of Healthcare Certificate, the Managing the Business of Healthcare Certificate, and a capstone course, form the Master of Healthcare Administration and Leadership degree.

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.

Managing the Business of Healthcare

The Managing the Business of Healthcare Certificate consists of 12 credits and provides students the opportunity to learn the fundamentals of business that guide organizations, including healthcare organizations. These fundamentals include: financial and managerial accounting, leadership skills (including productivity), data analysis, operations, finances (e.g. the concepts of time and money, the valuing of stocks and bonds, risk and return ratios), marketing (including creating marketing plans), and ethical frameworks. These fundamentals will equip healthcare managers with an analytical toolbox to solve the typical problems faced by managers. Students must successfully complete a minimum of 12 credits: ACCTG 550; B A 501; B A 502; B A 504; and one from B A 595, MGMT 593, or MKTG 506. Students who do not have an undergraduate degree in business, or cannot otherwise demonstrate by their transcript the completion of an introductory statistics course and micro- and macro-economics courses, will also be required to take one or both of B A 500 and ECONS 555. This certificate, combined with the Foundations of Leadership Certificate, the Essentials of Healthcare Certificate, and a capstone course, form the Master of Healthcare Administration and Leadership degree.

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 - Topics in Clinical Cases 2

May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; 4-week rotations require Course Director permission. 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 Topics in 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 Course Director permission. 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 Topics in 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 Underserved 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 - Urban 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 - Topics in 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 - Topics in 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 - Topics in 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 subspecialty 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 - Topics in 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 - Topics in 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** V 2-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MED CLIN 524; 4-week rotations require Course Director permission. 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 - Topics in Ambulatory Family 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 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 Topics in 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 - Topics in Ambulatory 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 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 Topics in 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 Topics - 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 Topics - 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 - Topics in 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 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 - Topics in 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 Topics in 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 Topics in 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 - Topics in 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 Transition to Residency Topics** 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; 4-week rotations require Course Director permission. 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 - Topics in Urology** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; 4-week rotations require Course Director permission. Introduction to the range of medical problems that urologic surgeons encounter.
- 595 Surgery - Topics in Surgery Critical Care** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; 4-week rotations require Course Director permission. Introduction to the range of medical and surgical issues encountered by surgical intensivists.
- 596 Surgery - Topics in Pediatric Surgical Specialties** V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; 4-week rotations require Course Director permission. Extension of knowledge, skills, and professional attitudes required for the practice of medicine with a focus on pediatric disorders.
- 597 Virtual - Virtual Clerkship Topics** V 2-4 May be repeated for credit; cumulative maximum 24 hours. Course Prerequisite: MED CLIN 524; 4-week rotations require Course Director permission. 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 or Topics** V 2-4 May be repeated for credit; cumulative maximum 20 hours. Course Prerequisite: By department permission. Enriched clinical experiences or non-patient care experiences that extend student's medical education. Objectives modified depending on specific plan formulated by student and faculty mentor.
- 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 and Course Director permission. 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 and Course Director permission. 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 Virtual - Global Health V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; 4-week rotations require Course Director permission. Social, economic, and medical factors affecting patients within a global context; ethical challenges tied to various global health practices and endeavors.

634 Clinical Rotation - Topics in Sleep Medicine V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; 4-week rotations require Course Director permission. Knowledge, skills, and range of medical problems that physicians practicing sleep medicine encounter.

635 Clinical Rotation - Topics in Pain Medicine V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; 4-week rotations require Course Director permission. Evaluation and management of patients with acute and chronic pain from a wide variety of both benign and malignant conditions.

636 Clinical Rotation - Topics in Sports Medicine V 2-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: MED CLIN 524; 4-week rotations require Course Director permission. 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, and 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.

Healthcare Administration and Leadership

MED HAL

501 Introduction to Leadership and Self-Assessment 3 Course Prerequisite: Admission to the Master of Healthcare Administration and Leadership degree program or one of its certificate programs. Exploration of leadership theories, styles, and frameworks; student strengths assessments; continuous improvement and change.

502 Team Building and Leadership 3 Course Prerequisite: Admission to the Master of Healthcare Administration and Leadership degree program or one of its certificate programs. Formation and behavior of teams; skills to maximize leadership and team effectiveness; personality effects; effective meetings.

503 Emotional Intelligence and the Healthcare Leader 3 Course Prerequisite: Admission to the Master of Healthcare Administration and Leadership degree program or one of its certificate programs. Development and use of emotional intelligence in supporting others and organizations; managing emotions for effective leadership.

504 Leading Through Transformational Change 3 Course Prerequisite: Admission to the Master of Healthcare Administration and Leadership degree program or one of its certificate programs. Leading through change and overcoming human inertia and resistance to change.

505 Value-Based Leadership: Incorporating the Triple Aim 3 Course Prerequisite: Admission to the Master of Healthcare Administration and Leadership degree program or one of its certificate programs. Examination of Berwick's Triple Aim of individual experience, health of populations, and cost reduction; development of skills through case studies.

506 Healthcare Policy and Politics 3 Course Prerequisite: Admission to the Master of Healthcare Administration and Leadership degree program or one of its certificate programs. History, methods, results, and evaluation of healthcare-related policy and politics.

507 Health Equity, Advocacy, and their Impact on Healthcare 3 Course Prerequisite: Admission to the Master of Healthcare Administration and Leadership degree program or one of its certificate programs. Social determinants of health and community capacity to impact wellness; knowledge and skills to help increase equity and access of healthcare.

508 U.S. Healthcare Systems: From Micro to Macro 3 Course Prerequisite: Admission to the Master of Healthcare Administration and Leadership degree program or one of its certificate programs. A comparative examination of health macro-, meso-, and micro-systems in the U.S. and across the globe.

600 MHAL Capstone 2 Course Prerequisite: Admission to the Master of Healthcare Administration and Leadership degree program or one of its certificate programs. Integration and synthesis of knowledge from three MHAL certificates, culminating in a reflection/essay that analyzes a healthcare challenge in selected field.

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 Leadership through Emotional Intelligence 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 Administration of Groups 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 Transformative Change 1 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 Teaching and Advocacy 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 Preparing for a Personal and Professional Life in Medicine 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/dcp/translational-med/
412 E Spokane Falls Blvd, Spokane, WA 99210
509-368-6791

Chair and Professor, K. Roberts; Clinical Professors, D. Conley, M. Layton; Professors, M. G. Frank, E. Szentirmai, J. Wisor; Associate Professors, K. Homn, S. James, L. Kaps, W. Li, L. Peixoto, J. Sun; Assistant Professors, J. Gerstner, D. Hansen, Y. Lee, Y. Liu; Clinical Assistant Professor, S. Helbling; Research Professor, H. P. A. Van Dongen; Research Assistant Professors, C. Kurinec, A. Lamp; Scholarly Associate Professor, T. Chauvin; Scholarly Professor, C. J. Davis; Scholarly Assistant Professor, B. Satterfield.

The Department of Translational Medicine and Physiology is the central hub of foundational, and translational biomedical research in the Elson S. Floyd College of Medicine. Our faculty represent a diverse set of interests, ranging from the neuroscience of sleep to neuroimmunology to cancer to reproduction. 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 undergraduate, graduate and medical students.

Our goal is to make foundational physiological discoveries and translate them to clinical application. The department also contributes to medical education, delivering curriculum in

human anatomy, embryology, biochemistry, cell physiology, histology, neuroscience, and case-based learning facilitation.

Description of Courses

Translational Medicine and Physiology

TMP

350 Introduction to Medical Biochemistry

3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to biochemical concepts relevant to human health and diseases.

414 Human Pathophysiology

3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to basic concepts and fundamental principles of human pathophysiology at the tissue, organ, and system levels.

424 Human Clinical Neuropathology

3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Functional anatomy of the human nervous system with an emphasis on disease and pathological states.

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.

Department of Military Science

rotc.wsu.edu

Avery 405

509-335-2591

Department Chair and Professor, LTC Matthew R. Sheftic; Military Science MS1 Instructors, MAJ Michelle M. Kelly, MAJ Diana Petris; Military Science MS2 Instructor, SFC Marcin Radwan; Military Science MS3 Instructors, CPT Brett Bush, 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 credits of approved Military Science courses, with at least 9 credits of 300-400-level work earned in WSU courses 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 2 (1-3) Role of the Army in contemporary society.

102 National and International Role of the Army 2 (1-3) Role of the Army in today's international affairs.

201 Introduction to Leadership 3 (2-3) Multidisciplinary approach to military leadership.

202 The Officer as a Professional 3 (2-3) U.S. Army Officer Corps as a profession; the U.S. Army Officer as a professional.

205 Combat Fitness 1 (0-3) May be repeated for credit. Physical Fitness to include aerobic and anaerobic strength and endurance; builds teamwork, high morale and leadership; train towards functional fitness to include ruck march treks, combat water survival tests, and the Army Combat Fitness Test. No prior experience required.

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 2 (0-6) Course Prerequisite: By interview only; MIL SCI 301; MIL SCI 302. Intensive study and internship in military tactics, command and leadership; held at Fort Lewis, WA. S, F grading.

396 Leader Internship 6 Course Prerequisite: By interview only; junior standing. 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 4 (3-3) 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 4 (3-3) Course Prerequisite: By instructor permission. Theory and practice of Army administration/management; staff planning and correspondence; pre-commission orientation; unit management/resources application.

405 Advanced Combat Fitness 1 (0-3) May be repeated for credit; cumulative maximum 10 hours. Physical fitness to include aerobic and anaerobic strength and endurance; build teamwork, high morale, and leadership; train towards functional fitness to include ruck march treks, combat water survival tests, and the Army Combat Fitness Test; gain leadership skills while learning to plan, lead, and assess fitness training for mixed ability groups. No prior experience required.

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.

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. MacLean; Associate Director for Undergraduate Programs and Professor, E. Offerdahl; Associate Director for Alumni Relations and Clinical Associate Professor, P. Mixer; Assistant Director for Undergraduate Laboratories and Clinical Associate Professor, C. Helmick; Regents Professor, P. Hunt; Professors, J. Alderete, W. Davis, T. Hassold, K. Hayashi, J. Oatley, J. Watts, J. Wyrick, L. Xun; Associate Professors, C. Cooper (Vancouver), L. Gloss, A. Goodman, C. Haseltine, C. Her, E. Shelden; Assistant Professors, R. Driskell, S. Duttke, H. Koehler; Clinical Professors, N. McCabe, M. Sanchez-Lanier; Clinical Assistant Professors, I. Driskell, M. Ederer, J. Hinz, S. Thomas.

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.

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]	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 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 171 [QUAN]	4
MBIOS 138	1

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 345	4
MATH 172	4

MBIOS 301	3
Social Sciences [SSCI]	3
<i>Second Term</i>	<i>Credits</i>
CHEM 348	4
MBIOS 201 [COMM]	3
MBIOS 303	4
PHYSICS 201	3
PHYSICS 211	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Humanities [HUM]	3
MBIOS 360 [M] or 304	2 or 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 or 360 [M]	3 or 2
MBIOS 401	3
MBIOS 465	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
CHEM 220	2
CHEM 222	2
Equity and Justice [EQJS]	3
MBIOS 413	3
PHYSICS 466	3

<i>Second Term</i>	<i>Credits</i>
MBIOS 414	3
MBIOS 460	3
MBIOS 494 [M] [CAPS]	3
Electives	7
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
MBIOS 138	1

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 345	4
MBIOS 301	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Social Sciences [SSCI]	3

<i>Second Term</i>	<i>Credits</i>
CHEM 348	4
MBIOS 201 [COMM]	3
MBIOS 303	4
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Humanities [HUM]	3
MBIOS 305	3
MBIOS 360 [M] or 304	2 or 3
STAT 212 or 412	3 or 4

<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
MBIOS 304 or 360 [M]	3 or 2
MBIOS 401	3
MBIOS 465	3
Electives	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
MBIOS 404	3
MBIOS 413	3
Electives	5

<i>Second Term</i>	<i>Credits</i>
MBIOS 414	3
MBIOS 460	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, 478; PHYSICS 466.

BIOCHEMISTRY - ACCELERATED PRE-PHARMACY OPTION (135 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

First Term	Credits
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ECONS 101 [SSCI]	3
ENGLISH 101 [WRTG]	3
MBIOS 138	1
PSYCH 105	3

Second Term	Credits
BIOLOGY 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4

Third Term	Credits
(Summer) PHYSICS 101 or 201	3
(Summer) PHYSICS 111 or 211	1

Second Year

First Term	Credits
CHEM 345	4
MBIOS 201 [COMM]	3
MBIOS 303	4
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1

Second Term	Credits
CHEM 348	4
Equity and Justice [EQJS]	3
MBIOS 304 or 360 [M]	3 or 2
MBIOS 305	3
PHIL 103 [HUM] or 365 [HUM]	3
Complete Writing Portfolio	

Third Term	Credits
(Summer) MBIOS 301	3

Third Year

First Term	Credits
Arts [ARTS]	3
BIOLOGY 315	4
MBIOS 360 [M] or 304	2 or 3

MBIOS 413	3
STAT 212 or 412	3 or 4

Second Term	Credits
ENGLISH 302 or 402	3
MBIOS 401	3
MBIOS 414	3
MBIOS 494 [M] [CAPS]	3
NEUROSCI 325	3
NEUROSCI 326	1

Third Term	Credits
(Summer) Diversity [DIVR]	3

Fourth Year

First Term	Credits
PHARMACY and PHARDSCI coursework ¹	15

Second Term	Credits
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 MBIOS 460 requirement 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

First Term	Credits
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

Second Term	Credits
BIOLOGY 106 or 107	4
CHEM 106	4

HISTORY 105 [ROOT]	3
MATH 140 [QUAN] or 171 [QUAN]	4
MBIOS 138	1

Second Year

First Term	Credits
CHEM 345 ²	4
Humanities [HUM]	3
MBIOS 301	4
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1

Second Term	Credits
Arts [ARTS]	3
MBIOS 201 [COMM]	3
MBIOS 303	4
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

First Term	Credits
MBIOS 304 or 360 [M]	3 or 2
MBIOS 305	3
STAT 212 or 412	3 or 4
Electives	3

Second Term	Credits
Diversity [DIVR]	3
Lecture Elective ³	3
MBIOS 360 [M] or 304	2 or 3
MBIOS 401	3
Electives	4

Fourth Year

First Term	Credits
Equity and Justice [EQJS]	3
MBIOS 404	3
MBIOS 478	3
Electives	4

Second Term	Credits
MBIOS 423	3
MBIOS 442 or BIOLOGY 476	3
MBIOS 460	3
MBIOS 494 [M] [CAPS]	3
Electives	4
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 (126 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
MBIOS 138	1
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
MBIOS 201	3
Foreign Language (if needed) or Elective ¹	2-4

<i>Third Term</i>	<i>Credits</i>
(Summer) MATH 140 or 171	4

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 345	4
HONORS 280	3
MBIOS 301	4
STAT 212	4

<i>Second Term</i>	<i>Credits</i>
HONORS 290 ²	3
MBIOS 303	4
MBIOS 304	3
MBIOS 360 [M]	2
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Complete Writing Portfolio	

<i>Third Term</i>	<i>Credits</i>
(Summer) MBIOS 305	3

Third Year

<i>First Term</i>	<i>Credits</i>
HONORS 370	3
HONORS 380	3
HONORS 398 ³	0 or 1
MBIOS 404	3
MBIOS 494 [CAPS] [M]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1

<i>Second Term</i>	<i>Credits</i>
HONORS 390	3
HONORS 450	1
MBIOS 410	3
MBIOS 411	3
MBIOS 450	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
VET MED 511 ⁴	5
VET MED 535 ⁵	3
Additional DVM coursework ⁶	7

<i>Second Term</i>	<i>Credits</i>
VET MED 534 ⁷	3
Additional DVM coursework ⁶	12
Exit Survey	

¹ The Foreign Language requirement may be satisfied in one of the following ways: satisfactory completion of the STAMP test; satisfactory completion of a foreign language 204-level course; completion of a minor in a foreign language; earning the Honors College Certificate of Global Competencies; or for students with a native language that is not English and who come to the United States after 8th grade, the foreign language requirement can be exempted from 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 MBIOS 460 requirement for the B.S. in Microbiology.

⁵ VET MED 535 satisfies the Virology requirement (MBIOS 442) for the B.S. in Microbiology

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.

⁷ VET MED 534 satisfies the Immunology requirement (MBIOS 440) for the B.S. in Microbiology.

MICROBIOLOGY – MEDICAL TECHNOLOGY OPTION (120 CREDITS)

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, 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 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 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
MBIOS 138	1

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>
Equity and Justice [EQJS]	3
MBIOS 303	4
MBIOS 305	3
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
MBIOS 304 or 360 [M]	3 or 2
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
STAT 212 or 412	3 or 4
Electives	3

<i>Second Term</i>	<i>Credits</i>
MBIOS 201 [COMM]	3
MBIOS 360 [M] or 304	2 or 3
MBIOS 410	3
MBIOS 450	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Electives	1

Fourth Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 418	4
MBIOS 404	3
MBIOS 440	3
MBIOS 460	3
Electives	3

<i>Second Term</i>	<i>Credits</i>	PHYSICS 101 or 201	3
MBIOS 411	3	PHYSICS 111 or 211	1
MBIOS 442	3	STAT 212 or 412	3 or 4
MBIOS 494 [M] [CAPS]	3		
Electives	4	<i>Second Term</i>	<i>Credits</i>
Exit Survey		MBIOS 360 [M] or 304	2 or 3
		MBIOS 410	3
		MBIOS 450	3
		PHYSICS 102 or 202	3
		PHYSICS 112 or 212	1
		Electives	4

¹ If required - consult advisor.

² CHEM 345 and 348 recommended for professional or graduate degrees.

MICROBIOLOGY – MOLECULAR BIOLOGY OPTION (120 CREDITS)

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, 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 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 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
MBIOS 138	1

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
CHEM 345 ²	4
Humanities [HUM]	3
MBIOS 301	3

<i>Second Term</i>	<i>Credits</i>
MBIOS 201 [COMM]	3
MBIOS 303	4
MBIOS 305	3
Social Sciences [SSCI]	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
Equity and Justice [EQJS]	3
MBIOS 304 or 360 [M]	3 or 2

Fourth Year

<i>First Term</i>	<i>Credits</i>
Lecture Elective ³	3
MBIOS 404	3
MBIOS 440	3
MBIOS 460 or 411	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 earned in WSU courses 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, CROP SCI/HORT 445, NEUROSCI 305, or PHIL 365. 9 credits of upper-division work must be earned in WSU courses 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 earned in WSU courses 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 earned in WSU courses 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 earned in WSU courses 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 268, 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. Recommended preparation: Pre-admitted or admitted major in Biochemistry, Genetics & Cell Biology, Microbiology, or Neuroscience. (Crosslisted course offered as NEUROSCI 201, MBIOS 201.)
- 301 General Genetics** 3 Course Prerequisite: BIOLOGY 106 or 120; BIOLOGY 107. Principles of modern and classical genetics. (Crosslisted course offered as MBIOS 301, BIOLOGY 301.)
- 303 Introductory Biochemistry** 4 Course Prerequisite: BIOLOGY 107 with a C or better; CHEM 102 or 345 with a C or better. 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 with a C or better; CHEM 102 or 345 with a C or better. 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. Recommended preparation for graduate students: Introductory genetics and biochemistry coursework. Credit not granted for both MBIOS 401 and MBIOS 501.
- 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 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. Recommended preparation for graduate students: Introductory biochemistry coursework. Credit not granted for both MBIOS 413 and MBIOS 513.
- 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 for graduate students: 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. Recommended preparation for graduate students: Introductory genetics and biochemistry coursework; concurrent enrollment with MBIOS 548 highly recommended. Credit not granted for both MBIOS 442 and MBIOS 542. 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. Recommended preparation for graduate students: Introductory genetics, biochemistry or microbiology coursework. Credit not granted for both MBIOS 450 and 550.
- 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.
- 460 Advanced Interdisciplinary Molecular Biosciences (AIMS) Laboratory** 3 (1-6) Course Prerequisite: MBIOS 201; MBIOS 304; MBIOS 360. Authentic laboratory investigations of contemporary topics from Biochemistry, Molecular Genetics, and Microbiology using a variety of model organisms; topics vary by semester and may include (but are not limited to) cell culture, protein structure and function, protein purification, detection of viruses using immunoassays, DNA isolation and transformation, DNA sequence analysis, gene editing, microscopy, and bioinformatic tools for DNA, protein, and gene expression analysis.
- 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. Recommended preparation for graduate students: Introductory genetics or biochemistry coursework. Credit not granted for both MBIOS 478 and MBIOS 578.

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 department permission. 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. 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 Cell Biology 3

Cellular structure and function; membrane biochemistry and transport; cell-cell communication; regulation of cell cycle and apoptosis; cell signaling; cancer biology. Recommended preparation for graduate students: Introductory genetics and biochemistry coursework. Credit not granted for both MBIOS 401 and MBIOS 501.

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. Recommended preparation for graduate students: Introductory biochemistry coursework. Credit not granted for both MBIOS 413 and MBIOS 513.

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 for graduate students: Introductory microbiology coursework; concurrent enrollment with MBIOS 548 highly recommended. Cooperative: Open to UI degree-seeking students.

542 General Virology 3

The biology of bacterial, animal, and plant viruses. Recommended preparation for graduate students: Introductory genetics and biochemistry coursework; concurrent enrollment with MBIOS 548 highly recommended. Credit not granted for both MBIOS 442 and MBIOS 542. Cooperative: Open to UI degree-seeking students.

548 Selected Topics in Immunology and

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. Recommended preparation for graduate students: Introductory genetics, biochemistry or microbiology coursework. Credit not granted for both MBIOS 450 and 550.

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.)

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

Provides skills, experiences, and knowledge to promote protein biotechnology research, research career preparation, and intellectual property commercialization. (Crosslisted course offered as MPS 574, CHE 574, MBIOS 574.)

578 Bioinformatics 3

(2-3) Computer analysis of protein and nucleic acid sequences, functional genomics and proteomics data; modeling biological networks and pathways. Recommended preparation for graduate students: Introductory genetics or biochemistry coursework. Credit not granted for both MBIOS 478 and MBIOS 578.

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.

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

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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 Provides skills, experiences, and knowledge to promote protein biotechnology research, research career preparation, and intellectual property commercialization. (Crosslisted course offered as MPS 574, CHE 574, MBIOS 574.)

587 Advanced Topics in Plant Biochemistry 1 May be repeated for credit; cumulative maximum 7 hours. 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, 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 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 Professor, K. McCarthy; Professors, D. Luethi, D. Pham, D. Turnbull; Associate Professors, T. Bennefield, S. Blasco, R. Boden, C. Dickey, J. Wieck; Assistant Professors, C. Haas, A. Hill, C. Kim, J. Kim, M. King, F. Menchetti, M. Myers, C. Rodrigues, Y. Roh, D. Singleton, S. Tegart, A. Wacker, C. Wilson, J. Wilson; Associate Professors Career Track, A. Miller, S. Miller, M. Parkhurst, J. Sweet; Assistant Professors Career Track, K. Rice, J. Svendsen, C. Wilson.

Washington State University is a public land-grant research university that is committed to the principles of practical education for all, scholarly inquiry that benefits society, and the sharing of expertise to positively impact the state and communities. Acting as local and global ambassadors, the School of Music students and faculty embrace this mission by promoting musical curiosity, cultural awareness, and critical engagement through artistic creation, pedagogy, and scholarship.

While preparing its students to be successful, innovative, and employable musicians in a 21st-century career field, the School of Music also strives to make its expertise available to anyone who seeks to benefit from it, regardless of where they live, where they come from, what they believe, or what their life experiences have been.

All efforts are directed toward the betterment of human existence through the uncovering of new information, the discovery of how to use that information to solve problems, and the creative expression of human experience. 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.

The School of Music at Washington State University participates in and fully supports efforts to ensure equal opportunity in and access to its programs. Copies of legislation and policies relating to affirmative action, equal opportunity, non-discrimination, non-harassment, ADA, and other issues are available at the WSU Center of Human Rights. Some of these materials are retained in the School's Office.

The School of Music regards each class attended, each event sponsored, each meeting held, each position vacancy offered, as an opportunity to promote diversity of ideas and to ensure free pursuit of life by those who are members of our community. We hope that each person participating in the School's activities honors this commitment to a humane and supportive atmosphere for our teaching, learning, research and creative activity, and service.

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 music minors and other 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. 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.

Performance studies may not be taken on a pass-fail basis.

Bachelor of Arts

This program offers a broad musical understanding within a liberal arts background. We expect 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.

Pre-Health Professions Program

The Bachelor of Arts/Pre-Health Professions program is a four-year program designed to meet the needs of students wishing to major in music while completing the required prerequisites required for admission into a profession pre-health program. Students should work with a Health Professions Student Center advisor to make sure they fulfill all the pre-requisite requirements for admission into a professional program, including taking correct prerequisite courses, preparing for exams, and creating a resume that is competitive for admission into the student's desired program. The exact order in which students take their required music courses will depend on their scores on diagnostic exams. If students need to take math and science remedial courses, students will complete the music academic portion of this degree as written. If students are prepared to immediately start their math and science pre-requisite courses, students will typically take their music theory and music history a year later than written in the degree plan. Each student's specific program of study will be constructed through a collaboration between the music and the HPSC advisors before the start of the first semester.

Bachelor of Music

This program offers majors for specialization in performance, composition, music business, and music education. The curriculum is designed to prepare students as professional musicians, teachers, and practitioners of music. We expect 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

These majors offer 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 Business

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. Students pursuing a Music Business degree are expected to pass a piano proficiency exam, achieve a cumulative 2.5 GPA and a grade of C or better in all music classes, and perform a successful half senior recital.

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, Sport, and Human Sciences.

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. All first-year students will be enrolled in MUS 251 and 252. Students who have earned a 4 or 5 on the AP music theory exam are exempted from MUS 251. Students who have taken AP music theory but did not take the exam or earned a 3 or lower on the exam will have the option to attempt to test out of MUS 251. Transfer credit from another college or university may be accepted pending a review of the student's grades, transcript, and syllabus. For more information, please contact the music academic advisors.

Admission to the Major

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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 not passing the Senior Qualifying Exam (or Junior if applicable) after the second attempt may not continue as music majors. Students must also complete the University's UCORE requirements, plus additional College of Arts and Sciences requirements.

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 they are performing to present a musically and artistically convincing performance. Additionally, students must become familiar with a wide range

of important works from the traditional western musical canon as well as a broad range of musical styles and genres from diverse cultures across the globe.

- **Communication:** Music students in the 21st century must be able to effectively write about, speak about, analyze, listen to, and perform music for themselves and others.
- **Diversity:** Students perform, study, interpret, listen to, and analyze music written by composers representing diverse backgrounds, cultures, social identities, and traditions while valuing the different perspective's impact on the global society in which they live.
- **Integration of Learning:** All music degrees and professions in the 21st century require individuals to integrate the previous learning outcomes to successfully perform, teach, and share music.

Schedules of Studies

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

MUSIC - ELECTIVE STUDIES IN PRE-LAW OPTION (120 CREDITS)

The Bachelor of Arts in Music, Elective Studies in Pre-Law option is designed to provide students with the opportunity to pursue a music degree while also preparing for possible admission to law school. In collaboration with the Pre-Law Resource Center, this degree plan offers suggestions for UCORE and non-music electives that develop critical reading, writing, research, and communication skills, along with attaining some background and knowledge of the law.

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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.

This four-year program is designed to meet the needs of students pursuing 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 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
PHIL 201 [QUAN] or Quantitative Reasoning [QUAN]	3

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
Equity and Justice [EQJS] ⁵	3
HISTORY 105 [ROOT]	3
MUS 182 ²	0 or 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
Biological Sciences [BSCI] with lab ⁷	4
MUS 241	3
MUS 351 ³	3
MUS 352 ³	1
MUS Ensemble ⁴	1

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
MUS 242	2
MUS 353 ⁶	3
MUS 354 ⁶	1
MUS 359 [HUM] [M] ⁶	3
MUS Ensemble ⁴	1
Social Science [SSCI] ⁸	3
Complete Writing Portfolio	
Pass Piano Proficiency	

Third Year

<i>First Term</i>	<i>Credits</i>
Foreign Language or Non-MUS Electives ⁹	5
MUS 360 ³	3
MUS Ensemble ⁴	1
PHIL 103	3
Physical Science [PSCI] with lab ⁷	4
SOC 361 [DIVR], ECONS 428 [DIVR], or Diversity [DIVR] (Non-MUS)	3

<i>Second Term</i>	<i>Credits</i>
ENGLISH 201 [WRTG], PHIL 200 [WRTG], Communication [COMM] or Written Communication [WRTG]	3
Foreign Language or Non-MUS Electives ⁹	7
MUS 461 [CAPS] ⁶	3
MUS Ensemble ⁴	1

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level MUS Electives	4
Non-MUS Electives ⁹	11
Senior Qualifying Exam	

<i>Second Term</i>	<i>Credits</i>
300-400-level MUS 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. Students must either take the listed class piano sequence or pass the piano proficiency exam and take an additional 2 credits of MUS electives.

³ Fall only.

⁴ Music Ensemble: 6 ensemble credits required on the student's major instrument (MUS 428-444) with at least 4 credits from MUS 429, 430, 431, 432, 434, 435 (guitar ensemble only), 436, 437, 438 or 441. 3 credits taken from ensemble courses designated as ARTS fulfill the [ARTS] UCORE requirement.

⁵ CRM J 205 [EQJS], SOC 340 [EQJS], or POLS 438 [EQJS] recommended.

⁶ Spring only.

⁷ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁸ CRM J 101 [SSCI], SOC 101 [SSCI], ECONS 101 [SSCI], or POLS 101 [SSCI] recommended.

⁹ Students must complete a minimum of 33 credits of 200-level or above electives outside of MUS and UCORE requirements. Please consult with advisor and Pre-Law Resource Center for elective selection.

**MUSIC - GENERAL OPTION
(120 CREDITS)**

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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. Students are expected to perform in an approved large ensemble on their major instrument during each semester of applied lessons. Additional ensemble requirements are clarified below. Any exceptions must be arranged with the instructor of the applied lessons.

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	1 or 0
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
Equity and Justice [EQJS]	3
HISTORY 105 [ROOT]	3
MUS 182 ²	1 or 0
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	

Third Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR] (Non-MUS)	3
MUS 360 [M] ⁸	3
MUS Ensemble ⁴	1
Foreign Language 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 or Non-MUS Electives ⁹	9

Fourth Year

<i>First Term</i>	<i>Credits</i>
300-400-level Music Electives	4 or 5
Non-MUS Electives ⁹	11
Senior Qualifying Exam	

<i>Second Term</i>	<i>Credits</i>
300-400-level Music Electives	6 or 7
Non-MUS Electives ⁹	8 or 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. Students must either take the listed class piano sequence

or pass the piano proficiency exam and take an additional 2 credits of MUS electives.

³ Fall only.

⁴ Music Ensemble: 6 ensemble credits required on the student's major instrument (MUS 428-444) with at least 4 credits from MUS 429, 430, 431, 432, 434, 435 (guitar ensemble only), 436, 437, 438 or 441. 3 credits taken from ensemble courses designated as ARTS fulfill the [ARTS] UCORE requirement.

⁵ Spring only.

⁶ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁷ Spring only.

⁸ Fall only.

