The College of Arts and Sciences

Dr. Charles A. McAdams, Dean

- Department of English and Modern Languages
- Department of Fine and Performing Arts
- Department of Humanities and Social Sciences
- Department of Mathematics, Computer Science and Information Systems
- Department of Military Science
- Department of Natural Sciences
- Honors Program

College of Arts and Sciences

Dean: Charles A. McAdams

The College of Arts and Sciences includes the Departments of English and Modern Languages; Fine and Performing Arts; Humanities and Social Sciences; Mathematics, Computer Science and Information Systems; Military Science; Natural Sciences; and the Honors Program.

The College of Arts and Sciences provides students basic communication skills, problem solving and critical thinking skills; a foundation in liberal arts, science and mathematics; individual professional preparation in selected fields; pre-professional education; and cultural enrichment. The college offers a wide spectrum of undergraduate majors, minors and cooperative programs with other units of the University. Additionally, many individualized programs are available to professionally-oriented students. Graduates are readily accepted into graduate and professional schools or placed in positions compatible with their field of study.

Programs in the College of Arts and Sciences provide a rich collegiate experience and the technical and intellectual skills necessary for professional competence. The traditional classroom setting is complemented by laboratory classes and field experiences, enabling the student to put into immediate practice the concepts and understandings gained. Through these processes, students have opportunities to grasp the value of individual integrity, respect for others' ideas, sensitivity to cultural diversity and to recognize the potential for personal growth.

General education and service courses offered by the college assure an understanding of the role of the scientific process and problem solving in daily living, and awakens students to the values of their own cultural heritage and that of others. These courses assist students in learning to apply and expand current knowledge thereby broadening the base of educational experiences to make students better contributors to society and assist them in leading fuller more rewarding lives. Students learn as individuals and as members of teams to communicate ideas effectively, apply emerging technologies, deal with abstractions, develop analytical skills, synthesize ideas, evaluate current actions against historical perspectives, develop discriminating aesthetic judgments and give form to visions of their imaginations.

INTERNATIONAL STUDY / 80

Study Abroad Coordinator: Jeaneth Puriel

International student exchange, study abroad and internship programs support the array of academic programs at Northwest. Whether a faculty-led short term program, a summer program, a trimester or academic year, students have the opportunity to earn Northwest credit abroad, at the same time they are exposed to a new educational system. Usually taken in the sophomore or junior year, students broaden their horizons by traveling to an international location to study with local citizens and/or international students to experience global living.

Bilateral, direct and consortium agreements are in place and continue to be updated to satisfy the need of students. Study Abroad programs include Australearn, Asialearn, Eurolearn, International Student Exchange Program (ISEP), Magellan Exchange, Mexico Exchange, Missouri-London Program, Asia Program, and faculty-led short term programs.

Course Descriptions

College of Arts and Sciences / 71

101 Freshman Seminar (1 hour)
Freshman Seminar is designed to introduce students to Northwest. Topics of exploration will include adjustment to University life, skills necessary to make the most of the University experience, General Education requirements, academic programs and advisement, career exploration, campus and community resources, taking advantage of cultural and extracurricular events, and assuming responsibility for one's own University experience. (F)

301 British Life and Culture (3 hours)
The student will survey British cultural, social, and political life through a series of lectures (by British experts) and field trips. This course is available only to those in the Missouri London Program. (F, S)

International Study / 80

299 International Study-Study Abroad ("Country") (3-15 credit hours)
Students studying abroad in a Northwest program enroll in this course for the period of their stay. This maintains the student's enrollment during the period of study abroad program and upon return facilitates the translation of coursework taken abroad into Northwest credit.

Department of English and Modern Languages

Chairperson: Michael Hobbs

Faculty: Kori Binnette, Richard Black, Stancy Bond, Wayne Chandler, Andre Davis, Karen Detrixhe, Eric Dickey, Steven Frogge, John Gallaher, Robin Gallaher, Tom Hardee, Brenda Lewis, Mindee Lieske, Jeffrey Loomis, Francisco Martinez, Nancy Mayer, Ildiko Olasz, Beth Richards, Luke Rolfes, Marcy Roush, Brenda Ryan, Jenny Rytting, Richard Sonnenmoser, Kenton Wilcox

Statement of Mission

Northwest Missouri State University is a learning-centered community of scholars offering undergraduate and selected graduate programs. The University is committed to preparing broadly educated and engaged citizens for a world of constant change, applying information technology to improve learning processes, and promoting continuous improvement to enhance performance in all its activities. Northwest seeks to expand access to learning and promote research designed to address the needs of our students and stakeholders.

DEGREE PROGRAMS

The Department of English and Modern Languages offers seven majors, three undergraduate degree programs and five minors.

The 30-hour Bachelor of Arts in English provides a course balance of advanced writing and literature that is excellent preparation for the study of law, business and medicine; for careers in teaching, publishing, writing, advertising and journalism; and for management and other positions requiring interpretive, diagnostic and analytic problem-solving abilities.

The 36-hour Bachelor of Science in English provides extensive writing experience and familiarity with editing and research skills, in response to the proliferation of desktop and small publishing companies, technical writing centers and in-house magazines or journals. This major provides preparation for careers especially in the fields of publishing and technical writing as well as for the study of law, business and medicine.

The 39-hour Bachelor of Science in Education in English and the 54-hour Comprehensive Bachelor of Science in Education in English both provide extensive writing experience, familiarity with the full chronological range of American and British literature, knowledge of traditional and modern grammars, rhetorical theory and history of the English language. Either major, when completed with the requirements of the B.S.Ed. Secondary Program, meets Missouri secondary school English teaching certification standards.

Bachelor of Arts and Bachelor of Science degrees are available in Spanish. These require 37 hours of study in the discipline. A minor or collateral coursework is required for these majors.

The Bachelor of Science in Education degree in Spanish (34 hours) provides preparation for the teaching of the language, and must be completed under the requirements for the B.S.Ed. degree, Elementary/Secondary Program, which meets the Missouri teacher certification standards for the teaching of the target language in grades K-12. A strong literature preparation is encouraged in order for success on the state examination.

The 24-hour Minor in Writing complements any major whose study is enhanced by improved written expression. The minor includes Mass Communication electives and a range of advanced-study opportunities in creative writing, technical writing, popular media and language.

The 24-hour Minor in English enhances students' analytic and communicative skills and prepares them for those career fields named above.

The 30-hour Minor in English is an attractive choice for students majoring in another teaching area such as foreign languages, social science, speech, art or music. This minor offers a balance of writing and literature courses similar to the Bachelor of Arts in English and, when completed with the requirements of the B.S.Ed. degree, Secondary Program, meets Missouri secondary school English teaching certification standards.

A minor in Spanish is required to complete 24 hours of study in Languages and to follow a prescribed series of courses. The minor taken under either the B.S.Ed. degree, Elementary/Secondary or Elementary Programs meets Missouri teacher certification degree requirements for a K-9 Spanish endorsement.

A minor in Deaf Studies is available to students majoring in another area. This minor requires 23 hours of study in American Sign Language as well as special education.

An Individualized Language minor (27 hours) allows students to study any language (other than English) through an immersion program outside of the United States. The program of study must be approved by the Department of English and Modern Languages and the Study Abroad Office in advance.

Test-Out Policy

Students may challenge their placement in ENGL 10-110 Introduction to College Writing by passing a writing test. Students should contact the department for additional details. Credit may be granted for AP or IB exams. Please see pages 14-16 for the specific policy.

Test-out is also available for LANG 14-131, 14-132, 14-141, 14-142, 14-151, 14-251 or 14-252. Students should consult with the Languages faculty regarding appropriate test-out level. See the department secretary for further details. Languages credit may be granted for AP, CLEP or IB exams, please see pages 14-16 for the specific policy.

Language Requirement

Students should follow the course sequences and listed prerequisites for language courses. Permission to take a course out of sequence to satisfy the "B.A. Specific Requirement" must be approved in advance by petition to the chair of the department. Contact the department for a petition form.

The nine hours of Modern Language required to graduate with a Bachelor of Arts degree may also be used to satisfy the total required hours for a major or minor in languages. Language 14-141 and 14-142 are prerequisite courses; these may be counted toward the Spanish B.A. major, but not for the Spanish B.S., Spanish B.S.Ed., or Spanish minor.

Language courses meeting the Multicultural/Diversity Competency requirement may also be counted toward the B.A. degree Language Requirement.

Portfolio Requirement

Successful completion of all modern language degrees requires the presentation of an academic and professional portfolio during the student's senior year. Immediately upon declaring a major, the student must request a portfolio packet from his/her advisor.

Language Majors

In order to qualify for advanced standing in language, students must (1) not be on academic probation or suspension and (2) have completed six hours of 200-level courses or the equivalent in a language.

English / 10

Core Requirements for Majors in English

	Semester Hours
ENGL 10-233 American Literature: Beginnings to 1865	3
ENGL 10-234 American Literature: 1865 to the Present	3
ENGL 10-245 English Literature: *Beowulf* through the 18th Century	3
ENGL 10-246 English Literature: Romantics to the Present	3
*ENGL 10-305 The Literary Critic's Craft	2
ENGL 10-372 Introduction to Shakespeare	3
*ENGL 10-405 Senior Seminar	1
Total Hours	**18**

*B.S. in English students will take ENGL 10-410 Professional Portfolio Preparation instead of ENGL 10-305 and ENGL 10-405.

MAJORS

Major in English, 30 hours: B.A.–Minor Required

CIP: 230101

Required Courses	Semester Hours
English Core Requirements	18
One course from:	3
ENGL 10-311 Advanced Composition	
ENGL 10-312 Creative Writing: Creative Nonfiction	
ENGL 10-313 Creative Writing: Fiction	
ENGL 10-314 Creative Writing: Poetry	
ENGL 10-315 Writing for the Professions	
Approved electives to total 30 hours	9

Major in English, 36 hours: B.S.–Minor Required

CIP: 230101

Required Courses	Semester Hours
English Core Requirements	18
ENGL 10-315 Writing for the Professions	3
One course from:	3
ENGL 10-304 Rhetorical Writing	
ENGL 10-311 Advanced Composition	
ENGL 10-420 Publication Skills	

ENGL 10-430 Writing for the Online Age	
ENGL 10-495 Internship in Writing and Research	
Approved electives to total 36 hours	12

Major in English, 39 hours: B.S.Ed.—Minor Required (Certifies Grades 9-12)

CIP: 131305

Required Courses	**Semester Hours**
*English Core Requirements	18
ENGL 10-322 Introduction to the Teaching of Writing	3
ENGL 10-404 Schoolhouse Grammars and Pedagogy	3
ENGL 10-501 Writing, Language, and Pedagogy	3
ENGL 10-590 Young Adult Literature	3
ENGL 10-210 Introduction to Creative Writing OR ENGL 10-311 Advanced Composition	3
Approved literature courses numbered 300 or above	6

*Students pursuing this degree may take either all four survey courses listed under English Core Requirements (ENGL 10-233, 10-234, 10-245, 10-246) *or* may take three of those survey courses and one of either ENGL 10-224 Multiethnic Literature of the United States or ENGL 10-226 Modern and Contemporary World Literature.

ENGL 10-580 Methods in Secondary School English must be completed as part of the professional education requirements.

This major, when completed under the B.S.Ed. Secondary Program, meets Missouri secondary school English teaching certification standards.

Comprehensive Major in English Education, 54 hours: B.S.Ed.—No Minor Required (Certifies Grades 9-12)

CIP: 131305

Required Courses	**Semester Hours**
English Core Requirements	18
ENGL 10-210 Introduction to Creative Writing	3
*ENGL 10-224 Multiethnic Literature of the United States	3
ENGL 10-311 Advanced Composition	3
ENGL 10-322 Introduction to the Teaching of Writing	3
ENGL 10-404 Schoolhouse Grammars and Pedagogy	3
ENGL 10-501 Writing, Language, and Pedagogy	3
ENGL 10-590 Young Adult Literature	3
Approved literature courses numbered 300 or above	6
Approved English electives to total 54 hours	9

ENGL 10-580 Methods in Secondary School English must be completed as part of the professional education requirements.

This major, when completed under the B.S.Ed. degree, Secondary Program, meets Missouri secondary school English teaching certification standards.

*B.S.Ed. in English students may not use ENGL 10-224 to fulfill an Institutional Requirement.