⁹ Students must complete a minimum of 36 credits of 200-level or above electives outside of MUS and UCORE requirements. Please consult with advisor for elective selection.

MUSIC BUSINESS (122 CREDITS)

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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. Students are expected to perform in an ensemble on their major instrument during each semester of applied lessons. Additional ensemble requirements are clarified below. Any exceptions must be arranged with the instructor of the applied lessons.

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

First Term	Credits
Applied MUS ¹	2
ENGLISH 101 [WRTG]	3
Equity and Justice [EQJS]	3
MUS 181 ²	0 or 1
MUS 251 ³	3
MUS 252 ³	1

MUS Ensemble ⁴	1
Foreign Language, if needed	0-4
<i>Second Term</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
Foreign Language, if needed	0-4

Second Year

First Term	Credits
Applied MUS ¹	2
Business minor course	3
Communication [COMM] or Written Communication [WRTG]	3
MUS 241	3
MUS 281 ²	0 or 1
MUS 351 ³	3
MUS 352 ³	1
MUS Ensemble ⁴	1

Second Term	Credits
Applied MUS ¹	2
Business minor course	3
MUS 242	2
MUS 353 ⁵	3
MUS 354 ⁵	1
MUS 359 [HUM] [M] ⁵	3
MUS 428, 433, or 435	1
MUS Ensemble ⁴	1
Complete Writing Portfolio	
Pass Piano Proficiency	

Third Year

First Term	Credits
Applied MUS ¹	2
Biological Sciences [BSCI] with lab ⁶	4
DTC 354 [ARTS]	3
MUS 360 [M] ³	3
MUS 482 ⁴	1
MUS Ensemble ⁴	1
300-400-level MUS Electives	2

Second Term	Credits
Applied MUS ¹	2
Business minor course	3
DTC 201	3
MUS 461 [CAPS] ⁵	3
MUS Ensemble ⁴	1
Physical Sciences [PSCI] with lab ⁶	4

Fourth Year

First Term	Credits
Applied MUS ¹	2
Business minor courses	6
MUS 470	3
MUS Ensemble ⁴	1
300-400-level MUS Electives	4
Senior Half Recital	

Second Term	Credits
Business minor course	3
Diversity [DIVR] (Non-MUS)	3
MUS 471 ⁷	6
Social Sciences [SSCI] ⁴	3

¹ Applied Music: 14 credits required with a minimum of 2 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: 7 ensemble credits required on the student's major instrument with at least 4 credits from MUS 429, 430, 431, 432, 434, 435 (guitar ensemble only), 436, 437, 438, or 441. 3 credits taken from ensemble courses designated as ARTS fulfill the [ARTS] UCORE requirement.

⁵ Spring only.

⁶ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁷ MUS 471 may be taken in the final semester for 6 credits or split between the last two semesters for 3 credits each.

MUSIC COMPOSITION (120 CREDITS)

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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.

A grade of B or better is required for all core music theory courses (MUS 251-254, 351-354).

Students are expected to perform in a large ensemble on their major instrument during each semester of applied music lessons. Additional ensemble requirements are clarified below. Any exceptions must be arranged with the instructor of the applied lessons.

A total of 8 ensemble credits are required. 5 large ensemble credits on the student's applied instrument are required from: MUS 429, 430, 431, 432, 434, 435 (guitar ensemble only), 436, 437, 438, or 441. 3 additional ensemble credits are required, and at least one of which must be taken from the following choral ensembles: MUS 429, 430, 431, 432.

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year*First Term*

Applied MUS ¹	Credits	2
ENGLISH 101 [WRTG]		3
MUS 164		1
MUS 181 ²	0 or 1	3
MUS 251 ³		1
MUS 252 ³		1
MUS Ensemble ⁴		1
Foreign Language, if needed, or Non-MUS Electives ⁵		3-4

Second Term

Applied MUS ¹	Credits	2
HISTORY 105 [ROOT]		3
MUS 182 ²	0 or 1	3
MUS 253 ⁶		1
MUS 254 ⁶		1
MUS Ensemble ⁴		1
Quantitative Reasoning [QUAN]		3
Foreign Language, if needed		0-4

Second Year*First Term*

Applied MUS ¹	Credits	2
Biological Sciences [BSCI] with lab ⁷		4
Communication [COMM] or Written Communication [WRTG]		3
MUS 256		2
MUS 281 ²	0 or 1	3
MUS 351 ³		1
MUS 352 ³		1
MUS Ensemble ⁴		1

Second Term

Applied MUS ¹	Credits	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		
Pass Piano Proficiency		

Third Year*First Term*

Applied MUS ¹	Credits	2
MUS 256		2
MUS 360 [M] ³		3
MUS Electives		4
MUS Ensemble ⁴		1
Social Sciences [SSCI]		3

Second Term

Equity and Justice [EQJS]	Credits	3
MUS 202 or 302		2
MUS 451 ^{9,8}		2
MUS 456		4
MUS 461 [CAPS] ⁶		3
MUS 483		1
MUS Ensemble ⁴		1

Fourth Year*First Term*

Diversity [DIVR] (Non-MUS)	Credits	3
MUS 202 or 302		2
MUS 455 ³		2
MUS 456		4

MUS 482 ³	1
MUS Electives	3
MUS Ensemble ⁴	1
Senior Qualifying Exam	

Second Term

MUS 452 ^{9,6}	Credits	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 (MUS 302-318, 320, 402-418, 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): 5 large ensemble credits on the student's applied instrument are required from: MUS 429, 430, 431, 432, 434, 435 (guitar ensemble only), 436, 437, 438, or 441. 3 additional ensemble credits are required, and at least one of which must be taken from the following choral ensembles: MUS 429, 430, 431, 432. 3 credits taken from ensemble courses designated as ARTS fulfill the [ARTS] UCORE requirement.

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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁸ Spring only.

⁹ Course taught alternate years.

MUSIC EDUCATION - CHORAL/GENERAL ENDORSEMENT OPTION (133 CREDITS)

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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, Sport, and Human Sciences.

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, Sport, and Human Sciences Professional Core courses. Class piano credits are not required for the degree. Students are expected to perform in an ensemble on their major instrument during each semester of applied lessons. Additional ensemble requirements are clarified below. Any exceptions must be arranged with the instructor of the applied lessons.

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. Students are required to enroll in a minimum of 7 credits of large ensembles (MUS 429, 430, 431, 432).

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year*First Term*

Applied MUS ¹	Credits	2
ENGLISH 101 [WRTG]		3
Foreign Language, if needed		0-4
MUS 164		1
MUS 181 ²	0 or 1	3
MUS 251 ³		1
MUS 252 ³		1
MUS Ensemble ⁴		1
Quantitative Reasoning [QUAN]		3

Second Term

Applied MUS ¹	Credits	2
ENGLISH 201 [WRTG] ⁵		3
Foreign Language, if needed		0-4
HISTORY 105 [ROOT]		3
MUS 182 ²	0 or 1	1
MUS 190		3
MUS 253 ⁶		1
MUS 254 ⁶		1
MUS Ensemble ⁴		1

Second Year*First Term*

Applied MUS ¹	Credits	2
MUS 281 ²	0 or 1	3
MUS 351 ³		1
MUS 352 ³		1
MUS Ensemble ⁴		1
Social Sciences [SSCI]		3
TCH LRN 301		3

Second Term

Applied MUS ¹	Credits	2
MUS 353 ⁶		3
MUS 354 ⁶		1
MUS 359 [HUM] [M] ⁶		3
MUS Ensemble ⁴		1
Equity and Justice [EQJS]		3
MUS 491 ⁶		2
Pass Piano Proficiency		
Complete Writing Portfolio		
May Field Experience		
Admitted into Major		

Third Term
TCH LRN 317

Credits
2

Third Year

First Term

Applied MUS ¹ 2
Biological Sciences [BSCI] with lab⁷ 4
Diversity [DIVR] (Non-MUS) 3
MUS 360 [M]³ 3
MUS 482³ 1
MUS 488^{3,8} 2
MUS Ensemble⁴ 1

Second Term

Applied MUS ¹ 2
MUS 461 [CAPS]⁶ 3
MUS 483⁶ 1
MUS 489^{6,8} 2
MUS 490⁶ 3
MUS Ensemble⁴ 1
Physical Sciences [PSCI] with lab⁷ 4
Admitted into TCH LRN

Fourth Year

First Term

Applied MUS ¹ 2
MUS 428, 433, or 439 1
MUS 455 2
MUS 480³ 3
MUS Ensemble⁴ 1
TCH LRN 464 3
TCH LRN 465 3
Senior Qualifying Exam

Second Term

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

First Term

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 of MUS 429, 430, 431, or 432. 3 credits taken from ensemble courses designated as ARTS fulfill the [ARTS] UCORE requirement.

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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁸ Course taught alternate years.

**MUSIC EDUCATION - CHORAL/
INSTRUMENTAL/GENERAL ENDORSEMENT
OPTION
(140 CREDITS)**

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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, Sport, and Human Sciences. Students are expected to perform in an ensemble on their major instrument during six of their seven semesters of applied lessons. Additional ensemble requirements are clarified below. Any exceptions must be arranged with the instructor of the applied lessons.

This option provides teacher certification in designated arts: music (choral, instrumental, and general). 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, Sport, and Human Sciences Professional Core courses. A solo half-recital is required. Class piano credits are not required for the degree. 6 credits required from MUS 429, 430, 431, 432, 434, 435 (guitar ensemble only), 436, 437, 438, or 441 on the student's major instrument. Instrumentalists must complete 4 credits in vocal performance studies (private lessons and/or ensemble) and vocalists must complete 4 credits of instrumental performance studies (private lessons and/or ensemble).

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

First Term

Applied MUS ¹ 2
ENGLISH 101 [WRTG] 3
Foreign Language, if needed 0-4
MUS 164 1
MUS 181² 0 or 1
MUS 251³ 3
MUS 252³ 1

MUS Ensemble⁴ 1
Quantitative Reasoning [QUAN] 3 or 4

Second Term

Applied MUS ¹ 2
ENGLISH 201 [WRTG]⁵ 3
Foreign Language, if needed 0-4
HISTORY 105 [ROOT] 3
MUS 182² 0 or 1
MUS 190 1
MUS 253⁶ 3
MUS 254⁶ 1
MUS Ensemble⁴ 1

Second Year

First Term

Applied MUS ¹ 2
Equity and Justice [EQJS] 3
MUS 281² 0 or 1
MUS 351³ 3
MUS 352³ 1
MUS 492^{3,7} 1
MUS 494^{3,7} 1
MUS Ensemble⁴ 1
TCH LRN 301 3

Second Term

Applied MUS ¹ 2
MUS 353⁶ 3
MUS 354⁶ 1
MUS 359 [HUM] [M]⁶ 3
MUS 491³ 2
MUS 493^{6,7,8} 1
MUS 495^{6,7,8} 1
MUS Ensemble⁴ 1
Complete Writing Portfolio
Pass Piano Proficiency
Social Sciences [SSCI] 3
Admitted into Major

Third Term

TCH LRN 317 2

Third Year

First Term

Applied MUS ¹ 2
Biological Sciences [BSCI] with lab 4
MUS 360 [M]³ 3
MUS 482³ 1
MUS 484^{3,7} 1
MUS 486^{3,7} 1
MUS 488^{3,7} 2
MUS Ensemble⁴ 1

Second Term

Applied MUS ¹ 2
MUS 461 [CAPS]⁶ 3
MUS 483⁶ 1
MUS 485^{6,7,8} 1
MUS 487^{6,7,8} 1
MUS 489^{6,7,8} 2
MUS 490⁶ 3
MUS Ensemble⁴ 1
Physical Sciences [PSCI] with lab 4
Senior Qualifying Exam
Admitted to TCH LRN

Fourth Year

First Term

Applied MUS ¹ 2
Diversity [DIVR] (Non-MUS) 3

MUS 428, 433, 435, or 439	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 MUS 429, 430, 431, 432, 434, 435 (guitar ensemble only), 436, 437, 438, or 441 on the student's major instrument. 3 credits taken from ensemble courses designated as ARTS fulfill the [ARTS] UCORE requirement.

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 required to take two second-level techniques course.

MUSIC EDUCATION - INSTRUMENTAL/ GENERAL ENDORSEMENT OPTION (136 CREDITS)

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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, Sport, and Human Sciences.

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, Sport, and Human Sciences Professional Core courses. Class piano credits are not required for the degree. Students are expected to perform in a large ensemble on their major instrument during each semester of applied lessons. Additional ensemble requirements are clarified below. Any exceptions must be arranged with the instructor of the applied lessons.

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; senior qualifying exam, piano proficiency, solo half-recital. 7 credits required from MUS 434, 435 (guitar ensemble only), 436, 437, 438, 441 on the student's major instrument and at least one credit of MUS 435.

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 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 491 ³	2
MUS 493 ^{5,7,8}	1

MUS 495 ^{5,7,8}	1
MUS Ensemble ⁴	1
Complete Writing Portfolio	
Pass Piano Proficiency	
May Field Experience	
Admitted into Major	

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

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 [M] ³	3
MUS 435	1
MUS 482 ³	1
MUS 484 ³⁷	1
MUS 486 ³⁷	1
MUS Ensemble ⁴	1

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
Equity and Justice [EQJS]	3
MUS 461 [CAPS] ⁵	3
MUS 485 ^{5,7,8}	1
MUS 487 ^{5,7,8}	1
MUS 490 ⁵	3
MUS Ensemble ⁴	1
Physical Sciences [PSCI] with lab ⁹	4
Senior Qualifying Exam	
Admitted into TCH LRN	

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 434, 435 (guitar ensemble only), 436, 437, 438, 441 on the student's major instrument. 3 credits taken from ensemble courses designated as ARTS fulfill the [ARTS] UCORE requirement.

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 required to take two second-level techniques course.

⁹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

MUSIC PERFORMANCE - BRASS, PERCUSSION, STRINGS, WINDS OPTION (120 CREDITS)

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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. Students are expected to perform in an ensemble on their major instrument during each semester of applied lessons. Additional ensemble requirements are clarified below. Any exceptions must be arranged with the instructor of the applied lessons.

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
Equity and Justice [EQJS]	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
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	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 484, 486, 492, or 494 ⁶	1
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 ⁸	4
Diversity [DIVR] (Non-MUS)	3
MUS 360 [M] ³	3
MUS 435	1
MUS Ensemble ⁴	1
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
MUS Ensemble ⁴	1
300-400-level MUS Electives	3
Junior Recital	

Fourth Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 455 ³	2
MUS 465 ^{3,9}	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 include MUS 304-318, 320, 404-418, and 420.

² Class piano credits not required.

³ Fall only.

⁴ Music Ensembles: 8 credits required from MUS 434, 435 (guitar ensemble only), 436, 437, or 438 on the student's major instrument. 3 credits taken from ensemble courses designated as ARTS fulfill the [ARTS] UCORE requirement.

⁵ Spring only.

⁶ One credit of pedagogy is required in respective area: woodwind (484), string (486), brass (492), or percussion (494).

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.

⁸ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁹ Course taught alternate years.

MUSIC PERFORMANCE - JAZZ STUDIES OPTION (PERCUSSION, SAXOPHONE, STRING BASS, TRUMPET, TROMBONE, GUITAR, AND KEYBOARD) (120 CREDITS)

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

This option with an emphasis in jazz is available to students whose major instruments are percussion, saxophone, string bass, trumpet, trombone, 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. Students are expected to perform in an ensemble on their major instrument during each semester of applied lessons. Additional ensemble requirements are clarified below. Any exceptions must be arranged with the instructor of the applied lessons. Ensemble requirements: 8 credits required from MUS 434, 435 (guitar ensemble only), 436, 437, 438, 441 on the student's major instrument (including a minimum of 2 credits in MUS 438). An additional 2 credits of MUS 440 are required. With permission from the applied instructor, up to 3 credits of MUS 440 may be substituted for Ensemble requirements but will not also count toward the MUS 440 requirement.

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
Equity and Justice [EQJS]	3
MUS 251 ²	3
MUS 252 ²	1
MUS Ensemble ³	1

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
HISTORY 105 [ROOT]	3
MUS 164	1
MUS 181 ⁴	0-1
MUS 253 ⁵	3
MUS 254 ⁵	1
MUS Ensemble ³	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 182 ⁴	0-1
MUS 257	2
MUS 351 ²	3
MUS 352 ²	1
MUS Ensemble ³	1
Social Sciences [SSCI]	3
<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 281 ⁴	0-1
MUS 353 ⁵	3
MUS 354 ⁵	1
MUS 359 [HUM] [M] ⁵	3
MUS Ensemble ³	1
Non-MUS Electives ⁶	3
Complete Writing Portfolio	
Pass Piano Proficiency	

Third Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Biological Sciences [BSCI] with lab ⁷	4
MUS 258 ²	2
MUS 360 [M] ²	3
MUS 457 ^{8,2}	2
MUS Ensemble ³	1
Junior Qualifying Exam	
<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 319	2
MUS 458	2
MUS 461 [CAPS] ⁵	3
MUS Ensemble ³	1
Physical Sciences [PSCI] with lab ⁷	4
Junior Recital	

Fourth Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Diversity [DIVR] (Non-MUS)	3
MUS 362	3
MUS 440 ³	1
MUS 482 ²	1
MUS Ensemble ³	1
Foreign Language, if needed	0-4
Senior Qualifying Exam	
<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 440	1
MUS Electives	3
MUS Ensemble ³	1
Foreign Language, if needed, or Non-MUS Electives ⁶	3-4
Senior Full Recital	

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: 8 credits required from MUS 434, 435 (guitar ensemble only), 436, 437, 438, 441 on the

student's major instrument (including a minimum of 2 credits in MUS 438). An additional 2 credits of MUS 440 are required. With permission from the applied instructor, up to 3 credits of MUS 440 may be substituted for Ensemble requirements but will not also count toward the MUS 440 requirement. 3 credits taken from ensemble courses designated as ARTS fulfill the [ARTS] UCORE requirement.

⁴ Class piano credits not required in degree.

⁵ Spring only.

⁶ Students must complete a minimum of 6 credits of electives outside of MUS and UCORE requirements. Please consult with advisor for elective selection.

⁷ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁸ Course taught alternate years.

MUSIC PERFORMANCE - KEYBOARD OPTION (120 CREDITS)

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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. Students are expected to perform on piano in a large ensemble (MUS 429, 430, 431, 432, 434, 436, 437, or 438) or take MUS 441 each semester in consultation with their applied instructor. Any exceptions must be arranged with the instructor of the applied lessons.

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
HISTORY 105 [ROOT]	3
MUS 164	1
MUS 251 ²	3
MUS 252 ²	1
Music Ensemble or MUS 441 ³	1
Non-MUS Electives ⁴	3
<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
ENGLISH 101 [WRTG]	3
MUS 253 ⁵	3
MUS 254 ⁵	1

Music Ensemble or MUS 441 ³	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 ²	3
MUS 352 ²	1
Music Ensemble or MUS 441 ³	1
Social Sciences [SSCI]	3
<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 353 ⁵	3
MUS 354 ⁵	1
MUS 359 [HUM] [M] ⁵	3
MUS 498	2
Music Ensemble or MUS 441 ³	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
Diversity [DIVR] (Non-MUS)	3
MUS 360 [M] ²	3
MUS 435	1
MUS 465 ^{2,7}	2
Music Ensemble or MUS 441 ³	1
Junior Qualifying Exam	
<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 461 [CAPS] ⁵	3
MUS 482 or 483	1
Music Ensemble or MUS 441 ³	1
Physical Sciences [PSCI] with lab ⁶	4
300-400-level MUS Electives	4
Junior Recital	

Fourth Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Equity and Justice [EQJS]	3
Foreign Language, if needed, or Non-MUS Electives ⁴	3-4
MUS 319	2
Music Ensemble or MUS 441 ³	1
Accompaniment Recital	
Senior Qualifying Examination	
<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
Foreign Language, if needed	0-4
MUS 451 ^{5,7}	2
Music Ensemble or MUS 441 ³	1
300-400-level MUS Electives	5
Senior Full Recital	

¹ Applied Music: 32 credits required with a minimum of 4 credits at the 400 level. Approved courses include MUS 301, 302, 401, and 402.

² Fall only.

³ Music Ensemble or MUS 441: 8 credits required from MUS 429, 430, 431, 432, 434, 436, 437, or 438 on piano, or MUS 441 through advisement with the student's applied instructor. To fulfill the [ARTS]

UCORE requirement, 3 credits of ensemble courses designated as ARTS must be completed.

⁴ Students must complete a minimum of 6 credits of electives outside of MUS and UCORE requirements. Please consult with advisor for elective selection.

⁵ Spring only.

⁶ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁷ Course taught alternate years.

MUSIC PERFORMANCE - KEYBOARD WITH ELECTIVE STUDIES IN PEDAGOGY OPTION (120 CREDITS)

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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. Students are expected to perform on piano in a large ensemble (MUS 429, 430, 431, 432, 434, 436, 437, or 438) or take MUS 441 each semester in consultation with their applied instructor. Any exceptions must be arranged with the instructor of the applied lessons.

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

First Term	Credits
Applied MUS ¹	4
ENGLISH 101 [WRTG]	3
MUS 251 ²	3
MUS 252 ²	1
Music Ensemble or MUS 441 ³	1
Quantitative Reasoning [QUAN]	3

Second Term	Credits
Applied MUS ¹	4
HISTORY 105 [ROOT]	3
MUS 164	1
MUS 253 ⁴	3
MUS 254 ⁴	1
Music Ensemble or MUS 441 ³	1
Foreign Language, if needed, or Non-MUS Electives ⁵	3-4

Second Year

First Term	Credits
Applied MUS ¹	4

Communication [COMM] or Written Communication [WRTG]	3
MUS 351 ²	3
MUS 352 ²	1
Music Ensemble or MUS 441 ³	1
Social Sciences [SSCI]	3

Second Term	Credits
Applied MUS ¹	4
MUS 353 ⁴	3
MUS 354 ⁴	1
MUS 359 [HUM] [M] ⁴	3
MUS 498	2
Music Ensemble or MUS 441 ³	1
Complete Writing Portfolio	
Pass Piano Proficiency	

Third Year

First Term	Credits
Applied MUS ¹	4
Biological Sciences [BSCI] with lab ⁶	4
MUS 360 [M] ²	3
MUS 435	1
MUS 498	2
Music Ensemble or MUS 441 ³	1
Junior Qualifying Exam	

Second Term	Credits
Applied MUS ¹	4
MUS 461 [CAPS] ⁴	3
MUS 483 or 482	1
MUS 498	2
Music Ensemble or MUS 441 ³	1
Physical Sciences [PSCI] with lab ⁶	4
Junior Recital	

Fourth Year

First Term	Credits
Applied MUS ¹	4
MUS 319	2
MUS 465 ^{2,7}	2
Music Ensemble or MUS 441 ³	1
PSYCH 361, 490, or TCH LRN 301	3
Foreign Language, if needed, or Non-MUS Electives ⁵	3-4
Senior Qualifying Exam	
Accompaniment Recital	

Second Term	Credits
Applied MUS ¹	4
Diversity [DIVR] (Non-MUS)	3
Equity and Justice [EQJS]	3
MUS 451 ^{4,7}	2
Music Ensemble or MUS 441 ³	1
Music Electives	2
Senior Full Recital	

¹ Applied Music: 32 credits required with a minimum of 4 credits at the 400 level. Approved courses include MUS 301, 302, 401, and 402.

² Fall only.

³ Music Ensemble or MUS 441: 8 credits required from MUS 429, 430, 431, 432, 434, 436, 437, or 438 on piano, or MUS 441 through advisement with the student's applied instructor. To fulfill the [ARTS] UCORE requirement, 3 credits of ensemble courses designated as ARTS must be completed.

⁴ Spring only.

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 To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁷ Course taught alternate years.

MUSIC PERFORMANCE - VOICE OPTION (120 CREDITS)

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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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. Students are expected to perform in a large choral ensemble (MUS 429, 430, 431, or 432) during each semester of applied lessons. Additional ensemble requirements are clarified below. Any exceptions must be arranged with the instructor of the applied lessons.

Only 9 credits of MUS courses can be used to fulfill UCORE requirements.

First Year

First Term	Credits
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, 431, or 432 ⁴	1

Second Term	Credits
Applied MUS ¹	4
HISTORY 105 [ROOT]	3
MUS 164	1
MUS 182 ²	0 or 1
MUS 253 ⁵	3
MUS 254 ⁵	1
MUS 429, 430, 431, or 432 ⁴	1
Quantitative Reasoning [QUAN]	3

Second Year

First Term	Credits
Applied MUS ¹	4
Communication [COMM] or Written Communication [WRTG]	3
MUS 281 ²	0 or 1
MUS 351 ³	3
MUS 352 ³	1

MUS 371 ³⁶	2
MUS 429, 430, 431, or 432 ⁴	1

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
MUS 353 ⁵	3
MUS 354 ⁵	1
MUS 359 [HUM] [M] ⁵	3
MUS 372 ^{5,6}	2
MUS 429, 430, 431, or 432 ⁴	1
MUS 491	2
Complete Writing Portfolio	
Pass Piano Proficiency	

Third Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Biological Sciences [BSCI] with lab ⁷	4
MUS 360 [M] ³	3
MUS 428, 433, or 439 ⁴	1
MUS 429, 430, 431, or 432 ⁴	1
Junior Qualifying Exam	

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
Equity and Justice [EQJS]	3
MUS 428 ⁴	1
MUS 429, 430, 431, or 432 ⁴	1
MUS 461 [CAPS] ⁵	3
MUS 483 ⁵	1
Physical Sciences [PSCI] with lab ⁷	4
Junior Recital	

Fourth Year

<i>First Term</i>	<i>Credits</i>
Applied MUS ¹	4
Foreign Language ⁸	4
MUS 429, 430, 431, or 432 ⁴	1
MUS 465 ^{3,6}	2
Non-MUS Elective ⁹	3
Senior Qualifying Exam	

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	4
Foreign Language ⁸	4
MUS 429, 430, 431, or 432 ⁴	1
Social Sciences [SSCI]	3
Non-MUS Electives ⁹	3
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 3 credits taken from MUS 428, 429, 430, 431, 432, 433, 439 fulfill the [ARTS] UCORE requirement.

⁵ Spring only.

⁶ Course taught alternate years.

⁷ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁸ Foreign Language Requirement: All students must take 8 credits of foreign language. The College of Arts and Sciences foreign language requirement can count towards this total. High school language credits will not count.

⁹ Students must complete a minimum of 6 credits of electives outside of MUS and UCORE requirements. Please consult with advisor for elective selection.

MUSIC PRE-TEACHER CERTIFICATION (120 CREDITS)

To be admitted as a major pursuing any Bachelor of Music degree, 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: Brass, Woodwind, Strings, Percussion, and Keyboard 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. Composition students must achieve a B or better in MUS 251 and 253.

In addition, for students advancing in any of the Bachelor of Music Education degrees, the College of Education, Sport, and Human Sciences 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.

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, Sport, and Human Sciences. 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, Sport, and Human Sciences 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 major may lead to one of three paths to achieve teacher certification in one of the designated areas: choral music, instrumental music, or general music. 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

<i>Second Term</i>	<i>Credits</i>
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

<i>First Term</i>	<i>Credits</i>
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

<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 ⁵	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
Diversity [DIVR] (Non-MUS)	3
ENGLISH 201 [WRTG] ⁷	3
MUS 258 ⁴	2

MUS 360 [M] ⁴	3
MUS 455 ⁴	2
MUS Ensemble ⁵	1

<i>Second Term</i>	<i>Credits</i>
Applied MUS ¹	2
Equity and Justice [EQJS]	3
MUS 428 or 435	1
MUS 461 [CAPS] ⁶	3
MUS Electives	3
Social Sciences [SSCI]	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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). 3 credits taken from ensemble courses designated as ARTS fulfill the [ARTS] UCORE requirement.

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 [WRITG] or [COMM] course.

⁸ MUS Endorsement Electives (8 credits required including at least 1 term MUS 480): Approved courses include MUS 480, 482, 483, 484, 485, 486, 487, 488, 489, 493, 494 and 495.

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 earned in WSU courses or through WSU-approved education abroad or educational exchange courses.

Music

Students may add a Music Minor after being admitted to a major. 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. Additional requirements for both options include MUS 160, one UCORE Elective course from MUS 163, 262, 265, 266, 267, 361, 362, 363, or 366; 4 credits of performance studies (studio lessons), 4 credits performing groups; and 4 credits 300-400-level music electives. The minor must include 9 upper-division credits earned in WSU courses 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 earned in WSU courses 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; ART 333, 435; DTC 201, 208, 336.

Certificates

Entertainment Entrepreneurship

The Entertainment Entrepreneurship Certificate is open to students from all majors. This certificate offers professional preparation in the entertainment 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. Students must complete the following courses (15 credits) with a minimum GPA of 2.0 to receive this certificate: DTC 201, 354; MUS 164, 241, 242, 470.

Music Production

The Music Production Certificate is open to students from all majors. The certificate offers students the opportunity to learn and apply home recording production utilizing DAW software, notation software for music publishing, mixing, mastering, and techniques used in studio recording and live sound reinforcement. Credits earned toward this certificate may apply to a bachelor's degree. This certificate does not require an audition.

The music production curriculum focuses on fundamental knowledge in the music entrepreneurship world. The certificate requires completion of the following courses with a minimum GPA of 2.0: MUS 181 or 102, 164, 241, 242, 264, 364, 464.

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] Understanding Music 3 Introduction to understanding music from aesthetic, cultural, and historical perspectives; music ranging from the earliest folk and art music traditions to modern popular music and beyond is listened to and discussed, all from a global perspective.

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 or 251, or concurrent enrollment in either. 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 department permission. 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 Introduction to Music Education 3 Introductory course for principles and practices fundamental to music learning and teaching, as well as analysis of the connections among learning theories, human development theories, and educational practice in today's music PK-12 classrooms.