MINORS

Minor in English, 24 hours

CIP: 230101

Required Courses	Semester Hours
ENGL 10-233 American Literature: Beginnings to 1865	3
ENGL 10-234 American Literature: 1865 to the Present	3
ENGL 10-245 English Literature: *Beowulf* through the 18th Century	3
ENGL 10-246 English Literature: Romantics to the Present	3
One course from:	3
ENGL 10-311 Advanced Composition	
ENGL 10-312 Creative Writing: Creative Nonfiction	
ENGL 10-313 Creative Writing: Fiction	
ENGL 10-314 Creative Writing: Poetry	
ENGL 10-315 Writing for the Professions	
Approved electives (must include 6 hours of upper-level English) to total 24 hours	

Writing Minor in English, 24 hours

CIP: 230501

Required Courses	Semester Hours
ENGL 10-210 Introduction to Creative Writing	3
ENGL 10-311 Advanced Composition	3
ENGL 10-315 Writing for the Professions	3
Approved Electives from the following:	**15**
Any two English Department literature courses for a total of 6 hours	
ENGL 10-304 Rhetorical Writing (3)	
ENGL 10-312 Creative Writing: Nonfiction (3)	
ENGL 10-313 Creative Writing: Fictions (3)	
ENGL 10-314 Creative Writing: Poetry (3)	
ENGL 10-322 Introduction to the Teaching of Writing (3)	
ENGL 10-380 Practicum in Teaching Writing (1)	
ENGL 10-403 Studies in Language (3)	
ENGL 10-414 Structure and Theory of Creative Writing (3)	
ENGL 10-419 Directed Writing (1-4)	
ENGL 10-430 Writing for the Online Age (3)	
ENGL 10-495 Internship in Writing and Research (3)	
ENGL 10-501 Writing, Language, and Pedagogy (3)	
ENGL 10-512 Publication Skills (3)	
ENGL 10-560 Advanced Creative Writing (3)	
MCOM 20-227 Reporting (3)	
MCOM 20-327 Advanced Reporting (3)	
MCOM 20-358 Feature Writing (3)	

Language Arts Concentrations for Middle School Major Certifies Grades 5-9 when completed with the Middle School Major

CIP: 131305

Required Courses	Semester Hours
ENGL 10-322 Introduction to the Teaching of Writing	3
ENGL 10-404 Schoolhouse Grammars and Pedagogy	3
ENGL 10-590 Young Adult Literature	3
COM 29-325 Listening Behaviors and Skills	3
THEA 43-460 Creative Dramatics	3

21 Hour Concentration

(Meets requirements of Major in Middle School)

Required Courses	15
*Two courses from electives	6

***See advisor for list of approved electives.**

Minor in English, 30 hours: Certifiable—See Professional Education Requirements

CIP: 131305

Required Courses	Semester Hours
ENGL 10-210 Introduction to Creative Writing	3
*ENGL 10-233 American Literature: Beginnings to 1865	3
ENGL 10-234 American Literature: 1865 to the Present	3
ENGL 10-245 English Literature: *Beowulf* through the 18th Century	3
ENGL 10-246 English Literature: Romantics to the Present	3
ENGL 10-311 Advanced Composition	3
ENGL 10-404 Schoolhouse Grammars and Pedagogy	3
ENGL 10-501 Writing, Language, and Pedagogy	3
ENGL 10-590 Young Adult Literature	3
Approved electives to total 30 hours	

*Students pursuing this minor may either take all four of these survey courses (ENGL 10-233, 10-234, 10-245, 10-246) *or* may take three of these survey courses and one of either ENGL 10-224 Multiethnic Literature of the United States or ENGL 10-226 Modern and Contemporary World Literature.

ENGL 10-580 Methods in Secondary School English must be completed as part of the professional education requirements.

This minor, when completed under the B.S.Ed. Secondary or Elementary/Secondary Programs, meets Missouri teacher certification standards for grades 9-12.

Languages / 14

MAJOR

Major in Spanish, 37 hours: B.A.–Minor Required or Collateral Field Listed Below

CIP: 160905

Required Core	Semester Hours
*LANG 14-242 Intermediate Spanish for Communication and Culture I (Appropriate for most students with four or more years of high school Spanish.)	3
LANG 14-243 Intermediate Spanish for Communication and Culture II	3
LANG 14-244 Beginning Conversation in Spanish (May be taken concurrently with LANG 14-242 or 243.)	3
LANG 14-342 Advanced Spanish	3
LANG 14-344 Advanced Conversation in Spanish	3
LANG 14-345 Advanced Spanish Composition	3
**LANG 14-347 Study Abroad for Spanish or French	3
LANG 14-485 Senior Seminar	1
Advanced Electives	**9-15**

(Minimum of 9 hours from the following to be taken on the Northwest campus or from Northwest faculty. Courses may be taken concurrently.)

LANG 14-347 Study Abroad for Spanish or French (1-4)
LANG 14-348 Spanish History and Culture (3)
LANG 14-400 Special Offerings (1-4)
LANG 14-401 Special Topics (1-3)
LANG 14-446 Practicum in Spanish Studies (1-3)
LANG 14-447 Latin American Civilization (3)
LANG 14-448 Survey of Spanish Language Literature (3)
LANG 14-449 Independent Study in Spanish (1-2)
LANG 14-460 Advanced Studies in Modern Language (3)
LANG 14-470 Internship in Languages (1-3)
LANG 14-500 Special Offerings (1-4)

***LANG 14-141 and 14-142 are prerequisite courses. These may count toward the major.**

****Participation in an approved Study Abroad experience or in an approved internship (14-470) will also satisfy this requirement.**

Collateral Field in Intercultural Enrichment (if no minor selected) **24**

ENGL 10-311 Advanced Composition (3)
ENGL 10-224 Multiethnic Literature of the United States (3)
*LANG 14-347 Study Abroad for Spanish or French (6)
GEOG 32-445 Geography of Latin America (3)
HIST 33-375 History of Latin America (3)
POLS 34-421 International Conflict Resolution (3)
MKTG 55-438 International Business (3)

***Faculty-led trips in other departments, Study Abroad may be counted with departmental approval; upper-level Spanish courses may be substituted for students unable to participate in experiences requiring travel.**

Major in Spanish, 37 hours: B.S.–Minor Required or Collateral Field Listed Below

CIP: 160905

Required Core	**Semester Hours**
*LANG 14-242 Intermediate Spanish for Communication and Culture I (Appropriate for most students with four or more years of high school Spanish.)	3
LANG 14-243 Intermediate Spanish for Communication and Culture II	3
LANG 14-244 Beginning Conversation in Spanish (May be taken concurrently with LANG 14-242 or 243.)	3
LANG 14-342 Advanced Spanish	3
LANG 14-344 Advanced Conversation in Spanish	3
LANG 14-345 Advanced Spanish Composition	3
**LANG 14-347 Study Abroad for Spanish or French	3
LANG 14-485 Senior Seminar	1

Advanced Electives **15**

(Minimum of 15 hours from the following; at least 12 hours are to be taken on the Northwest campus or from Northwest faculty. Courses may be taken concurrently.)

LANG 14-347 Study Abroad for Spanish or French (1-4)
LANG 14-348 Spanish History and Culture (3)
LANG 14-400 Special Offerings (1-4)
LANG 14-401 Special Topics (1-3)
LANG 14-446 Practicum in Spanish Studies (1-3)
LANG 14-447 Latin American Civilization (3)
LANG 14-448 Survey of Spanish Language Literature (3)
LANG 14-449 Independent Study in Spanish (1-2)
LANG 14-460 Advanced Studies in Modern Language (3)
LANG 14-470 Internship in Languages (1-3)
LANG 14-500 Special Offerings (1-4)

***LANG 14-141 and 14-142 are prerequisite courses. These do not count toward the major.**

****Participation in an approved Study Abroad experience or in an approved internship (14-470) will also satisfy this requirement.**

Collateral Field in Intercultural Enrichment (if no minor selected) **24**

ENGL 10-311 Advanced Composition (3)
ENGL 10-224 Multiethnic Literature of the United States (3)
*LANG 14-347 Study Abroad for Spanish or French (6)
GEOG 32-445 Geography of Latin America (3)
HIST 33-375 History of Latin America (3)
POLS 34-421 International Conflict Resolution (3)
MKTG 55-438 International Business (3)

***Faculty-led trips in other departments, Study Abroad may be counted with departmental approval; upper-level Spanish courses may be substituted for students unable to participate in experiences requiring travel.**

Major in Spanish, 34 hours: B.S.Ed., (Certifies Grades K-12)—Minor Required

CIP: 131330

Required Core	Semester Hours
*LANG 14-242 Intermediate Spanish for Communication and Culture I	3
(Appropriate for most students with four or more years of high school Spanish.)	
LANG 14-243 Intermediate Spanish for Communication and Culture II	3
LANG 14-244 Beginning Conversation in Spanish	3
(May be taken concurrently with Lang 14-242 or 243.)	
LANG 14-342 Advanced Spanish	3
LANG 14-344 Advanced Conversation in Spanish	3
LANG 14-345 Advanced Spanish Composition	3
**LANG 14-347 Study Abroad for Spanish or French	3
LANG 14-485 Senior Seminar	1
Required Course	
LANG 14-448 Survey of Spanish Language Literature	3
Advanced Electives	**9**

(Minimum of 9 hours from the following; at least 6 hours are to be taken on the Northwest campus or from Northwest faculty. Courses may be taken concurrently.)

LANG 14-347 Study Abroad for Spanish or French (1-4)
LANG 14-348 Spanish History and Culture (3)
LANG 14-400 Special Offerings (1-4)
LANG 14-401 Special Topics (1-3)
LANG 14-446 Practicum in Spanish Studies (1-3)
LANG 14-447 Latin American Civilization (3)
LANG 14-449 Independent Study in Spanish (1-2)
LANG 14-460 Advanced Studies in Modern Language (3)
LANG 14-470 Internship in Languages (1-3)
LANG 14-500 Special Offerings (1-4)

Students must take LANG 14-480 Methods in Teaching Modern Language as part of their professional education requirements.

***LANG 14-141 and 14-142 are prerequisite courses. These do not count toward the major.**

****Participation in an approved Study Abroad experience or in an approved internship (14-470) will also satisfy this requirement.**

MINORS

Minor in Deaf Studies, 24 hours

CIP: 161601

Required Courses	Semester Hours
LANG 14-151 Introduction to American Sign Language and Deaf Culture	3
LANG 14-251 American Sign Language I	3
LANG 14-252 American Sign Language II	3
LANG 14-351 American Sign Language III	3
LANG 14-451 American Sign Language IV	3
*COM 29-336 Nonverbal Communication	3
COM 29-553 Language, Speech and Hearing of the Exceptional Child and Adult OR	
FCS 15-526 Independent Living for Special Populations	3
EDCI 62-371 Introduction to Special Education	3

***May be taken concurrently with ASL III.**

Minor in Spanish, 24 hours

CIP: 160905

Certifies Grades K-9 when completed on an education degree. See Professional Education Requirements.

Required Courses	**Semester Hours**
*LANG 14-242 Intermediate Spanish for Communication and Culture I (Appropriate for most students with four or more years of high school Spanish.)	3
LANG 14-243 Intermediate Spanish for Communication and Culture II	3
**LANG 14-244 Beginning Conversation in Spanish	3
LANG 14-342 Advanced Spanish	3
LANG 14-344 Advanced Conversation in Spanish	3
LANG 14-345 Advanced Spanish Composition	3

****May be taken concurrently with LANG 14-242 or 243.**

Advanced Electives **6**

(Minimum of 6 hours from the following, to be taken on the Northwest campus or from Northwest faculty. These courses may be taken concurrently.)

LANG 14-347 Study Abroad for Spanish or French (1-4)
LANG 14-348 Spanish History and Culture (3)
LANG 14-400 Special Offerings (1-4)
LANG 14-401 Special Topics (1-3)
LANG 14-446 Practicum in Spanish Studies (1-3)
LANG 14-447 Latin American Civilization (3)
LANG 14-448 Survey of Spanish Language Literature (3)
LANG 14-449 Independent Study in Spanish (1-2)
LANG 14-460 Advanced Studies in Modern Language (3)
LANG 14-500 Special Offerings (1-4)

Students must take LANG 14-480 Methods in Teaching Modern Language as part of their professional education requirements.

*LANG 14-141 and 14-142 are prerequisite courses. These do not count toward the minor.

Minor in Individualized Language Program, 27 hours

CIP: 160101

Students may participate in a language immersion program at an approved foreign higher education institution and count up to 24 semester-equivalent credit hours toward this minor. Partner institutions and courses of study must be approved in advance by the Study Abroad Office and the Department of English and Modern Languages. Coursework must be taught in a target language other than English, and may not be in the student's native language.

At least 24 credit hours of coursework must be in a single non-English target language.

At least 3 credit hours of coursework must be completed through Northwest, either in the target language or in English-language delivered courses related to the target language (e.g., history, culture).

Course Descriptions

English / 10

200 Special Offerings (1-4 hours)
Courses that are offered on only one occasion or variable issue-oriented courses that have the content described in the title. Students may repeat this course with a change in topic. Credit and prerequisites as announced.

300 Special Offerings (1-4 hours)
Courses that are offered on only one occasion or variable issue-oriented courses that have the content described in the title. Students may repeat this course with a change in topic. Credit and prerequisites as announced.

400 Special Offerings (1-4 hours)
Courses that are offered on only one occasion or variable issue-oriented courses that have the content described in the title. Students may repeat this course with a change in topic. Credit and prerequisites as announced.

GRAMMAR AND LINGUISTICS

403 Studies in Language (3 hours)
Studies of issues related to linguistics, with emphasis on English-language applications beyond traditional or schoolhouse grammar. Specific subject matter of course will change each trimester. Possible topics include "Ambiguity and Poetics," "English and Politics," "History and Science of Lexicography," "Issues in Translation," "Language Acquisition," "Philosophies of Language," and so forth. Students may repeat the course with a change in topic. (F)

404 Schoolhouse Grammars and Pedagogy (3 hours)
Examination of traditional schoolhouse grammars as they are indicative of the issues facing students in today's secondary classrooms. Includes a rigorous study of the literature surrounding the teaching of grammar in K-12 schools and an exploration of effective pedagogical approaches to the teaching of grammars in secondary schools. (S)

409 Directed Reading in Linguistics (1-3 hours)
Tutorial for individual student projects. Instructor's permission required. Students may repeat this course with a change in topic. (F, S)

501 Writing, Language, and Pedagogy (3 hours)
A study of the history of English, language theory and writing theory. The specific subject matter and emphasis will change each trimester. Possible topics include "The History of English," "Noah Webster and the American Language," "Dialects and Diversity," "Applied Studies in Modern Grammar," and "Theories of Teaching Composition." Students may repeat the course with a change in topic. (F, S)

LITERATURE

220 Introduction to Literature (3 hours)
A general introduction to literature organized around central themes in our global society. Selected themes will vary, but each course offering will include (1) literature from various genres, (2) literature from three centuries and (3) readings from at least three of four distinct cultural categories. Humanities credit. (F, S)

224 Multiethnic Literature of the United States (3 hours)
Focuses on the literature of African Americans, Native Americans, Chicanos/Chicanas and Asian Americans. Includes close critical reading of a variety of texts as well as attention to the cultural contexts from which the literature derives. Students may not use this course to fulfill both a major requirement and an Institutional Requirement. (F)

226 Modern and Contemporary World Literature (3 hours)
Although paying some attention to parallel themes in the "world" literature of post-1900 Europe, the course focuses on non-Western literature of the twentieth century and later. It includes close critical reading of a variety of genres as well as attention to the cultural contexts from which the literature derives. Students may not use this course to fulfill both a major requirement and an Institutional Requirement. (S)

233 American Literature: Beginnings to 1865 (3 hours)
Development of American literature from the early Colonial period to the mid-19th century. Readings include Edwards, Hawthorne, Poe, Melville, Emerson, Thoreau, Dickinson and Whitman. (F, S)

234 American Literature: 1865 to the Present (3 hours)
Development of American literature from the end of the Civil War to the present. Readings include Twain, Norris, Crane, Hemingway, Faulkner, Wright, Momaday, Frost, Eliot, Stevens, Hughes and Brooks. (F, S)

245 English Literature: Beowulf through the 18th Century (3 hours)
A study of selected English literary masterpieces and their backgrounds from the Anglo-Saxons through Boswell's biography of Samuel Johnson. Readings include Chaucer, More, Spenser, Marlowe, Shakespeare, Donne, Milton, Pope, Swift and Boswell. (F, S)

246 English Literature: Romantics to the Present (3 hours)
English literature from the Romantics to the present, including works by Wordsworth, Byron, Keats, Shelley, Browning, Tennyson, Wilde, Hardy, Yeats, Woolf, Joyce, Lawrence, Lessing, Eliot and Auden. (F, S)

305 The Literary Critic's Craft (2 hours)
A course examining the practice of literary criticism over time and especially in the past century. This course shows such criticism being used in reflection on major texts during what have been on-going debates about the literature scholar's discipline. (F)

325 Special Studies (3 hours)
An intensive study of a literary theme, a genre or an approach to writing, language or literature. The subject matter or emphasis will change each trimester. Students may repeat this course with a change in topic. (F, S)

331 The Bible and Literature (3 hours)
Study of Bible stories as key narratives of Middle Eastern and Western culture, both in their original Biblical contexts and in adapted versions prepared by literary writers of many later eras. Tales from both Old and New Testaments are featured, along with adaptations of them by later poets, playwrights, and novelists.

343 Survey of Women's Literature (3 hours)
A study of women's literature in all genres from the Middle Ages to the present. Readings may include Kempe, Lanyer, Behn, Wollstonecraft, Chopin, Gilman, Woolf, Lessing, Atwood, Kingston, Silko and Walker. (S, alt. years)

372 Introduction to Shakespeare (3 hours)
An introduction to Shakespeare's most popular and/or important plays and poems, including the sonnets, *Romeo and Juliet, The Taming of the Shrew* and such works as *The Tempest, Hamlet, Macbeth, A Midsummer Night's Dream, Richard III* and *Venus and Adonis.* (F, alt. S)

428 Directed Reading in Literature (1-6 hours)
Tutorial for individual student projects. Instructor's permission required. Students may repeat this course with a change in topic. (F, S)

462 Advanced British Literature (3 hours)
This course may focus on any period or aspect of British literature. The class might focus on a particular author (e.g. "Where Angels Fear to Tread: E.M. Forester," "The World of J.R.R. Tolkien"); a group of writers (e.g. "The Bloomsbury Group," "The Sons' of Ben Jonson"); the literature of a specific period, genre or place (e.g. "Irish Modernism," "Medieval Drama"); or a specific theme (e.g. "Victorian Stunners," "Virginia Woolf's Feminism"). Students may repeat the course with a change in topic.

463 Advanced American Literature (3 hours)
This course may focus on any period or aspect of American literature. The class might focus on a particular author (e.g. "Leaves and/or Grass: Walt Whitman," "The Awakening of Kate Chopin"), a group of writers (e.g. "African American Writers between the Wars," "American Modernist Poets"); the literature of a specific period, genre or place (e.g. "Twenty-First Century American Fiction," "American Nature Writing") or a specific theme (e.g. "Gender & Memoir," "Sense & Sentiment in Nineteenth-Century Women's Literature"). Students may repeat the course with a change in topic.

464 Advanced World Literature (3 hours)
This course may focus on any period or aspect of World literature. The class might focus on a particular author (e.g. Tolstoy, Chinua Achebe), a group of writers or a genre (e.g. "Trans-Atlantic Romanticists," "Contemporary World Drama"); the literature of a specific period or place (e.g. "Classical Epic Poetry," "South American Magic Realism"); or a specific theme (e.g. "Poetry in Translation: Issues & Answers," "Post Colonial Literature"). Students may repeat the course with a change in topic.

520 Studies in Early British Literature (3 hours)
A study of genres, figures and/or issues from British literature of the Medieval and Renaissance periods. Specific subject matter and emphasis of course will change each trimester. Possible topics include "Middle English literature," which would include Medieval writers such as Chaucer, Margery Kempe and Sir Thomas Malory; "Renaissance Drama," examining the works of authors such as Christopher Marlowe, Elizabeth Cary and Shakespeare; or intensive focus on the works of a specific writer such as the Pearl Poet, Edmund Spenser or John Milton. Students may repeat the course with a change in topic.

530 Studies in British Literature, 18th Century-Present (3 hours)
A study of genres, figures and/or issues from British literature of the past 300 years. Specific subject matter will change each trimester. Possible topics include "Literature of the Romantic Movement," examining works of authors such as Emily Bronte, William Wordsworth, Mary Shelley and Lord Byron; "The Victorian Age," featuring writers such as Charles Dickens, Elizabeth Barrett Browning and Rudyard Kipling; or "Twentieth-Century British Fiction," including writers such as Joseph Conrad, Virginia Woolf, James Joyce and Anthony Burgess. Students may repeat the course with a change in topic.

540 Studies in Multiculturalism and World Literature (3 hours)
An intensive study of world or multicultural literature. Specific subject matter will change each trimester. Possible topics might include "Literature of the Harlem Renaissance," with works by authors such as Hughes, Toomer, McKay, Hurston and Bontemps; "The Development of the Modern Novel," examining novels by authors such as Petronius, Boccaccio, Cervantes, Voltaire, Austen, Dostoevsky, Woolf, Beckett, Robbe-Grillet, Morrison, or Achebe; or "Anglophone Literature: Fiction of the Post-Colonial World," including works by Rushdie, Naipaul, Gordimer, Lessing, Coatzee, White, Atwood and Munro. Students may repeat the course with a change in topic.

550 Studies in American Literature (3 hours)
An intensive study of topics in American literature. Specific subject matter will change each trimester. Sample topics: "American Romanticism," with such authors as Emerson, Thoreau, Fuller, Whitman and Dickinson; "The Small Town in American Literature," with works by Hawthorne, Twain, Anderson, Lewis, Gaines, Lee, King, Morrison and Faulker; "American Modernism and Long Poem," examining the long works of Whitman, Eliot, Williams, H.D. Stevens, Heaney and Dove. Students may repeat the course with a change in topic.

PEDAGOGY

322 Introduction to the Teaching of Writing (3 hours)
Strategies for effective teaching of writing, with some background on writing research and theory. (S)

380 Practicum in Teaching Writing Skills (1 hour)
Laboratory practice in teaching developmental writing skills and tutoring in a small-group setting. (F)

580 Methods in Secondary School English (3 hours)
Study and practice in strategies for effective teaching of the English language arts in secondary schools. Includes materials, methods, planning, assessment and evaluation, current issues and trends in teaching the English and language arts. (F)

590 Young Adult Literature (3 hours)
A study of literature for grades 7 through 12 and the ways that literature can be taught in the classroom. The course teaches students to judge young adult literature by accepted and respected critical standards and to understand what makes the literature suitable for students. (S)

WRITING

101 English as a Foreign Language (3 hours)
For the individual needs of students whose native language is not English. Meets five times per week. Does not fulfill the ENGL 10-110 or 111 requirement.

110 Introduction to College Writing (3 hours + 2 lab hours)
A college-level composition course designed to develop skills in prewriting, drafting, editing and rewriting. Required of students with ACT English scores of 18 or below. (F, S)

111 Composition I: Academic Literacies (3 hours)
Study and practice in reading and writing texts towards development of college-level academic

literacies. Students will engage through writing and reading in knowledge-based inquiry and sustained critical thinking for the purpose of better understanding the subject or issue. Concepts taught will include academic rhetoric and argumentation, research and documentation. Prerequisite: A grade of "C" or better in ENGL 10-110, an ACT English subscore of 19-26, or successful placement challenge. (F, S)

112 Composition II: Writing as Engagement (3 hours)
Study and practice of writing as a form of engagement in public and personal contexts. Builds on skills practiced in Composition I (academic rhetoric, argumentation research, and documentation) while broadening the contexts in which these skills are used. Students will complete an extensive writing project which may incorporate various forms of writing and other media. Prerequisites: ENGL 10-111.

115 Accelerated Composition (3 hours)
Combines the course material of ENGL 10-111: Composition I: Academic Literacies and ENGL 10-112: Composition II: Writing as Engagement into one semester. Skills covered will include those required for academic literacies, such as academic rhetoric, argumentation, and research, as well as those applicable to writing and reading beyond the university. Students will complete an extensive writing project which may incorporate various genres and media as well as primary and secondary research. For further information, see the course descriptions for ENGL 10-111 and 112. Satisfactory completion of this course fulfills all six hours of the University's General Education requirements for Written Communication. Three, GPA bearing, credit hours will be applied for ENGL 10-115. Three non-GPA bearing, credit hours will be applied as credit for the required ACT score. Prerequisite: ACT English score of 27 or above. (F, S)

210 Introduction to Creative Writing (3 hours)
A multi-genre introduction to creative writing. Emphasis is on producing and responding to creative work in various genres including poetry, fiction and creative nonfiction. Prerequisite: ENGL 10-112 or 115.

304 Rhetorical Writing (3 hours)
Application of the principles and theories of rhetoric to original writing, with special attention given to writings that can potentially produce genuine results in personal, institutional, cultural or political contexts. (Alt. years)

311 Advanced Composition (3 hours)
Advanced study of writing, especially techniques of rhetoric, argumentation and research. Prerequisite: ENGL 10-112 or 115.

312 Creative Writing: Creative Nonfiction (3 hours)
Composition of original creative nonfiction. Students have the opportunity to study published works, write original works, critique the works of others and consult with the professor about their works on a regular basis. Prerequisite: ENGL 10-112 or 115. (Alt. years)

313 Creative Writing: Fiction (3 hours)
Composition of original short stories or other forms of prose fiction. Students have the opportunity to study published works, write original works, critique the works of others and consult with the professor about their works on a regular basis. Prerequisite: ENGL 10-112 or 115. (F)

314 Creative Writing: Poetry (3 hours)
Composition of original poetry and study of poetic forms and techniques. Students have the opportunity to study published works, write original works, critique the works of others and consult with the professor about their works on a regular basis. Prerequisite: ENGL 10-112 or 115. (S)

315 Writing for the Professions (3 hours)
Instruction and practice in the practical application of effective writing strategies for government, business and industry, including but not limited to reports, memos, causal analyses, mechanism descriptions, definitions, persuasive letters and feasibility studies. Prerequisite: ENGL 10-112 or 10-115 or permission of instructor.

405 Senior Seminar (1 hour)
A capstone course. Besides preparing a professional résumé and participating in a mock interview, the student will, through presentation of a research project at a public forum, synthesize various elements of critical thinking, reflect on major texts and demonstrate research abilities in the discipline. (F)

410 Professional Portfolio Preparation (3 hours)
A capstone class for B.S. in English students, focused on preparing a professional portfolio to facilitate application for jobs in writing, editing and publishing. Prerequisite: Senior standing or permission of instructor.

414 The Structure and Theory of Creative Writing (3 hours)
An intermediate creative writing course that investigates the history and formative statements of creative writing through reading, writing, and discussion. Readings include theoretical essays regarding the purpose and role of the writer in society, the rhetoric of structure and major statements on the art. The specific contents of the course changes each time the course is offered. Course topics might include "Poetic Forms," "Prose Poetry," "Critical Reading for Creative Writers," "Writing the Natural World," "Micro Fiction," "Lyric Essays," "Personal Reportage" and "Memoir." Students may repeat the course with a change in topic. Prerequisite: the relevant 300-level creative writing class or instructor permission.