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.
- 241 Survey of the Entertainment Industry 3** Exploration of the complex and changing world of the entertainment industry including contracts and negotiations, professional organizations and networks, and industry standards.
- 242 Fundamentals of Music Entrepreneurship 2** Techniques of self-promotion, including social media, web design, and marketing for the creative product.
- 251 Materials and Structures of Music I 3** An examination of the fundamentals of music theory; pitch, rhythm, scales, intervals, and chords.
- 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 diatonic and initial chromatic harmony, figured bass, two-voice counterpoint, and phrase structure.
- 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 Music 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 Applied Jazz Theory and Improvisation I 2** (0-6) Course Prerequisite: MUS 251 with a C or better; MUS 252 with a C or better. Applied study of fundamental jazz theory and improvisation concepts including rhythms, four-part chords, modes of the major scale, ii-V-I progression, harmonic minor scale, guide tones, 12-bar blues form, and blues scales.
- 258 Applied Jazz Theory and Improvisation II 2** (0-6) May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MUS 257 with a C or better. Applied study of intermediate jazz theory and improvisation concepts including five-part chords, modes of melodic minor scale, chord-scale theory, idiomatic jazz progressions, voice-leading, rhythm changes, bebop blues, and bebop scales.
- 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.
- 263 [DIVR] Rags to Rhinestones: A History of Country Music 3** History of Country Music from its humble roots in Appalachian folk music, Black American spirituals, the blues, and other immigrated cultural traditions to the modern age of Country musicians selling out arenas all over the world.
- 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 [EQJS] 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 department permission. 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 253 with a C or better; MUS 254 with a C or better. Voice leading and analysis of functional chromatic harmony, harmonic language and compositional styles of the 20th/21st 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. A study of common large forms in the 17th, 18th, and 19th century.
- 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 3** 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.
- 366 [DIVR] LGBTQ+ Perspectives in Music 3** Exploration of music through the lens of LGBTQ+ representation as a way of examining the personal and social struggles the community has endured for decades. (Crosslisted course offered as MUS 366, WGSS 366.)
- 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.
- 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/Musical Theatre 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] 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.
- 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 Collaborative Piano 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 164. 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 Music 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 Applied Jazz Theory and Improvisation III 2 (0-6)** May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: MUS 258 with a C or better. Applied study of advanced jazz theory and improvisation concepts including pentatonic scales, Coltrane changes, whole-tone scales, octatonic scales, upper structure triads, triad pairs, intervallic improvisation, and reharmonization techniques.
- 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** 3 (2-3) Course Prerequisite: DTC 201; DTC 354; MUS 241; MUS 242. Practice components and techniques used in the marketing and promotion of the performing arts and the entrepreneurship industry.
- 471 Music Business Internship** V 3-6 May be repeated for credit. Course Prerequisite: MUS 470 or concurrent enrollment. Monitored and evaluated professional work experience in the music business field such as music publishing, artist management, concert promotion, music marketing, and other music entrepreneurship works.
- 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 if enrolled as music education major. Performance and pedagogy of woodwind instruments for music educators.
- 485 Woodwind Techniques II** 1 (0-2) Course Prerequisite: MUS 190. Second level of performance and pedagogy of woodwind instruments for music educators.
- 486 String Techniques I** 1 (0-2) Course Prerequisite: MUS 190 if enrolled as music education major. Exploration of string instrument performance and pedagogy for music educators, with a focus on guitar, violin, and viola.
- 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 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 if enrolled as music education major. 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 if enrolled as music education major. 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 department permission. 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. 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 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/Musical Theatre** 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] 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.

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 Collaborative Piano 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 Music 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 and 21st 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.

563 Seminar in Literature of the Classical/Romantic Eras 2 Examination of art music from the Classical and Romantic periods.

566 Seminar in Literature of the Baroque Era 2 May be repeated for credit; cumulative maximum 6 hours. Examination of art music from 1550-1750.

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.

581 Foundations of Music Education 2 An examination of the historical, philosophical, and sociological foundations of music education in the United States.

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 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 earned in WSU courses 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** 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** 1 Practical instruction for introduction to first-year Naval Science Students.
- 122 Introduction to Naval Science Laboratory 2** 1 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 1 Practical instruction for introduction to sophomore Naval Science Students.

222 Introduction to Naval Science Laboratory 4 1 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.E.C. Fuller. Recommended preparation: NAV SCI 101, NAV SCI 104.

321 Introduction to Naval Science Laboratory 5 1 Practical instruction for introduction to junior Naval Science Students.

322 Introduction to Naval Science Laboratory 6 1 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 1 Practical instruction for introduction to senior Naval Science Students.

422 Introduction to Naval Science Laboratory 8 1 Practical instruction for introduction to senior Naval Science Students.

423 Introduction to Naval Science Laboratory 9 1 Practical instruction for introduction to senior Naval Science Students.

424 Introduction to Naval Science Laboratory 10 1 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, M. Chandra, C. Davis (Spokane), W. Dong, M. Frank (Spokane), R. Fuchs, J. Hinson, M. Morgan (Vancouver), M. Schmitter-Edgecombe, B. Tanner, H. Van Dongen (Spokane), G. Wayman; Associate Professors, R. L. Brown, T. Brown, R. Catena, C. Cutter, A. Dimitrov (Vancouver), D. Jackson (Spokane), L. Kapas (Spokane), M. Layton (Spokane), D. Lin, R. McLaughlin, S. McPherson (Spokane) P. Meighan, L. Peixoto (Spokane), J. Peters, D. Rossi, J. Sun (Spokane), M. Varnum, A. Vasavada, J. Wisor (Spokane); Assistant Professors, K. Delevich, J. Gerstner (Spokane), G. Giannotti, A. Henricks, S. Hidalgo Sotelo, K. Honn (Spokane), Y. Lee (Spokane), E. Qualls-Creekmore, M. Rempe (Spokane), B. Satterfield (Spokane); Additional Graduate Faculty, S. Demirel, B. Fortune, H. Shen, B. Sorg.

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. It 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.

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. Our graduates have gone on to excellent positions in tier-one research universities, teaching colleges, industry (e.g., biotechnology, pharmaceuticals, and medical devices), 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 vitae
- The Personal Statement is one of the most important and informative aspects of the application. This statement is read carefully by the Admissions Committee and by other faculty members who are interested in recruiting a student in any given year. These readers are looking to understand your motivation for pursuing a PhD in Neuroscience and to ensure that your interests are a good match for the current research interests of Neuroscience faculty at WSU (you can find details of faculty interests on the Neuroscience Program website). In your statement, you can identify specific faculty (minimum of three) that you might want to do lab rotations with and note how their research fits with your previous experience and/or interests. You can also use this statement to provide evidence that you understand the demands of graduate school and can handle such demands. Please limit this statement to 500 words. Turning in a document over the maximum word length may cause your application to be disqualified from consideration.
- TOEFL scores (minimum score 100). IELTS (minimum score 7), or Duolingo (minimum score 115) required for applicants whose native language is not English. See <https://gradschool.wsu.edu/international-requirements/> for more information on language exemptions.

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.

NEUROSCIENCE - 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
Equity and Justice [EQJS]	3
NEUROSCI 430 [M]	4
Electives ⁷	3
<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, MGMT 301, MGMT 401, MGMT 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.

NEUROSCIENCE - 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 2.5 minimum GPA overall, and a 2.5 minimum cumulative GPA in BIOLOGY 107, CHEM 105, CHEM 106 or 116, MATH 140 or 171, NEUROSCI 301, 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>
Arts [ARTS]	3
BIOLOGY 106	4
CHEM 345	4
NEUROSCI 301 ²	3
<i>Second Term</i>	<i>Credits</i>
Diversity [DIVR]	3
NEUROSCI 302	3
PHYSICS 101 or 201	3
PHYSICS 111 or 211	1
Neuroscience Electives ³	5
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
NEUROSCI 430 [M]	3
PHYSICS 102 or 202	3
PHYSICS 112 or 212	1
Statistics Course ⁴	3 or 4
Electives ⁵	6
<i>Second Term</i>	<i>Credits</i>
Humanities [HUM]	3
NEUROSCI 404	3
Neuroscience Electives ³	6
Electives ⁵	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
Behavior Course ⁶	3
BIOLOGY/MBIOS 301	4
Equity and Justice [EQJS]	3
Electives ⁵	6
<i>Second Term</i>	<i>Credits</i>
NEUROSCI 403 [M]	3
NEUROSCI 490 [CAPS]	3
Electives ⁵	9

¹ NEUROSCI/MBIOS 201 is recommended.

² PSYCH 372 may be taken in place of NEUROSCI 301 with department permission.

³ Neuroscience Electives (11 credits): Approved courses include BIOLOGY 307, 315, 321, 324, 333, 340, 352, 353, 354, 438, 456; MATH 340; MBIOS 303, 304, 305, 401, 404, 405, 478; NEUROSCI 305, 325, 326, 333, 409, 480; PHYSICS 466; PSYCH 265, 312, 328, 333, 350, 361, 363, 384, 390, 464, 468, 470, 473, 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 Statistics Course: Choose one course from PSYCH 311, STAT 212, 360, 370, or 412.

⁵ Elective choices should include 300-400 level coursework to meet the University minimum requirement of 40 upper division credits.

⁶ Behavior Course: Choose one course from NEUROSCI 305, 333, or 409. Other courses may be allowed by department consent.

NEUROSCIENCE - 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.

NEUROSCIENCE - PRE-PROFESSIONAL OPTION (120 CREDITS)

Students may be admitted to the Neuroscience - Pre-Professional 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, 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 appropriate entrance exam for their professional program after completion of the third year and apply 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>
MBIOS 303	4
NEUROSCI 430 [M]	3
NEUROSCI 431	1
Statistics Course ³	3 or 4
Neuroscience Electives ⁴	5

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
Equity and Justice [EQJS]	3
Humanities [HUM]	3
NEUROSCI 325	3
NEUROSCI 404	3
NEUROSCI 405	1

Fourth Year

<i>First Term</i>	<i>Credits</i>
Behavior Course ⁵	3
Electives ⁶	12

<i>Second Term</i>	<i>Credits</i>
NEUROSCI 403 [M]	3
NEUROSCI 490 [CAPS]	3
Electives ⁶	10

¹ NEUROSCI/MBIOS 201 is recommended.

² PSYCH 372 may be taken in place of NEUROSCI 301 with department permission.

³ Statistics Course: Choose one course from PSYCH 311, STAT 212, 360, 370, or 412.

⁴ Neuroscience Electives (5 credits): Approved courses include BIOLOGY 307, 315, 321, 324, 333, 340, 352, 353, 354, 438, 456; MATH 340; MBIOS 304, 305, 401, 404, 405, 478; NEUROSCI 305, 326, 333, 395, 409, 480; PHYSICS 466; PSYCH 265, 312, 328, 333, 350, 361, 363, 384, 390, 464, 468, 470, 473, 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.

⁵ Behavior Course: Choose one course from NEUROSCI 305, 333, or 409. Other courses may be allowed by department consent.

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 professional program.

NEUROSCIENCE - RESEARCH OPTION (120 CREDITS)

Students may be admitted to the Neuroscience - Research 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, 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, if required, after completion of the third year and apply to graduate schools 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
HISTORY 105 [ROOT]

3
3

Second Year

First Term

Arts [ARTS]
BIOLOGY 106
CHEM 345
Humanities [HUM]
NEUROSCI 301²

Credits
3
4
4
3
3

Second Term

Diversity [DIVR]
NEUROSCI 302
PHYSICS 101 or 201
PHYSICS 111 or 211
Neuroscience Electives³
Complete Writing Portfolio

Credits
3
3
3
1
5

Third Year

First Term

NEUROSCI 333
NEUROSCI 430 [M]
NEUROSCI 431
NEUROSCI 495 or 499⁴
PHYSICS 102 or 202
PHYSICS 112 or 212

Credits
4
3
1
2
3
1

Second Term

BIOLOGY/MBIOS 301
Equity and Justice [EQJS]
NEUROSCI 395
NEUROSCI 404
NEUROSCI 405
NEUROSCI 495 or 499⁴

Credits
4
3
3
3
1
2

Fourth Year

First Term

MBIOS 303
NEUROSCI 495 or 499⁴
Statistics Course⁵
Electives⁶

Credits
4
2
4
5

Second Term

NEUROSCI 403 [M]
NEUROSCI 490 [CAPS]
NEUROSCI 495 or 499⁴
Electives⁶

Credits
3
3
2
7

¹ NEUROSCI/MBIOS 201 is recommended.

² PSYCH 372 may be taken in place of NEUROSCI 301 with department permission.

³ Neuroscience Electives (5 credits): Approved courses include BIOLOGY 307, 315, 321, 324, 333, 340, 352, 353, 354, 438, 456; MATH 340; MBIOS 304, 305, 401, 404, 405, 478; NEUROSCI 305, 326, 333, 395, 409, 480; PHYSICS 466; PSYCH 265, 312, 328, 333, 350, 361, 363, 384, 390, 464, 468, 470, 473, 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.

⁴ Up to 2 credits of NEUROSCI 450 and/or HONORS 450 may be substituted for NEUROSCI 495 or 499.

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. Consult your advisor regarding elective courses that may be required or recommended for admission to a graduate program.

Minors

Neuroscience

Students may apply for the minor in Neuroscience once they have completed 60 credits and have a 2.5 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. Credits for the minor must include a minimum of 9 credits of upper-division work earned in WSU courses or through WSU-approved education abroad or educational exchange courses.

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 a minimum of three credits of neuroscience related elective coursework. Approved Neuroscience electives include: BIOLOGY 301, 315, 321, 340, 352, 353, 354, 438, 456; MATH 340; MBIOS 304, 305, 401, 404, 413; NEUROSCI 305, 325, 326, 333, 409; PSYCH 265, 312, 333, 350, 361, 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. Courses may not be used to fulfill more than one requirement for the minor.

Certificates

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 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. Recommended preparation: Pre-admitted or admitted major in Biochemistry, Genetics & Cell Biology, Microbiology, or Neuroscience. (Crosslisted course offered as NEUROSCI 201, MBIOS 201.)

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. 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. Recommended preparation: CHEM 105, NEUROSCI 105.

302 Foundations of Neuroscience II 3 Course Prerequisite: NEUROSCI 301 or PSYCH 372. In-depth concepts, analysis, and discussion of the experimental foundations for understanding nervous system function. Recommended preparation: CHEM 105, CHEM 106.

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.

325 Foundations of Medical Physiology 3 Course Prerequisite: BIOLOGY 106; BIOLOGY 107. 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 325, VET PH 325.)

326 Foundations of Medical Physiology Lab 1 (0-3) Course Prerequisite: Concurrent enrollment in NEUROSCI 325 or VET PH 325. Optional laboratory component of NEUROSCI/VET PH 325. Practical analysis of organ function and health using medical diagnostic equipment and clinical cases. (Crosslisted course offered as NEUROSCI 326, VET PH 326. Formerly NEUROSCI 426, VET PH 426.)

333 Techniques and Experimental Design in Neuroscience Research 4 (3-3) Course Prerequisite: NEUROSCI 301 or PSYCH 372. Representative modern neuroscience experiments are explored from a conceptual, technical, and design perspective.

395 Brain Matters: Critical Analysis in Neuroscience 3 Course Prerequisite: Junior standing. Discussion and analysis of current trends in neuroscience and cutting-edge approaches to research.

- 403 [M] Cellular Neurobiology 3** Course Prerequisite: NEUROSCI 302; MBIOS 301. Cellular and molecular interactions occurring within the nervous system. Recommended preparation: NEUROSCI 430.
- 404 Neuroanatomy 3** Course Prerequisite: NEUROSCI 301 or PSYCH 372. Fundamental principles of the organization and plans of circuitry of the nervous system.
- 405 Neuroanatomy Laboratory 1 (0-3)** Course Prerequisite: NEUROSCI 301; NEUROSCI 404 or concurrent enrollment or instructor permission. Laboratory investigation of 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.
- 430 [M] Principles of Neurophysiology 3** Course Prerequisite: NEUROSCI 301 or PSYCH 372. Advanced exploration of the principles underlying cellular, sensory, motor and integrative functions of the nervous system. Recommended preparation: previous or concurrent enrollment in PHYSICS 102 and 112, or PHYSICS 202 and 212, or PHYSICS 206.
- 431 Principles of Neurophysiology Laboratory 1 (0-3)** Course Prerequisite: NEUROSCI 301 or PSYCH 372; NEUROSCI 430 or concurrent enrollment or instructor permission. Advanced laboratory exploration of the principles underlying cellular, sensory, motor, and integrative functions of the nervous system. Recommended preparation: MBIOS 303.
- 480 Special Topics: Study Abroad V 1-15** May be repeated for credit.
- 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.
- 496 Special Topics V 1-3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: NEUROSCI 302 with a C or better or junior standing. Reading, discussion, and exploration of contemporary topics in Neuroscience.
- 499 Special Problems V 1-3** May be repeated for credit. Course Prerequisite: By department permission only; 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.
- 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 Professor, A. Mason; Associate Dean for Research and Professor, J. Postma; Associate Dean for Leadership Development and Academic Director-Vancouver and Professor, L. Eddy; Academic Director-Tri-Cities and Clinical Associate Professor, C. Chacon; Chair, Department of Foundational Practice and Community-Based Care, pending; Chair, Department of Advanced Practice and Community-Based Care and Clinical Professor, J. Hamilton; Chair, Department of Nursing and Systems Science and Associate Professor, M. Wilson; Chair, Department of Social Work, pending.

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. The prelicensure BSN, RN-BSN, MN, and DNP programs are all accredited by the Commission on Collegiate Nursing Education (CCNE) and approved by the Washington State Board of Nursing.

For the prelicensure BSN and RN-BSN programs, see the Department of Foundational Practice and Community-Based Care.

For the Master of Nursing (MN) and Doctor of Nursing Practice (DNP) programs, see the Department of Advanced Practice and Community-Based Care.

For the Ph.D. in Nursing program, see the Department of Nursing and Systems Science.

For the BA in Social Work, see the Social Work section of this catalog as well as the tricities.wsu.edu/nursing/social-work/.

Department of Advanced Practice and Community-Based Care

nursing.wsu.edu
Spokane

Chair, Josh Hamilton.

MASTER OF NURSING (MN) PROGRAM

The Master of Nursing (MN) program prepares students for advanced nursing practice. Students may choose from two areas of specialization, 1) nurse educator (academic or clinical education), or 2) clinical systems leadership. MN students complete practica and capstone projects to demonstrate mastery of essential competencies. The MN program is offered at the Spokane, Tri-Cities, Yakima, and Vancouver WSU campuses.

To apply for admission, applicants must have completed College of Nursing admission requirements, which are viewable at <https://nursing.wsu.edu/graduate-program-options/mn/>. Meeting with an academic advisor prior to applying is highly recommended. Most students complete the program in one to two years.

Student Learning Outcomes

Student learning outcomes for the MN program are

- Lead Change Initiatives: Drive quality improvements in complex systems by addressing organizational gaps.
- Cultivate Leadership: Enhance leadership skills to foster personal and organizational development.
- Innovate with Technology: Utilize cutting-edge technology and data analysis to deliver safe, effective care and education.
- Influence Public Health: Engage with community, industry, and government stakeholders to shape public health policy.
- Apply Evidence-Based Models: Develop and deploy person-centered strategies that cater to diverse populations across various settings.
- Advance Nursing Knowledge: Synthesize and apply advanced nursing knowledge to transform healthcare outcomes for patients and populations.

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. Specialty track options within the DNP include the Family Nurse Practitioner (FNP) route; the Psychiatric Mental Health Nurse Practitioner (PMHNP) route; and the post-Master's general (PMG) route. FNP and PHMNP tracks may be done in 3 or 4 year progression plan options, and the PMG track may be done in a 5 or 8 semester option if the student has completed an advanced specialty in their master's program. Information and Sample progression plans are found on the DNP section of the WSU Nursing website: <https://nursing.wsu.edu/graduate-program-options/dnp/>

The DNP program requires students to complete practicums in various health care settings under the supervision 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. Along with completing required didactic coursework, students complete a minimum of 1,000 practicum hours. For the nurse practitioner tracks, students must complete their track specific direct-patient care rotations and required hours as part of the 1000+ hours of practicum. Graduates of the FNP and PMHNP programs are eligible to complete a national certification examination leading to state licensure as Advanced Registered Nurse Practitioners. Courses are offered on the Spokane, Tri-Cities, and Vancouver WSU campuses, as well as at the Yakima teaching site.

To apply for admission, applicants must have completed College of Nursing admission requirements, The College of Nursing admission requirements are viewable at <https://nursing.wsu.edu/graduate-program-options/dnp/>. Meeting with an academic advisor prior to applying is highly recommended.

Student Learning Outcomes

We expect that DNP graduates:

- Apply biophysical, psychosocial, behavioral, sociopolitical, cultural, economic, and nursing science to improve health care practice and delivery systems (DNP Essentials I, V, and VIII);
- Analyze organizational structure, functions and resources to improve the delivery of care (DNP Essential II);
- Translate evidence-based research into practice to improve health care delivery and outcomes for all (DNP Essential III);
- Use information systems/technology to support and improve patient care and healthcare systems (DNP Essential IV);
- Advocate for the nursing profession through the development, implementation and evaluation of healthcare policy (DNP Essential V);
- Collaborate with other health professionals to improve health care access and health outcomes for individuals and populations (DNP Essential VI);
- 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);
- Apply advanced knowledge and skills within an area of specialized nursing practice (DNP Essential VIII).

Requirements for the DNP Degree

Post-Bachelor's Family Nurse Practitioner (FNP). Required courses: NURS ADV 503, 504, 505, 508, 509, 513, 514, 515, 516, 518, 537, 538, 540 (repeatable course - 4 credits required), 553, 554, 557 (minimum grade of "B" required), 558 (minimum grade of "B" required), 559, 562, 563, 565, 573, 576, 581, 584, and 591.

Post-Master's Family Nurse Practitioner (FNP). Required courses: NURS ADV 505, 508, 509, 513, 514, 515, 516, 518, 537, 538, 540 (repeatable course - 4 credits required), 553, 554, 557 (minimum

grade of "B" required), 558 (minimum grade of "B" required), 559, 562, 563, 565, 573, 576, 581, 584, and 591.

Post-Bachelor's Psychiatric Mental Health Nurse Practitioner (PMHNP). Required courses: NURS ADV 501, 502, 503, 504, 505, 518, 530, 544, 545, 547, 553, 554, 555, 557 (minimum grade of "B" required), 558 (minimum grade of "B" required), 559, 560, 562, 563, 565, 576, 581, 582, 584, and 591.

Post-Master's Psychiatric Mental Health Nurse Practitioner (PMHNP). Required courses: NURS ADV 501, 502, 505, 518, 530, 544, 545, 547, 553, 554, 555, 557 (minimum grade of "B" required), 558 (minimum grade of "B" required), 559, 560, 562, 563, 565, 576, 581, 582, 584, and 591.

Post-Bachelor's Population Health (PH). Required courses: NURS ADV 503, 504, 505, 518, 523, 534 or 566, 542, 553, 554, 556, 557 (minimum grade of "B" required), 558 (minimum grade of "B" required), 559, 564, 565, 576, 583 (repeatable course - 7 credits required), 584, 591, and Population Health Electives (12 credits chosen from nursing courses at the 400-level and higher, from 3-credit courses).

Post-Master's Population Health (PH). Required courses: NURS ADV 505, 518, 523, 534 or 566, 542, 553, 554, 556, 557 (minimum grade of "B" required), 558 (minimum grade of "B" required), 559, 564, 565, 576, 583 (repeatable course - 7 credits required), 584, 591, and Population Health Electives (12 credits chosen from nursing courses at the 400-level and higher, from 3-credit courses).

Post-Master's General (PMG). Required courses: NURS ADV 505, 518, 553, 554, 557 (minimum grade of "B" required), 558 (minimum grade of "B" required), 559, 565, 576, 583, 584, and 591. Note that additional practicum electives from NURS ADV 583 may be required to ensure the total practicum hours are over the required 1000 hours.

Requirements for the DNP Certificates

The College of Nursing offers certificates for students concentrating in specific areas. Admission to the elective certificates is the same as admission to the DNP program. Students must complete a minimum of 9 credits and earn a cumulative 3.0 GPA in the concentration to earn a certificate.

Nursing Educator Certificate. Required courses: NURS ADV 521, 523, and 533. In addition to the three theory courses, students participating in the Nurse Faculty Loan Program (NFLP) must also take NURS ADV 585: Faculty Role Practicum to fulfill their practicum requirement. All other students may opt to take NURS ADV 585 for practicum experiences and may repeat the course in order to develop further teaching competency.

Nursing Leadership Certificate. Required courses: NURS ADV 553, 565, 576, and 591.

Description of Courses

Advanced Practice and Community-Based Care

NURS ADV

501 Psychiatric Assessment, Diagnosis, and Management of Children and Adolescents 3 Course Prerequisite: NURS ADV 530; NURS ADV 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 ADV 530; NURS ADV 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 ADV 503, NURS ADV 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 ADV 562 or concurrent enrollment; NURS ADV 563 or concurrent enrollment; NURS ADV 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 ADV 562 or concurrent enrollment; NURS ADV 563 or concurrent enrollment; NURS ADV 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.
- 510 Leadership in Systems and Organizations** 3 Course prerequisite: Admission to Nursing graduate program. Principles of effective communication to promote teamwork, collaboration, employee engagement, and relationship management through transformative and innovative change leadership.
- 511 Evidence-Based Practice** 3 Course prerequisite: Admission to Nursing graduate program. Research and scholarship methodologies that inform the provision and evaluation of quality improvement efforts and evidence-based care.
- 512 Advanced Health Assessment, Pathophysiology, and Pharmacology** 4 (3-3) Course prerequisite: Admission to Nursing graduate program. Advanced physical health assessment techniques, pathophysiological processes, and pharmacological management.
- 513 Primary Care I: Health Promotion, Disease Prevention, and Disease Detection Across the Lifespan** 3 Course Prerequisite: NURS ADV 508; NURS ADV 509; concurrent enrollment in NURS ADV 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 I** 2 (0-8) Course Prerequisite: NURS ADV 508; NURS ADV 509; concurrent enrollment in NURS ADV 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 ADV 513; NURS ADV 514; concurrent enrollment in NURS ADV 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 ADV 513; NURS ADV 514; concurrent enrollment in NURS ADV 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 ADV 553; NURS ADV 565; NURS ADV 591; admission to Nursing graduate program. Development of advanced skills for appraising and applying evidence in advanced practice.
- 521 Nursing Education: Assessment and Evaluation** 3 Course prerequisite: NURS ADV 523. Examines assessment and evaluation methodologies across academic programs, including student, course, and program evaluations.
- 523 Nursing Education: Curriculum Design** 3 Course prerequisite: Admitted to Nurse Educator Certificate Plan. Synthesis and application of adult learning theory and curriculum design models in academic and practice, including professional education standards, accreditation and regulatory processes, and competency-based education models in nursing education.
- 524 Managing in Complex Systems** 3 (2-3) Leadership competencies for navigating and transforming complex health systems, including complexity theory, chaos theory, change management, and healthcare innovation.
- 525 Healthcare Operational Planning and Management** 3 Reflective design of operational plans that align with the strategic goals of healthcare organizations and available resource utilization, in addition to human resource and financial management concepts.
- 526 Quality Improvement and Culture of Safety** 3 Facilitating patient experience, safety, and quality through the promotion of patient-centered care grounded in a culture of safety and emergency preparedness.
- 527 Systems Leadership Practicum** 2 (0-6) Course Prerequisite: NURS ADV 524 and concurrent enrollment in NURS ADV 701. Collaboration with a mentor in a clinical nurse leadership role for practice experiences necessary to complete capstone project.
- 530 Theory of Psychopharmacology and Safe Prescribing Practices** 3 Course Prerequisite: NURS ADV 563; NURS ADV 581. Psychopharmacology across the lifespan for clinical practice including pharmacokinetics, pharmacodynamics, principles of prescribing, client education, and outcome monitoring.
- 533 Nursing Education: Teaching and Learning** 3 Course Prerequisite: NURS ADV 521; NURS ADV 523. Explores student-centered teaching and learning strategies that respond to diverse learning needs, innovative design, and an array of delivery methods across didactic and experiential settings.
- 537 Primary Care III: Chronic Health Conditions Across the Lifespan** 3 Course Prerequisite: NURS ADV 515; NURS ADV 516; concurrent enrollment in NURS ADV 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 ADV 515; NURS ADV 516; concurrent enrollment in NURS ADV 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 ADV 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 ADV 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 ADV 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 ADV 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 ADV 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 ADV 501; NURS ADV 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 ADV 518; NURS ADV 553; NURS ADV 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 ADV 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 ADV 558 with a grade B or better. Implementation and evaluation of the DNP Project.
- 560 PMHNP Practicum II** 3 (0-12) Course Prerequisite: NURS ADV 501; NURS ADV 502; NURS ADV 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 ADV 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 Systems Leaders** 3 Course Prerequisite: NURS ADV 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.
- 573 Rational Prescribing** 3 Course Prerequisite: NURS ADV 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 ADV 503 and NURS ADV 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.
- 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 ADV 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 Nursing Education: Faculty Role Practicum** V 1-3 May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: NURS ADV 521; NURS ADV 523. Competencies in the role of nurse educator for academic and practice settings. S, F grading.
- 586 Nursing Education Capstone** 3 (1-6) Course Prerequisite: NURS ADV 533; NURS ADV 585. A culminating, supervised practicum experience to strengthen leadership abilities of nurse educators by identifying a performance gap and developing a proposed intervention for addressing the gap. S, F grading.
- 591 Introduction to Mixed Methods and Evaluation** 3 Course Prerequisite: NURS ADV 503, NURS ADV 504, and NURS ADV 554; or admission to post-master's DNP program and NURS ADV 554. Program development, implementation, and outcomes evaluation in healthcare, primarily from a mixed methods and perspective.
- 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.
- 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. 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.

Department of Foundational Practice and Community-Based Care

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UNDERGRADUATE PROGRAMS

The College of Nursing offers two pre-professional baccalaureate programs. The prelicensure Bachelor of Science in Nursing (PL-BSN) 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 already-licensed registered nurses (RNs) 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 through a variable schedule.

The program of study for both programs grants a degree of Bachelor of Science in Nursing (BSN).

PL-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), Whitworth University, or another college or university. Pre-nursing coursework provides the student with a foundation of core preparatory knowledge in the sciences and the humanities.

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 PL-BSN program, graduates are eligible to take the National Council Licensure Examination (NCLEX) to become eligible for licensure as Registered Nurses.

To apply for admission, applicants must be at junior standing (60 semester hours/90 quarter hours), have completed College of Nursing admission requirements, and completed WSU's University Common Requirements (UCORE) or equivalent course work. The College of Nursing admission requirements are viewable at <https://nursing.wsu.edu/ug-programs/bsn/>. Meeting with an academic advisor prior to applying is highly recommended.

RN-BSN Students

Students who are already licensed 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, and Vancouver WSU campuses, and at the Yakima teaching site on the campus of Pacific Northwest University. The program is focused on additional pre-professional nursing competencies that include research, leadership, patient care quality and safety, informatics, and population health.

To apply for admission, applicants must be at junior standing (60 semester hours/90 quarter hours), have completed College of Nursing admission requirements, and completed WSU's University Common Requirements (UCORE) or equivalent course work. Applicants must also meet the requirement of holding a current, unencumbered WA state RN license or eligibility for licensure. The College of Nursing admission requirements are viewable at <https://nursing.wsu.edu/ug-programs/rn-bsn/>. Meeting with an academic advisor prior to applying is highly recommended.

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.

Schedules of Studies

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

NURSING (120 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>
CHEM 101 [PSCI]	4
HISTORY 105 [ROOT]	3
UCORE Inquiry ¹	6

<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
MBIOS 101	4
STAT 212 [QUAN]	4
UCORE Inquiry ¹	3

<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
Elective	2
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
NURS FPC 306 [M]	3
NURS FPC 311	3
NURS FPC 315	4
NURS FPC 316	2
NURS FPC 317	3

<i>Second Term</i>	<i>Credits</i>
NURS FPC 308 [M]	3
NURS FPC 322	2
NURS FPC 324	5
NURS FPC 325	5

Fourth Year

<i>First Term</i>	<i>Credits</i>
NURS FPC 408	3
NURS FPC 412	2
NURS FPC 414	3
NURS FPC 415	2
NURS FPC 416	3
NURS FPC 417	2

<i>Second Term</i>	<i>Credits</i>
NURS FPC 409	2
NURS FPC 424	3
NURS FPC 425	2
NURS FPC 426 [M]	2
NURS FPC 427	2
NURS FPC 430 [CAPS]	4

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

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 FPC 360, 400, 405, 406, 413, 440, 463, 465, 495, Integrated Capstone/upper-division elective.

Description of Courses

Foundational Practice and Community-Based Care

NURS FPC

306 [M] Professional Development I: Contexts of Care 3 Course Prerequisite: Admitted to the major in Nursing. First of the professional development series; introduction to the various contexts that guide care, including the nurse, the patient, and the health care system.

308 [M] Professional Development II: Evidence Based Practice 3 Course Prerequisite: NURS FPC 306; NURS FPC 311; NURS FPC 315; NURS FPC 316; NURS FPC 317. Second in professional development series; focuses on developing clinical decision making that utilizes evidence through the integration of current scientific research.

309 [M] Professional Development II: Ethical Reasoning and Decision Making Processes in Nursing 3 Course Prerequisite: NURS FPC 308; NURS FPC 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 3 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: Concurrent enrollment in NURS FPC 316 and NURS FPC 317; 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; concurrent enrollment in NURS FPC 315 and NURS FPC 317. 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; concurrent enrollment in NURS FPC 315 and NURS FPC 316. Systematic approach to health assessment of adults emphasizing and incorporating use of nursing process and scientific rationale.

322 Health Equity in the Context of Care 2 Course Prerequisite: NURS FPC 306; NURS FPC 311; NURS FPC 315; NURS FPC 316; NURS FPC 317. An exploration of diversity, equity, inclusion and belonging (DEIB) and how the social determinants of health impact the nursing practice and society's trajectory toward justice and health.

324 Nursing Concepts in Acute and Chronic Illness in the Adult 5 Course Prerequisite: NURS FPC 311; NURS FPC 315; NURS FPC 316; NURS FPC 317; and concurrent enrollment in NURS FPC 325. 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 FPC 311; NURS FPC 315; NURS FPC 316; NURS FPC 317; and concurrent enrollment in NURS FPC 324. Application of acute and chronic illness concepts and strategies in the care of adults to improve health and well-being. S, F grading.

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.

398 Special Topics V 1-3 May be repeated for credit; cumulative maximum 6 hours.

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 FPC 308; NURS FPC 322; NURS FPC 324; NURS FPC 325. 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 FPC 408; NURS FPC 414; NURS FPC 415; NURS FPC 416; NURS FPC 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 2 Course Prerequisite: NURS FPC 308; NURS FPC 322; NURS FPC 324; NURS FPC 325. 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 FPC 308; NURS FPC 322; NURS FPC 324; NURS FPC 325; and concurrent enrollment in NURS FPC 415. 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 FPC 308; NURS FPC 322; NURS FPC 324; NURS FPC 325; and concurrent enrollment in NURS FPC 414. 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 FPC 308; NURS FPC 322; NURS FPC 324; NURS FPC 325; concurrent enrollment in NURS FPC 417. 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 FPC 308; NURS FPC 322; NURS FPC 324; NURS FPC 325; and concurrent enrollment in NURS FPC 416. 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 FPC 408; NURS FPC 412; NURS FPC 414; NURS FPC 415; NURS FPC 416; NURS FPC 417; and concurrent enrollment in NURS FPC 425. Principles and concepts of mental health studied within a nursing framework; includes psychopathology, treatment modalities, nursing care across the lifespan, and professional values within a legal/ethical framework.

425 Nursing Practice: Psychiatric/Mental Health 2 (0-6) Course Prerequisite: NURS FPC 408; NURS FPC 412; NURS FPC 414; NURS FPC 415; NURS FPC 416; NURS FPC 417; concurrent enrollment in NURS FPC 424. Clinical application of the nursing process with clients experiencing acute and chronic psychiatric/mental health disruptions. S, F grading.

426 Community Health Nursing Theory 2 Course Prerequisite: NURS FPC 408; NURS FPC 412; NURS FPC 414; NURS FPC 415; NURS FPC 416; NURS FPC 417; concurrent enrollment in NURS FPC 427. Synthesis of nursing and public health concepts with emphasis on community as partner and population-focused practice.

427 Community Health Nursing Practice 2 (0-6) Course Prerequisite: NURS FPC 408; NURS FPC 412; NURS FPC 414; NURS FPC 415; NURS FPC 416; NURS FPC 417; concurrent enrollment in NURS FPC 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 4 (0-12) Course Prerequisite: NURS FPC 409 or concurrent enrollment; NURS FPC 424 or concurrent enrollment; NURS FPC 425 or concurrent enrollment; NURS FPC 426 or concurrent enrollment; NURS FPC 427 or concurrent enrollment. Application of practical and professional knowledge, skills, and attitudes in a healthcare setting as a novice nurse. 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.

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 FPC 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: Admitted to the major in Nursing. Fundamentals of occupational and environmental health practice; concepts of prevention, epidemiology, disease prevention and health promotion to explain the underlying causes of occupational illness.

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; junior standing. 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.

Department of Nursing and Systems Science

nursing.wsu.edu
Spokane

Chair, Marian Wilson.

PH.D. IN NURSING PROGRAM

The Ph.D. in Nursing program, available at the Spokane campus, 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.

Coursework is delivered in a hybrid format. Students work closely with their dissertation chair/advisor to design a program of study of courses that support their research interest and method. The courses offered in the Ph.D. program are centered around the research focal areas of the College: health equity, behavioral health, climate change and health, and work science, education, and policy. Students may utilize the College's consortium membership with NeXus to access additional courses in support of their expertise development and dissertation. All students defend an independent research proposal (preliminary exam), and once approved, complete a research study which may result in a traditional dissertation or a 3-manuscript dissertation.

Students may apply as post-master's PhD or post baccalaureate. All students must complete a total of 72 credits; post-master's students may transfer credits from their master's degree program, per Graduate School policy, to fulfill some of the program requirements. 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 receive close advising during Year 1 from 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 successful completion of requirements found at <https://nursing.wsu.edu/graduate-program-options/phd/> Applicants to the Ph.D. program do

not need to be a registered nurse in Washington state.

Student Learning Outcomes

We expect graduates of the Ph.D. in Nursing program to:

1. Demonstrate the ability to collect and analyze data.
2. Demonstrate the ability to translate nursing / related health science by contributing meaningfully to the research literature.
3. Collaborate with interdisciplinary scholars in research and transfers evidence-based knowledge into best clinical practices and policy through dissemination processes.

Description of Courses

Nursing and Systems Science

NURS SCI

510 Role of the Nurse Scientist 1 Course prerequisite: Admission to Nursing graduate program. Transition to doctoral study and future professional role as a nurse scientist, addressing professional stewardship, cross-disciplinary teamwork, scientific communication, and required skills.

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 SCI 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 SCI 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.

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 SCI 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.

539 Advancing Health Equity and Social Justice: Toward Evidence-Informed Solutions 3 Course Prerequisite: NURS SCI 536.

Theories, frameworks, research approaches and methods, and systems solutions that improve health equity; topics include trauma-informed care, social and political determinants of health, social justice, racism and anti-racism in healthcare.

541 Individual/Family Systems Nursing and Healthcare 3 Course Prerequisite: NURS SCI 539.

Theories, research methods, and substantive areas of focus in individual and family nursing and healthcare.

579 Systems and Organizational Change: Theory and Methods 3 Course Prerequisite: NURS SCI 539.

The meta-theoretical perspective of complex systems science, including contributing theories (e.g., systems theory, complex adaptive systems, network theory, and nonlinear dynamics); topics include organizational change theories, methods, and metrics.

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 SCI 526; NURS SCI 527; NURS SCI 588.

Application of psychometric theory and techniques for constructing, analyzing and testing instruments to measure nursing and educational interventions and outcomes.

592 Research Inquiry: Qualitative Methods II 2 Course prerequisite: NURS SCI 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: By college permission only; PhD in Nursing; completion of 30 core credits.

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 SCI 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.
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; Professor, P. Monsivais; Associate Professors, O. Amram, F. Carbonero, H. Haverkamp, P. Solverson; Assistant Professors, C. Jarrett, M. Perrigue; Clinical Associate Professor, A. Davis; Clinical Assistant Professor, L. Heneghen; Research Assistant Professor, N. Sanjeevi; Scholarly Assistant Professor, K. Lindquist; 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, that 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 physical activity as preventative and therapeutic medicine.

The Bachelor of Science in NEP is an 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 various 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 completed. 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 NEP 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 master's 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.

NUTRITION AND EXERCISE PHYSIOLOGY (134 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 2.7 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

First Term	Credits
BIOLOGY 106 [BSCI]	4
CHEM 101 [PSCI] or 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
STAT 212 [QUAN]	4
UCORE Inquiry ¹	3

Second Term	Credits
BIOLOGY 107	4
CHEM 102 or 106	4
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3
PSYCH 105 [SSCI]	3

Second Year

First Term	Credits
BIOLOGY 333	3
CHEM 345	4
KINES 262 or BIOLOGY 315	4
PHYSICS 101 and 111 (if needed) ²	0 or 4
UCORE Inquiry ¹	3

Second Term	Credits
BIOLOGY 251 or 353	4
MBIOS 303	4
MBIOS 305	3
PHYSICS 102 and 112 (if needed) ²	0 or 4
UCORE Inquiry ¹	3
Complete Writing Portfolio	

Third Year

First Term	Credits
WSU Spokane	
NEP 320	3
NEP 340	3
NEP 362	3
NEP 400	3
NEP 463	4

Second Term	Credits
WSU Spokane	
NEP 370	3
NEP 402	3
NEP 427 [M]	4
NEP 435	3
NEP 476	3

Fourth Year

First Term	Credits
WSU Spokane	
NEP 458	3
NEP 477	3
NEP 478	3
NEP 479	3
NEP 489	2

Second Term	Credits
WSU Spokane	
NEP 450	3
NEP 480	4
NEP 481	3
NEP 482	3
NEP 495 [CAPS] [M]	3

Third Term	Credits
NEP 490	9

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

² 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.

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.

330 Biochemical and Molecular Food and Nutrition 3 Course

Prerequisite: BIOLOGY 106, 107, or 120; CHEM 102 or 345. Introduction to the biochemistry and molecular processes involved in food production and digestion.

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.

370 Concepts and Controversies in Health Science Research 3 Course

Prerequisite: STAT 212. Overview of research and evaluation methods designed to answer questions in the health sciences; differentiating mainstream health literature and scientific work; investigating controversies in human subjects research including ethical concerns in data collection, analysis, and reporting.

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 4 (3-3) 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** 3 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.
- 462 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 462/562, SOC 462/562.) Credit not granted for both NEP 462/562 and SOC 462/562.
- 463 Exercise Physiology** 4 (3-3) Course Prerequisite: Admitted to the major in Nutrition and Exercise Physiology, or the Master of Science Coordinated Program in Dietetics, 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** 2 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** 9 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 Nutrition 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.
- 509 Nutritional Biochemistry for the Health Sciences** 3 Course Prerequisite: Enrollment in the NEP Graduate Certificate in Human Nutrition. Certificate-only course. Human health and health-related principles taught at the biochemical level, including intermediary metabolism, proteins, medical nutrition, and gene expression. S, F grading.
- 510 Methods in Human Nutrition Research** 3 Course Prerequisite: Enrollment in the NEP Graduate Certificate in Human Nutrition. Certificate-only course. Current research designs and methods in human nutrition research including behavioral and basic sciences emphasizing chronic disease prevention. S, F grading.
- 515 Advanced Human Nutrition** 3 Course Prerequisite: Enrollment in the NEP Graduate Certificate in Human Nutrition. Certificate-only course. Topics in applied human nutrition with an in-depth study of contemporary nutrition research and applications in public health. S, F grading.
- 516 Nutritional Epidemiology** 3 Course Prerequisite: Enrollment in the NEP Graduate Certificate in Human Nutrition. Certificate-only course. The relationship between nutritional status, diet, and disease at the community and population level. 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 Nutrition Supervised Practice** 9 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** 2 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.
- 549 Food Service Management** 2 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. Advanced principles in food systems, institutional food service management, school food service, and community feeding programs.
- 551 Food Service Management Supervised Practice** 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.
- 562 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 462/562, SOC 462/562.) Credit not granted for both NEP 462/562 and SOC 462/562.
- 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.
- 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/
509-368-6542

Pharmaceutical Sciences and Molecular Medicine Graduate Program Director and Associate Professor, D. Jackson, Executive Director of Graduate Programs and Professor, S. Ahmed; Professors, A. Lazarus, P. Lazarus, M. Leid, K. Meier, M. Paine, J-B Rouillet, S. Tolmachev, J. White, J. Zhu; Associate Professors, A. Ahmed, M. Avtandilashvili, G. Chen, Z. Cheng, J. Clarke, S. Daoud, W. Li, S. Marsh, S. Natesan, B. Prasad, C. Remsberg, A. Salahudeen, G. Tabatabadze, J. Sun, S. Wang, Z. Wang, B. Wu; Assistant Professors, T. Denton, A. Singh, 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: pharmacy.gradprograms@wsu.edu.

Description of Courses

Pharmaceutical Sciences Graduate Program

PHARMSCI

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.

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.

571 Computer-Aided Drug Design 3 (2-2) Course Prerequisite: By instructor permission; graduate standing in the Pharmaceutical Sciences graduate program. 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.

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.

590 Journal Club: Critical Appraisal of Scientific Articles 1 May be repeated for credit; cumulative maximum 8 hours. Course Prerequisite: By instructor permission; graduate standing in the Pharmaceutical Sciences graduate program. Critical analysis, presentation, and discussion of published journal articles in the biomedical sciences. S, F grading.

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 Professor, J. Robinson; Associate Dean and Professor, A. Stewart. DEPARTMENT OF PHARMACEUTICAL SCIENCES: Interim Chair and Professor, K. Meier; Professors, S. Ahmed, A. Lazarus, P. Lazarus, M. Paine, S. Tolmachev, J. Zhu; Associate Professors, A. Ahmed, M. Avtandilashvili, G. Chen, Z. Cheng, J. Clarke, S. Daoud, D. Jackson, S. Marsh, S. Natesan, B. Prasad, C. Remsberg, G. Tabatadze, S. Wang, Z. Wang, B. Wu; Assistant Professors, T. Denton, M. Šefl, A. Singh, H. Zhang, F. Zhang. DEPARTMENT OF PHARMACOTHERAPY: Chair and Professor, J. White; Professors, D. Baker, B. Gates, T. Levien, J. Neumiller, J-B Roulet, M. Willson; Associate Professors, D. Brand,

J. Clark, R. Crutchley, C. Frazier, K. McKeirnan, M. Undeberg; Assistant Professors, T. Bertsch, D. Bowers, C. Buchman, M. Giruzzi, N. Giruzzi, K. MacCamy, J. Miller, A. Powell, N. Rodin, A. Stumphauzer.

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 for the Doctor of Pharmacy degree

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 the following link: <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)

Bachelor of Science in Pharmaceutical and Medical Sciences

<https://pharmacy.wsu.edu/bs-program/>
509-358-7631

Pharmaceutical Sciences and Molecular Medicine Graduate Program Director and Professor, A. Lazarus; Professors, S. Ahmed, D. DeWald, P. Lazarus, M. Leid, K. Meier, M. Paine, J-B Roulet, S. Tolmachev, J. Zhu; Associate Professors, A. Ahmed, G. Chen, S. Daoud, W. Li, S. Marsh, S. Natesan, B. Prasad, C. Remsberg, G. Tabatadze, S. Wang, Z. Wang, B. Wu; Assistant Professors, A. Ahmed, M. Avtandilashvili, Z. Cheng, J. Clarke, T. Denton, M. Seft, A. Singh, H. Zhang. Elson S. Floyd College of Medicine: Associate Professors, T. Chauvin, C. Davis, W. Li, E. Szentirmai; Professors, M. Layton, M. Layton, K. Roberts, J. Wisor.

The Bachelor of Science in Pharmaceutical and Medical Sciences prepares students for the following post-graduate degree paths: Doctor of Pharmacy, Doctor of Medicine, other health professional degrees, PhD in the biomedical sciences, or employment in the biotechnology/pharmaceutical

sector. The program is a collaboration between the College of Pharmacy and Pharmaceutical Sciences and the Elson S. Floyd College of Medicine. The program includes appropriate basic science coursework, but also emphasizes career development and critical discussions of current topics in the biomedical sciences. Courses will be delivered on the WSU Spokane campus.

The junior and senior years of the curriculum are delivered in Spokane. Students can complete the first two years of coursework in the WSU system, or at another university, college, or community college. They will then apply for transfer to complete their degree in Spokane.

The program includes a research track option in which interested students can gain mentored research experience while completing their degree, in preparation for applying to graduate school. There is also a "3+4" option in which students can complete junior year coursework, apply to the WSU PharmD program, and (if accepted) complete the final year of their baccalaureate degree while in their first year of pharmacy school.

Student Learning Outcomes for the BS in Pharmaceutical and Medical Sciences degree

Our curriculum is designed to provide students with a comprehensive understanding of the human body, diseases, and biomedical research. Here are some of the key skills and knowledge that you can expect to gain from the program:

1. Mastery of fundamental biological and chemical concepts: A strong foundation in basic biological and chemical concepts will enable you to understand the workings of the human body at the molecular and cellular level. You will be able to integrate these concepts to address complex topics in the biomedical sciences.

2. Critical thinking and problem-solving skills: Our program emphasizes critical thinking and quantitative reasoning skills. You will learn how to analyze and solve problems in human biomedical sciences using scientific methods and approaches.

3. Effective communication skills: Communication is crucial not only in patient care, but also professional conferences and for public health. Our program will teach you how to effectively communicate biomedical problems, findings, and solutions to professional audiences as well as the public-at-large in writing and in oral discussion. 4. Utilization of scientific literature: You will learn how to effectively use scientific literature to identify knowledge gaps and analyze contemporary social and cultural issues relevant to human medicine.

5. Practical application of knowledge: Our program will provide you with a comprehensive understanding of a variety of approaches used in basic and clinical sciences. You will learn how to apply this knowledge to propose ways to address biomedical problems.

6. Ethics and professionalism: We place a strong emphasis on ethics in research practices and professional health care settings. You will learn how to make informed and ethical decisions in a health care setting.

Additional Information about the Bachelors of Science in Pharmaceutical and Medical Sciences can be found on the website. Inquiries should be emailed to: pharmacy.undergrad@wsu.edu.

Schedules of Studies

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

PHARMACEUTICAL AND MEDICAL SCIENCES - GENERAL OPTION (121 CREDITS)

First Year

First Term	Credits
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 106	3

Second Term	Credits
BIOLOGY 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 108 ¹	2
STAT 212 [QUAN]	4

Second Year

First Term	Credits
CHEM 345	4
PHYSICS 101	3
PHYSICS 111	1
UCORE Inquiry ¹	6
Complete Writing Portfolio	

Second Term	Credits
BIOLOGY 315	4
BIOLOGY 353	4
CHEM 348	4
UCORE Inquiry ¹	3

Third Year

First Term	Credits
PHARMEDS 313 [M]	3
PHARMEDS 323	3
TMP 350	3
TMP 414	3
PHARMEDS Elective ²	3

Second Term	Credits
PHARMEDS 315 [COMM]	4
PHARMEDS 330	3
PHARMEDS 425	3
TMP 424	3
UCORE Inquiry ¹	3

Fourth Year

First Term	Credits
PHARMEDS 301	3
PHARMEDS 401	3
PHARMEDS 415	3
PHARMEDS 421 [M]	3
PHARMEDS 499 or Elective ^{2,3}	3

Second Term	Credits
PHARMEDS 320	3
PHARMEDS 322	3
PHARMEDS 490 [CAPS]	3
PHARMEDS 499 or Elective ^{2,3}	3
Selective ⁴	3

¹ Must complete 4 of these 5 UCORE designations: ARTS, DIVR, EQJS, HUM, SSCI.

² PHARMEDS Electives – 6 credits: Choose from PHARMEDS 444, 445, or other CPPS undergraduate elective courses in consultation with advisor.

³ Research Experience – 6 credits: Students participating in the Research Track take PHARMEDS 499.

⁴ Selective course (3 credits): Choose from NEP 200, 477, NURS FPC 455, 471, SHS 479, or other approved course in consultation with advisor.

PHARMACEUTICAL AND MEDICAL SCIENCES – ACCELERATED PHARMACY OPTION (121 CREDITS)

First Year

First Term	Credits
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
MATH 106	3

Second Term	Credits
BIOLOGY 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 108 ¹	2
STAT 212 [QUAN]	4

Second Year

First Term	Credits
CHEM 345	4
PHYSICS 101	3
PHYSICS 111	1
UCORE Inquiry ¹	6

Second Term	Credits
BIOLOGY 315	4
BIOLOGY 353	4
CHEM 348	4
UCORE Inquiry ¹	3
Complete Writing Portfolio	

Third Year

First Term	Credits
PHARMEDS 301	3
PHARMEDS 313 [M]	3
PHARMEDS 401	3
TMP 350	3
TMP 414	3

Second Term	Credits
PHARMEDS 315 [COMM]	4
PHARMEDS 320	3
PHARMEDS 322	3
PHARMEDS 421 [M]	3
PHARMEDS 425	3

Fourth Year

First Term	Credits
PHARDSCI 502	4
PHARDSCI 504	2
PHARDSCI 508	3
PHARMACY 507	1
PHARMACY 516	2

<i>Second Term</i>	<i>Credits</i>
PHARDSCI 510	2
PHARDSCI 512	4
PHARDSCI 518	2
PHARMACY 514	4
PHARMEDS 490 [CAPS]	3
UCORE Inquiry ¹	3

¹ Must complete 4 of these 5 UCORE designations: ARTS, DIVR, EQJS, HUM, SSCI.

PHARMACEUTICAL AND MEDICAL SCIENCES – MEDICAL LABORATORY SCIENCE OPTION (145 CREDITS)

First Year

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

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 107	4
CHEM 106	4
HISTORY 105 [ROOT]	3
MATH 108	2
STAT 212 [QUAN]	4

Second Year

<i>First Term</i>	<i>Credits</i>
CHEM 345	4
MBIOS 305	3
PHYSICS 101	3
PHYSICS 111	1
UCORE Inquiry ¹	6

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 315	4
BIOLOGY 353	4
CHEM 348	4
UCORE Inquiry ¹	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
PHARMEDS 301	3
PHARMEDS 313 [M]	3
PHARMEDS 323	3
TMP 350	3

<i>Second Term</i>	<i>Credits</i>
MBIOS 440	3
PHARMEDS 315 [COMM]	4
PHARMEDS 421 [M]	3
PHARMEDS 425	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
PHARMEDS 375 [EQJS]	3
PHARMEDS 401	3
PHARMEDS 415	3
TMP 414	3

<i>Second Term</i>	<i>Credits</i>
PHARMEDS 485	14

<i>Third Term</i>	<i>Credits</i>
PHARMEDS 486	2

Fifth Year

<i>First Term</i>	<i>Credits</i>
PHARMEDS 487	16

<i>Second Term</i>	<i>Credits</i>
PHARMEDS 330	3
PHARMEDS 488	1
PHARMEDS 490 [CAPS]	3
PHARMEDS Elective or Selective ^{2,3}	6

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, HUM, SSCI.

² PHARMEDS Elective (3 credits): Choose from PHARMEDS 444, 445, or other CPPS undergraduate elective courses in consultation with advisor.

³ Selective course (3 credits): Choose from NEP 200, 477, NURS FPC 455, 471, SHS 479, or other approved course in consultation with advisor.

PHARMACY - DOCTOR OF PHARMACY (PHARM D) CURRICULUM (135 CREDITS)

First Year

<i>First Term</i>	<i>Credits</i>
PHARDSCI 502	4
PHARDSCI 504	2
PHARDSCI 508	3
PHARMACY 506	1
PHARMACY 507	1
PHARMACY 509	1
PHARMACY 516	2

<i>Second Term</i>	<i>Credits</i>
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

<i>Third Term</i>	<i>Credits</i>
PHARMACY 533 ²	4

Second Year

<i>First Term</i>	<i>Credits</i>
PHARDSCI 528	3
PHARDSCI 532	4
PHARMACY 530	2
PHARMACY 531	1
PHARMACY 534	4
PHARMACY 536	1
Electives ¹	2 - 0

<i>Second Term</i>	<i>Credits</i>
PHARDSCI 542	4
PHARMACY 541	1
PHARMACY 543	1
PHARMACY 544	4
PHARMACY 545	3
PHARMACY 558	2
Electives ¹	0-3

<i>Third Term</i>	<i>Credits</i>
PHARMACY 553 ²	3

Third Year

<i>First Term</i>	<i>Credits</i>
PHARDSCI 547	2
PHARMACY 551	2
PHARMACY 554	4
PHARMACY 555	4
PHARMACY 556	1
PHARMACY 559	2
Electives ¹	0-2

<i>Second Term</i>	<i>Credits</i>
PHARMACY 557	4
PHARMACY 561	2
PHARMACY 563	2
PHARMACY 564	3
PHARMACY 566	3

<i>Third Term</i>	<i>Credits</i>
Advanced Pharmacy Practice Experiences (APPE) ³	5

Fourth Year

<i>First Term</i>	<i>Credits</i>
Advanced Pharmacy Practice Experiences (APPE) ³	15

<i>Second Term</i>	<i>Credits</i>
Advanced Pharmacy Practice Experiences (APPE) ³	15

¹ Elective Courses: 5 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, E M 508, 520, 522, 526, 530, 534, 538, 555, 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.

PHARMACY - 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	2
PHARDSCI 508	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	0-3
Third Term	Credits
PHARMACY 533 ²	4

Second Year

First Term	Credits
PHARDSCI 528	3
PHARDSCI 532	4
PHARDSCI 598	1 - 4
PHARMACY 530	2
PHARMACY 531	1
PHARMACY 534	4
PHARMACY 536	1
PHARMSCI 577	3
Electives ¹	2 - 0
Second Term	Credits
PHARDSCI 542	4
PHARDSCI 598	1 - 4
PHARMACY 541	1
PHARMACY 543	1
PHARMACY 544	4
PHARMACY 545	3
PHARMACY 558	2
Electives ¹	3 - 0
Third Term	Credits
PHARMACY 553 ²	3

Third Year

First Term	Credits
PHARDSCI 547	2
PHARDSCI 598	1 - 4
PHARMACY 551	2
PHARMACY 554	4
PHARMACY 555	4
PHARMACY 556	1
PHARMACY 559	2
Electives ¹	0-2
Second Term	Credits
PHARDSCI 598	1 - 4
PHARMACY 557	4
PHARMACY 561	2
PHARMACY 563	2
PHARMACY 564	3
PHARMACY 566	3

Third Term	Credits
Advanced Pharmacy Practice Experiences (APPE) ³	5

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: 5 credits of electives 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, E M 501, 508, 522, 526, 530, 538, 555, 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

499 Special Problems V 1-4 May be repeated for credit; cumulative maximum 12 hours. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.

501 Applied Patient Care I: Patient Assessment 1 (0-3) Course Prerequisite: Admission to the Pharmacy program. Laboratory course teaching hands-on physical assessment techniques from a pharmacy perspective, to provide patient-specific care.

506 Pharmacy Practice and Professional Development I 1 Course Prerequisite: Admission to the Pharmacy program. Introduction to the essential skills, attitudes, and values for practicing health care professionals.

507 Introduction to Therapeutic Agents: Top 200 Drugs 1 (0-2) Course Prerequisite: Admission to the Pharmacy program. Drugs most frequently prescribed in the US as a basis for pharmacy practice.

509 Professional Communications Lab 1 (0-3) Course Prerequisite: Admission to the Pharmacy program. Professional communication skills as an essential foundation for career development.

513 Pharmacy Practice and Professional Development II 1 Course Prerequisite: PHARMACY 506. Prepares student pharmacists for a focused 4-week Community Pharmacy Practice Experience.

514 Pharmacotherapy I 4 Course Prerequisite: PHARDSCI 502; PHARMACY 507. First in a sequence of courses that focuses on the clinical use of medications in the prevention, mitigation, or cure of disease.

516 Health Care Systems 2 Course Prerequisite: Admission to the Pharmacy program. US healthcare system, financing of health care delivery and the role of the pharmacist.

530 Point of Care and Clinical Services 2 Course Prerequisite: Admission to the Pharmacy program. Providing point of care and clinical services in a pharmacy setting.

531 Applied Patient Care II: Clinical Assessment and Documentation 1 (0-3) Course Prerequisite: Concurrent enrollment in PHARMACY 534. Clinical assessment and documentation skills necessary for effective pharmaceutical care.

533 Community Introductory Pharmacy Practice Experience 4 Course Prerequisite: Pharm. D. year 1 didactic coursework completed, including PHARDSCI 510; 512; 518; 519; PHARMACY 501; 513; 514. Provides student pharmacists with a 160-hour Institutional Pharmacy Practice Experience with additional patient care activity assignments. S, F grading.

534 Pharmacotherapy II 4 Course Prerequisite: PHARMACY 514. Second in a sequence of courses that focuses on the clinical use of medications in the prevention, mitigation, or cure of disease.

536 Pharmacy Practice and Professional Development III 1 Course Prerequisite: PHARMACY 513. Continuing development of the essential skills, attitudes, and values for practicing health care professionals.

541 Applied Patient Care III: Medication Therapy Management 1 (0-3) Course Prerequisite: PHARMACY 544 or concurrent enrollment. Identification of pertinent patient findings, assessment of drug-related problems and clinical problem solving.

543 Pharmacy Practice and Professional Development IV 1 Course Prerequisite: PHARMACY 536. Prepares student pharmacists for a focused 3-week Institutional Pharmacy Practice Experience.

544 Pharmacotherapy III 4 Course Prerequisite: PHARMACY 534. Third in a sequence of courses that focuses on the clinical use of medications in the prevention, mitigation, or cure of disease.

545 Pharmacy Management 3 Course Prerequisite: PHARMACY 516. Management principles essential for common practice settings in the profession of pharmacy.

- 551 Applied Patient Care IV: Advanced Medication Therapy Management 2** (1-3) Course Prerequisite: PHARMACY 554 or concurrent enrollment. Medication therapy management for complex patients; case-based discussions and human patient simulation.
- 553 Institutional Introductory Pharmacy Practice Experience 3** Course Prerequisite: Pharm. D. year 2 didactic coursework completed, including PHARDSCI 542; PHARMACY 541; 543; 544; 545; 558. Provides student pharmacists with a 120-hour Institutional Pharmacy Practice Experience with additional patient care activity assignments. S, F grading.
- 554 Pharmacotherapy IV 4** Course Prerequisite: PHARMACY 544. Fourth in a sequence of courses that focuses on the clinical use of medications in the prevention, mitigation, or cure of disease.
- 555 Drug Information and Literature Evaluation 4** Course Prerequisite: Admission to the Pharmacy program. Evaluation of drug information in pharmaceutical and biomedical literature to provide better patient care.
- 556 Pharmacy Practice and Professional Development V 1** Course Prerequisite: PHARMACY 543. Enhanced development of the essential skills, attitudes, and values for practicing health care professionals.
- 557 Pharmacotherapy V 4** Course Prerequisite: PHARMACY 554. Fifth in a sequence of courses that focuses on the clinical use of medications in the prevention, mitigation, or cure of disease.
- 558 Applied Clinical Pharmacokinetics 2** Course Prerequisite: PHARDSCI 528. Clinical applications of pharmacokinetics including theoretical background and application to patient care.
- 559 Quality Assurance and Patient Safety 2** Course Prerequisite: PHARMACY 545. Patient safety issues including quality assurance, medication error avoidance and risk management in healthcare systems.
- 561 Applied Patient Care V: Integrated Patient Care 2** (1-3) Course Prerequisite: Concurrent enrollment in PHARMACY 557. Integration of pharmaceutical care with an interdisciplinary emphasis using patient cases and human patient simulation.
- 563 Pharmacy Practice and Professional Development VI 2** Course Prerequisite: PHARMACY 556. Provides student pharmacists with continuing patient care and professional development activities in preparation for the Advanced Pharmacy Practice Experience rotations.
- 564 Pharmacy Law and Regulatory Affairs 3** Course Prerequisite: Admission to the Pharmacy program. Legal and ethical pharmacy practice including licensing, patient privacy protection, order fulfillment and contracts.
- 566 Therapeutics of Special Populations 3** Course Prerequisite: Admission to the Pharmacy program. Special therapeutic needs of unique populations including pediatrics, chronic neurologic disorders, hospice care and immuno-compromised patients.
- 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 the 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: Successful completion of all didactic coursework (required and elective), including PHARMACY 557; 561; 563; 564; 566. Advanced practice experience in acute care settings. H, S, F grading.
- 582 Ambulatory Care Advanced Practice Experience 5** (0-15) Course Prerequisite: Successful completion of all didactic coursework (required and elective), including PHARMACY 557; 561; 563; 564; 566. Advanced practice experience in ambulatory care settings. H, S, F grading.
- 583 Community Advanced Practice Experience 5** (0-15) Course Prerequisite: Successful completion of all didactic coursework (required and elective), including PHARMACY 557; 561; 563; 564; 566. 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: Successful completion of all didactic coursework (required and elective), including PHARMACY 557; 561; 563; 564; 566. Advanced practice experience in an institutional pharmacy setting. H, S, F grading.
- 585 Elective I Advanced Practice Experience 5** (0-15) Course Prerequisite: Successful completion of all didactic coursework (required and elective), including PHARMACY 557; 561; 563; 564; 566. 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: Successful completion of all didactic coursework (required and elective), including PHARMACY 557; 561; 563; 564; 566. 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: Successful completion of all didactic coursework (required and elective), including PHARMACY 557; 561; 563; 564; 566. 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 514. 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.