419 Directed Writing (1-4 hours)
Independent work in creative or expository writing. Instructor's permission required. Students may repeat this course with a change in topic. (F, S)

430 Writing for the Online Age (3 hours)
Addresses the changing environments and situations facing writers due to the ever-increasing presence of computer and internet technology. Emphasizes planning and creating documents in a number of technology-rich situations. The specific content of the course will vary each trimester, with possible topics such as "Internet Rhetoric," "Writing With New Media," "Literature, Hypertext and Other Media Influences," or "Technology and Collaborative Writing." While students may be required to learn the basics of webpage construction through an HTML editor, this is not a course in coding or graphical design except as far as these subjects intersect with writing. Students may repeat the course with change of topic. Prerequisite: ENGL 10-112 or 115.

495 Internship in Writing and Research (1-8 hours)
Internships (paid and unpaid) will be offered as available or as located by students. Internships require a written proposal at the time of registration and permission of the instructor and department chair. Fifty work hours are required for each hour of academic credit. A maximum of three credit hours may be applied to the major or minor. Course may be repeated for a maximum of 11 hours for additional experience. Prerequisites: Junior standing and three hours of writing courses at the 300 level or above.

512 Publication Skills (3 hours)
Course covers major skills required in publishing. As well as providing an overview of the publishing industry, it prepares students for work in areas of technical writing, magazine editing and freelance copyediting. The specific content of the course will vary each trimester, with possible topics such as "Design, Layout and Typography," "Principles and Practice of Editing," or "Proposals, Reports and Contracts." Students may repeat the course with a change in topic.

560 Advanced Creative Writing (3 hours)
An advanced course in the study and writing of original poetry, fiction, or creative non-fiction. Specific subject matter changes each trimester. Topics may include "The Art of the Short Story," which studies a variety of short stories from various time periods and cultures, with a focus on writing short stories; "Form in Contemporary Poetry," which studies traditional forms such as the sonnet and sestina; study and practice of techniques such as meter, rhyme, alliteration etc.; reading a variety of traditional and contemporary formal poets; and writing formal poetry. Other topics could include "Exploring the Prose Poem," "Who Lives There: Building a Cast of Characters," "Essentials of Poetry" and "Essentials of Fiction." Students may repeat the course with a change in topic. Prerequisite: a 300- or 400-level creative writing class or consent of instructor.

Languages / 14

200 Special Offerings (1-4 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable with topics changing.

400 Special Offerings (1-4 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable with topics changing.

401 Special Topics (1-3 hours)
Provides concentrated study in special areas within languages. Topics vary trimester to trimester. Prerequisites as announced. Repeatable with topics changing. (SS)

460 Advanced Studies in Modern Languages (3 hours)
Study of special topics chosen by the instructor. Subject matter may vary. Students may repeat

the course once for credit with different topics. Intended for students who have completed the major core in a foreign language. Prerequisite: Advanced standing.

470 Internship in Languages (1-3 hours)
Allows students to gain practical experience by participating in on-site work with various types of predominantly non-English speaking organizations. Prerequisites: LANG 14-243 and 14-244 or equivalent, and permission of instructor. Repeatable for new experience. (F, S, SS)

480 Methods of Teaching A Modern Language (3 hours)
Study and practice in techniques for effective teaching of foreign languages. Includes study of theories, methodologies, assessments, and current trends in teaching foreign languages in schools. (F)

485 Senior Seminar for Modern Language Majors (1 hour)
Intended for seniors who have finished the major or who are taking the last course of their major. Each student will prepare a paper or portfolio in an area of the language field related to his or her future employment or lifetime interests, which will be presented to other majors for discussion and exchange of ideas. Prerequisite: Must meet the current departmental cut score(s) on the current standardized general education test(s) (contact the department office for specific information), and have permission of the department chairperson and have successfully completed at least one 400-level course. (F, S)

500 Special Offerings (1-4 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable with topics changing.

582 International Heroes: France, Spain and England (3 hours)
Literary selections in French, Spanish, and English will trace the development of the histories and legends of Sir Lancelot, Roland, and El Cid in and out of their home countries, from the 12 through the 17th centuries. French and Spanish majors will read the appropriate selections in their original languages; other readings will be in English. Non-language majors will read in English translations. For graduate or undergraduate credit. Graduate credit will require an additional research paper. Prerequisite: LANG 14-448 or 400 level literature course in appropriate language.

CHINESE

121 Chinese: Communication and Culture I (3 hours)
Initiates awareness of Chinese cultures along with the ability to understand simple conversation in Chinese and to communicate basic needs and activities. Intended for students with no previous study of Chinese. (F)

122 Chinese: Communication and Culture II (3 hours)
Develops comprehension and communication skills, including the ability to discuss opinions and past events, and introduces students to Chinese life and culture. Prerequisite: LANG 14-121 or equivalent. (S)

221 Intermediate Chinese for Communication and Culture I (3 hours)
Broadens and strengthens the student's knowledge of Chinese through reading, composition, and conversation, and also expands knowledge of the structure of the Chinese language. Prerequisite: LANG 14-122 or equivalent. (F)

222 Intermediate Chinese for Communication and Culture II (3 hours)
Broadens and strengthens the student's knowledge of Chinese through reading, composition, and conversation, and also expands knowledge of the structure of the Chinese language. Prerequisite: LANG 14-221 or equivalent. (S)

FRENCH

131 French: Communication and Culture I (3 hours)
Initiates awareness of Francophone cultures along with the ability to understand simple conversation in French and to communicate basic needs and describe activities. Intended for students with no previous study of French. Does not count toward minor in French. (F)

132 French: Communication and Culture II (3 hours)
Develops comprehension and communication skills, including the ability to discuss opinions and past events, and introduces students to French life and culture. Prerequisite: LANG 14-131 or equivalent in high school French. (S)

232 Intermediate French for Communication and Culture I (3 hours)
Intermediate level course focusing on the language

and culture of France and the Francophone world. Further development of contemporary conversational vocabulary in French along with activities designed for practical applications. Readings broaden the student's vocabulary and syntax usage. Prerequisite: LANG 14-132 or equivalent. (F)

233 Intermediate French for Communication and Culture II (3 hours)
Intermediate level course focusing on the language and culture of France and the Francophone world. Further development of contemporary conversational vocabulary in French, along with activities designed for practical applications. Readings broaden the student's vocabulary and syntax usage. Prerequisite: LANG 14-232 or equivalent. (S)

439 Independent Study in French (1-2 hours)
Offered by special arrangement and petition approved by the language faculty. May be repeated for a maximum of six semester hours with topics changing. (F, S)

SPANISH

141 Spanish: Communication and Culture I (3 hours)
Initiates awareness of Hispanic cultures along with the ability to understand simple conversation in Spanish and to communicate basic needs and activities. Intended for students with no previous study of Spanish. Does not count towards major or minor in Spanish. (F, S, SS)

142 Spanish: Communication and Culture II (3 hours)
Develops comprehension and communication skills, including the ability to discuss opinions and past events, and introduces students to various countries in Spanish America. Does not count towards major or minor in Spanish. Prerequisite: LANG 14-141 or equivalent in high school Spanish. (F, S)

242 Intermediate Spanish for Communication and Culture I (3 hours)
Broadens and strengthens the student's knowledge of Spanish through reading, composition, and conversation, and also expands knowledge of the structure of the Spanish language. Prerequisite: LANG 14-142 or equivalent. (F, S)

243 Intermediate Spanish for Communication and Culture II (3 hours)
Broadens and strengthens the student's knowledge of Spanish through reading, composition, and conversation, and also expands knowledge of the structure of the Spanish language. Prerequisite: LANG 14-242 or equivalent. (F, S)

244 Beginning Conversation in Spanish (3 hours)
Beginning practice in conversation, with emphasis on practical vocabulary and developing fluency and ease of expression. Prerequisite: LANG 14-242 or 243 or equivalent. (F, S)

342 Advanced Spanish (3 hours)
Practice in correct idiomatic and effective written communication, from the business letter to the essay. Prerequisite: LANG 14-243 or equivalent. (F)

344 Advanced Conversation in Spanish (3 hours)
This course provides an intensive advanced practice in speaking Spanish in order to increase students' fluency and self-confidence. Students will learn the appropriate uses of Spanish street idioms, as well as a wide range of topics of conversation, from the superficial discussion to the most profound philosophical or scientific themes. The topics are actual issues that have an impact on our daily lives. Prerequisite: LANG 14-243 and 14-244 or equivalent. (S)

345 Advanced Spanish Composition (3 hours)
Practice in correct idiomatic and effective oral and written communication including descriptive, narrative, informative, and argumentative essay. Prerequisite: LANG 14-342 or equivalent. (S)

347 Study Abroad for Spanish or French (1-4 hours)
Designed for coursework taught in Spanish or French, taken outside of the U.S. Prerequisite: LANG 14-243 AND 244 (Spanish) or equivalent, 14-233 (French) or equivalent. Repeatable for new experience. (SS)

348 Spanish History and Culture (3 hours)
The history and culture of Spain as a background to national identity. Course is taught in Spanish. Prerequisite: LANG 14-243. (F)

446 Practicum in Spanish (1-3 hours)
An experience which will offer students the opportunity to gain practical experience in the field by working in a setting closely related to their chosen career field, preferably in a foreign country. May be used for elementary Spanish teaching practicum

as a supervised teaching experience. Repeatable for further mastery. (F, S)

447 Latin American Civilization (3 hours)
Practice in correct idiomatic and effective oral and written communication including descriptive, narrative, informative, and argumentative essay. Prerequisite: LANG 14-243 or equivalent. (F, alt. years)

448 Survey of Spanish Language Literature (3 hours)
This course offers a general overview of major literary works and movements in both Spain and Latin America from the outset of the Colonial period to the present. It includes a discussion of the important historical, cultural, social and ideological issues that underlie each movement. The genres to be studied include poetry, short story, drama, and essay. Prerequisite: LANG 14-243 or equivalent. (F, alt. years)

449 Independent Study in Spanish (1-2 hours)
Offered by special arrangement and petition approved by the language faculty. May be repeated for a maximum of six semester hours with topics changing. (F, S)

541 Independent Study in Spanish (1-4 hours)
Provides individualized, in-depth study in the area of Spanish. Study will be conducted in Spanish and will be designed to meet the needs of the student(s). May be repeated up to 4 credits with topics changing. Credit and prerequisites as announced.

SIGN LANGUAGE

151 Introduction to American Sign Language and Deaf Culture (3 hours)
This course introduces awareness of the deaf culture along with the ability to understand simple conversations with an emphasis on the signing space and use of non-manual components. This includes an introduction to the manual alphabet, fingerspelling, numbers, culturally appropriate behaviors, and exposes students to basic ASL vocabulary and grammar. (F, S, SS)

251 American Sign Language I (3 hours)
A continuation of ASL 151, this course develops more rudimentary competency in receptive and expressive skills and allows recognition and demonstration of American Sign Language grammatical structure and rules. Students will continue to learn about the deaf culture and the deaf community. This class is taught primarily in ASL. Prerequisites: LANG 14-151 or permission of instructor. (F, S, SS)

252 American Sign Language II (3 hours)
Students will develop advanced competence of complex ASL grammatical features including vocabulary building. Integrates and refines expressive and receptive skills in ASL. Encourages more creative use of non-manual markers, expression, classifiers, body language/postures, and signing space. This course is taught in ASL. Prerequisites: LANG 14-251 or permission of instructor. (F, S)

256 American Sign Language Practicum (1 hour)
This course allows students to gain practical experience by participating in teaching children American Sign Language while under the supervision of the instructor. This course will provide an introduction into curriculum planning, creating, and integrating developmentally appropriate activities and materials when working with children in educational settings.

351 American Sign Language III (3 hours)
This course will provide students the opportunity to develop competence in their ability to communicate about a variety of topics with the deaf community. Students will distinguish between English to ASL and ASL to English. Students will model appropriate language and cultural behaviors in a variety of situations. Discussions, activities, and multi-media components will also reinforce the student's receptive and expressive skills. This course is taught entirely in ASL with limited to no use of voice. Prerequisites: LANG 14-252 or permission of instructor. (S)

451 American Sign Language IV (3 hours)
Emphasizes advanced linguistic aspects of ASL and encourages contact with the deaf community. Students will translate written text into ASL and improve their ability to make formal presentations in ASL. Develops vocabulary, grammatical knowledge, and conversational competence with a total immersion approach. Broadens and strengthens the student's knowledge, fluency, and competence in American Sign Language through interpreting, transliterating, voice to sign and sign to voice. Students will develop proficient conversational

storytelling skills. This course is taught entirely in ASL with no voice. Prerequisites: LANG 14-351 or permission of instructor. (F)

459 Independent Study in American Sign Language (1-2 hours)
Offered by special arrangement and petition approved by the language faculty. May be repeated for a maximum of six semester hours with topics changing. (F, S)

RUSSIAN

161 Russian: Communication and Culture I (3 hours)
Initiates the awareness of Russian cultures along with the ability to understand simple conversation in Russian and to communicate basic needs and activities. Intended for students with no previous study of Russian. (F)

162 Russian: Communication and Culture II (3 hours)
Develops comprehension and communication skills, including the ability to discuss opinions and past events, and introduces students to Russian life and culture. Prerequisite: LANG 14-161 or equivalent. (S)

261 Intermediate Russian for Communication and Culture I (3 hours)
Broadens and strengthens the student's knowledge of Russian through reading, composition, and conversation, and also expands knowledge of the structure of the Russian language. Prerequisite: LANG 14-162 or equivalent. (F)

STUDY ABROAD

191 Modern Language Communication and Culture I (1-4 hours)
Designed for credit in the study of a language other than English, French, or Spanish. Initiates awareness of non-English speaking cultures along with the ability to understand simple conversation and to communicate basic needs and describe activities. Intended for students with no previous study of the language. Does not count toward a language major or minor. Course may be repeated for further mastery.

192 Modern Language Communication and Culture II (1-4 hours)
Designed for credit in the study of a language other than English, French, or Spanish. Develops comprehension and communication skills, including the ability to discuss opinions and past events, and introduces students to non-English speaking life and culture. Does not count toward a language major or minor. Course may be repeated for further mastery.

290 Intermediate Communication and Cultures in Modern Languages I (1-4 hours)
Designed for credit in the study of a language other than English, French, or Spanish. Intermediate level, credited experiences from other higher education institutions may be equated to this course number. Does not count toward a language major or minor. Course may be repeated for further mastery.

390 Advanced Communication and Cultures in Modern Languages (1-4 hours)
Designed primarily for credit in the study of a language other than English, French, or Spanish. Advanced level, credited experiences from other higher education institutions may be equated to this course number. Credit under this course number may be used as advanced electives in a language major or minor. Course may be repeated for further mastery.

490 Advanced Studies in Culture and History in Modern Languages (1-4 hours)
Designed primarily for credit in the study of a language other than English, French, or Spanish. Advanced level, credited experiences focusing on culture and/or history from other higher education institutions may be equated to this course number. Credit under this course number may be used as advanced electives in a language major or minor. Course may be repeated for further mastery.

491 Advanced Technical Topics in Modern Languages (1-4 hours)
Designed primarily for credit in the study of a language other than English, French, or Spanish. Advanced level, credited experiences focusing on topics requiring technical vocabulary from other higher education institutions may be equated to this course number. Credit under this course number may be used as advanced electives in a language major or minor. Course may be repeated for further mastery.

492 Advanced Literary Topics in Modern Languages (1-4 hours)
Designed primarily for credit in the study of a language other than English, French, or Spanish.

Advanced level, credited experiences focusing on literary topics from other higher education institutions may be equated to this course number. Credit under this course number may be used as advanced electives in a language major or minor. Course may be repeated for further mastery.

582 International Heroes: France, Spain and England (3 hours)
Literary selections in French, Spanish, and English will trace the development of the histories and legends of Sir Lancelot, Roland, and El Cid in and out their home countries, from the 12th through the 17th centuries. French and Spanish majors will read the appropriate selections in their original languages; other readings will be in English. Non-language majors will read in English translations. For graduate or undergraduate credit. Graduate credit will require an additional research paper. Prerequisite: LANG 14-448 or 400-level literature course in appropriate language.

Department of Fine and Performing Arts

Chairperson: David Oehler

Faculty: Charles Badami, Martha Breckenridge, Rebecca Dunnell, Christopher Gibson, Christopher Graves, Patrick Immel, Ernest Kramer, Laura Kukkee, Philip Laber, Brian Lanier, Armin Mühsam, Anthony Olson, Douglas Overmier, Amanda Petefish-Schrag, Kendall Prinz, Sheila Phillips, William Richardson, Theo Ross, Pamela Shannon, Kim Spradling, Stephen Town, Shawn Wake, Craig Warner, Glenn Williams

Statement of Mission

Northwest Missouri State University is a learning-centered community of scholars offering undergraduate and selected graduate programs. The University is committed to preparing broadly educated and engaged citizens for a world of constant change, applying information technology to improve learning processes, and promoting continuous improvement to enhance performance in all its activities. Northwest seeks to expand access to learning and promote research designed to address the needs of our students and stakeholders.

Degree Programs

The Department of Fine and Performing Arts offers eleven majors, six minors and one area of endorsement.

Preamble

The Department of Fine and Performing Arts is comprised of the disciplines of Art, Music, and Theatre. While these disciplines share many common objectives and values, the programs of study require different policies for study in the various majors. For that reason the policies, descriptions, requirements, and offerings are presented by discipline so that all materials related to Art are together, followed by all materials related to Music, followed by all materials related to Theatre.

Art / 13

Statement of Purpose for Art

The four degree programs of the Discipline of Art provide students with the skills needed to accomplish the tasks of their professions and to awaken them to that intellectual level of existence which will cause them to lead fuller, more rewarding lives regardless of the professional area they enter.

Study in these programs offers students the opportunity to learn to communicate ideas effectively, to develop analytical skills, to synthesize ideas, to evaluate implications of present actions against historical perspective, and to develop discriminating aesthetic judgments.

The Discipline of Art has among its quality objectives: (a) to provide an environment conducive to learning and creative production, (b) to develop an understanding and sensitivity to the visual arts of the past and present, (c) to prepare students for careers in the visual arts including the teaching of art, (d) to furnish the students with sufficient mastery of technical skills to allow for future independent development and creative production, and (e) to prepare students for advanced study in the visual arts.

In addition to the academic programs, the Exhibitions Program and Visiting Artists Series assist in broadening the learning experiences of all students. The exhibitions are shown in the Gallery of the Olive DeLuce Fine Arts Building and are drawn from national as well as regional sources. The Visiting Artists Series brings outstanding artists and art historians to the department where they conduct workshops, give demonstrations, hold discussions, and give slide presentations and lectures that are open to all persons in the University and regional community.

DEGREE PROGRAMS IN ART

The Bachelor of Fine Arts with a Comprehensive Major in Art is a program emphasizing professional preparation within the studio areas. This major allows students to take over half of their total degree requirements in art and to experience various studio areas in addition to their specializations.

Specializations are to be selected from ceramics, drawing, painting, photography, printmaking, sculpture or graphic design and involve advanced study in both a class format and individualized work.

The comprehensive specialization in graphic design provides introductory and advanced study in graphic design, drawing, painting, electronic media, and photography and the opportunity to select from these areas for additional advanced work. The student may take electives outside art in such fields as marketing and mass communication.

The Bachelor of Science in Education, Elementary/Secondary Program with a Comprehensive Major in Art Education is designed to prepare students to teach art at all levels, kindergarten through grade twelve, and to supervise art in the elementary school. For this degree, students are allowed to take almost one-half of their total degree requirements in art and to have a broad experience within the studio areas. This major program exceeds the minimum Missouri teacher certification standards in art and certifies grades K-12.

The Bachelor of Arts with a Comprehensive Major in Art is a program that is distinctive for its flexibility and combines the major requirements, which constitute almost one-half of the total degree requirements, with a rich and varied selection of general studies.

The Bachelor of Science with a Comprehensive Major in Interactive Digital Media (IDM) and a concentration in Visual Imaging (VI) is a program that will allow students to possess cross-disciplinary knowledge and skills in areas that deal with visual aesthetic understanding and communication, integrated with technological knowledge. Students in the Visual Imaging concentration of the IDM major will understand the fundamental concepts of design, comprehend how visual compositions convey content and meaning, and create computer generated images and animations for digital output.

The Minor in Art (24 hours) provides students majoring in any other department with opportunities to pursue studio and/or art history courses.

The Minor in Elementary Art Education is provided for students pursuing the elementary preparation program who also desire certification for teaching art in the elementary school, junior high,

or middle school. This minor is also available to students, in majors other than art, seeking the B.S.Ed. with the Elementary/Secondary Program (certifies grades K-12); this program exceeds the minimum Missouri teacher certification standards in art K-9.

The Minor in Secondary Art Education is provided for students pursuing secondary preparation programs who also desire certification for teaching art in the junior high, middle school, or high school. This minor is also available to students, in majors other than art, seeking the B.S.Ed. with the Elementary/Secondary Program (certifies grades K-12); this program meets the minimum Missouri teacher certification standards in art 7-12.

DEPARTMENT POLICIES FOR ART

Students should acquire a copy of the Art Student Handbook or IDM Student Handbook for a complete list of department policies and other important information.

All work produced in fulfillment of course requirements is considered the property of the Department of Fine and Performing Arts for exhibition purposes until the student's graduation or withdrawal from the University.

Attendance at programs in the Visiting Artists Series is required of all students enrolled in art classes regardless of their major areas of study.

Advanced Placement (AP), Dual Enrollment Transfer Credit and Credit by Examination

The Department of Fine and Performing Arts does not accept Advanced Placement, International Baccalaureate or Dual Enrollment credit for any of its Art degree programs, majors or minors. Credit by examination through the department is not available for any course in Art. The Discipline of Art faculty decides upon credit for courses transferred from another institution on a course-by-course basis.

Advanced Standing Requirement: Art Majors

No art major may be enrolled in and pursue advanced art courses (numbered 300 and above with the exception of ART 13-321, 333 and 395) until Art Advanced Standing has been granted. Art minors must complete the appropriate art core sequence prior to being enrolled in and pursuing advanced art courses.

Students seeking a major in art are expected to demonstrate a capacity to integrate, from the art core courses: principles of an acquired formal language, processes of seeing and perception of content. Through visual, written and verbal evidence, students must show understandings of conceptual purposes behind directed work in the art core courses and sufficient commitment to expand their knowledge in order to successfully pursue advanced study.

To achieve art advanced standing a student (1) must have no grade lower than "C" in ART 13-120, 191, 192, complete ART 13-161 or ART 13-150 and have a grade point of at least 2.00 in the overall art core courses, with no more than 6-9 hours left to complete in the art core; (2) must demonstrate her/his readiness for advanced art courses by satisfactorily responding to written and/or oral questions as informed by the current art reading list; (3) must have completed ART 13-109 Survey of Art I and 13-111 Survey of Art II; (4) must present a portfolio of work from art core courses which demonstrates to the art faculty the student's readiness to pursue advanced art courses; (5) must have attended no fewer than 70% of visiting artist lectures; and (6) must have completed the general education required classes listed for Art Advanced Standing with a GPA of at least 2.00.

Students beginning the second trimester of their sophomore year and/or beginning their last art core courses must apply for Art Advanced Standing. Transfer art majors seeking to enroll in advanced art courses must meet the same requirements as native students. A student not granted Art Advanced Standing may appeal the decision through a written petition to the dean of the College of Arts and Sciences.

Advanced Standing Requirement: Interactive Digital Media Majors

No interactive digital media (IDM) major with a visual imaging concentration (VI) may be enrolled in and pursue advanced program courses (numbered 300 and above, with the exception of ART 13-321, 333, and 395) until IDM Advanced Standing has been granted.

Students seeking a major in interactive digital media with a visual imaging concentration are expected to demonstrate a capacity to integrate from the IDM-VI Advanced Standing Core courses: principles of an acquired formal language, processes of seeing and perception of content. Through visual, written and verbal evidence, students must show understandings of conceptual purposes behind directed work in the IDM Visual Imaging core courses and sufficient commitment to expand knowledge in order to successfully pursue advanced study.

To achieve IDM-VI advanced standing a student (1) must have no grade lower than a "C" in the IDM-VI Advanced Standing Core courses; (2) must have completed the general education required classes listed for IDM-VI Advanced Standing with a GPA of at least 2.00; and (3) must have attended no fewer than 70% of visiting artist lectures.

Advanced Standing Core–Interactive Digital Media-Visual Imaging:

ART 13-120 Drawing	3
ART 13-191 Introduction to Design	3
ART 13-207 Digital Photography	3
ART 13-221 Life Drawing	3
ART 13-240 Painting	3
ART 13-292 Introduction to Creative Electronic Imaging	3
ART 13-294 Letter Forms and Graphic Design	3
Total Hours	**21**

Students who have completed the requirements outlined in the paragraph above must apply for IDM-VI Advanced Standing. Transfer IDM majors seeking to enroll in the advanced program courses must meet the same requirements as native students. A student who is not granted IDM-VI Advanced Standing may appeal the decision through a written petition to the dean of the College of Arts and Sciences.

Advisement of Transfer Art and Interactive Digital Media Majors

All transfer students transferring credit for an art or interactive digital media-visual imaging concentration degree at Northwest must contact the Department of Fine and Performing Arts chairperson to arrange a portfolio review in the first week of the first trimester of enrollment. A review may be held prior to the first trimester of enrollment by arranging for a special appointment with the Department of Fine and Performing Arts chairperson. The purpose of this review is to provide an opportunity for advisement, appropriate to the background of the student, in meeting requirements for Advanced Standing and to determine which transfer credits will be accepted to meet Department Core Requirements and/or electives. Enrollment in advanced courses (numbered 300 and above) is not allowed until Advanced Standing has been obtained. The required portfolio review is not equivalent to an Advanced Standing review (see above for Advanced Standing requirements).

Senior Comprehensive Review

A senior comprehensive review must be successfully completed by all art majors and before a senior exhibit may be installed. Senior review requires an attendance of 70% or more of visiting artist lectures.

Senior Exhibition

All art majors are required to present an exhibition of their work that is acceptable to the art faculty. Candidates for the B.A. or B.S.Ed. degree can meet this requirement by successfully participating in a group exhibition in their senior year. Candidates for the B.F.A. degree can satisfy this requirement only through the completion of ART 13-403 Senior Exhibition. Senior exhibitions are held during the fall and spring trimesters only.