Pharmaceutical and Medical Sciences

PHARMEDS

301 Pharmacology: The Science of Drug Action 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to drug receptors, cell signaling, and drug classes.

313 [M] Careers: Pathways in Biomedicine 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to careers in biomedical research, pharmaceutical/biotech industry, government, and human health professions.

315 [COMM] Biomedical Literature: Communicating Science 4 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Review and discussion of recent biomedical literature emphasizing oral presentations.

320 Pharmaceuticals: Delivering the Treatment 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to drug absorption, distribution, metabolism, and excretion; drug delivery; and vaccines.

322 Medicinal Chemistry: Developing New Drugs 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to drug disposition, drug metabolism, structure-activity relationships, functional groups, and drug development.

323 Ethics: Conduct and Career Development 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to biomedical research practices, responsible conduct of research, scientific writing, and biomedical ethics.

330 Molecular Methods: Biochemical Techniques 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to methodological approaches commonly used in pharmaceutical research and biotechnology.

375 [EQJS] Equity, Disparity, and Social Justice in Healthcare 3 Fundamental concepts of social justice and equity in healthcare, with a solution-focused approach.

401 Genomics: Frontiers in Human Genetics 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to genetics and pharmacogenomics, with examples from human medicine and consideration of ethics.

415 Healthcare Systems: Tackling Human Health 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to healthcare systems, workforce, financing, policy, and delivery with discussions of current challenges.

421 [M] Scientific Communication: Writing and Speaking 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to scientific writing and oral communications in the biomedical sciences.

425 Medical Microbiology: Bugs and Drugs 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to immunology, bacteriology, virology, mycology, parasitology, and drugs used to treat infectious diseases.

444 Toxicology: Assessing Drug Side Effects 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to toxicology, with an emphasis on the side effects of drugs used to treat human disease. Credit not granted for both PHARMEDS 444 and PHARMEDS 544.

445 Cancer Biology 3 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program. Introduction to contemporary cancer biology covering fundamental hallmarks of cancer biology, from the discovery of oncogenes to cancer initiation, metastasis, and treatment.

485 Lab Medicine Internship I 14 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program and accepted into the Providence School of Medical Laboratory Science (SMLS). Part one of a laboratory internship covering the theories, concepts, and practices of Medical Laboratory Science.

486 Lab Medicine Internship II 2 Course Prerequisite: PHARMEDS 485. Part two of a laboratory internship covering the theories, concepts, and practices of Medical Laboratory Science.

487 Lab Medicine Internship III 16 Course Prerequisite: PHARMEDS 486. Part three of a laboratory internship covering the theories, concepts, and practices of Medical Laboratory Science.

488 Lab Medicine Review 1 Course Prerequisite: Admitted to the Pharmaceutical and Medical Sciences BS program and accepted into the Providence School of Medical Laboratory Science (SMLS). Review and comprehensive examination covering the theories, concepts, and practices of Medical Laboratory Science.

490 [CAPS] Senior Seminar: Capstone Experience 3 Culminating and integrative experience with senior thesis; discussion of current topics in biomedicine and presentation of senior projects.

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.

544 Toxicology: Assessing Drug Side Effects 3 Introduction to toxicology, with an emphasis on the side effects of drugs used to treat human disease. Credit not granted for both PHARMEDS 444 and PHARMEDS 544.

Pharmacy Sciences

PHARDSCI

499 Special Problems V 1-4 May be repeated for credit; cumulative maximum 12 hours. Course Prerequisite: By instructor permission; admission to Pharmacy 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.

502 Integrated Pharmacology I 4 Course Prerequisite: Admission to the Pharmacy program. Integrated autonomic and central nervous system pharmacology.

504 Pharmacy Calculations 2 Course Prerequisite: Admission to the Pharmacy program. The mathematics of prescription preparation and dispensing.

508 Pharmaceutics I 3 Course Prerequisite: Admission to the Pharmacy program. Principles of dosage from design and drug delivery, with an emphasis on physiochemical principles.

510 Basic and Clinical Pharmacogenomics 2 Course Prerequisite: Admission to the Pharmacy program. Introduction to the science involving pharmacogenomics and how this knowledge is clinically applied to individualized patient therapy.

512 Integrated Pharmacology II 4 Course Prerequisite: Admission to the Pharmacy program. Integrated hepatic, gastrointestinal, and endocrine pharmacology.

518 Pharmaceutics II 2 Course Prerequisite: PHARDSCI 508. Principles of dosage from design and drug delivery, with an emphasis on pharmaceutical technology and biopharmaceutics.

519 Pharmaceutics Laboratory 1 (0-3) Course Prerequisite: PHARDSCI 504; PHARDSCI 508. Laboratory experience in the preparation of medicines.

528 Pharmacokinetics 3 Course Prerequisite: Admission to the Pharmacy program. Qualitative and quantitative understanding of the processes of drug absorption, distribution, and elimination.

532 Integrated Pharmacology III 4 Course Prerequisite: Admission to the Pharmacy program. Integrated cardiovascular, pulmonary, and renal pharmacology.

542 Integrated Pharmacology IV 4 Course Prerequisite: Admission to the Pharmacy program. Integrated immuno- and anticancer pharmacology.

547 Drug Development 2 Course Prerequisite: Admission to the Pharmacy program. Principles of drug design from the most initial stage of conception to the final product as a drug.

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, P. Engels, Y. Gu, P. L. Marston, M.D. McCluskey, S. L. Tomsovic, G. Worthey; Associate Professors, B. A. Collins, M. Duez, M. Forbes; 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.

PHYSICS - APPLIED PHYSICS OPTION (122 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. 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 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
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
MATH 171 [QUAN]	4
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
Equity and Justice [EQJS]	3
MATH 220, 225 or 230	2 or 3
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	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]	4
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
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.

PHYSICS - 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. 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 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, 225 or 230	2 or 3
MATH 273	2
PHYSICS 202	3
PHYSICS 212	1
PHYSICS 303	3
Foreign Language, if needed ¹	0-4

Second Term	Credits
Arts [ARTS]	3
ASTRONOM 390	1
MATH 315	3
PHYSICS 304	3
PHYSICS 330	3
Foreign Language, if needed ¹	0-4
Complete Writing Portfolio	

Third Year

First Term	Credits
ASTRONOM 345	3
CPT S 111, 121, 131, E E 221, or MATH 300	2-4
Humanities [HUM]	3
MATH Elective ²	3
PHYSICS 320	3
PHYSICS 341	3

Second Term	Credits
ASTRONOM 435 or 436	3
COM 400 [COMM], ENGLISH 301 [WRTG], or ENGLISH 402 [WRTG]	3
MATH Elective ²	3
PHYSICS 342	3

PHYSICS 410	4	PHYSICS 201 [PSCI]	3
PHYSICS 489	1	PHYSICS 211 [PSCI]	1
		SOE 102	4
		Foreign Language, if needed	0-4

Fourth Year

<i>First Term</i>	<i>Credits</i>
Diversity [DIVR]	3
Equity and Justice [EQJS]	3
PHYSICS 450	3
PHYSICS 490 [M]	1
Technical Elective ³	3
<i>Second Term</i>	<i>Credits</i>
ASTRONOM 435 or 436	3
Integrative Capstone [CAPS]	3
PHYSICS 415 [M]	3
Technical Elective ³	6

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 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.

PHYSICS - 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.

Admission to the Major requirements

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>
CHEM 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
Equity and Justice [EQJS]	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

<i>Second Term</i>	<i>Credits</i>
Biological Sciences [BSCI]	3
Diversity [DIVR]	3
MATH 220, 225 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 350	4
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 356	3
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.

PHYSICS - 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. 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 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, 225 or 230	2 or 3
MATH 273	2
PHYSICS 202	3
PHYSICS 212	1
PHYSICS 303	3
Foreign Language, if needed ¹	0-4

<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 111, 121, 131, 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

<i>First Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3

PHYSICS 450	3
PHYSICS 490 [M]	1
Standard Option Electives ³	6
Technical Elective ⁴	3

<i>Second Term</i>	<i>Credits</i>
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 minimum): 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 earned in WSU courses 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 earned in WSU courses 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.

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.

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. Cooperative: Open to UI degree-seeking students.

525 Stellar Astrophysics 3 Numerical modeling of stellar equilibria; equations of state; opacity and radiative transfer; nuclear reactions; stellar oscillations; stellar formation and evolution; compact objects.

526 Galaxies and Radiative Processes 3 Radiative processes, nebular spectra, dust, galaxy structure and dynamics, active galactic nuclei, dark matter, large-scale structure. Cooperative: Open to UI degree-seeking students.

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.

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 lab; topics in mechanics and oscillations; heavy emphasis on group work; 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; heavy emphasis on group work; oriented toward non-physical science majors.

137 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. Recommended preparation: UCORE [QUAN]. Credit not allowed for students who have earned credit for PHYSICS 408.

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.
- 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, waves; heavy emphasis on group work.
- 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 lab; topics in electricity, magnetism, electromagnetics, circuits, optics, reflection, refraction, interference, diffraction, polarization; heavy emphasis on group work.
- 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.
- 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. 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 Graduate Seminar** 1 Introduction to graduate and interdisciplinary research. S, F grading.
- 511 Advanced X-ray Characterization** 3 Foundations in X-ray diffraction, scattering, and spectroscopy-based characterization methods as applied to a wide range of systems relevant to physics, chemistry, and engineering; hands-on experience with data collection and analysis. (Crosslisted course offered as PHYSICS 511, CHEM 511.)
- 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.
- 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.
- 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.
- 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

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Professor and Chair, L. J. duToit; Professors, G. A. Chastagner, G. G. Grove, S. H. Hulbert, H. R. Pappu, N. Rayapati, Y. Zhao; Associate Professors, A. Amiri, M. L. Friesen, C. Gleason, S. Harper, K. Tanaka; Assistant Professors, C. Mattupalli, J. U'Ren; Research Assistant Professor, J. Hulbert; Adjunct ARS Plant Pathologists, W. Chen, X. M. Chen, N. Klopfenstein, T. C. Paulitz, D. See, L. S. Thomashow, G. Vandemark, D. M. Weller, S. Yurgel; Adjunct Plant Pathologists, C. Hagerty, M. Moyer; Professors Emeriti, L. M. Carris, R. J. Cook, L. A. Hadwiger, D. A. Inglis, D. A. Johnson, J. W. Moyer, T. D. Murray, T. L. Peever, 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://cahnrs.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

- 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. Recommended preparation: CROP SCI 305; PL P 429. (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. Cooperative: Open to UI degree-seeking students.
- 421 General Mycology** 3 The structure, life histories, classification, and economic importance of the fungi. Credit not granted for both PL P 421 and 521. 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. 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 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. Recommended preparation: CROP SCI 305; PL P 429. (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. 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. Credit not granted for both PL P 421 and 521. 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.

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. Recommended preparation: BIOLOGY 474; MBIOS 478. (Crosslisted course offered as CROP SCI 545, ANIM SCI 545, BIOLOGY 545, HORT 545, PL P 545.) 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, J. Carboni, C. Clayton, T. Preston; Associate Professors, H. Evans (Career Track), S. Hoard (Career Track), C. Lee, C. Long, A. Lopez, M. Salamone, S. Stehr, M. Stephan, P. Thiers; Assistant Professors, O. Christley, R. Elgar (Career Track), C. Ellenwood, J. Lewis, M. Ritter (Career Track), Y. Sherwood; Professors Emeriti; M. Cottam, N. Lovrich, A. Mazur, D. Nice. **PHILOSOPHY:** Professors, P. Glazebrook, W. Kabasenche (Career Track) M. Stichter; Associate Professors, M. Goldsby, S. Noll; Assistant Professors, S. Conklin, 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 27 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)); 3 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

First Term	Credits
Arts [ARTS]	3
HISTORY 105 [ROOT]	3
Introductory PHIL Course [HUM] or [WRTG] ¹	3
Electives ²	6
Second Term	Credits
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

First Term	Credits
Biological Sciences [BSCI] with lab ⁴	4
Foreign Language, if necessary, or Elective ^{2,5}	4
History of Philosophy Course (Group A) ^{6,7}	3
Value Theory Course (Group B) ^{8,6}	3
Electives ²	2

Second Term	Credits
Equity and Justice [EQJS]	3
Foreign Language, if needed, or Elective ^{2,5}	4
Metaphysics and Epistemology Course (Group C) ^{2,9}	3
Physical Sciences [PSCI] with lab ⁴	4
Complete Writing Portfolio	

Third Year

First Term	Credits
Diversity [DIVR]	3
Further Study Requirement ^{10,6}	3
Electives ²	9

Second Term	Credits
PHIL Integrative Capstone [CAPS]	3
Electives ²	12

Fourth Year

First Term	Credits
Advanced Study Requirement ^{11,6}	3
Electives ²	12

Second Term	Credits
Advanced Study Requirement ^{11,6}	3
Electives ²	12

¹ Introductory PHIL Course (3 credits): Select one from PHIL 101 [HUM], 103 [HUM], 200 [WRTG], 207 [HUM], and 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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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 To meet University requirements, students are required to complete at least two [M] courses.

⁷ History of Philosophy Course (Group A) (3 credits): Choose one from PHIL 314 [M], 315 [M], 320 [M], 321, 322, 333, 390, 420, 421, and 437 [M] not used to fulfill other Philosophy major requirements.

⁸ Value Theory Course (Group B) (3 credits): Choose one from PHIL 220, 234, 280, 333, 360, 365, 370, 390, 406, 413, 425, 431, 435, 437 [M], 438 [M], 445, 450, 460 [M], 462 [M], 470, 472 [M], 475 not used to fulfill other Philosophy major requirements.

⁹ Metaphysics and Epistemology Course (Group C) (3 credits): Choose one from PHIL 207, 350, 390, 401, 406, 407, 413, 425, 442 [M], 443 [M], 446, 447, 475 not used to fulfill other Philosophy major requirements.

¹⁰ Further Study Requirement (3 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 27 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)); 3 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

First Term	Credits
ENGLISH 101 [WRTG]	3
PHIL 200 [WRTG]	3
Social Sciences [SSCI]	3
Electives ¹	6

Second Term	Credits
HISTORY 105 [ROOT]	3
Humanities [HUM] ²	3
PHIL 201 [QUAN]	3
Electives ¹	6

Second Year

First Term	Credits
Biological Sciences [BSCI] with lab ³	4
History of Philosophy Course (Group A) ^{4,5}	3
Foreign Language, if needed, or Electives ^{1,6}	6
Electives	3

Second Term	Credits
Equity and Justice [EQJS]	3
Metaphysics and Epistemology Course (Group C) ^{7,4}	3
Physical Sciences [PSCI] with lab ³	4
Foreign Language, if needed, or Electives ^{1,6}	4
Complete Writing Portfolio	

Third Year

First Term	Credits
Arts [ARTS]	3
Diversity [DIVR]	3
POL S 300	3
Value Theory Course (Group B) ^{8,4}	3
Electives ¹	3

Second Term	Credits
Further Study Requirement ^{9,4}	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 ^{10,4}	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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

⁴ To meet University requirements, students are required to complete at least two [M] courses.

⁵ History of Philosophy Course (Group A) (3 credits): Choose one from PHIL 314 [M], 315 [M], 320 [M], 321, 322, 333, 390, 420, 421, and 437 [M] not used to fulfill other Philosophy major requirements.

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, 350, 390, 401, 406, 407, 413, 425, 442 [M], 443 [M], 446, 447, 475 not used to fulfill other Philosophy major requirements.

⁸ Value Theory Course (Group B) (3 credits): Choose one from PHIL 220, 234, 280, 333, 360, 365, 370, 390, 406, 413, 425, 431, 435, 437 [M], 438 [M], 445, 450, 460 [M], 462 [M], 470, 472 [M], 475 not used to fulfill other Philosophy major requirements.

⁹ Further Study Requirement (3 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>
Equity and Justice [EQJS]	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, 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, 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
Complete the School's Exit Survey for Political Science majors	

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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. May need to include a writing in the major [M] course to meet University requirements.

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>
Equity and Justice [EQJS]	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
Complete the School's Exit Survey for Political Science majors	

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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 or ECONS 102	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
Equity and Justice [EQJS]	3
H D 205 [COMM] or COM 102 [COMM]	3 or 4
POL S 201	3
POL S 300	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, 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, 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
Complete the School's Exit Survey for Political Science majors	

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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>
Equity and Justice [EQJS]	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>	<i>Credits</i>
PA Elective ³	6
POL S 432 [M]	3
SOC 321	4
Electives	2

Fourth Year

<i>First Term</i>	<i>Credits</i>
Integrative Capstone [CAPS]	3
Minor Elective ²	6
PA Elective ³	3
POL S 442 [M]	3

<i>Second Term</i>	<i>Credits</i>
Minor Elective ²	9
300-400-level Electives	3
Complete the School's Exit Survey for Public Affairs majors	

¹ To meet College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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 Option: 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 and Management Option: 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 and Politics Option: 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 earned in WSU courses 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 credit earned in WSU courses 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 earned in WSU courses or through WSU-approved education abroad or educational exchange 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 [WRITG] Critical Thinking and Writing 3** Application of critical thinking skills to essay writing.
- 201 [QUAN] Introduction to Formal Logic 3** Course Prerequisite: MATH 103 with a C or better, a minimum ALEKS math placement score of 40%, or higher level MATH, or transfer credit for Intermediate Algebra equivalent to MATH 101. 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.
- 234 [EQJS] Peace, Justice, and Human Rights 3** Approaches of political science and philosophy to the study of peace, justice, and human rights, and practical applications of these approaches. (Crosslisted course offered as POL S 234, PHIL 234.)
- 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. Recommended preparation: PHIL 201. Credit not granted for both PHIL 401 and PHIL 501. 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.
- 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.
- 437 [HUM] 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 [EQJS] [M] Contemporary Political Theories of Power, Oppression, and Resistance 3** Exploration of three paradigms in contemporary political theory - critical theory, post-structuralism, and feminist theory - for an understanding of power, oppression, and possibilities for more just societies. (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.
- 445 [CAPS] Philosophy of Technology 3** Course Prerequisite: Junior standing. An examination of the nature of technology and its role in personal life and society, focusing on the conceptualization of technology, the relation of science to technology, and the impact of technology on culture.
- 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. Course Prerequisite: By department permission. Independent study conducted under the jurisdiction of an approving faculty member; may include independent research studies in technical or specialized problems; selection and analysis of specified readings; development of a creative project; or field experiences. S, F grading.
- 501 Advanced Formal Logic** 3 First-order predicate logic plus some metatheory, applications and/or extensions. Recommended preparation: PHIL 201. Credit not granted for both PHIL 401 and PHIL 501. 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.
- 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** 1 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 BIOMDSCI 564, PHIL 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 [QUAN] Political Research Methods** 3 Course Prerequisite: MATH 103 or higher, STAT 205 or higher, or a minimum ALEKS math placement score of 40%. Analysis and interpretation of political phenomenon using numerical social science research methodologies.
- 206 [SSCI] State and Local Government** 3 Institutions, processes, and problems, with special reference to the state of Washington.
- 234 [EQJS] Peace, Justice, and Human Rights** 3 Approaches of political science and philosophy to the study of peace, justice, and human rights, and practical applications of these approaches. (Crosslisted course offered as POL S 234, PHIL 234.)
- 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 Mock Trial** 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.
- 320 Politics and Current Affairs** 3 May be repeated for credit; cumulative maximum 9 hours. Current trends in politics and public policy.
- 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 Latinx Politics** 3 Histories, role, and goals of Latinx politics; explores political movements, coalitional politics, representation, voting, and other political 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; junior standing. 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 [CAPS] Human Issues in International Development** 3 Interdisciplinary analysis of complex interaction in the context of colonial and post-colonial development. (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.
- 437 [HUM] 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 [EQJS] [M] Contemporary Political Theories of Power, Oppression, and Resistance** 3 Exploration of three paradigms in contemporary political theory - critical theory, post-structuralism, and feminist theory - for an understanding of power, oppression, and possibilities for more just societies. (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.
- 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 [SSCI] 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 department permission. 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. 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 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.

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 CRMJ 540, POL S 541.) 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.

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 Scholarly Associate Professor-Career, 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 Lindsey Grasmick, M.A., Pre-Dental 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 Scholarly Associate Professor-Career, 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-physician associate, 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 (Center for Undergraduate Education 502; email: prelaw@wsu.edu). Students interested in law as an area of study, can pursue one of the five undergraduate programs at the University which offer pre-law curricula: History (301 Wilson Hall), Philosophy (801 Johnson Tower), Music (260 Kimbrough) Political Science (801 Johnson Tower), and Economics (101 Hulbert Hall). Additional information can be obtained from Amelie Pedneault (Washington State University, 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 Scholarly Associate Professor-Career,
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, the 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 are 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 university professors, 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 Lindsey Grasmick, M.A., pre-Medical Specialist (last names M-Z) or Noa Murphy M.Ed., pre-Medical Specialist (last names A-L), in 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 Scholarly Associate Professor-Career,
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, Haoyu (Jane) Zeng, M.S., or other pre-Nursing Health Professions Advisor, 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 Scholarly Associate Professor-Career,
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 their Health Professions Advisor, Haoyu (Jane) Zeng, M.S., 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 Scholarly Associate Professor-Career,
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, Haoyu (Jane) Zeng, M.S., 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 Scholarly Associate Professor-Career, 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 (physician associate) 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 (physician associate) 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 (physician associate) programs are 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 your assigned pre-PT/OT or pre-PA specialist in the HPSC.

Additional information on preparation for admission to Physical therapy or Occupational therapy programs can be obtained from the assigned pre-Physical Therapy or Occupational Therapy Specialist in the Health Professions Student Center, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551. Additional information on preparation for admission to physician assistant (physician associate) programs can be obtained from Noa Murphy M.Ed., pre-Physician Assistant/Physical

Associate Specialist in the 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 Scholarly Associate Professor-Career, 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 the assigned Health Professions Advisor in the Health Professions Student Center, Washington State University, 502 Smith Center for Undergraduate Education, Pullman, WA 99164-4551, Pullman.

Pre-Veterinary Curriculum

healthprofessions.wsu.edu
Smith Center for Undergraduate Education (CUE) 502
509-335-4549
health.professions@wsu.edu

Director and Scholarly Associate Professor-Career, 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 any veterinary program is highly competitive. The Health Professions Student Center assists students to prepare for admission to any College of Veterinary Medicine based on student's choice. 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 Tina Krauss, M.A., 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, M. Gartstein; Professors (Tenured), C. Barry, T. D. Barry, G. L. Burns, L. Fournier, R. Magnan, D. Marcus, M. M. Morgan, T. M. Probst, M. Schmitter-Edgecombe, W. Scott, P. S. Strand, P. M. Whitney; Associate Professors, S. Bauman, E. Canning, C. Cuttler, J. Fales, B. Ladd, H-Y. Liao, Assistant Professors, C. Liu, K. Meidenbauer, C. So; Professors (Career-Track), L. Daffin, B. Duell, J. Peters, D. Posey, S. Swindell; Associate Professors (Career-Track), M. C. Kirchhoff, A. L. Matthews, A. Spradlin; Assistant Professors (Career-Track), L. Huckaby, A. Stueber, R. Swenson; Professors Emeriti, A. Blume, T. A. Brigham, M. Craft, J. M. Hinson, F. K. McSweeney, R. Quock, K. Schmaliney, 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, emotion, 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 multifaceted, designed for those who wish to study psychology as part of a liberal education, students who plan to use their training providing psychological services and in related vocations, becoming professionals in governmental organizations, business and industry,

as well as 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, themes, enduring conflicts, 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 defend/criticize claims made about psychological topics while pursuing new ideas/approaches with an open, but critical, mind; 3) effectively design, conduct, and interpret ethical studies to address psychological questions; 4) communicate effectively by using professional writing and oral conventions of the discipline; 5) practice information literacy by locating and evaluating relevant references from a variety of sources; 6) explain how individual differences interact with social, economic, political, 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/TTY: 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 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 - ACCELERATED PRE-PHARMACY OPTION (135 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 and Psychology requirements followed by the four-year PharmD Program. Satisfactory completion of this 7-year curriculum leads to the Bachelor of Science (B.S.) in Psychology and Doctor of Pharmacy (PharmD) degrees.

Admission to the PharmD program requires application to and approval of the Pharmacy Admissions Committee.

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 Psychology.

First Year

First Term	Credits
BIOLOGY 106 [BSCI]	4
CHEM 105 [PSCI]	4
HISTORY 105 [ROOT]	3
MATH 106 or 140 [QUAN] or 171 [QUAN] or 202 [QUAN]	3
PSYCH 105 [SSCI]	3

Second Term	Credits
BIOLOGY 107	4
CHEM 106	4
Diversity [DIVR]	3
ENGLISH 101 [WRTG]	3
PSYCH 210	3

Second Year

First Term	Credits
CHEM 345	4
Communication [COMM] or Written Communication [WRTG]	3
Humanities [HUM]	3
PSYCH 311 ¹	4
Focus Area PSYCH Elective ²	3

Second Term	Credits
BIOLOGY 315 or 354	4
CHEM 348	4
PSYCH 312	4
Focus Area PSYCH Electives ²	6
Complete Writing Portfolio ³	

Third Year

First Term	Credits
Arts [ARTS]	3
MBIOS 303	4
Focus Area PSYCH Electives ²	9

Second Term	Credits
BIOLOGY 251 or 353	4
Equity and Justice [EQJS]	3
MBIOS 305	3
PSYCH [M]	3
Focus Area PSYCH Electives ²	3

Fourth Year

First Term	Credits
PHARMACY and PHARDSCI coursework	16

Second Term	Credits
Integrated Capstone [CAPS] ⁴	3
PHARMACY and PHARDSCI coursework	15
Complete Psychology Exit Interview and Survey	

¹ PSYCH 311 will meet the statistics pre-requisite for admission to the Doctor of Pharmacy program.

² Focus Area Electives (21 credits): Students must complete at least 2 courses from each of the following areas: 1) Behavior/Cognition: PSYCH 110, 265, 372, 384, 473, 490, 491, 492; 2) Social/Motivational PSYCH 230, 306, 307, 308, 309, 321, 324, 350, 403, 466, 470; and 3) Clinical/Developmental: PSYCH 320, 333, 342, 348, 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.

³ The writing portfolio may be completed any time prior to the end of the junior year. Writing portfolio must be complete prior to enrolling in an [M] course.

⁴ CAPS courses in Psychology available via global PSYCH 401 and PSYCH 412. CAPS course from the major not required. CAPS requirement can also be completed the second term of the third academic year.

PSYCHOLOGY - GENERAL OPTION (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

<i>First Term</i>	<i>Credits</i>
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

<i>Second Term</i>	<i>Credits</i>
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Foreign Language or Electives	3 or 4
Electives	3

Second Year

<i>First Term</i>	<i>Credits</i>
Arts [ARTS]	3
Physical Sciences [PSCI] with lab	4
PSYCH 210	3
Foreign Language and/or Electives	5

<i>Second Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
PSYCH 311 [QUAN]	4
Electives	7
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
Focus Area PSYCH Electives ¹	9
PSYCH 312 [M]	4
Electives	3

<i>Second Term</i>	<i>Credits</i>
Focus Area PSYCH Electives ¹	6
300-400-level Electives	10

Fourth Year

<i>First Term</i>	<i>Credits</i>
Focus Area PSYCH Electives ¹	6
Integrative Capstone [CAPS]	3
PSYCH [M] Course	3
300-400-level Electives	4

<i>Second Term</i>	<i>Credits</i>
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) Behavior/Cognition: PSYCH 110, 265, 328, 372, 384, 473, 490, 491, 492; 2) Social/Motivational PSYCH 230, 306, 307, 308, 309, 310, 321, 324, 350, 403, 466, 470; and 3) Clinical/Developmental: PSYCH 320, 333, 342, 348, 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 21 credits. Track 1 (professional certification, 21 credits): comprises coursework primarily in the Department of Psychology and is aimed at preparing students for certification as chemical substance use disorder professionals (SUDP) 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. The minor must include 9 credits of upper-division work earned in WSU courses 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 substance use disorder professionals (SUDP) 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 practicum experience.

Track 1 requires a minimum of 21 semester credits, which must include the following:

Required Courses (15 credits):

- PSYCH 110
 - PSYCH 265
 - PSYCH 333
 - PSYCH 342
 - PSYCH 442
- Elective Courses (choose two of the following; 6 credits):
- PSYCH 320
 - PSYCH 390
 - 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 WSU). 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 390
- PSYCH 342
- PSYCH 468
- CRM J 428
- SOC 368

Psychology

The minor in psychology may be certified after students have been admitted to their primary major. The minor requires 18 credit hours in PSYCH, of which at least 9 must be earned in WSU courses or through WSU-approved education abroad or education exchange courses, 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.

223 Psychology of Happiness 3 Survey of topics in positive psychology with the focus being on a wholeness approach to well-being, examining both positive and negative experiences and empirically based strategies for cultivating one's own happiness.

230 Human Sexuality 3 Sexuality in personal development; personal, cultural, biological influences on sexual identification and behavior; fertility, reproduction, sexual functioning, sexuality and personality. Recommended preparation: PSYCH 105. (Crosslisted course offered as PSYCH 230, WGSS 230.)