Core Requirements for Majors in Art

	Semester Hours
ART 13-120 Drawing	3
ART 13-150 Jewelry and Metalsmithing OR ART 13-161 Ceramics	3
ART 13-191 Introduction to Design	3
ART 13-192 Three-Dimensional Design	3
ART 13-221 Life Drawing	3
ART 13-240 Painting	3
ART 13-270 Sculpture	3
ART 13-280 Visual Art Concepts	3
*ART 13-333 Printmaking	3
ART 13-402 Senior Seminar	1
Total Hours	**28**

***Students seeking a graphic design specialization must take ART 13-294 Letter Forms and Graphic Design prior to Advanced Standing and ART 13-333 Printmaking at a later time.**

MAJORS

Comprehensive Major in Art, 72 hours: B.F.A.—No Minor Required

CIP: 500702

Required Courses	Semester Hours
Art Major Core Requirements	28
ART 13-201 Creative Photography	3
ART 13-321 Advanced Drawing	3
ART 13-403 Senior Exhibition	1

Studio Specialization Requirements:
A minimum of 12 hours in one studio area at or above the 300 level.
At least 10 hours in supporting electives of 300 level or above.
Art History Requirements: ART 13-109 Survey of Art I
and ART 13-111 Survey of Art II plus three of the following courses
(9 hours): ART 13-311, 313, 315, 316, 317 and 318

Graphic Design Requirements:
ART 13-292, 294, 394, 396, 398, 492, 497

Art History Requirements: ART 13-109 Survey of Art I
and ART 13-111 Survey of Art II plus one of the following courses
(3 hours): ART 13-311, 313, 315, 316, 317 and 318

Approved electives as needed to total 72 hours in the major
(ART 13-180, 380, 382, 389, 480 are not approved art electives for this degree.)

Recommended General Education Course

HUM 26-102 Western Civilization I: The Ancient World to 1500 (3)

Recommended Institutional Requirement

CSIS 44-130 Computers and Information Technology (3)

Comprehensive Major in Art Education, 55 hours: B.S.Ed.–No Minor Required

CIP: 131302

Required Courses	Semester Hours
Art Major Core Requirements	28
ART 13-180 Principles of Art Education	3
ART 13-280 Visual Art Concepts	3
ART 13-292 Introduction to Creative Electronic Imaging	3
ART 13-382 Methods in Elementary Art	3
ART 13-395 Design with Fibers	3
ART 13-111 Survey of Art II: Renaissance to the Present	3
Advanced Art History choice	3
Approved art electives as needed to total 55 hours in the major	6
ART 13-480 must be completed as part of the Professional Education requirements.	

This major, when completed under the B.S.Ed. degree, Elementary/Secondary Program, meets Missouri teacher certification requirements which certifies grades K-12.

Comprehensive Major in Art, 54 hours: B.A.–No Minor Required

CIP: 500702

Required Courses	Semester Hours
Art Major Core Requirements	28
Art History: ART 13-109 Survey of Art I and ART 13-111 Survey of Art II plus three of the following courses (9 hours): ART 13-311, 313, 315, 316, 317, and 318	15
Approved art electives as needed to total 54 hours in art	

Comprehensive Major in Interactive Digital Media, 61 hours: B.S.–No Minor Required

CIP: 110801

Visual Imaging Concentration

This is an interdisciplinary major in conjunction with the Department of Fine and Performing Arts, the Department of Mathematics, Computer Science and Information Systems, and the Department of Communication and Mass Media. Three concentrations are available for this major: Computer Science Programming (Mathematics, Computer Science and Information Systems), New Media (Communication and Mass Media), and Visual Imaging (Fine and Performing Arts).

Required Core Courses	Semester Hours
ART 13-191 Introduction to Design	3
ART 13-207 Digital Photography	3
ART 13-292 Introduction to Creative Electronic Imaging	3
ART 13-294 Letter Forms and Graphic Design	3
MCOM 20-120 Introduction to Mass Media	3
MCOM 20-243 Media Design I	3
MCOM 20-303 Introduction to Web Publishing	3
MCOM 20-314 Communication Law and Ethics	3
CSIS 44-143 Script Programming I	3
CSIS 44-333 Multimedia and Web Development	3
CSIS 44-335 Script Programming II	3
MKTG 55-330 Principles of Marketing	3
Total Core Requirements	**36**

Visual Imaging Concentration Required Courses	
ART 13-120 Drawing	3
ART 13-221 Life Drawing	3
ART 13-240 Painting	3
ART 13-394 Advanced Creative Electronic Imaging*	3
ART 13-396 Advanced Graphic Design*	3
ART 13-398 Computer Assisted Graphic Design*	3
ART 13-415 Interactive Digital Media Seminar*	1
ART 13-497 Creative Digital Animation*	3
ART 13-592 Graphic Design Internship*	3
Total Concentration Hours	**25**

***Must have completed all Advanced Standing Requirements prior to enrolling in advanced courses (300-level and above).**

Concentration in New Media – see the Department of Communication and Mass Media

Concentration in Computer Science Programming – see the Department of Mathematics, Computer Science and Information Systems

MINORS

Minor in Art, 24 hours

CIP: 500701

Required Courses	Semester Hours
ART 13-120 Drawing	3
ART 13-191 Introduction to Design OR ART 13-192 Three-Dimensional Design	3
ART 13-109 Survey of Art I OR ART 13-111 Survey of Art II	3
Art History: choice of courses (300-level)	3
Art History or Studio choices by advisement	12

Minor in Elementary Art Education, 24 hours: B.S.Ed.–Certifiable–See Professional Education Requirements

CIP: 131302

Required Courses	Semester Hours
ART 13-120 Drawing	3
ART 13-161 Ceramics	3
ART 13-180 Principles of Art Education	3
ART 13-191 Introduction to Design	3
ART 13-192 Three-Dimensional Design	3
ART 13-240 Painting	3
ART 13-382 Methods in Elementary Art	3
ART 13-395 Design with Fibers	3
Art electives approved by the minor advisor as needed to total 24 hours in art selected from either printmaking or photography.	

Students may elect to take either ART 13-109 Survey of Art I or 13-111 Survey of Art II to satisfy the Art History requirement of the Minor in Elementary Art Education. If ART 13-109 Survey of Art I or 13-111 Survey of Art II is not taken to meet General Education requirements, either course must be added for the completion of this minor. This minor, if completed under the B.S.Ed. degree, meets Missouri teacher certification requirements in art K-9.

Minor in Secondary Art Education, 30 hours: B.S.Ed.–Certifiable–See Professional Education Requirements

CIP: 131302

Required Courses	Semester Hours
ART 13-110 Survey of Art	3
ART 13-120 Drawing	3
ART 13-161 Ceramics	3
ART 13-180 Principles of Art Education	3
ART 13-191 Introduction to Design	3
ART 13-192 Three-Dimensional Design	3
ART 13-201 Creative Photography OR ART 13-333 Printmaking	3
ART 13-240 Painting	3
ART 13-395 Design with Fibers	3
ART 13-480 Methods in Secondary School Art	2
Art electives approved by the minor advisor as needed to total 30 hours in art.	

Students may elect to take either ART 13-109 Survey of Art I or 13-111 Survey of Art II to satisfy the Art History requirement of the Minor in Secondary Art Education. If ART 13-109 Survey of Art I or 13-111 Survey of Art II is not taken to meet General Education requirements, either course must be added for the completion of this minor. This minor, if completed under the B.S.Ed. degree, meets Missouri teacher certification requirements in art 7-12.

Minor in Interactive Digital Media, 24 hours

CIP: 110801

This is an interdisciplinary minor in conjunction with the Department of Fine and Performing Arts, the Department of Mathematics, Computer Science and Information Systems, and the Department of Communication and Mass Media. This minor requires CSIS 44-130 Computers and Information Technology as a prerequisite course as required by course descriptions.

Required Courses	Semester Hours
ART 13-191 Introduction to Design	3
ART 13-292 Introduction to Creative Electronic Imaging	3
MCOM 20-243 Media Design I	3
MCOM 20-303 Introduction to Web Publishing	3
CSIS 44-143 Script Programming I	3
CSIS 44-333 Multimedia and Web Development	3
Choose 6 hours from electives:	6
ART 13-120 Drawing (3)	
ART 13-207 Digital Photography (3)	
MCOM 20-334 Multimedia Production (3)	
CSIS 44-141 Computer Programming I (3)	
CSIS 44-335 Script Programming II (3)	
Total Minor Requirements	**24**

Course Descriptions

Art / 13

102 Art Appreciation (3 hours)
A study of the elements and principles of art as well as forms of expression in works from the major periods of Western art. Although the works will be studied in the context of history, the course is not a chronological survey. Not a studio course. Not for art majors. (F, S, SS)

200 Special Offerings (1-4 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable for additional experience, new material and progression of study.

299 Individual Problems in Studio (2 hours)
Individual direction using previously learned skills and techniques. Prerequisite: Permission of instructor. Repeatable once for additional experience, new material and progression of study. (F, S)

316 International Studies in Art History (3 hours)
A course involving international travel emphasizing an art historic and personal reflection to the art, architecture, and culture of selected foreign countries. Course length is approximately one month. This course is an approved art history elective for art majors. Prerequisite: ART 13-110
(Alt. summers)

399 International Studies in Studio (3 hours)
A course involving international travel emphasizing a studio artist's response to the art, architecture, and culture of selected foreign countries. Course length is approximately one month. Students may enroll twice in the same session for a maximum of six credits. (Advanced standing not required for undergraduate students requesting upper division credit providing course prerequisites have been met.) Prerequisites: ART 13-110 and 13-221 or 13-201 or 13-333. (Alt. summers)

400 Special Offerings (1-4 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable for additional experience, new material and progression of study.

402 Senior Seminar (1 hour)
A seminar dealing with issues encountered by the art educator and artist . Exhibition techniques, preparation of résumés, preparation of letters seeking interviews, preparation of portfolios, and interview techniques will be stressed. Prerequisite: Permission of department chairperson. (F)

403 Senior Exhibition (1 hour)
An exhibition to include works produced expressly for the exhibition and outstanding works previously done. Prerequisite: ART 13-402. (F, S)

415 Interactive Digital Media Seminar (1 hour)
A seminar dealing in issues faced by multimedia professionals and preparation for advanced study. Major emphasis will be placed on the development of a professional portfolio, résumé writing and interviews for the field of multimedia. Prerequisites: Junior or senior standing by advisement. (F)

500 Special Offerings (1-4 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable for additional experience, new material and progression of study.

ART EDUCATION

180 Principles of Art Education (3 hours)
The examination of theories, concepts, and principles of art education within the context of the history of art education. The impact of philosophies of art, art education, and general education, relevant psychological and sociological research, current issues and trends in the field, and the nature of art are investigated as they apply to art education. (F)

280 Visual Art Concepts (3 hours)
The course is an examination of philosophies, theories, concepts, and principles of art. Investigation of visual art aesthetics and critical inquiry (art criticism) will be undertaken to develop the student's knowledge and comprehension of these fields. (S)

380 Art in the Elementary School (2 hours)
An orientation in current concepts of art education teaching strategies and learning processes and procedures for the elementary classroom. Concepts of art education are presented with experiences to explore appropriate methods and materials. Art majors cannot receive credit for this course. Prerequisite: ART 13-102 or MUS 19-201, 202 or 222. (F, S)

382 Methods in Elementary Art (3 hours)
The teacher's role in directing art experiences in the elementary art classroom. Consideration is given to the student developing strategies for implementing art activities for the individual, class, and total school art program. Prerequisite: ART 13-180. (S)

386 Papermaking (3 hours)
Processes and techniques for creating two-dimensional and three-dimensional forms using handmade paper. Prerequisite: Advanced standing for art majors. (S)

389 Individual Study in Art Education (2 hours)
Individual investigations in art education. Prerequisites: ART 13-180 and permission of instructor. Repeatable once for additional experience, new material and progression of study. (S)

395 Design With Fibers (3 hours)
Two- and three-dimensional design for fiber techniques with emphasis placed on the design process. (F)

480 Methods in Secondary School Art (2 hours)
Specific methods used in teaching art and in curriculum planning for secondary school levels. Prerequisites: ART 13-180, 280, 382 and admission into the Professional Education Program. (F)

495 Advanced Fibers (3 hours)
Two- and three-dimensional design for advanced fiber techniques with emphasis placed on the design process and aesthetic quality. Prerequisite: ART 13-395. (F, S)

582 Organization and Supervision of the Art Program (2 hours)
The organization of the total art program within the framework of the educational structure of the school; the functions, role and responsibilities of the supervisor, coordinator and/or single art teacher. Model programs in several school classifications will be examined. Prerequisites: ART 13-180, 382 and 480. (SS, alt. years)

584 Art Activities in the Elementary School (2 hours)
Activities which develop personal sensitivity and refined consciousness with an emphasis on an active philosophy for creative growth which stresses the importance of art as a personal language. Prerequisite: ART 13-382. (SS, alt. years)

588 Art in the Senior High School (2 hours)
Studies designed to present the secondary art teacher with an expanded conceptual and practical framework for implementing curricular concerns in studio, art appreciation, art history and art criticism. Prerequisite: ART 13-480. (SS, alt. years)

ART HISTORY

109 Survey of Art I: Prehistory through Medieval Art (3 hours)
A survey of painting, sculpture, architecture, and the decorative arts from cave art through the Gothic Period in Europe, in addition to early Islamic, African, Asian, Oceanic art and that of the Americas in their chronology.

111 Survey of Art II: Renaissance to the Present (3 hours)
A survey of painting, sculpture, architecture, and the decorative arts from the Renaissance Period to the present in Europe and America, and includes later Islamic, African, Asian, Oceanic art and that of the Americas in their chronology.