- 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.
- 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. Recommended preparation: PSYCH 105. (Crosslisted course offered as PSYCH 324, WGSS 324.)
- 326 Principles of Self-Control** 3 Theories and principles of self-control; factors contributing to successful self-control. Recommended preparation: PSYCH 105.
- 328 [M] Behavior Modification** 3 Analysis of behavior; application of behavioral principles to self-modification 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. Recommended preparation: PSYCH 105 or SOC 101. (Crosslisted course offered as PSYCH 350, SOC 350.)
- 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 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 Misuse** 3 Course Prerequisite: PSYCH 105. Biopsychosocial models of alcohol use and misuse; 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 department permission. 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** 3 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 306. 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. Recommended preparation: SOC 101, PSYCH 105, or CRM J 101. (Crosslisted course offered as PSYCH 468, CRM J 468, SOC 468.)
- 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 a major or minor in EECS or 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 a major or minor in EECS or 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. 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 department permission. S, F grading.
- 498 Research Participation** V 1-4 May be repeated for credit. Course Prerequisite: By department permission. 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 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 535 Personality Assessment and Diagnosis** 3 Course Prerequisite: Ph.D. student in Psychology. Diagnostic interviewing, conceptualization of clinical problems, case presentations, and treatment planning.
- 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.

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 neuropsychological 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.

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.

Public Health

[https://vetmed.wsu.edu/education/undergraduate-degrees/bachelor-of-science-Biotechnology and Life Sciences Bldg \(BLS\) 102](https://vetmed.wsu.edu/education/undergraduate-degrees/bachelor-of-science-Biotechnology and Life Sciences Bldg (BLS) 102)
509-335-7675

Co-Directors and Associate Professors, K. McBride, T. Sabato; Assistant Professors, C. Allick, A. Eleftheriou.

Public Health is the field invested in the protection and improvement of the health of people and the communities they belong to. The goals of the field are to promote and support healthy lifestyles, understand disease, educate about injury prevention, and detect, prevent, and respond

to the threat of infectious diseases. Overall, it is concerned with the health of population groups, from small neighborhoods to large countries or entire regions of the world. WSU's Public Health faculty is engaged in research with numerous foci including epidemiology, women's health, vector-borne disease, and HIV. Public Health sponsors the Bachelor of Science degree at the undergraduate level.

The undergraduate program for majors is designed for students interested in preparing for a career in the broad realm of public health, including medicine and other healthcare professions, health education, environmental health monitoring, health policy and administration, and more. Graduates earning the BS degree in Public Health are well prepared to enter the workforce in the public health arena of their choice, or attend graduate or professional school, pursuing an MPH, PhD, or a professional health degree such as MD, DVM, or PharmD.

The General option gives students the broadest choice for training in public health. Along with the core courses, students in this option choose a concentration area to specialize in. The general option has 12 concentrations to choose from, or students can design their own with approval of the program. The infectious disease option leverages the expertise of the Washington Animal Disease Diagnostic Laboratory and the Paul G. Allen School for Global Health on the Pullman campus. In addition to core courses in population health, health systems, methods, biostatistics, health communications, environmental health administration, and community health development, students in the infectious disease option will be educated in epidemiology, infectious disease testing, vaccinology/vaccine development, data management, statistical analysis, and bioinformatics. Similarly, the behavioral health option with its emphasis on addiction science would leverage existing expertise at WSU Spokane and WSU Vancouver. In addition to the core curriculum as described above, students will be educated in fundamental tenants of behavioral health, the theoretical underpinnings of substance use disorder, the complex interactions between physical and mental health, and the behavioral antecedents and correlates of chronic health conditions.

Student Learning Outcomes

- Locate, use, evaluate, and synthesize public health information to inform evidence-based decision making and drive impactful interventions.
- Effectively communicate public health information, in both oral and written forms and through a variety of media, to diverse audiences.
- Analyze the various cultural contexts in which Public Health professionals operate including factors that influence public health-related practices, beliefs, and behaviors within diverse communities.
- Develop proficiency in navigating ethical decision making within the realm of Public Health to benefit the well-being of both individuals and communities.
- Advocate effectively for protection and promotion of the public's health, demonstrating a comprehensive understanding of strategies and policies essential for promoting the well-being of communities.

Transfer Students

Transfer students must satisfy all of the program requirements for graduation. Courses taken at other institutions will be evaluated and credits accepted where possible. Students who are planning to transfer to the Public Health program at Washington State University from other institutions should review their academic plans with a Public Health program advisor to establish a schedule of studies leading to the bachelor's degree prior to transfer in order to minimize the time required at Washington State University to complete bachelor's degree requirements. This is desirable because equivalent coursework to the required PUBHLTH courses is not available at many other institutions. Inquiries concerning specific questions are welcomed. 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 Program Co-Directors.

Schedules of Studies

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

PUBLIC HEALTH - COMMUNITY AND BEHAVIORAL HEALTH OPTION (120 CREDITS)

Students may be admitted to the Public Health major, Community and Behavioral Health option upon making their intention known to the department and completion of 24 credits with a 2.0 GPA. Students can take the first two years of this option on the Vancouver or Pullman campuses and finish the last two years on the Vancouver or Spokane campuses.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 or 107 [BSCI]	4
CHEM 101 [PSCI] or 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
PUBHLTH 101 [HUM]	3
PUBHLTH 110	3

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

Second Year

<i>First Term</i>	<i>Credits</i>
H D 350 [DIVR]	3
PSYCH 105 [SSCI]	3
PUBHLTH 120	3
PUBHLTH 210 or 240	3
STAT 212 [QUAN] or PSYCH 311 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
COM 102 [COMM], 210 [COMM], or H D 205 [COMM]	3 or 4
PSYCH 265	3

PUBHLTH 202	3
SOC 368	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COMSTRAT 478	3
Equity and Justice [EQJS]	3
PUBHLTH 220 or 230	3
PUBHLTH 310	3
PUBHLTH 495	1

<i>Second Term</i>	<i>Credits</i>
PSYCH 310 or 320	3
PUBHLTH 495	1
Public Health Electives ¹	8
Electives ²	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
NEP 477	3
PUBHLTH 301	3
PUBHLTH 402 [M]	4
PUBHLTH 410	3
PUBHLTH 495	2

<i>Second Term</i>	<i>Credits</i>
NEP 481	3
PSYCH 468	3
PUBHLTH 330	3
PUBHLTH 490 [CAPS] [M]	3
Public Health Electives ¹	3

¹ Public Health Electives (11 credits): Approved courses include: AMDT 317; ANTH 203, 205, 220, 268, 302, 304, 316, 350, 405; BIOLOGY 307, 333, 340, 370, 395, 418, 469, 579; COM 471; COMHLTH 571, 572, 573, 574; CRM J 205, 330, 365, 380; H D 220, 300, 301, 302, 307, 310, 385, 403, 406, 410, 418, 430, 482; ENGLISH 310; ENTOM 340, 361, 448, 490; MBIOS 306, 320, 405, 410, 440, 442, 446, 478, 548; MGMT 301; PHIL 365; PSYCH 230, 265, 310, 320, 372, 390; PUBHLTH 499; SOC 300, 310, 317, 320, 334, 340, 351, 367, 536; SOIL SCI 568; WGSS 120, 300, 307. Other courses may be allowed by department consent. Courses may not be used to fulfill more than one requirement. Please see your advisor.

² Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

PUBLIC HEALTH - GENERAL OPTION (120 CREDITS)

Students may be admitted to the Public Health major, General Option upon making their intention known to the department and completion of 24 credits with a 2.0 GPA. Within the General Option, students select one of twelve recommended Concentrations or create their own with approval of the Public Health Program Director. This option is available on the Pullman campus.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 [BSCI] or 107 [BSCI]	4
CHEM 101 [PSCI] or 105 [PSCI] ¹	4

ENGLISH 101 [WRTG]	3
PUBHLTH 101 [HUM]	3
PUBHLTH 110	3

<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107	4
CHEM 102 or 106 ¹	4
HISTORY 105 [ROOT]	3
PUBHLTH 105	3

Second Year

<i>First Term</i>	<i>Credits</i>
H D 350 [DIVR]	3
PSYCH 105 [SSCI]	3
PUBHLTH 120	3
PUBHLTH 210 ²	3
STAT 212 [QUAN] or PSYCH 311 [QUAN]	4

<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
COM 102 [COMM], 210 [COMM], or H D 205 [COMM]	3 or 4
PUBHLTH 202	3
PUBHLTH 220 ²	3
Concentration Course ³	3

Third Year

<i>First Term</i>	<i>Credits</i>
COMSTRAT 478	3
PUBHLTH 240 ²	3
PUBHLTH 301	3
PUBHLTH 310	3
Concentration Course ³	3

<i>Second Term</i>	<i>Credits</i>
PUBHLTH 230 ²	3
PUBHLTH 495	2
Concentration Courses ³	6
Public Health Electives ⁴	4

Fourth Year

<i>First Term</i>	<i>Credits</i>
Equity and Justice [EQJS]	3
PUBHLTH 402 [M]	4
PUBHLTH 410	3
PUBHLTH 495	2
Concentration Course ³	3

<i>Second Term</i>	<i>Credits</i>
PUBHLTH 330	3
PUBHLTH 490 [CAPS] [M]	3
Concentration Course ³	3
Electives ⁵	4

¹ Students taking the Pre-Med or Pre-Vet Concentrations must select CHEM 105 and CHEM 106. Students taking the Pre-Nursing concentration should select CHEM 101 and CHEM 102.

² Students taking the Pre-Med, Pre-Nursing, or Pre-Vet Concentrations select either PUBHLTH 210 or 240 and PUBHLTH 220 or 230. All other concentrations must take 210, 220, 230, and 240.

³ Concentration Courses: Students must complete a minimum of 18 credits from a single concentration area or they may create their own concentration, which must be approved in advance by the Public Health Program Director. Courses may not be used to fulfill more than one requirement. Recommended Concentrations: Animal Science (ANIM SCI 101, 240, 285, 485 and any two courses from ANIM SCI

350/351, 440, 451, 453, 495); Environmental Justice (SOE 110, 280, SOC 337, 375, 474; SOE 312 – in addition, SOC 101 is recommended as an elective); Environmental Policy (SOE 101, 280, 285, 312, 335, 444); Gender and Sexuality (SOC 384, WGSS 101 or 120, 230, WGSS/SOC 300 and any two courses from SOC 251, 351, 385; WGSS 120, 220, 251, 305, 307, 309, 316, 336, 351, 403); Health and Communities (SOC 101, 102, 334, 352 and any two from SOC 106, 332, 335, 336, 337, 340, 342, 346, 347, 358, 368, 462, 474); Health and Culture (ANTH 101 or 203, 201, 205, 405, and any two courses from ANTH 215, 220, 260, 268, 304, 305, 370, 418, 463, 464, 465, 469); Health and Food (BIOLOGY 140, 333; FS 201, 202 and any two courses from AFS 101, 336; FS 302; HISTORY 492; PHIL 220; SOC 336); Health Communication (COM 101, 102, 105; COMSTRAT 326 and any two courses from COM 210, 230, 320, 400, 421, 454, 471, 479, 486; COMSTRAT 285, 483 – note that COMSTRAT 478 is a requirement that does not count toward this concentration); One Health (ENTOM 101, 102, 103, 201, 343); Pre-Med (CHEM 345, 348; MATH 140 or 171; MBIOS 303; PHYSICS 101 or 201, 111 or 211, 102 or 202, 112 or 212); Pre-Nursing (BIOLOGY 140 or 333, 251, 315; H D 101; MBIOS 101; SOC 101 or 102); Pre-Vet (CHEM 345; MATH 104 or 171; MBIOS 301, 303; PHYSICS 101 or 201; 111 or 211).

⁴ Approved Public Health Electives courses include: AMDT 317; ANTH 203, 205, 220, 268, 302, 304, 316, 350, 405; BIOLOGY 307, 333, 340, 370, 395, 418, 469, 579; COM 471; COMHLTH 571, 572, 573, 574; CRM J 205, 330, 365, 380; H D 220, 300, 301, 302, 307, 310, 385, 403, 406, 410, 418, 430, 482; ENGLISH 310; ENTOM 351, 361, 448, 490; MBIOS 301, 303, 306, 320, 405, 410, 440, 442, 446, 478, 548; MGMT 301; PHIL 365; PSYCH 230, 265, 310, 320, 372, 390; PUBHLTH 499; SOC 300, 310, 317, 320, 334, 340, 351, 367, 536; SOIL SCI 368; WGSS 120, 300, 307. Other courses may be allowed by department consent. Courses may not be used to fulfill more than one requirement.

⁵ Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

PUBLIC HEALTH - INFECTIOUS DISEASE OPTION (120 CREDITS)

Students may be admitted to the Public Health major, Infectious Disease option upon making their intention known to the department and completion of 24 credits with a 2.0 GPA. This option is available on the Pullman campus.

First Year

<i>First Term</i>	<i>Credits</i>
BIOLOGY 106 or 107 [BSCI]	4
CHEM 101 [PSCI] or 105 [PSCI]	4
ENGLISH 101 [WRTG]	3
PUBHLTH 101 [HUM]	3
PUBHLTH 110	3
<i>Second Term</i>	<i>Credits</i>
BIOLOGY 106 or 107	4
CHEM 102 or 106	4
HISTORY 105 [ROOT]	3
PSYCH 105 [SSCI]	3
PUBHLTH 105	3

Second Year

<i>First Term</i>	<i>Credits</i>
H D 350 [DIVR]	3
MBIOS 301 or 303	3 or 4
PUBHLTH 120	3
STAT 212 [QUAN] or PSYCH 311 [QUAN]	4
<i>Second Term</i>	<i>Credits</i>
Arts [ARTS]	3
COM 101 [COMM], 210 [COMM], or H D 205 [COMM]	3 or 4
MBIOS 304	3
MBIOS 305	3
PUBHLTH 202	3
Complete Writing Portfolio	

Third Year

<i>First Term</i>	<i>Credits</i>
COMSTRAT 478	3
PUBHLTH 210 or 240	3
PUBHLTH 220 or 230	3
PUBHLTH 301	3
PUBHLTH 310	3
PUBHLTH 495	1
<i>Second Term</i>	<i>Credits</i>
ANTH 405	3
Equity and Justice [EQJS]	3
PUBHLTH 495	2
Public Health Electives ¹	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
MBIOS 440	3
PUBHLTH 402 [M]	4
PUBHLTH 410	3
PUBHLTH 495	1
Public Health Electives ¹	3
Electives	2
<i>Second Term</i>	<i>Credits</i>
PUBHLTH 330	4
PUBHLTH 490 [CAPS] [M]	3
Public Health Electives ¹	3
Electives ²	5

¹ Public Health Electives (9 credits): Approved courses include: AMDT 317; ANTH 203, 205, 220, 268, 302, 304, 316, 350; BIOLOGY 307, 333, 340, 370, 395, 418, 469, 579; COM 471; COMHLTH 571, 572, 573, 574; CRM J 205, 330, 365, 380; H D 220, 300, 301, 302, 307, 310, 385, 403, 406, 410, 418, 430, 482; ENGLISH 310; ENTOM 340, 361, 448, 490; MBIOS 306, 320, 405, 410, 442, 446, 478, 548; MGMT 301; PHIL 365; PSYCH 230, 265, 310, 320, 372, 390; SOC 300, 310, 317, 320, 344, 340, 351, 367, 368, 536; PUBHLTH 499; SOIL SCI 568; WGSS 120, 300, 307. Other courses may be allowed by department consent. Courses may not be used to fulfill more than one requirement. Please see your advisor.

² Electives: 300-400-level coursework as needed to meet University requirements of 120 credits and 40 upper-division credits.

Minors

Public Health

Students may apply for the minor in Public Health once they have been admitted to a major, completed 60 credits, and have a 2.5 GPA. The minor in Public Health requires 21 credits, including a minimum of 9 credits of 300-400-level coursework earned in WSU courses or through WSU-approved education abroad or educational exchange courses.

Courses taken to satisfy the minor must include PUBHLTH 101, 110, 301, 330, and 410; as well as 6 additional credits of PUBHLTH courses. Courses may not be used to fulfill more than one requirement for the minor. Additional courses may be substituted for these requirements with the permission of the program director.

Description of Courses

Public Health

PUBHLTH

101 [HUM] Introduction to Public Health 3 History and philosophy of public health as well as its core values, concepts and functions across the globe and in societies.

105 Professional Development in Public Health 3 Exploration of careers and professional skills in public health.

110 Social and Environmental Determinants of Health 3 Socioeconomic, behavioral, biological, environmental, and other factors that impact human health and contribute to health disparities.

120 Introduction to Health Systems Organization 3 Fundamentals of the US health system and comparison to other global systems; concepts of legal, ethical, economic, and regulatory dimensions; influences and responsibilities of governmental agencies in public health.

202 Research Methods in Social and Behavioral Sciences 3 Introduction to essential concepts and strategies in planning, designing, and implementing research studies in the social and behavioral sciences, including public health; analysis and evaluation of quantitative and qualitative research methodology in public health research.

210 Introduction to Global Health 3 Introduction to key global health topics including the distribution and burden of disease; global health systems and policies; evidence-based interventions; global health equity; critical examination of historical and contemporary global health science and practice.

220 Chronic and Infectious Diseases 3 Exploration of both newly emerging and re-emerging infectious diseases including the ways in which disease organisms interact with and alter each other and their environments.

230 Principles of Epidemiology 3 Applications of epidemiologic methods and procedures to the study of the distribution and determinants of health and diseases, morbidity, injuries, disability, and mortality in populations.

240 Introduction to Environmental Health 3 Exploration of the complex interactions between human health outcomes and the physical environment, including core concepts in sustainability and the built environment, energy and transportation, food systems and security, climate and natural disasters, environmental racism, justice, and ethics, One Health, and emerging challenges.

301 Community Health 3 Concepts of population health and the basic processes, approaches, and interventions that identify and address the major health-related needs and concerns of populations.

310 Foundations of Health Behavior 3 Introduction to the behavioral change theories that are most commonly applied in public health practice, including individual, interpersonal, and community-level theories.

330 Health Policy, Law, and Ethics 3 Exploration of the legal and ethical issues impacting the administration and delivery of health care services; examination of health policy and the government's role in health and in the provision of health care.

402 [M] Public Health Interventions 3 Course Prerequisite: PUBHLTH 202. Fundamental concepts and features of public health interventions; project implementation planning, assessment, and evaluation.

410 Organization and Administration in Public Health 3 Course Prerequisite: PUBHLTH 110. Organization and administration of public health programs and policies.

490 [CAPS] [M] Public Health Capstone 3 Integration of broad topics from public health and other fields to inform scientific and technical writing and presentation of independent research projects.

495 Public Health Internship V 1-3 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By department permission. Internship with a public health agency, a nonprofit organization, or a private sector company that aligns with the student's chosen career path. 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.

Social Work

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BSW Interim Director and Assistant Professor: R. Droesch; Field Education Director and Assistant Professor: J. Young-McMurchie; Assistant Professor: D. Guyer.

Social workers are changemakers, advocates, case managers, therapists, researchers, and activists. The primary mission of social work is to enhance human well-being and help meet the basic needs of all people. At WSU Tri-Cities, the Social Work program equips students to understand and address local, regional, and global challenges faced by marginalized populations. Our baccalaureate program prepares students for rewarding careers as generalist social workers in diverse settings, including social service agencies, schools, and hospitals.

CSWE has adopted a competency-based education framework for its Educational Policy and Accreditation Standards (EPAS). The nine social work competencies are:

- Competency 1: Demonstrate Ethical and Professional Behavior.
- Competency 2: Advance Human Rights and Social, Racial, Economic, and Environmental Justice.
- Competency 3: Engage Anti-Racism, Diversity, Equity, and Inclusion (ADEI) in Practice.
- Competency 4: Engage in Practice-Informed Research and Research-Informed Practice.
- Competency 5: Engage in Policy Practice.
- Competency 6: Engage with Individuals, Families, Groups, Organizations, and Communities.
- Competency 7: Assess Individuals, Families, Groups, Organizations, and Communities.
- Competency 8: Intervene with Individuals, Families, Groups, Organizations, and Communities.
- Competency 9: Evaluate Practice with Individuals, Families, Groups, Organizations, and Communities.

Schedules of Studies

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

SOCIAL WORK (TRI-CITIES ONLY) (120 CREDITS)

The BASW program will take most students 4 years to complete and will include 120 undergraduate credits. The program focuses on preparing entry-level generalist social workers with no specific specialization.

CSWE Accreditation: The curriculum meets social work accreditation standards by integrating the Educational Accreditation Policy Standards and Social Work Competencies into the curricula in each course. The specific competencies have been highlighted in the curriculum in each course syllabus.

The degree is a 2+2 program. Students are formally admitted into the program beginning in their 3rd year. The prerequisite courses from the first two years will cover the lower division UCORE requirements as a Direct Transfer Associates (DTA) degree. An additional BSCI or PSCI lab course is required for the major, and will not be satisfied by the DTA degree. The social work advisor and program director will individually assess whether course work taken will meet the content requirements of SOCL WRK 101, 201, and 202. If so, these courses will be waived. If not, the student is required to fulfill these requirements before being formally admitted to the social work program.

Prerequisites include 6 student selected credits in social work or human development which may be satisfied with social science and humanities courses in DTA degree if courses are in social work and/or human development. In the program of study, SOCL WRK 101, 201, and 202 satisfy these requirements. Other prerequisites include; Introduction to Sociology/Social Problems - 3 credits.

Only course work specifically designated as a Sociology course covering Introduction to Sociology (SOC 101) or Social Problems will be accepted), Introduction to Psychology (PSYCH 105) - 3 credits, and Statistics (STAT 212) - 3 credits which must include inferential and descriptive statistics.

A minimum cumulative 3.0 GPA is required in SOCL WRK courses.

Students must complete 9 practice concentration area Social Science credits:

- Courses must be 300 or 400 level (graduate courses are allowed).
- Must thematically connect to an area of social work practice interest.
- May only include 3 credits of independent study.
- Must complete practice concentration description form to demonstrate satisfaction of this requirement for graduation.
- May not include other required social work major courses.

First Year

First Term	Credits
HISTORY 105 [ROOT]	3
Physical Sciences [PSCI] with lab	4
UCORE Inquiry ¹	3
Electives	5

Second Term	Credits
Biological Sciences [BSCI] with lab	4
PSYCH 105 [SSCI]	3
SOCL WRK 101	1
Written Communication [WRTG]	3
Electives	4

Second Year

First Term	Credits
SOC 101	3
SOCL WRK 201	3
STAT 212 [QUAN]	4
UCORE Inquiry ¹	3
Electives	3

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
SOCL WRK 202	3
Electives	9
Complete Writing Portfolio	

Third Year

First Term	Credits
H D 350 [DIVR]	3
SOCL WRK 302	3
SOCL WRK 310	3
SOCL WRK 410	3
Social Science Elective (Concentration Area) ²	3

Second Term	Credits
H D 385	3
SOC 351	3
SOCL WRK 303	3
SOCL WRK 411 [M]	3
Social Science Elective (Concentration Area) ²	3

Fourth Year

First Term	Credits
SOCL WRK 402	3
SOCL WRK 430	3
SOCL WRK 440 [M]	3
SOCL WRK 475	4
Social Work Elective (Concentration Area) ²	3

Second Term	Credits
SOCL WRK 403	3
SOCL WRK 431	3
SOCL WRK 441 [CAPS]	3
SOCL WRK 476	4

¹ Must complete 2 of these 3 UCORE designations: ARTS, EQJS, HUM.

² Social Science Elective (Concentration Area) (9 credits, 300-400 level): Courses selected from the Social Sciences and thematically connecting to an area of social work practice interest. May include 3 credits of independent study. May not include coursework used to fulfill other major requirements.

Description of Courses**Social Work****SOCL WRK**

101 Social Work as a Profession 1 Overview of various disciplines of social work, associated degrees, and careers; exploration of the roles of social workers in addressing social problems such as child maltreatment, mental illness, school violence, and poverty.

201 [SSCI] Introduction to Social Work I 3 A foundation for social work, the institutional framework for social policies, and human behavior in the social environment.

202 Introduction to Social Work II 3 Course Prerequisite: SOCL WRK 201. An exploration of human problems, intervention strategies, and professional practice choices from a generalist perspective, with a focus on oppressed, marginalized, and underserved populations.

302 Generalist I 3 An introduction to generalist social work knowledge, values, and skills in working with individuals, families, and groups, including interviewing, active listening, problem assessment, intervention, and evaluation.

303 Generalist II 3 Continuation of generalist knowledge, values, and skills with a focus on assessment and evidence-based interventions with diverse populations represented within the rural communities of Washington.

310 Human Behavior in the Social Environment 3 Understanding human behavior and human development using a bio/psycho/social/spiritual perspective with focus on individuals, families, groups, and communities.

402 Generalist III 3 Continuation of generalist knowledge, values, and skills with a focus on structures, functions, processes, and interventions at the community and organizational levels of practice, including strategies for helping communities and organizations advocate for system development and change.

403 Generalist IV 3 Continuation of generalist knowledge, values, and skills with a focus on empowerment of populations who have experienced trauma and social, economic, and environmental injustice and the application of evidence-based, culturally inclusive and trauma-informed principles essential to helping populations at risk.

410 Intergroup Dialogues 3 An exploration of differences, inequalities, and social identities to build skills of understanding, self-reflection, and communication that promote social change.

411 [M] Privilege, Oppression, and Power 3 Exploration of institutionalized oppression and responses centered on social justice; privilege, structural and individual discrimination, and their impacts upon marginalized groups.

430 Self-awareness and Diversity in Practice 3 Awareness of the use of self within practice, including personal identity, group memberships, and styles of communication; self regulation to manage the influence of personal biases and values in working with diverse clients.

431 Special Topics in Social Work 3 Specific interventions used in generalist social work practice; the intervention taught in each offering of the course will vary.

440 [M] Policy in Social Work 3 Policy and program development of social services including current and emergent policies, context and development of policies, and the potential of advocacy to promote social change.

441 [CAPS] Translating Research into Social Work Practice 3 The role of research in innovation, planning, and evidence-based interventions for social problems including child abuse, alcohol misuse, and interpersonal violence.

475 Field Experience I 4 (0-12) Beginning social service assignments under the supervision of competent agency personnel. A detailed description of the field experience can be found in the Field Education Handbook.

476 Field Experience II 4 (0-12) Course Prerequisite: SOCL WRK 475. Social service assignments under the supervision of competent agency personnel. A detailed description of the field experience can be found in the Field Education Handbook.

Department of Sociology

soc.wsu.edu/
Wilson-Short 204
509-335-4595

Department Chair and Professor, J. Kmec; Professors, J. Denney, C. Horne, M. Johnson, A. MacLean, T. Rotolo, J. Schwartz, J. Sherman; Associate Professor, E. Johnson; Assistant Professors, M. Amorim, D. Bugden, V. Delgado, S. Mejia, A. Zamora-Kapoor; Career Track Assistant Professors, K. Cutler, J. Kremer, S. Whitley; Instructor, K. Bittinger.

Sociology is the scientific study of social life. Sociology provides fundamental insight into social matters. Because our lives are affected by our place in the social world, the discipline seeks to understand the connection between people and society. Sociologists study and work across a broad range of issues - from inequality to health, from deviance to family, from work to gender and race. Few fields offer students opportunities for 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) define and analyze social problems and identify the structural

and cultural factors that contribute to social and individual outcomes; (2) understand and apply basic statistics to social issues, including how to interpret, and draw appropriate conclusions from social science data presented in tables, charts, and graphs, as well as apply quantitative knowledge to present social science data in various forms (graphs, tables, words, etc.); (3) Identify, analyze, and explain the causes and consequences of social inequality across multiple dimensions and social institutions; (4) clearly communicate sociological concepts, theories, and findings through writing and speaking; (5) identify, assess, explain, and conduct social science research including learning the skills of research design, data collection, sampling, and measurement. (6) identify sources of social science research and assess it when reported in both professional and popular publications and use social science to develop informed judgements; (7) analyze the relationships between social, technological, and natural physical systems; 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 Electives	4

Second Term	Credits
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3
Humanities [HUM]	3
Foreign Language, if necessary, or Electives	5

Second Year

First Term	Credits
Biological Sciences [BSCI] with lab ¹	4
Diversity [DIVR]	3
Equity and Justice [EQJS]	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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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.

Environmental Policy and Equity

The Environmental Policy and Equity minor prepares future leaders from numerous degree programs to collaborate with communities, advocacy organizations, and policymakers to develop equitable solutions to pressing environmental problems. Interdisciplinary coursework enhances students' understanding of complex interactions between society and the environment, including social drivers of environmental issues. The minor equips students with practical knowledge and policy-oriented skills to confront ecological challenges, making them competitive candidates for careers in government, non-profit, business, agriculture, conservation, and advocacy sectors.

Students may be admitted to the minor in Environmental Policy and Equity after completion of 60 credits. The minor requires a minimum of 18 credits in Sociology and related disciplines. The 18 credits include at least 9 credits of SOC courses, selected from the following: SOC 101 or 102, 230, 332, 333, 335, 336, 337, 338, 340, 375, and 474; and at least 9 additional credits of Environmental Policy and Equity Electives selected from the following: AFS 336; PHIL 220, 370; POL S 430; SOC 101 or 102, 230, 332, 333, 335, 336, 337, 338, 340, 375, 474; SOE 110, 285, 312, 438, 444, 477). The minor must include at least 9 credits of 300-400-level work earned in WSU courses or through WSU-approved education abroad or educational exchange courses. Students must maintain a 2.0 average.

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 work earned in WSU courses 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

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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 earned in WSU courses 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; ANTH 203, CES 101 or WGSS 101; SOC 340 or CES 301.

Electives (9 credits) to be selected in collaboration with program director from: ANTH 316; ANTH/POL S/SOC 418; CES 244, 301, 440, 446; CES/HISTORY 426; COM 321, 421; MGMT 315; PHIL 360, 365; POL S 305, 340, 432; PSYCH 309; SOC 334, 340, 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 230, 335, 336, 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.

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 [EQJS] 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 [EQJS] [M] Intersections of Race, Class, Gender, Sexuality, and Dis/ability 3 Course Prerequisite: SOC 101 or WGSS 101. Study of intersections among race, class, gender, sexuality, and dis/ability 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 Preparing for Internships and Sociology Careers 1 Explore career options, develop professional materials, and learn strategies for internship and job searching, networking, and interviewing; emphasis is placed on connecting academic training to real-world opportunities and career paths.

310 [M] 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 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).

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
- 338 Environmental Inequality and Justice** 3 Causes and consequences of poor and minoritized communities' uneven exposure to environmental risks and hazards; social and political solutions that address community level environmental inequities.
- 340 [EQJS] 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. Recommended preparation: PSYCH 105 or SOC 101. (Crosslisted course offered as PSYCH 350, SOC 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. Recommended preparation: SOC 101. (Crosslisted course offered as SOC 351, WGSS 351.)
- 352 Youth and Society** 3 Social issues facing youth; youth and social institutions of education, employment, family, criminal justice system, and politics.
- 356 Growing Up and Growing Older** 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 [EQJS] 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. Recommended preparation: SOC 101. (Crosslisted course offered as SOC 384, WGSS 384.)
- 385 [EQJS] Lesbian, Gay, Bisexual, Transgender, and Queer 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 [CAPS] Human Issues in International Development** 3 Interdisciplinary analysis of complex interaction in the context of colonial and post-colonial development. (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.
- 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.
- 462 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 462/562, SOC 462/562.) Credit not granted for both NEP 462/562 and SOC 462/562.
- 468 Addictive Behavior Among Diverse Populations** 3 Course Prerequisite: Junior standing. Overview of social, cultural, and historical perspectives on dealing with addictive behavior. Recommended preparation: SOC 101, PSYCH 105, or CRM J 101. (Crosslisted course offered as PSYCH 468, CRM J 468, SOC 468.)
- 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 department permission. 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.
- 497 [CAPS] [M] Capstone Research Practicum 3**
Course Prerequisite: SOC 317, SOC 320, PSYCH 312, or CRM J 311, or concurrent enrollment in any; admitted to the major in Sociology; junior standing. Hands-on experience in selection of a social problem, review of literature, identifying data sources, developing methodology and reporting results. Senior standing recommended.
- 498 Research Assistantship 3** May be repeated for credit; cumulative maximum 6 hours. Course Prerequisite: By department permission. Supervised experience in current research by departmental faculty.
- 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 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.
- 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 Quantitative Techniques in Sociology 3** Advanced quantitative techniques extending beyond ordinary least squares regression and its limitations; focus on current sociological methods and models. 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.
- 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.
- 546 Social Norms 3** Introduction to theories of norms including their emergence, enforcement, change, decline, and application.
- 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.
- 561 Inequality, Crime, and Social Control 3** Analysis of disparities in crime and punishment; examination of social, economic, and place-based inequalities in relation to crime and the criminal legal system.
- 562 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 462/562, SOC 462/562.) Credit not granted for both NEP 462/562 and SOC 462/562.
- 570 Social Autopsies: How Society Kills Us 3** Theory and literature review; data analysis and interpretation of trends in population health and mortality disparities by social characteristics including age, gender, race/ethnicity, socioeconomic status, place of residence, social networks, and sociopolitical factors.
- 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.
- 595 Internship V 1-4** Course Prerequisite: By department permission; MA in Sociology; admitted to Sociology PhD program. Supervised student experiential activities as paid or unpaid intern or other work-related experience in government, nonprofit, education, or business organization. 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 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

<https://medicine.wsu.edu/speech-hearing-sciences/ba-shs/>
Health Science Bldg, Room 125J; WSU Spokane
509-358-7709
speechhearing@wsu.edu

Associate Professor and Interim Department Chair, D. Jenson; Professors, A. Meredith, M. VanDam; Associate Professor, L. Thompson; Assistant Professors, K. Cabbage, A. Kemp; Clinical Assistant Professors, J. Kurtulus, J. Lewis-Mowry, E. Schriener, A. Stormo, A. Winkle; Clinical Associate Professor, D. Algeo-Nichols; Teaching Associate Professor, M. Ratsch; Professors Emeriti, S. Bassett, G. Chermak, E. Inglebret, C. L. Madison, N. Potter, L. Power, K. Simpson.

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 are located in the Health Sciences Building on the Washington State University Health Sciences Spokane campus. WSU students enroll through and receive their degrees from Washington State University. The Speech and Language Clinic is the Spokane campus graduate training facility in affiliation with Range Health. 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.

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 3.0.

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 371 [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

First Term	Credits
BIOLOGY 102 [BSCI] or 106 [BSCI]	4
Communication [COMM] or Written Communication [WRTG]	3
HISTORY 105 [ROOT]	3
PSYCH 105 [SSCI]	3
UCORE Inquiry ¹	3

Second Term	Credits
ENGLISH 101 [WRTG]	3
PHYSICS 101/111 [PSCI] or CHEM 101 [PSCI]	4
SHS Elective ²	3
STAT 212 [QUAN]	4

Second Year

First Term	Credits
SHS 205	3
SHS Electives ²	6
UCORE Inquiry ¹	3
Electives	3

Second Term	Credits
SHS Electives ²	6
UCORE Inquiry ¹	3
Electives	6
Complete Writing Portfolio	

Third Year

First Term	Credits
SHS 371 [M]	4
SHS 372	4
SHS 375	3
SHS 377	3
Electives	3

<i>Second Term</i>	<i>Credits</i>
SHS 376	3
SHS 378	3
SHS 477	3
SHS 478	3
SHS 479	3

Fourth Year

<i>First Term</i>	<i>Credits</i>
SHS 201 ³	4
SHS 452	2
SHS 460	3
SHS 482 [M]	3
SHS 490	1
SHS Electives ²	2

<i>Second Term</i>	<i>Credits</i>
SHS 202 ³	4
SHS 461	3
SHS 465	3
SHS 480 [CAPS]	3

¹ Must complete 3 of these 4 UCORE designations: ARTS, DIVR, EQJS, HUM.

² SHS electives (17 credits required) include any H D or PSYCH course 200-level or above, or as approved by advisor.

³ SHS 201 and 202 may be replaced with 2 semesters (8 credits) of Spanish Language courses.

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 [HUM] 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 [M] Language Development 4 Normal development of the cognitive, linguistic, and pragmatic components of language; introduction to language disorders in children.

372 Hearing, Hearing Disorders, and Audiometry 4 Acoustic and psychologic aspects of normal hearing; introduction to assessment and differential diagnosis of hearing impairment and auditory pathologies.

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/Physiology of Speech and Swallowing Mechanisms 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.

452 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.

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 3 Course Prerequisite: Concurrent enrollment in SHS 480 or SHS 478. Pre-practicum preparation; observation of and assisting in therapy; state laws; clinical methods.

465 Skills Lab 3 Development of skill sets necessary for generalist speech-language pathologists' and audiologists' practice across the broad range of practice areas and client systems including individuals, families, groups, organizations, communities, community groups, legislative groups, and boards.

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 1 Laws, policies, and ethical issues involved in providing speech-language and audiology services in public schools.

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 1 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.

564 On-Campus Clinical Practicum V 2-6 May be repeated for credit; cumulative maximum 15 hours. Clinical practice in the evaluation and treatment of speech, language, and hearing disorders. SHS graduate student; all undergraduate prerequisite courses completed. S, F grading.

565 Augmentative Communication 2 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.

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.

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. L. Salisbury; Regents Professor, J. L. Egbert; Professors, A. Cavagnetto, M. Dunn, S. Finley, E. J. Johnson, K. Lesseig, A. R. McDuffie, J. Morrison, D. Slavitt, M. Vaughn; Associate Professors, Y. Ardasheva, D. Day-Wiff, J. Firestone, A. Gilmore, A. Guerrettaz, Y. Hsiao, J. E. Kelley, M. Kelton, J. Lupinacci, J. Masterson, D. McMahon, S. Newcomer, M. Poppen, K. Puzio, J. Taylor, H. Whittenburg; Assistant Professors, T. Hansen, S. RunningHawk Johnson, T. Li, E. Smith, A. Sobotta; Associate Professors - Career Track, S. Rakha, T. F. Watson; Assistant Professors - Career Track: Y. Cooper, P. He, J. Johnson, L. Lightner, A. Segadelli, A. Sheftel, S. E. Skavdahl, L. White; Professors Emeriti, J. M. Canty, G. Ernst-Slavitt, T. Holmlund, S. Kruse, S. B. Kucer, L. Mabry, D. Miller, A. G. Rud, R. D. Sawyer; 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, and Master of Education in the following specializations: Curriculum and Instruction; Language, Literacy, and Technology; and Special Education; Master in Teaching in Elementary or Secondary Education, and Doctor of Philosophy. Doctoral specializations are available in these areas: Cultural Studies and Social Thought in Education (Ph.D.); Language, Literacy, and Technology (Ph.D.); 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, Sport, and Human Sciences 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, Sport, and Human Sciences, 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, Sport, and Human Sciences, 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, Bilingual Education, 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/basicsskillstesting>.
- 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: HD 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 pre-internship 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 (2-3 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 internship. 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. Information about minimum admission requirements may be obtained from the College of Education, Sport, and Human Sciences Office of Graduate Studies 509-335-7016 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/teacher/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; 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, 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 DOCTORAL PROGRAMS

Doctor of Philosophy in Education (Ph.D.)

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, or TCH LRN 490, MIT 575 or TCH LRN 415, SPEC ED 520.

Course of Study for Secondary Education: MIT 501, 502, 505, 506, 507, 508, 511, 550, 551, 552, 571 or TCH LRN 490, MIT 575 or TCH LRN 415,

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, 13 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 for Elementary Education and Secondary Education must be submitted by November 15th for programs beginning the following summer.

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.

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.

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

First Term	Credits
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

Second Term	Credits
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

ng 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, Sport, and Human Sciences'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 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: TCH LRN 307, 321, 322, 323, 330, and 413 or 414.

Special Education [undergraduate courses]: SPEC ED 301, 401, 402, 403, 404, 409, 421, 471, 490 or 499 (4 credits).

Special Education [graduate courses]: SPEC ED 301, 501, 502, 503, 504, 509, 521, 571, 590 or 499 (4 credits).

Certificates

Dual Language Pathway

The Department of Teaching and Learning offers a Dual Language Pathway Certificate to multilingual students in the teacher preparation program on all WSU campuses. The Dual Language Pathway Certificate demonstrates to potential employers (like school districts) that the teacher candidates have received professional training across a variety of topics and content areas in the field of education in a language other than English. The Certificate also highlights that the teacher candidates are linguistically proficient enough to succeed in upper-division teacher preparation courses in a language other than English.

Certificate Requirements: The Dual Language Pathway Certificate entails successfully completing the required course work for the Washington State Bilingual Education endorsement (7 courses, 21 credits). As part of that process, students must take 3 of the 7 courses required for the Bilingual Education endorsement in a language other than English. The 3 courses (9 credits) offered in an additional language are: TCH LRN 330, 333, 411. Students must pass all 3 courses in the additional language with a 2.0 or better to receive the certificate. The Dual Language Pathway Certificate offered through the Department of Teaching and Learning does not automatically qualify the student for a teaching endorsement or teaching certificate through the Office of the Superintendent of Public Instruction (OSPI).

Education Technology

The WSU College of Education, Sport, and Human Sciences 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, Sport, and Human

Sciences 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.

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 Introduction to Multilingual Education in K-12 Settings 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. Required preparation must include completion of an introductory special education course, or SPEC ED 520. Credit not granted for both SPEC ED 401 and SPEC ED 501.

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. Required preparation for graduate students must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504; concurrent enrollment SPEC ED 590 (2 credits). Credit not granted for both SPEC ED 402 and SPEC ED 502.

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. Required preparation for graduate students must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504; or permission of instructor. Credit not granted for both SPEC ED 403 and SPEC ED 503.

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. Required preparation must include completion of an introductory special education course, SPEC ED 520. Credit not granted for both SPEC ED 404 and SPEC ED 504.

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. Required preparation must include completion of an introductory special education course, or SPEC ED 520. Credit not granted for both SPEC ED 409 and SPEC ED 509.

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. Required preparation for graduate students must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504. Credit not granted for both SPEC ED 421 and SPEC ED 521.

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. 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 Teaching Students with Disabilities

3 Intervention and instructional strategies for managing academic, social, and behavior problems in classroom settings. Required preparation must include completion of an introductory special education course, or SPEC ED 520. Credit not granted for both SPEC ED 401 and SPEC ED 501.

502 Assessment and Curriculum for Students with Disabilities

3 Methods of individual and group, formal and informal assessment for students with disabilities. Required preparation for graduate students must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504; concurrent enrollment SPEC ED 590 (2 credits). Credit not granted for both SPEC ED 402 and SPEC ED 502.

503 Secondary Education for Students with Disabilities

3 Overview of instruction and intervention strategies for secondary students with disabilities; assessment, and curriculum/program development. Required preparation for graduate students must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504; or permission of instructor. Credit not granted for both SPEC ED 403 and SPEC ED 503.

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. Required preparation must include completion of an introductory special education course, SPEC ED 520. Credit not granted for both SPEC ED 404 and SPEC ED 504.

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. Required preparation must include completion of an introductory special education course, or SPEC ED 520. Credit not granted for both SPEC ED 409 and SPEC ED 509.

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. Required preparation for graduate students must include completion of an introductory special education course, or SPEC ED 520; SPEC ED 504. Credit not granted for both SPEC ED 421 and SPEC ED 521.

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.

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.

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.

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.

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.

323 Literacy Assessment and Intervention 3 Course Prerequisite: TCH LRN 321. Effective and equitable literacy assessment using research-based practices; instructional methods for assisting students who are experiencing reading difficulties and supporting students' social emotional needs and cultural identities within the literacy process.

330 Equity and Diversity within Schools and Communities 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 Multilingual Education 3 Foundations of ESL with attention to basic concepts of second language processing in educational settings.

339 Communication in Multilingual Classrooms and Communities 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 Multilingual 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.

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, Sport, and Human Sciences.

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 Curriculum and Assessment for Multilingual Education 3 Research in curriculum development for and assessment of language minority students.

410 Foundations of Multilingual 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 Dual Language Teaching Methods and Materials 3 Course Prerequisite: TCH LRN 333, 339, 410, or 413. Approaches, methods, and materials across content areas for the bilingual classroom.

413 Introduction to Multilingual Education in Elementary Settings 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 Multilingual Education 3 Research and instructional methods related to English language acquisition across content areas. Recommended preparation: TCH LRN 410 or 510; TCH LRN 509; TCH LRN 549. Credit not granted for both TCH LRN 414 and TCH LRN 514.

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. Recommended preparation: Introduction to education technology course. Credit not granted for both TCH LRN 417 and 517.
- 419 Instructional Media Production 3** Course Prerequisite: TCH LRN 333. Principles of media design for diverse learners and application to problems of practice.
- 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** Course Prerequisite: TCH LRN 352 or MATH 330. Middle-school philosophy; understanding of effective standards and research-based methods. Recommended preparation: MATH 106 (or equivalent) and MATH 251/252. 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. Recommended preparation: MATH 106 (or equivalent) and MATH 251/252. Credit not granted for both TCH LRN 434 and 534.
- 435 Indigenous Language Reclamation and Learning 3** Engage in hands-on language reclamation by studying one regional Indigenous language (e.g., Nez Perce language, Coeur d'Alene language, or another regional Native American language), including its linguistic and sociocultural foundations and the overarching processes and underlying tenets of Indigenous language reclamation broadly conceived. Taught or co-taught by members or regional tribes; the specific regional language offered each semester may vary depending on the availability of tribal language expert instructors. Credit not granted for both TCH LRN 435 and 535.
- 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.
- 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. Recommended preparation: MATH 106 (or equivalent) and MATH 251/252. 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 Introduction to Multilingual Education in Secondary Settings 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. 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 Practicum in Multilingual 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 Linguistics for Educators 3** Use of linguistics to better understand second language learning and teaching and the physical aspects of acquiring a language.
- 509 Research in Curriculum and Assessment for Multilingual Education 3** Research in curriculum development for and assessment of language minority students. Recommended preparation: TCH LRN 510; TCH LRN 549. A
- 510 Foundations of Multilingual 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 Multilingual Education 3** Research and instructional methods related to English language acquisition across content areas. Recommended preparation: TCH LRN 410 or 510; TCH LRN 509; TCH LRN 549. Credit not granted for both TCH LRN 414 and TCH LRN 514.
- 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. Recommended preparation: Introduction to education technology course. Credit not granted for both TCH LRN 417 and 517.

- 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.
- 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.
- 531 Frameworks for Research in Mathematics and Science Education** 3 Exploration of research frameworks and methodologies specific to mathematics and science education.
- 533 Middle Level Mathematics Methods** 3 Middle-school philosophy; understanding of effective standards and research-based methods. Recommended preparation: MATH 106 (or equivalent) and MATH 251/252. 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. Recommended preparation: MATH 106 (or equivalent) and MATH 251/252. Credit not granted for both TCH LRN 434 and 534.
- 535 Indigenous Language Reclamation and Learning** 3 Engage in hands-on language reclamation by studying one regional Indigenous language (e.g., Nez Perce language, Coeur d'Alene language, or another regional Native American language), including its linguistic and sociocultural foundations and the overarching processes and underlying tenets of Indigenous language reclamation broadly conceived. Taught or co-taught by members or regional tribes; the specific regional language offered each semester may vary depending on the availability of tribal language expert instructors. Credit not granted for both TCH LRN 435 and 535.
- 539 Innovations in Language Arts** 3 The most recent developments in language arts instruction for pre-service and in-service teachers K-12.
- 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.
- 549 Communication in a Multilingual World** 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 psychological 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.
- 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. Recommended preparation: MATH 106 (or equivalent) and MATH 251/252. Credit not granted for both TCH LRN 463 and 563.
- 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.)
- 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.
- 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/education/
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 63 semester credits of acceptable prerequisite credits from an accredited college or university. The 63 semester credits should include: 35 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 DVM Admissions, 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 at <http://www.aavmc.org/becoming-a-veterinarian/> designating WSU as a school of choice and answering any supplemental questions as appropriate. Please see <https://vetmed.wsu.edu/education/dvm/> 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

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.

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

First Term	Credits
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

Biomedical Sciences

BIOMDSCI

530 Immunological Concepts for Infectious Diseases 1 Course Prerequisite: BIOMDSCI 563. Applications and research related to interactions of mammalian pathogens with the host immune system.

532 Immunity to Bacterial Pathogens 1 Course Prerequisite: BIOMDSCI 563; enrollment in the Immunology and Infectious Disease PhD program. Current literature and research in the immune response to bacterial pathogens.

534 Advanced Concepts in Viral Immunity 1 Course Prerequisite: BIOMDSCI 563. Participatory discussion of primary research related to immune responses to viral pathogens.

544 Fundamentals of Proposal Writing and Oral Presentations 2 Course Prerequisite: BIOMDSCI 563. Enhancement of scholarly competencies in written and oral scientific communication, particularly as they apply to the development of biomedical research and scientific research grant proposals.

552 Statistical Thinking 1 Core concepts, methods, and skills for reasoning about data, how it is obtained, and how to use statistics to interrogate data and build an understanding of the world around us.

555 Advances in Immunology and Microbiology Seminar Series 1 May be repeated for credit; cumulative maximum 2 credits. Seminars given by visiting scholars, faculty, post-docs and graduate students; development of scientific communication skills for trainees affiliated with the Immunology and Infectious Disease (IID) doctoral program. S, F grading.

556 Bacterial Virulence Mechanisms 1 Course Prerequisite: Enrollment in the Immunology and Infectious Disease PhD program. Introduction to the diversity of molecular bacterial mechanisms that contribute to virulence in human and/or veterinary diseases. Typically offered Fall.

563 Deconstruction of Research 2 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.

564 Topics in Biomedical Experimentation

1 May be repeated for credit; cumulative maximum 6 credits. 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 BIOMDSCI 564, PHIL 564.)

567 Mechanisms and Applications of Virology

1 Course Prerequisite: BIOMDSCI 563. An examination of primary research centered around an ever-growing list of contemporary viral threats to provide a comprehensive understanding of advanced virology and its real-world implications.

700 Master's Research, Thesis, and/or Examination

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

800 Doctoral Research, Dissertation, and/or Examination

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

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.

502 Communication Skills

1 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.

¹ Select one from VET MED 628 or 629.

² Select two from VET MED 609, 620, or 621.

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 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.

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.

527 Veterinary Dentistry 1 Diagnosis and treatment of oral disease in common species. S, M, F grading.

529 Small Animal Practical Veterinary Dentistry Laboratory 1 (0-3) Dental cleanings, interpretation of radiographs, and surgical extractions on dogs and cats. 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 Veterinary Topics in Free-Ranging Wildlife 1 May be repeated for credit; cumulative maximum 4 hours. 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.

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 1 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 2 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.
- 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 1** 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 Clinical and Professional Skills 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.
- 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 May be repeated for credit; cumulative maximum 2 hours. 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

vcs.vetmed.wsu.edu/
ADBF 1020
509-335-0738

Chair/Professor, R. Mealey; Professors, W. Bayly, B. Campbell, M. Court, R. DeBowes, K. Farnsworth, R. Farnsworth, B. Fransson, J. Fidel, L. Martin, S. Matthew, K. Mealey, O. L. Nelson, D. Sellon, R. Sellon; Associate Professors, R. Baumwart, J. Bell, J. Bunch, J. Cary, N. Finch, J. Haines, R. Kasimanickam, K. Kline, K. Kuehl, M. Logsdon, C. McConnel, S. O'Marra, T. Owen, J. Peyton, N. Villarino; Assistant Professors, Y. Ambrosini, M. Ciccarelli, H. Cohen, C. Cordon, C. Figueroa, S. Guess, N. Hall, B. Heil, L. Malavasi, M. Mason, J. Olivarez, T. Perez, E. Pinnell, J. Sexton, M. Varvil, S. Diaz Yucupicio; Lecturers, A. Botting, T. Bradley, B. Darveshi, N. Hall, A. Marre, S. Wagas.

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.

The department also offers two Graduate certificate programs 1.) Veterinary Clinical Internship Certificate Program, and 2.) Veterinary Clinical Residency Certificate Program. Veterinary Clinical Internship and Veterinary Clinical Residency Graduate Certificate Programs provide

formal recognition for the internship and residency programs. Graduate certificate programs are intended to provide post-baccalaureate students with multi-course training programs in specialized areas that help professionals gain new skills and knowledge and advance their careers. The clinical internship and residency program is a one-year (internship) to three-year (residency) post-DVM training program that is intended to prepare graduate veterinarians for high-quality clinical service or advanced specialty training (internship), and to provide advanced specialty training (residency). The graduate certificate for interns requires a minimum of 20 credits obtained over two semesters, with a course load of 10 credits/semester. The certificate for residents will require a minimum of 60 credits obtained over six semesters (course load of 10 credits/semester) for three years with a course load of 10 credit hours/semester.

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.

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 V 3-6 May be repeated for credit. Course Prerequisite: Admission to MS or PhD in Veterinary Science program, or Internship, Residency Grad Cert in the Biomedical Sciences (Veterinary Clinical and Translational Sciences). Only 6 cr allowed for students in the MS or PhD 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.

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.

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

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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, A. Pessier, D. Shaw, K. Taylor, T. Waltzek; Assistant Professors, A. Baylink, L. Broughton-Neiswanger, A. Eleftheriou, J. Elissa, J. Miller, R. Oliveira, J. Park, K. Poonsuk, W. Sheley, C. Sykes, L. Williams; Adjunct Faculty, H. Alzan, T. Baldwin, R. Bastos, D. Binczok, D. R. Call, F. Cassirer, C. Chung, C. Cunha, M. Dark, C. Davies, C. Eckstrand, A. Gilbertsen, B. Gowen, T. H. Kawula, D. Knowles, S. Keiser, L. Knodler, R. O'Connor, A. Omsland, K. Oyen, G. H. Palmer, S. Pence, L. Piel, K. Poh, D. Schneider, E. Schwartz, G. A. Scoles, D. Shah, D. M. Stone, C. Suarez, N. Taus, S. Taylor, S. J. Thomas, M. Ueti, V. Vadyvaloo, P. Vandyke, A. Van Wettter, A. Viall, J. Vittori, L. White, S. White, N. Wolley; Professors Emeriti, T. E. Besser, W. Brown, W. J. Foreyt, S. Hines, D. Jasmer, K. Potter, S. Srikumaran.

The WSU College of Veterinary Medicine and the Department of Veterinary Microbiology and Pathology have offered combined training in veterinary anatomic pathology and immunology/infectious disease research for over 40 years. Students in this program complete their doctoral research and pathology training in 6-7 years and become eligible for board certification by the American College of Veterinary Pathologists. It is one of the largest and

most successful programs that trains veterinary pathologists for leadership positions in academia, in the biotechnology and pharmaceutical industries, and in government institutions.

Incoming students spend the first three years focused on veterinary anatomic pathology training and complete the Master of Veterinary Anatomic Pathology (MVAP) degree.

After completing residency training, students interested in research can transition into a PhD program within the College of Veterinary Medicine to complete their graduate training.

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. Microbiology laboratory for performing and interpreting virologic, serologic, and related tests for the diagnosis of animal diseases.

572 Advanced Topics in Microbiology, Parasitology, or Immunology V 1-3 May be repeated for credit; cumulative maximum 4 hours. Advanced topics in microbiology, parasitology, or immunology presented in short-course, or workshop format.

591 Seminar in Diagnostic Microbiology 1 May be repeated for credit; cumulative maximum 8 hours. 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.

Veterinary Pathology

VET PATH

542 Advanced Diagnostic Pathology 3 (0-9) May be repeated for credit; cumulative maximum 18 hours. Necropsy laboratory for techniques and skills in performing and interpreting necropsy material.

545 Mechanisms of Disease 4 Biochemical and immunological mechanisms involved in disease processes from the comparative standpoint.

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.

582 Introduction to Histopathology 1 Course
Prerequisite: Enrollment in the Combined MS/Anatomic Pathology Residency Program or Clinical Microbiology Residency Program. Histological tissue identification, prototypical lesions associated with injury, and terminology of common diseases in domestic and non-domestic animals; emphasis on pattern recognition, diagnoses, written descriptions, tissue processing techniques.

592 Anatomic Pathology Seminar 2 May be repeated for credit. Gross and histopathologic description, diagnosis, and interpretation.

701 Master's Independent Capstone Project and /or Examination V 2-4 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.

Department of Viticulture and Enology

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Ste. Michelle Wine Estates Wine Science Center

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Associate Professor and Chair, J. C. Dodson Peterson; Professors, J. Harbertson, T. Henick-Kling, M. Keller, M. Moyer; Associate Professors, B. R. Bondada, T. Collins; Adjunct Professors, R. Coleman, S. Spayd; Professor Emeritus, G. Grove.

The Department of Viticulture and Enology offers a comprehensive education and research program designed to prepare students for successful careers in the wine and grape industry in Washington and beyond. Enhanced by renowned faculty and state-of-the-art facilities, the Department takes a hands-on, multidisciplinary approach in offering students technical, scientific, and practical experiences. The undergraduate degree path will lead to a Bachelor of Science in Viticulture and Enology. This degree pathway is offered exclusively at the Tri-Cities campus. The department also offers a minor in Viticulture and Enology for any student desiring to learn more about the juice and wine industry from the growing of grapes to harvest, processing and product evaluation.

Student Learning Outcomes

- Apply critical thinking and problem solving to address issues facing the global viticulture and enology industry.
- Demonstrate technical competence in viticulture and enology, especially as it relates to

viticulture, winemaking practices and the chemical, microbiological and sensory analysis of wines.

- Evaluate and adapt foundational viticultural and enological practices as appropriate to be environmentally and socially equitable.
- Promote and value life-long learning through engagement with government agencies, university research and extension, and industry in a professional manner.

Undergraduate Transfer Students

Students planning to transfer to Washington State University into Viticulture and Enology should take courses that meet the University Common Requirements (UCORE), and core requirements for Viticulture and Enology. Students are strongly encouraged to consult with and advisor and the Department Chair of Viticulture and Enology for further guidance.

Graduate Study

The Viticulture and Enology Department is active in research and hosts a diverse graduate student community. Depending on the area of interest, graduate degree paths lead to degrees of Master of Science in Crop Science, Master of Science in Food Science, Doctor of Philosophy in Crop Science and Doctor of Philosophy in Food Science.

Schedules of Studies

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

VITICULTURE AND ENOLOGY (TRI-CITIES ONLY) (122 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

First Term	Credits
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
Second Term	Credits
Arts [ARTS]	3
CHEM 102 or 106	4
ENGLISH 101 [WRTG]	3
SOIL SCI 201	3

Second Year

First Term	Credits
BIOLOGY 106 [BSCI] or BIOLOGY 120 [BSCI]	4
CHEM 345	4

Communication [COMM] or Written Communication [WRTG] ²	3 or 4
Specialization Elective ³	3

Second Term	Credits
BIOLOGY 107	4
MBIOS 101 or 305	3 or 4
STAT 212 [QUAN]	4
VIT ENOL 280	4
Complete Writing Portfolio	

Third Term	Credits
VIT ENOL 498 ⁴	2

Third Year

First Term	Credits
BIOLOGY 420	3
Diversity [DIVR]	3
PL P 300 ⁵	2
VIT ENOL 311	3
VIT ENOL 312	1
VIT ENOL 322	3
VIT ENOL 323	1

Second Term	Credits
ENTOM 351	3
MBIOS 303 or CHEM 370	4 or 3
VIT ENOL 340 [M]	3
VIT ENOL 341	1
VIT ENOL 414	3
VIT ENOL 415	1
VIT ENOL 490	1

Third Term	Credits
VIT ENOL 498 ⁴	2

Fourth Year

First Term	Credits
Equity and Justice [EQJS]	3
Humanities [HUM]	3
VIT ENOL 438	3
VIT ENOL 439	1
VIT ENOL 482	3
VIT ENOL 483	1

Second Term	Credits
HORT 416 ⁶	3
VIT ENOL 422	3
VIT ENOL 423	1
VIT ENOL 490	1
VIT ENOL 494 [CAPS] [M]	3
Specialization Electives ³	3

¹ MATH 106 is recommended.

² COM 102 or H D 205 recommended.

³ Specialization Electives (6 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.

⁴ VIT ENOL 498 is a variable credit 1-4 course. Four credits are required but can be divided as desired between second year, third term; and third year, third term.

⁵ PL P 429 can be taken as an alternative, but PL P 300 is recommended. PL P 300 is offered Even Years – Fall.

⁶ CROP SCI 411 [M] can be taken in the fall as an alternative to HORT 416.

Minors

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 earned in WSU courses or through WSU-approved education abroad or educational exchange courses. The minor requires VIT ENOL 113, 280, and 422, and at least 7 additional credits from BIOLOGY 420, HBM 350, PL P 300, SOIL SCI 201, VIT ENOL 438, or any other VIT ENOL course - with the following exception: No more than 4 credits of VIT ENOL 498 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. Students interested in minoring in Viticulture and Enology should contact the department at ve.program@wsu.edu, 509-372-7224.

Description of Courses

Viticulture and 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.

280 Grapevine Physiology 3 Course Prerequisite: VIT ENOL 113. Botanical and physiological concepts related to grapevine growth and development including photosynthesis, water relations, mineral nutrient impacts, and grapevine response to environmental conditions.

311 Viticulture I 3 Course Prerequisite: BIOLOGY 106 or 120; SOIL SCI 201; VIT ENOL 113; VIT ENOL 280. Fall viticulture theory and practices including identification and utilization of rootstocks, wine grapes, and wild species; grape species taxonomy and diversity; breeding efforts for grapevine improvement and clean plant material.

312 Viticulture I Laboratory 1 (0-3) Course Prerequisite: Concurrent enrollment in VIT ENOL 311. Fall viticulture theory and practices laboratory focused on identification of wine grapes, rootstocks, and wild species; grape species taxonomy and diversity, harvest decisions and practices.

322 Wine Fermentation and Production 3 Course Prerequisite: CHEM 345; VIT ENOL 113. Principles and practices of wine fermentation and production.

323 Wine Fermentation and Production Laboratory 1 (0-3) Course Prerequisite: Concurrent enrollment in VIT ENOL 322. Hands-on experience with the production of still and sparkling wine; evaluation of the impacts of vineyard practices, environment, cultivar, vintage, and production methods on wine composition and quality with a winemaking project. Must be 18 years of age or older to participate.

340 [M] Winery Operations and Equipment 3 Course Prerequisite: VIT ENOL 322. Fundamentals and practices for the unit operations and equipment involved in wine production from fruit receiving through bottling.

341 Winery Operations and Equipment Laboratory Field Trip 1 (0-3) Course Prerequisite: By department permission; concurrent enrollment in VIT ENOL 340. Week-long field trip over Spring Break to visit wineries and wine industry suppliers, specific visits vary by year but will include several wineries, at least one cooperage, and several equipment and packaging suppliers.