311 Ancient and Medieval Art (3 hours)
The history of architecture, painting, sculpture, and related arts in Egyptian, Aegean, Greek and Roman civilizations, as well as the Early Christian, Byzantine, Romanesque and Gothic periods. Prerequisite: ART 13-109 and 111. (F, odd years)

313 Renaissance and Baroque Art (3 hours)
The history of architecture, painting, sculpture and related arts in Europe from the last of the 14th century through the 18th century. Prerequisite: ART 13-109 and 111. (S, odd years)

315 Nineteenth and Early Twentieth Century Art (3 hours)
A study of the major visual arts in Europe from the latter 18th century to the second decade of the 20th century. Prerequisite: ART 13-109 and 111. (S, even years)

317 Twentieth Century Art (3 hours)
The development of trends and influences in painting, sculpture, photography, and architecture from the mid-19th Century to the present day. The course will discuss artists and stylistic movements from Realism and Impressionism through contemporary art. Prerequisites: ART 13-109, 111 and 315. (F, even years)

318 Far Eastern Art (3 hours)
A study of the dominant visual arts of the Far East covering the major cultures and emphasizing the arts of China and Japan. Prerequisite: ART 13-109 and 111. (F, even years)

411 Special Topics in Art (1-4 hours)
Provides concentrated study in special topics within art history. Topics vary trimester to trimester. Prerequisite: ART 13-109 and 111.

CERAMICS

161 Ceramics (3 hours)
An introduction to studio pottery through comprehensive experience with clay preparation, basic forming, decorating, glazing methods, and kiln firing procedures at low temperatures. Basic studio work principles and individual design are stressed. (F, S)

261 Wheel Throwing and Functional Form (3 hours)
An intermediate level course in ceramics. Emphasis on the fundamentals of working on the potter's wheel and developing understanding of functional ceramic forms. Continued study of the physical properties of ceramic materials. Prerequisite: ART 13-161. (S)

360 Advanced Ceramics (3 hours)
Continued explorations in materials, processes and studio practice in ceramics. Assigned clay and glaze research as well as research into experimental uses of ceramic materials. Focused studio practice and development are stressed. Prerequisites: ART 13-161, 192, 261, advanced standing and permission of instructor. (S)

369 Ceramics Studio (2-6 hours)
Further cultivation of each student's approach to materials and processes in ceramics. Mature, disciplined studio practice and focused development of a unique and resolved body of work are stressed. Prerequisites: ART 13-360 and permission of instructor. Repeatable, up to 15 credit hours, for additional experience, new material and progression of study. (F, S)

569 Ceramics Processes (2-6 hours)
Advanced studio work providing students the opportunity to further develop work in ceramics. Study in all phases of studio practice. Repeatable, up to 6 credit hours, for additional experience, new material and progression of study. Prerequisite: Permission of instructor. (F, S)

DRAWING

120 Drawing (3 hours)
An introduction to and the application of basic principles of art in drawing using a variety of media, techniques and subjects. (F, S)

221 Life Drawing (3 hours)
Application of the fundamentals of drawing to develop an understanding of creative composition using the human figure. Prerequisite: ART 13-120 (art majors must complete with at least a grade of "C"). (F, S)

321 Advanced Drawing (3 hours)
A continued study of the human figure, other subjects and composition. More emphasis given to independent decision making. Prerequisite: ART 13-221. (S, SS)

429 Drawing Studio (2-6 hours)
Advanced exploration of drawing media, techniques, and concepts from representation to abstraction. Prerequisites: ART 13-321, advanced standing and permission of instructor. Repeatable, up to 15 credit hours, for additional experience, new material and progression of study. Art majors must complete with at least a grade of "C". (F, S)

529 Drawing Processes (2-6 hours)
Advanced studio work providing students with opportunities for extended studies in various media and directions. Repeatable, up to 6 credit hours, for additional experience, new material and progression of study. Prerequisite: Permission of instructor. (F, S)

GRAPHIC DESIGN

191 Introduction to Design (3 hours)
Introduction to two-dimensional design elements and principles, including design objectives, concepts, processes and skills through varied class projects and lecture/demonstration material. (F, S)

292 Introduction to Creative Electronic Imaging (3 hours)
An introduction to electronic media for creative imaging using computers, scanners, and digital photography . Appropriate hardware and software exploration for fine art purposes. Prerequisites: ART 13-120 and 191 (IDM majors may take concurrently with ART 13-191 and are not required to have ART 13-120 as a prerequisite; art majors must complete prerequisites with at least a grade of "C"). (F, S)

294 Letter Forms and Graphic Design (3 hours)
Type, letter forms and their creative use in visual communications, including the development of comprehensive advertising layouts in black and white. Prerequisite: ART 13-191 (art majors must complete prerequisite with at least a grade of "C"). (F, S)

394 Advanced Creative Electronic Imaging (3 hours)
Course covers advanced visual perception principles and computer procedures for creative digital imagery as it applies to interactive and design applications. Prerequisites: ART 13-292 and advanced standing. (F)

396 Advanced Graphic Design (3 hours)
The creative design of color comprehensive layouts using drawing, lettering, and type. Professional procedures and standards of quality are emphasized. Prerequisites: ART 13-120, 294 and advanced standing. (F)

398 Computer Assisted Graphic Design (3 hours)
Graphic arts and design course for technical print and related media plus advanced interactive media graphics. Equal emphasis on creative problem solving and technical software application. Primary software applications involve desktop publishing and related production software. Prerequisites: ART 13-120 and 396. (S)

491 Interactive Design (2 hours)
Interactive art/design theory with practical application of time-based motion and static graphics for CD-ROM or web graphics. Prerequisite: ART 13-394 or permission of instructor. Prerequisite: ART 13-394 (S)

492 Advertising Design (3 hours)
Principles of graphic design applied to various commercial visual communications, i.e., magazine and newspaper display, packaging, billboards, posters, book covers, etc. Prerequisites: ART 13-221, 396, 398 and advanced standing. (S, even years)

493 Interactive Portfolio (1 hour)
Interactive design application of time-based motion and static graphics for CD-ROM portfolios or web portfolios. Prerequisite: ART 13-191, 13-292,13-394, 13-491. (S)

497 Creative Digital Animation (3 hours)
Principles and procedures of creative digital animation. Prerequisite: ART 13-394. (S)

499 Design Studio (2-6 hours)
Exploration of two- and three-dimensional graphic design processes using a variety of non-traditional materials. Prerequisite: ART 13-396 and permission of instructor. Repeatable, up to 15 credit hours, for additional experience, new material and progression of study. (F, S)

592 Graphic Design Internship (2-6 hours)
To provide the student with an opportunity to work within a business context, so that the student can gain professional experience that would otherwise not be obtained in regular coursework. Prerequisite: Must be junior/senior level graphic design specialization with 3.00 GPA in graphic design or IDM-VI major. Repeatable, up to 6 credit hours, for additional experience, new material and progression of study. (F, S, SS)

599 Design Processes (2-6 hours)
Advanced professional level work in various techniques and directions in graphic design and/or fiber arts. Repeatable, up to 6 credit hours, for additional experience, new material and progression of study. Prerequisite: ART 13-499 (graphic design) or 13-495 (fiber arts), and permission of instructor. (F, S)

PAINTING

240 Painting (3 hours)
A continued study of elements and principles of composition and color perception; synthesis of drawing and painting through work from traditional genre with concern for materials and methods in the use of the oil medium. Prerequisites: ART 13-120 and 191 (art majors must complete prerequisites with at least a grade of "C"). (F, S)

340 Advanced Painting (3 hours)
Emphasis on life study and exposure to alternative forms and media combined with an introduction to the conceptual side of painting. Prerequisites: ART 13-221, 240 and advanced standing. (F, S)

343 Watercolor Painting (3 hours)
An introduction to both transparent and opaque watercolor with emphasis on their unique qualities and expressive potential. Prerequisites: ART 13-240 and advanced standing. (F)

449 Painting Studio (2-6 hours)
Advanced exploration of painting media, techniques and concepts, from representation to abstraction. Prerequisites: ART 13-340, advanced standing, and permission of instructor. Repeatable, up to 15 credit hours, for additional experience, new material and progression of study. Art majors must complete with at least a grade of "C". (F, S)

549 Painting Processes (2-6 hours)
Advanced studio work providing students with opportunities for extended study in various media, and directions. Repeatable, up to 6 credit hours, for additional experience, new material and progression of study. Prerequisite: Permission of instructor. (F, S)

PHOTOGRAPHY

201 Creative Photography (3 hours)
An introduction to the history of photography and basic darkroom and camera procedures through the exploration of in-darkroom photography. Photography as a creative art and expressive medium will be stressed. (F, S)

207 Digital Photography (3 hours)
An introductory creative photography course for students interested in digital media, and for students in the interactive digital media major. Students will explore contemporary applications of visual space and plastic form through the medium of electronic photography. Not for art majors. (F, S, SS)

303 Advanced Creative Photography (3 hours)
A continuance of Art 13-201. Each student will direct work toward developing a personal expressive approach to photography. The study of contemporary photographers and criticism will be stressed. Studio lighting, Photoshop, digitally scanning film, and making digital prints is introduced. Prerequisites: ART 13-201 and advanced standing. (F, S)

305 Advanced Digital Photography (3 hours)
An exploratory continuation of creative photography with an emphasis on advanced digital photography, software, and printing applications. Photography as an art and expressive medium will be stressed. Prerequisites: ART 13-303 or 13-207 and advanced standing. (S)

309 Photography Studio (2-6 hours)
Directed study and exploration of black and white, color, non-traditional and/or digital photography. Prerequisites: ART 13-303 and permission of instructor. Repeatable, up to 15 credit hours, for additional experience, new material and progression of study. (F, S)

509 Photography Processes (2-6 hours)
Advanced directed studies in various techniques in black and white or digital photography. Repeatable, up to 6 credit hours, for additional experience, new material and progression of study. Prerequisite: Permission of instructor. (F, S)

PRINTMAKING

333 Printmaking (3 hours)
An introduction to traditional and contemporary pursuits of intaglio printmaking including color monotype, etching and engraving processes. Prerequisites: ART 13-120 and 221. (F, S)

439 Printmaking Studio (2-6 hours)
Directed study in traditional or experimental techniques in selected media. Prerequisites: ART 13-333, advanced standing and permission of instructor. Repeatable, up to 15 credit hours, for additional experience, new material and progression of study. (F)

539 Printmaking Processes (2-6 hours)
Advanced directed studies in various print media, techniques and directions. Repeatable, up to 6 credit hours, for additional experience, new material and progression of study. Prerequisite: Permission of instructor. (F)

SCULPTURE/THREE-DIMENSIONAL DESIGN

150 Jewelry and Metalsmithing (3 hours)
This course is designed as an introduction to the language and techniques of jewelry and metalsmithing. During the course, students will focus on techniques and design concepts that deal primarily with the process of small-scale metal fabrication. Emphasis will be placed on jewelry and metalsmithing as an art form, not a means for production. (F)

192 Three-Dimensional Design (3 hours)
An introduction to the fundamentals of three-dimensional design explored through assigned problems and a variety of construction methods. Prerequisites: ART 13-120 and 191 (completed with at least a grade of "C" for art majors). (F, S)

270 Sculpture (3 hours)
An introduction to the basic concepts and techniques utilized in the production of sculpture, including additive/subtractive methods, welding, and site installation. Prerequisite: ART 13-192 (completed with at least a grade of "C" for art majors). (F, S)

470 Advanced Sculpture (3 hours)
An introduction to concepts and techniques beyond those explored in Art 13-270. Emphasis will be on the execution of ideas and development of the student's artistic direction. Prerequisites: ART 13-270 and advanced standing. (S)

479 Sculpture Studio (2-6 hours)
Designed to allow students to focus more comprehensively on a particular direction or technique utilized in the production of sculpture. Discussions and assigned research on contemporary modes in sculpture. Prerequisites: ART 13-470 and permission of instructor. Repeatable, for up to 15 credit hours, for additional experience, new material and progression of study. (F, S)

579 Sculpture Processes (2-6 hours)
Advanced studio work facilitated through discussions on contemporary concepts in sculpture, directed research and group critiques. Emphasis on student's understanding of the content of his/her work and where that fits into the continuum of sculpture. Repeatable, up to 6 credit hours, for additional experience, new material and progression of study. Prerequisite: Permission of instructor. (F, S)

Music / 19

Accreditation of Music Degrees

Since 1969, Northwest Missouri State University has been a member of the National Association of Schools of Music. Both the B.M.E. and the B.A. degree are accredited by NASM. This accreditation insures that our programs are of the highest quality and that the curriculum conforms to national standards of excellence.

Statement of Purpose for Music

The Discipline of Music serves the University in three basic areas: general music education foundation for all students, individual professional preparation for selected fields and cultural enrichment for both campus and community.

Study in these programs provides majors with the skills needed to become highly successful in their chosen professions. The Discipline of Music is especially committed to excellence in public school music; in addition to an inclusive major in music, comprehensive programs are also available in vocal music education and instrumental music education. These programs provide instruction in private study, music theory/literature and methodology applicable to teaching at the elementary and secondary levels.

Recognizing its obligation to enhance the quality of life for the citizens of the four-state area, the Department of Fine and Performing Arts assists music supervisors in keeping current in their fields of expertise, offering courses for advanced study and special topics seminars that help them advance the cause of public school music in their communities.