401 Special Topics in Viticulture and Enology V 1-4 May be repeated for credit; cumulative maximum 4 hours. Assessment and evaluation of special topics in viticulture and enology. Credit not granted for both VIT ENOL 401 and 501.

414 Viticulture II 3 Course Prerequisite: VIT ENOL 311. Winter and spring viticulture theory and practices including water relations and irrigation, major pest pressures, training and trellising, pruning, berry composition, light, and temperature.

415 Viticulture II Laboratory 1 (0-3) Course Prerequisite: Concurrent enrollment in VIT ENOL 414. Winter and spring viticulture theory and practices laboratory focused on pruning, trellising, and training; addressing vineyard nutrient issues; sprayer calibration; and assessing vine water status.

422 Wine Sensory 3 Course Prerequisite: STAT 212; VIT ENOL 113. Introduction to theory, principles, and applications of sensory evaluation techniques for the evaluation of appearance, aroma, flavor and texture of foods and wine; basic psychological and physiological processes underlying sensory analysis, sensory testing methodologies and the basic principles of flavor perception and chemistry. Cooperative: Open to UI degree-seeking students.

423 Wine Sensory Laboratory 1 (0-3) Course Prerequisite: VIT ENOL 422 or concurrent enrollment. Principles and application of sensory evaluation techniques for the evaluation of the appearance, aroma, flavor, and texture of wine. Typically offered Spring.

438 Wine Chemistry 3 Course Prerequisite: MBIOS 101 or 305; MBIOS 303 or CHEM 370; concurrent enrollment in BIOLOGY 420. Study of the chemistry and biochemistry of fruits; biochemistry and physiology of individual fruit compounds, aspects of processing including winemaking. Credit not granted for both VIT ENOL 438 and 538.

439 Wine Chemistry Laboratory 1 (0-3) Course Prerequisite: Concurrent enrollment in VIT ENOL 438. Assay wine and juice for its chemical constituents; laboratory safety in a wine chemistry setting. Credit not granted for both VIT ENOL 439 and 539.

482 Micro and Molecular Biology of Wine 3 Course Prerequisite: MBIOS 101 or 305; MBIOS 303 or CHEM 370; VIT ENOL 322. Molecular and microbiological aspects of yeast, filamentous fungi, and lactic acid bacteria fermentation of grape juice or must to produce still, sparkling, and aged wine; production and preservation of microbial starter cultures and the application of hazard analysis and critical control point systems; assessment of normal, stuck, and sluggish fermentations. Credit not granted for both VIT ENOL 482 and 582.

483 Micro and Molecular Biology of Wine Laboratory 1 (0-3) Course Prerequisite: Concurrent enrollment in VIT ENOL 482. Identification of microorganisms (non-spoilage and spoilage) using microscopic, molecular, and selective media methods; evaluation of factors related to the survival of yeast and bacteria in wine; strategies for restarting stuck yeast and malolactic fermentations. Credit not granted for both VIT ENOL 483 and 583.

490 Seminar in Viticulture and Enology 1 May be repeated for credit; cumulative maximum 2 hours. Course Prerequisite: VIT ENOL 113; VIT ENOL 280. Current topics in viticulture and enology; designed to enhance student educational pathways and career goals. S, F grading.

494 [CAPS] [M] Critical Thinking in Vineyard and Winery Management 3 Course Prerequisite: VIT ENOL 311; VIT ENOL 340; VIT ENOL 414. Integration and application of knowledge of grape production and wine science to major issues of the industry; improvement planning for existing winery and vineyard operations; incorporation of the principles of economic and environmental sustainability; leadership skill development applicable to the grape and wine industry.

497 Undergraduate Research in Viticulture and Enology V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By instructor permission; admitted to the major in Viticulture and Enology; junior standing. Research in viticulture and enology under faculty guidance.

498 Professional Work Experience/ Internship V 1-4 May be repeated for credit; cumulative maximum 4 hours. Course Prerequisite: By department permission; VIT ENOL 113; VIT ENOL 280. Undergraduate professional experience or internship course designed to complement the academic program, provide practical learning, and facilitate the transition to industry; one credit per 45 hours of approved experience. S, F grading.

501 Special Topics in Viticulture and Enology V 1-4 May be repeated for credit; cumulative maximum 4 hours. Assessment and evaluation of special topics in viticulture and enology. Credit not granted for both VIT ENOL 401 and 501.

518 Instrumental Analysis of Grapes, Wines, and Distilled Spirits 2 Course Prerequisite: By instructor permission. Lecture material and hands-on lab sessions working with both GC/MS and LC/MS systems for the analysis of complex samples of grapes, wines, and distilled spirits; meets over two weekends during the fall semester.

519 Analysis of Chromatographic and MS Data 2 Course Prerequisite: By instructor permission. Processing of gas chromatography (GC), liquid chromatography (LC), and mass spectroscopy (MS) data from raw data files for further processing in multivariate statistical software; workflow development for specific mass spectrometry data types; meets over two weekends during the fall semester.

526 Sensometrics 3 Course Prerequisite: STAT 511; STAT 512; VIT ENOL 422. Statistical and computational methods to advance the sensory and chemical evaluation of consumer products, specifically wines and spirits, including experimental design and methods, and data generation, analysis, and modeling.

538 Wine Chemistry 3 Study of the chemistry and biochemistry of fruits; biochemistry and physiology of individual fruit compounds, aspects of processing including winemaking. Credit not granted for both VIT ENOL 438 and 538.

539 Wine Chemistry Laboratory 1 (0-3) Course Prerequisite: VIT ENOL 538 or concurrent enrollment. Assay wine and juice for its chemical constituents; laboratory safety in a wine chemistry setting. Credit not granted for both VIT ENOL 439 and 539.

566 Grape Ripening and Composition 3 Course Prerequisite: By instructor permission. Course Prerequisite: By instructor consent. Key biochemical and molecular aspects of primary, secondary, tertiary, and trace compounds/minerals during grape ripening and development; impact of environmental and climatic variation on grape ripening and development.

582 Micro and Molecular Biology of Wine 3 Molecular and microbiological aspects of yeast, filamentous fungi, and lactic acid bacteria fermentation of grape juice or must to produce still, sparkling, and aged wine; production and preservation of microbial starter cultures and the application of hazard analysis and critical control point systems; assessment of normal, stuck, and sluggish fermentations. Credit not granted for both VIT ENOL 482 and 582.

583 Micro and Molecular Biology of Wine Laboratory 1 (0-3) Course Prerequisite: Concurrent enrollment in VIT ENOL 582. Identification of microorganisms (non-spoilage and spoilage) using microscopic, molecular, and selective media methods; evaluation of factors related to the survival of yeast and bacteria in wine; strategies for restarting stuck yeast and malolactic fermentations. Credit not granted for both VIT ENOL 483 and 583.

590 Seminar in Viticulture and Enology 1 May be repeated for credit; cumulative maximum 2 hours. Current topics in viticulture and enology; designed to enhance student educational pathways and career goals. S, F grading.

591 Graduate Seminar 1 Course Prerequisite: Enrollment not allowed for students currently enrolled in VIT ENOL 590. Typically taken during a student's final semester. Delivery of an exit seminar during the departmental seminar series.

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.

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), P. Chilson (English), R. Christopher (English, Vancouver), M. Diversi (Human Development, Vancouver), P. Glazebrook (Philosophy), L. Gordillo (History, Vancouver), L. Heidenreich (History), D. Hellegers (English, Vancouver), M. Johnson (Sociology), J. Kmec (Sociology), D. Lee (English), P. Narayanan (English, Vancouver), V. Navarro-Daniels (Languages, Cultures, and Race), M. Nicolas (English), W. Olsen (English, Vancouver), S. Peabody (History, Vancouver), E. Schwartz (Mathematics and Statistics and School of Biological Sciences), N. Shahani (English, Vancouver), J. Sherman (Sociology); Associate Professors, C. Dickey (Music), J. Lupinacci (Education), M.-A. Neuilly (Criminal Justice and Criminology), A. Pedneault (Criminal Justice and Criminology), A. Salazar (Human Development, Vancouver); Assistant Professors E. Ávalos (Languages, Cultures, and Race), M. Bhatia (Sociology), M. A. Miller (English), B. Poudyal (English), E. Van Alst (Anthropology); Scholarly Professors, B. Duell (Psychology), K. Robertson (English, Vancouver), L. Russo (English); Scholarly Associate Professors, R. Gregory (Digital Technology and Culture), B. Hewlett (Anthropology, Vancouver), K. McBride (Molecular Biosciences and College of Veterinary Medicine), M. Sciachitano (English), A. Spradlin (Psychology), Lauren Westerfield (English); Teaching Associate Professors, M. Lobnitz (English, Vancouver), M. Parkhurst (Music); Scholarly Assistant Professor, L. Hoeller (Languages, Cultures, and Race); Lecturer, N. Thrush (Art, 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, Gender, and Sexuality Studies and

Queer Studies. The program also offers a Graduate Certificate in WGSS (<https://wgss.wsu.edu/graduate-certificate/>). 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 plans.
- 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 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
Equity and Justice [EQJS]	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 College of Arts and Sciences requirements, students must complete 1 additional lab credit of [BSCI] or [PSCI] for a total of 8 credits (2 labs).

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; 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 upper-division and earned in WSU courses 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, Gender, and Sexuality Studies

Completion of the minor in Women's, Gender, and Sexuality Studies requires a minimum of 16 credits with a 2.0 GPA. At least 9 credits must be upper-division and earned in WSU courses 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 [EQJS] 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 [EQJS] 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.

222 [EQJS] Fat Studies 3 Course Prerequisite: Sophomore 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 222, WGSS 222.)

230 Human Sexuality 3 Sexuality in personal development; personal, cultural, biological influences on sexual identification and behavior; fertility, reproduction, sexual functioning, sexuality and personality. Recommended preparation: PSYCH 105. (Crosslisted course offered as PSYCH 230, WGSS 230.)

251 [EQJS] 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 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 [EQJS] [M] Intersections of Race, Class, Gender, Sexuality, and Dis/ability 3 Course Prerequisite: SOC 101 or WGSS 101. Study of intersections among race, class, gender, sexuality, and dis/ability 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 Sex and Gender** 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 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 ART 310, WGSS 310.)
- 316 [DIVR] Gender in Cross Cultural Perspective** 3 Cross-cultural examination of gendered status and roles, sexuality and marriage, folk concepts of sexual anatomy in Western and non-Western societies; concepts of nature and culture are explored through a variety of perspectives. Recommended preparation: Sophomore standing. (Crosslisted course offered as ANTH 316, WGSS 316.)
- 317 Queer Literature** 3 Queer literature with focus on the history of literature about minoritized genders and sexualities and exploration of current authors. (Crosslisted course offered as ENGLISH 317, WGSS 317.)
- 321 Topics in Women's, Gender, and Sexuality Studies** V 1-3 May be repeated for credit; cumulative maximum 9 hours. Focused study of subjects/issues relating to women, gender, and sexuality.
- 324 Psychology of Gender** 3 Contemporary overview of the psychological theory and research on sex and gender. Recommended preparation: PSYCH 105. (Crosslisted course offered as PSYCH 324, WGSS 324.)
- 332 [EQJS] 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 Gender and Decolonial Representation in 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. Recommended preparation: SOC 101. (Crosslisted course offered as SOC 351, WGSS 351.)
- 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.)
- 366 [DIVR] LGBTQ+ Perspectives in Music** 3 Exploration of music through the lens of LGBTQ+ representation as a way of examining the personal and social struggles the community has endured for decades. (Crosslisted course offered as MUS 366, WGSS 366.)
- 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.)
- 373 [HUM] Empire, Gender, and Postcoloniality in Global Literature** 3 Literary/cultural texts and theory focusing on postcolonial conditions (and their gendered operations) in the shadow of empire and imperialism. (Crosslisted course offered as ENGLISH 373, WGSS 373.)
- 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. Recommended preparation: SOC 101. (Crosslisted course offered as SOC 384, WGSS 384.)
- 385 [EQJS] Lesbian, Gay, Bisexual, Transgender, and Queer 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 [EQJS] 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 [EQJS] 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 Gender, Race, and Environmental Literature** 3 Course Prerequisite: Junior standing. Diversity of writings by queer writers, women writers, and writers of color exploring 20th and 21st century environmental issues of the American West and Pacific Rim through the lens of ecofeminism and environmental justice. (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 and 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 and Pacific American women. (Crosslisted course offered as CES 411, WGSS 411.)
- 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: By department permission; 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. 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.

541 Feminist and Queer Approaches to Research 3 A survey of qualitative research methods from queer and feminist perspectives including applications and practice.

561 Topics in Feminist and Queer Studies 3 Specialized coursework on contemporary debates and inquiry in feminist and queer studies to provide breadth and depth in the interdisciplinary field of women's, gender, and sexuality studies.

581 Feminist and Queer Theories and Frameworks 3 Seminar on contemporary works by major theorists and scholar-activists in feminist and queer studies, providing fundamental theoretical background and conceptual vocabulary in the interdisciplinary field of women's, gender, and sexuality studies.

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.
- Transfer Fresh Start Policy – 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 previous institutions may be disregarded, provided the work was completed at least four (4) years before the enrollment term at Washington State University and the applicant has taken at least one year away from postsecondary enrollment. After the student has completed 12 semester credits at WSU with a cumulative GPA of 2.0 or higher, the prior credits earned in courses graded C or better will be restored. Only the courses and credits, not grades or grade points, will be restored. The courses that were graded C- or below will remain excluded.

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 WRTG, QUAN, BSCI, and PSCI. Additional UCORE requirements will be satisfied on a course-by-course basis. An individual course completed within the AS-T degree may not satisfy more than one UCORE category. Additional courses, up to the 73-semester credit limit, will be reviewed for transfer on a course-by-course basis.
- 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 appropriate request 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 appropriate request 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 credit 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 credits (including audits) in any one semester or 4 credits (including audits) in the summer session. The limitation includes any combination of credit and audit credits. 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.
- Loan Programs: Credit hour requirements for specific loan programs may vary based on the funding type.

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.

Definition of Academic Credit. Academic credit is a measure of the minimum time commitment required of a typical student enrolled in a specific course. At WSU, a course hour is 50 minutes in length. For the WSU semester system, a one-semester lecture credit is assigned a minimum of 45 course hours, of which a minimum of 15 course hours are spent in instructor-led activities. Students should expect to spend a minimum of 30 additional course hours in outside activities to support their learning and success.

Instructor-led Activities. Instructor-led or instructor-supervised activities include time spent in scheduled course activities organized by an instructor, such as lectures, discussions, laboratories, studios, ensembles, visual media, fieldwork, and clinical hours.

Outside Activities. Outside activities involve students completing course requirements, including reading, studying, problem-solving, writing, homework, and other preparations for the course. Typically, students spend two hours on outside activities for every hour spent in class. Achievement of course goals may require more than the minimum time commitment.

Minimum In-Class Time Commitments. Based on a synchronous format, as defined in Educational Policies and Procedures Manual (EPPM) 13.1.6, the

minimum in-class time commitment per term (e.g., a 15-week semester with an additional finals week; a five-week block during a semester; a six-week summer session; a three-week winter intersession; a study abroad over break) must adhere to the following scheduling contact hour policies. Definitions of each class type can be found in EPPM 13.1.7:

- Lecture or Recitation: A minimum of 15 course hours of instructor-led activities plus at least 30 hours of outside activities per term for each credit.
- Studio: A minimum of 30 course hours of studio per term plus at least 15 hours of outside activities for each credit.
- Laboratory: A minimum of 45 course hours of laboratory per term for each credit.
- Ensemble: A minimum of 60 course hours of ensemble per term for each credit.
- Practicum/Clinical Experiences for Credit: (including internships, field studies, and clinical experiences): At least 45 course hours per term for each credit.
- Independent Study: (e.g., 499, 600 credits): At least 45 course hours per term for each credit.
- Dissertation, Thesis, or Master's Project: (700, 701, 702, 800 credits): Credits are determined through an agreement between the student and their advisor, based on the time commitment required for the specific research or examination activities.
- Other: At least 45 course hours per term for each credit.

Instructor Responsibilities. Instructors must ensure that all courses, regardless of delivery modality (face-to-face, hybrid, or online), meet the following criteria:

1. Cover the same material with the same depth across all modalities.
2. Provide regular and substantive interaction with enrolled students.

Regular Interaction: Instructors must interact with students on a predictable and scheduled basis.

Substantive Interaction: Instructors must engage students through teaching, learning, and assessment. Additionally, instructors must perform at least two of the following activities:

- Provide direct instruction.
- Assess or provide feedback on students' coursework.
- Provide information or respond to questions about course content or competencies.
- Facilitate group discussions regarding course content or competencies.
- Guide other instructional activities approved by the institution or program's accrediting agency.

These requirements apply to all course modalities to ensure consistency in educational quality and student engagement.

Compliance and Monitoring. New and revised courses submitted through either the major or minor curricular change process must include a report from the WSU Credit-Hour Calculator to demonstrate adherence to credit and minimum time commitments.

To ensure ongoing adherence to credit and minimum time commitments, academic units and colleges will review the schedule of classes each term to check a judgment sample of scheduled courses for compliance to this regulation. The WSU Credit-Hour Calculator can assist in these reviews.

28. HIGH SCHOOL STUDENTS. High school students may enroll at Washington State University provided they are admitted to the university and pay the appropriate fees. Such enrollments may be for high school or university credit or both. For fall and spring semesters, all eligible high school students enroll through Running Start. For Summer Session, special fees may apply.

29. WORK FROM HIGH SCHOOLS AND VOCATIONAL BUSINESS COLLEGES. No university credit shall be given for work from high schools or vocational business colleges. Recognized exceptions are College Board Advanced Placement (AP) and International Baccalaureate (IB), for which official score reports are required to award credit. Students are awarded transfer credit for Running Start (RS), College in the High School (CHS) and similar programs only when official college transcripts are presented. Credit is not granted on the basis of the high school transcript.

31. CREDIT TO HIGH SCHOOL STUDENTS FOR COURSES COMPLETED PRIOR TO HIGH SCHOOL GRADUATION. Washington State University encourages students to complete rigorous college preparatory courses in high school, or to take college courses while in high school if they have adequate preparation. In some cases college credit may be awarded when consistent with the following criteria.

- a. High School Courses: Some high schools may offer instruction at the college level, and when consistent with university and academic department policies, college credit will be awarded if student achievement is validated by an approved national examination such as Advanced Placement or International Baccalaureate or Cambridge International, or a review or examination administered by the university.
- b. 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.
- c. 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.

- a. Repeating courses graded C- or below. To attempt to improve the cumulative grade point average, a student may repeat courses in which a C- or below was received. When such a course is repeated, only the last grade contributes to the grade point average and total credits 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 credits, the credit value of the repeat course supersedes the credits 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 NOTICE AND SUSPENSION

Academic Notice

- a. Undergraduate students whose semester (excluding winter and 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 notice after being reinstated. Academic departments may release students from the major who are on academic notice. See rule 53.

Academic Suspension

- b. First-time, first-year undergraduate students are suspended from the University after their first term of enrollment if their semester grade point average is below 1.0. Individuals are suspended from the university for one full semester (Fall or Spring). To re-enroll for courses offered through any WSU campus students must apply for reinstatement. Suspended individuals may not seek status as a non-degree seeking student. Suspended individuals may enroll in summer session.

Appeal of Academic Suspension

Students may appeal an Academic Suspension in cases where there are compelling and documented circumstances. If the appeal is approved, the student may return to the university without sitting out a semester upon reinstatement.

39. ACADEMIC DISMISSAL

Undergraduate students are dismissed from the university after the third semester (excluding winter and summer session) in which the cumulative grade point average is below 2.0. (The three semesters do not have to be consecutive for the dismissal policy to apply.) 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. To re-enroll for courses offered through any WSU campus students must apply for reinstatement and WSU Admissions. Dismissed individuals may not seek status as a 'non-degree seeking student.' Dismissed students may enroll in summer session.

Appeal of Academic Dismissal

Students may appeal a dismissal in cases where there are compelling and documented circumstances. If the appeal is approved, the student may return to the university without sitting out two full semesters upon reinstatement. Appeals are considered where the student has otherwise demonstrated an ability to succeed at the university and the compelling circumstances that led to the poor academic performance have been resolved.

40. REINSTATEMENT FOR FORMER STUDENTS RETURNING. Former Students Returning (FSR) may seek reinstatement after completing their suspension (one semester away) or dismissal (two semesters away) from the University. Former students applying 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 the suspension or dismissal 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 notice. The specific conditions of enrollment for students who are on academic notice will be determined by the interviewer or Review Board. Students on academic notice who fail to comply with the reinstatement conditions will be dismissed from the university.

43. FRESH START POLICY. Former students who have not attended WSU for at least four years and whose cumulative GPA was less than a 2.0 when they stopped attending may request a fresh start when they return to WSU.

A fresh start begins once the student is officially enrolled following the first day of the term. Initially, the student's transcript will be marked to indicate that the previous coursework does not count. All credits and grade points earned will be excluded.

After the student has completed 12 credits at WSU with a cumulative GPA of 2.0 or higher, the prior credits earned in courses graded C or better will be restored. Only the courses and credits, not grades or grade points, will be restored. The courses that were graded C- or below will remain excluded.

The restored credits will apply toward University requirements, which are set at the time of readmission to WSU and published in the catalog.

Students apply for a fresh start by contacting the designated office on their campuses: Pullman, the Academic Success and Career Center; Everett, Student Services; Global, the student support team or advisor; Tri-Cities, the Learning Commons; and Vancouver, the Engaged Learning and Career Center.

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.

48. **ENROLLMENT POLICY TO MAINTAIN ELIGIBILITY TO ENROLL.** Currently enrolled students will be eligible to enroll for future terms when they meet the following requirements:

- Undergraduate students will be eligible to enroll (barring any holds) when they are continuously enrolled each semester (excluding summer). They do not need to enroll in summer session classes to maintain their enrollment eligibility. Undergraduate students may also take one semester off (fall or spring) and will still be eligible to enroll for the next semester. However, students who are not enrolled for two semesters in a row (fall/spring or spring/fall) will not be eligible to enroll without re-activating their admission as a returning student. There is no fee for this re-activation. (See [Returning Student Application](#).)
- Graduate students must enroll for at least 2 credits each fall and spring semester. Unapproved absences, defined as not registering for credits or not being on approved leave, may result in discontinuation from the Graduate School. (For details, refer to [Chapter 5.a.2](#) in the Graduate School Policies and Procedures Manual.)
- Students in the professional programs of medicine, pharmacy, veterinary medicine, the Doctor of Nursing Practice, and the MBA business career will be eligible to enroll (barring any holds) when they are continuously enrolled each semester (excluding summer). Students should consult their respective colleges regarding leave of absence policies and options.

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. Requests for pass, fail grading are processed by the campus Registrar's Office.

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 or Pharmacy 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, or in the Veterinary Medicine (DVM) 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 H, NH, 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.
- Courses carrying a UCORE designation can be taken for a pass, fail (P, F) grade, but the pass, fail grade will not satisfy a UCORE requirement.
- 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 credits required for the undergraduate degree, though some majors require a higher percentage of the total credits. 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 been admitted to a primary major may be admitted to pursue a minor with the approval of the offering department.
- (2) The minimum university requirement for awarding an undergraduate minor is 16 semester credits, 9 of which must be in upper-division work earned in WSU courses or through WSU-approved education abroad or educational exchange courses.
- (3) Departments specify the requirements for the minor, including number of credits, courses, minimum GPA, and any other specific requirements as detailed in the *WSU Catalog*.
- (4) Unless otherwise noted by the department offering the minor, courses forming a minor may also be used to satisfy the requirements of a major.
- (5) 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.
- (6) Students may not be admitted to pursue a minor, or be awarded a minor, if it carries the same name as any other current area of study or completed academic awards from WSU. This includes current or completed degrees; majors; 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 as 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, and any other specific requirements as detailed in the *WSU Catalog*.
- (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 area of study or completed academic awards from WSU. 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 credits. 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.

60. STUDENT VACCINATION REQUIREMENTS. All students newly enrolled at a physical home campus location must comply with WSU Executive Policy 43, requiring proof of vaccination, demonstrated immunity to, or screening for certain illnesses. This requirement also applies to those students who reapply for admission for Fall 2023 or later.

A student's home campus is defined in their student record. If a student is working/studying at a different location (e.g., internship, Extension site), the guidelines for their home campus apply. A student who transfers from WSU Global to a physical campus, or takes classes on a physical campus (e.g., through intercampus enrollment), is subject to the vaccination requirements of the physical campus.

For all physical campus locations, a student is initially compliant when they have submitted proof of vaccination for the following illnesses. Health sciences programs and those with clinical experiential learning requirements may have additional vaccination requirements.

- Hepatitis B;
- Measles (MMR);
- Pertussis (Tdap); and
- Varicella.

For WSU Pullman only, the additional requirement applies:

- Meningitis (MCV4/ACWY).

Additionally, students from certain geographic areas or high-risk situations will be required to be screened for tuberculosis.

When applicable, religious, or medical exemptions and/or proof of immunity will be considered for each required vaccination.

For more information on how to comply with WSU's vaccination requirement, students should visit: <https://cougarhealth.wsu.edu/medical-services/specialty-care-and-services/immunizations/required-immunizations-fall-2023/>.

Students who do not comply will not be able to register for classes delivered in-person on a physical campus in subsequent terms, and a hold will be placed on their student account. If students do not complete these steps, it may impact their ability to participate in campus events. The university may impose further restrictions in the interest of maintaining public health until a student has complied with the vaccine requirement(s).

Program-specific student vaccination requirements must be posted on the program's website and in its enrollment materials and are considered a condition of enrollment or admission in that program.

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 <https://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.
- 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.

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 notice 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.

- Students:** 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.
- 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.
- 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.
- 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.

- Reasonable Religious Accommodation.** Washington State University provides reasonable religious accommodations enabling students to avoid conflict with their sincerely held religious beliefs or practices. Students seeking reasonable religious accommodations must submit written requests to the Office of the Dean of Students (ODOS), identifying:

A. The course and instructor names,

B. The specific accommodations they are requesting (including dates/frequency),

C. Their sincerely held religious belief or practice, and

D. How the requested accommodation would avoid conflict with that religious belief or practice.

Upon receiving a request for religious accommodation, ODOS will ask for any additional information needed to review the request and contact the student's instructor to provide notice of the student's requested accommodation. If necessary, ODOS will collaborate with the student, the instructor, and the instructor's department to assess whether there are any effective alternatives that may align with the student's needs and the requirements of the course at issue. Students, instructors, and ODOS may contact WSU Compliance and Civil Rights (CCR) for a consultation if they have questions or concerns at any point in the process. If they believe they have not been appropriately accommodated, students may report their concerns to CCR. Students are encouraged to submit requests as soon as possible to allow sufficient time for this review and collaboration and the implementation of any reasonable religious accommodations. Proactive review of their course syllabi or program requirements and other resources may enable students to make more timely requests. Although it is not a requirement, it is best practice for students to request accommodations at least two weeks before the start of the course, lab or assignment deadline, program or event, or other relevant activity. See <https://deanofstudents.wsu.edu/student-resources/religious-accommodations/>.

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.

The final exam schedule gives the maximum time that may be used for the final, including any administration time. Classes which are 1 – 3 credits are allowed up to 2 hours. Classes which are 4 credits or more are allowed up to 2 hours and 50 minutes.

While instructors may use the maximum amount of time scheduled for the final, they are not required to use all of the allotted time and may elect to give a shorter final exam.

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. PREPARATION 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 can be exempt from this rule when scanning/emailing in this timeframe is not possible.

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, Juneteenth, 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, Juneteenth, 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 provides reasonable religious accommodations enabling students to avoid conflict with their sincerely held religious beliefs or practices. A religious accommodation is reasonable if it does not cause undue hardship to WSU operations; factors include safety, cost, efficiency, academic requirements, business needs, and the rights of others. Reasonable religious accommodations are individualized to the needs of the students who request them and the settings for which they are requested.

- Students seeking reasonable religious accommodations must submit written requests to the Office of the Dean of Students (ODOS), identifying:
 - A. The course and instructor names,
 - B. The specific accommodations they are requesting (including dates/frequency),
 - C. Their sincerely held religious belief or practice, and
 - D. How the requested accommodation would avoid conflict with that religious belief or practice.
- Students are encouraged to submit requests as soon as possible to allow sufficient time for this review and collaboration and the implementation of any reasonable religious accommodations. Proactive review of their course syllabi or program requirements and other resources may enable students to make more timely requests. Although it is not a requirement, it is best practice for students to request accommodations at least two weeks before the start of the course, lab or assignment deadline, program or event, or other relevant activity.
- Upon receiving a request for religious accommodation, ODOS will ask for any additional information needed to review the request and contact the student's instructor to provide notice of the student's requested accommodation. If necessary, ODOS will collaborate with the student, the instructor, and the instructor's department to assess whether there are any effective alternatives that may align with the student's needs and the requirements of the course at issue. This may include evaluation of undue hardship.
- Students, instructors, and ODOS may contact WSU Compliance and Civil Rights (CCR) for a consultation if they have questions or concerns at any point in the process. If they believe they have not been appropriately

accommodated, students may report their concerns to CCR. Students are encouraged to submit requests as soon as possible to allow sufficient time for this review and collaboration and the implementation of any reasonable religious accommodations. Proactive review of their course syllabi or program requirements and other resources may enable students to make more timely requests. Although it is not a requirement, it is best practice for students to request accommodations at least two weeks before the start of the course, lab or assignment deadline, program or event, or other relevant activity. See <https://deanofstudents.wsu.edu/student-resources/religious-accommodations/>.

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.
P	(Credits attempted are calculated in GPA) 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.** Students should follow these steps to resolve complaints about grades, instruction, or course policies:

- For concerns on course policies as outlined in the course syllabus, the complaint should be emailed to the instructor within 5 business days after the first day of class instruction, or for students who enroll after the first day of class within 5 days of receiving access to the syllabus, in either hard-copy or electronic form.
- For grades on individual assignments, the complaint should be emailed to the instructor in a timely way (typically within a week of receiving the grade, or as defined by the instructor) so that the issue may be addressed.
- For final grades, the complaint must be emailed to the instructor within 10 business days of the final grading deadline and posting to the transcript.
- For any other concerns about instruction that arise during the course, the student should email the instructor to attempt to resolve the issue.

If the complaint is not resolved with the instructor within 10 business days of sending the email, or if the instructor is unavailable, then the student may work directly with the chair of the academic department in which the course is offered. The chair's decision shall be rendered within 10 additional business days.

After the chair's decision, the student may appeal to the Dean's Office of the academic college. Complaints must be emailed to the college dean within 10 business days of the chair's decision. The written statement should:

- describe the complaint,
- provide supporting evidence of how the student has attempted to resolve the complaint,
- indicate how the issue affects the student, and
- state the remedy sought from the college dean.

The decision of the college dean is the final step and shall be made within 10 business days.

On the Everett, Tri-Cities, and Vancouver campuses, the program leader or academic director will act in place of the department chair. The program leader or academic director will outline next steps if the student is unsatisfied.

The University Ombuds 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 10 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:

- a. New students are held to the University requirements that are published in the catalog with the effective date that corresponds to their Admission term.
- b. 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.

- c. 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:

- a. 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.
- b. 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.

- c. 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.
- d. 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.
- e. 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.
- f. 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 credits 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 credits 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. Students should review their unofficial transcript prior to ordering the official transcript. Official transcripts are not withheld for any reason, including instances where a student has current or outstanding debt to the university.

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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