Objectives

The music curriculum has been designed to assist all participating students in maximizing potential. Toward this end, the primary objectives of the undergraduate programs are (1) to further performance ability in at least one musical medium, (2) to provide future teachers with the knowledge and skills necessary to become successful as professional educators in instrumental and/or vocal music, and (3) to provide students with a wide range of educational/musical experiences which will encourage continued personal and professional growth.

DEGREE PROGRAMS IN MUSIC

The Bachelor of Arts with a Comprehensive Major in Music (41 hours) is designed to provide the student with a broad liberal arts education, as well as more specialized work in an applied area of voice, keyboard or a particular instrument.

The Bachelor of Music in Education, Elementary/Secondary Program, with a comprehensive major in either Instrumental Music Education (60 hours) or Vocal Music Education (58 hours), prepares students to teach instrumental or vocal music at all levels, K-12. These major programs exceed the minimum Missouri teacher certification standards in instrumental music K-12 or in vocal music K-12.

A 24-hour Minor in Music is available to students with a major in another academic discipline.

Test-Out Policy for Music

Credit by examination through the department is available for the following courses only: MUS 19-171 (Beginning Sight Singing and Ear Training), MUS 19-172 (Intermediate Sight Singing and Ear Training), MUS 19-173 (Theory of Music), MUS 19-174 (Theory of Music), MUS 19-271 (Advanced Sight Singing and Ear Training I) and MUS 19-272 (Advanced Sight Singing and Ear Training II).

For policies and procedures see the "Departmental Test-Out" section of this catalog. Advanced Placement (AP) credit is available for MUS 19-173 (Theory of Music) and MUS 19-201 (Enjoyment of Music) with a score of "4" on the appropriate test.

Upper-Level Standing in Applied Study for Music

The Upper-Level Qualifying Examination in applied study may be attempted after a minimum of four semester hours of study (not including dual credit) in the lower level (courses numbered below 300) of applied instruction. If approved for upper-level standing by the appropriate faculty committee, the student must then enroll in upper-level applied study. Transfer students wishing to enroll in private study at the upper level must meet the same requirements as students who began studies at Northwest. Transfer students will be tested for upper-level standing during the first week of their initial trimester.

DEPARTMENTAL POLICIES FOR MUSIC

Applied Jury Exam: All students enrolled in applied music are required to participate in the applied jury exam each trimester of applied study except for the trimester in which their senior recital is actually presented. These examinations are administered by the music faculty on specific dates during the week of final examinations.

Concert/Recital Attendance: All music majors and minors are required to attend concerts and recitals as specified by the music faculty at the beginning of each fall and spring trimester. Non-music majors and minors may be required to attend concerts and/or recitals as directed by course instructors.

Ensemble Participation: Majors in the B.M.E. program are required to satisfactorily participate in Marching Band, Symphonic Band, Wind Symphony, University Chorale or Orchestra according to their major applied area (and/or area of added endorsement) each fall and spring trimester of full-time enrollment, except for the trimester of student teaching. Majors in the B.A. degree and minors are required to satisfactorily participate in either Marching Band, Symphonic Band, Wind Symphony, University Chorale or Orchestra according to their major applied area each fall or spring trimester of full-time enrollment. Students may enroll in ensemble courses for activity OR academic credit in order to fulfill this requirement. NOTE: Courses taken for activity credit do not count toward GPA.

Performance Audition: For all levels of applied study, students must have the permission of the instructor and/or faculty within the area of study. Any student who has not been heard by the faculty at scholarship auditions must perform an audition for faculty members before the drop/add period closes in the fall to determine acceptance to applied study. Students unable to demonstrate sufficient performance skills will be admitted on a trial basis.

Entrance Examination for Music Theory: All students who intend to begin the theory sequence at Northwest must successfully pass the entrance examination prior to enrolling in theory courses. The purpose of the examination is to ensure that each student possesses a significant level of competence in music before entering the theory sequence.

Placement Examination in Theory and Ear-Training for Transfer Students: All students who desire to transfer theory and/or ear-training credit from another institution must take a Placement Examination in Music Theory and Ear-Training at the appropriate level. The purpose of this examination is to ensure proper placement in the theory/ear-training sequence and equate previous theory/ear-training courses to those offered at Northwest. Students may be required to retake or audit appropriate Northwest music theory/ear-training courses to remedy any deficiencies.

Entrance Examination In Keyboard: All students who intend to study keyboard at Northwest must take a placement exam prior to enrolling in any level of applied piano class, applied

piano, applied organ or applied harpsichord. The purpose of the examination is to assess the ability level of each student and to appropriately place that student.

Courses at 500-level: Unless excused by the department chairperson, students must have senior standing before being permitted to enroll in 500-level music courses.

Keyboard Proficiency: Majors in the B.M.E. degree are required to satisfactorily pass a piano proficiency examination to the satisfaction of the piano faculty. Piano majors are exempt from this policy. The examination must be taken no later than the end of the student's third trimester of piano study. Transfer students with three trimesters of piano study are required to take the examination during their first trimester of enrollment at Northwest. The examination is administered only during the fall and spring trimesters of each academic year for students enrolled in keyboard study. Fulfillment of this requirement is a prerequisite to enrollment in MUS 19-482 (Methods in Secondary School Instrumental Music), MUS 19-484 (Methods in Secondary School Vocal Music) and EDUC 61-470 (Directed Teaching in Elementary and Secondary School).

In order to pass the piano proficiency examination at Northwest, students must be able to: (1) perform one prepared piece of comparable difficulty to a movement from a Clementi Sonatine, (2) sight read one composition of intermediate difficulty, (3) supply an accompaniment to a given melody with marked chording, and (4) supply an accompaniment to a given melody without marked chording. Special note: A requirement for taking the keyboard proficiency exam is enrollment in keyboard study for credit (and have a passing grade in the course) or successfully auditing of class piano (i.e. have a minimum of 65% attendance).

Senior Recital: All majors, regardless of degree, are required to present a senior recital to the satisfaction of the music faculty. Such a recital will be presented only upon the approval of the student's senior recital hearing committee. The student must be enrolled in MUS 19-499 (Senior Recital) and in applied music with the student's major instructor during the trimester of the recital. The senior recital may not be attempted sooner than the third trimester of the upper level of applied study.

Students must adhere to departmental standards/policies concerning scheduling, format, additional performers and printed materials relative to the Senior Recital. These standards/policies are specified in the music student handbook, which may be obtained in the office of the Department of Fine and Performing Arts and online at www.nwmissouri.edu/dept/music/pdfs/handbook.pdf.

Sight Singing/Ear Training Proficiency: All majors are required to pass a sight singing/ear training proficiency examination to the satisfaction of the music theory faculty. This examination must be taken by the end of the student's fourth trimester of ear training. The examination is given to all transfer students who have completed at least four trimesters of ear training study at another institution. Students who do not pass this examination must successfully audit (i.e. minimum of 65% attendance) either MUS 19-271 (Advanced Sight Singing and Ear Training I) or MUS 19-272 (Advanced Sight Singing and Ear Training II) before attempting to pass the proficiency examination again. The examinations are administered only during the fall and spring trimesters of each academic year for students enrolled in MUS 19-271 or 19-272. This requirement is a prerequisite to enrollment in EDUC 61-470 (Directed Teaching in Elementary and Secondary School).

Student Recital: Each music major, regardless of degree program, is required to perform in his/her major applied area in a student recital each trimester of applied study, with the exception of the initial trimester of such applied study. Other students enrolled in applied music may also be required by the applied instructor to perform in a student recital.

Bachelor of Music Education (B.M.E.) (K-12 Certification)

The purpose of the B.M.E. degree is to provide music teacher training. Those who complete this degree are normally granted a certificate to teach in Missouri. All degrees in education are subject to state requirements which may change at any time due to action of the State Board of Education. Care should be exercised in choosing courses to assure a minimum of 40 semester hours of senior college work in courses numbered above 300. Completion of this curriculum, other University requirements, and an overall grade point average of 2.50 on a 4.00 scale qualifies a student to receive a Bachelor of Music Education degree. The Bachelor of Music Education degree is available with these majors: Instrumental Music K-12, Vocal Music K-12. Candidates must complete the following requirements:

B.M.E. Degree Requirements	**Semester Hours**
General Education Requirements (See pages 66-68)	**42**
Directed General Education Requirement (must achieve grade of "C" or better in each)	
COM 29-102 Fundamentals of Oral Communications	
PSYC 08-303 Educational Psychology	
Institutional Requirements (See pages 68-69)	**6**
Information Technology Competency	
Multicultural Diversity Competency	
Degree Requirement	**3**
EDUC 61-569 Multiculturalism in Education (3) OR	
LANG 14-100 Level "Communication and Culture" Modern Languages course*	
*Includes LANG 14-151 Introduction to Conversational American Sign Language	
Professional Education Requirements	**25**
EDUC 61-260 Secondary Teaching Practicum I (1)	
EDCI 62-353 Teaching Reading in Content Areas (2)	
EDCI 62-371 Introduction to Special Education (3)	
PSYC 08-322 Adolescent Psychology (2)	
**EDUC 61-360 Secondary Teaching Practicum II (1)	
**EDUC 61-461 School and Society (2)	
**EDUC 61-520 Techniques of Classroom Management and Discipline (2)	
***EDUC 61-462 School and Society Seminar (1)	
***EDUC 61-470 Directed Teaching in Elementary and Secondary School (10)	
***EDUC 61-521 Seminar in Classroom Management (1)	

**These courses are to be taken in the same trimester as MUS 19-482 Methods in Secondary School Instrumental Music or MUS 19-484 Methods in Secondary School Vocal Music
***These courses must be taken during the student teaching trimester.

Major Requirements	**58-60**
TOTAL MINIMUM ACADEMIC	**124**

Music Core Requirements

The Department of Fine and Performing Arts has formulated a curriculum that facilitates development of a student's musicianship in a comprehensive fashion with course offerings in applied music, music literature and music theory.

Core Requirements for Majors in Music:	**Semester Hours**
MUS 19-171 Beginning Sight Singing and Ear Training	1
MUS 19-172 Intermediate Sight Singing and Ear Training	1
MUS 19-173 Theory of Music	3
MUS 19-174 Theory of Music	3
MUS 19-271 Advanced Sight Singing and Ear Training I	1
MUS 19-272 Advanced Sight Singing and Ear Training II	1
MUS 19-273 Theory of Music	3
MUS 19-274 Theory of Music	3
MUS 19-385 Music Literature: Antiquity through Renaissance (BC-1600)	3
MUS 19-386 Music Literature: Baroque through Classical	3
MUS 19-387 Music Literature: Romantic through the Present	3
MUS 19-472 Musical Form and Analysis OR	
*MUS 19-493 Choral Composition and Arranging OR	
**MUS 19-494 Instrumental Composition and Arranging	2
MUS 19-499 Senior Recital and Seminar	1
MUS 19-299 Music Recital Attendance (activity credit)	7 hours (B.M.E.) 8 hours (B.A.)
Total Hours	**28**

*** Required for Vocal Music Education**

**** Required for Instrumental Music Education**

Applied Music:

Included in the requirements for the B.M.E. degree is a minimum of **four** semester hours credit in **upper level** coursework in the major applied area.

For the **B.A.** degree, a minimum of **six** semester hours credit in **upper level** coursework in the major applied area is required.

MAJORS

Comprehensive Major in Instrumental Music Education, 60 hours: B.M.E.–No Minor Required (Certifies Grades K-12)

CIP: 131312

Required Courses	**Semester Hours**
Music Core Requirements	28
Applied Music: Major Instruments, 8 hours; Piano (or other keyboard instrument), 3 hours; Electives, 2 hours. For Piano as a Major Instrument: Piano (or other keyboard instrument), 8 hours; Instrumental, 5 hours.	13
MUS 19-180 Introduction to Music Education	1
MUS 19-220 Brass Methods I	1
MUS 19-223 Brass Methods II	1
MUS 19-221 Percussion Methods I	1
MUS 19-224 Percussion Methods II	1
MUS 19-240 String Methods I	1
MUS 19-241 String Methods II	1
MUS 19-260 Woodwind Methods I	1
MUS 19-261 Woodwind Methods II	1

MUS 19-391 Elements of Conducting	2
MUS 19-421 Instrumental Conducting	2
MUS 19-481 Methods in Elementary School Music	2
Vocal Electives selected from MUS 19-250 Vocal Methods, 19-151 Applied Voice Class, or 19-152 Applied Voice Class	2
Instrumental ensembles taken for academic or activity credit selected from MUS 19-110 or 111, 19-115 or 116, 19-118 or 119, 19-209 or 210 (each fall and spring trimester of full-time enrollment, 7 trimesters minimum)	(7)
MUS 19-482 Methods in Secondary School Instrumental Music	2

This major meets Missouri teacher certification requirements in instrumental music K–12.

Comprehensive Major in Vocal Music Education, 58 hours: B.M.E.–No Minor Required (Certifies Grades K-12)

CIP: 131312

Required Courses	Semester Hours
Music Core Requirements	28
Applied Music: Voice Concentration: Voice, 8 hours; piano (or other keyboard instrument), 4 hours; electives, 1 hour. For Piano Concentration: Piano, 8 hours; voice, 5 hours	13
MUS 19-180 Introduction to Music Education	1
MUS 19-250 Vocal Methods	2
MUS 19-270 Instrumental Methods for Non-Instrumental Majors	2
MUS 19-391 Elements of Conducting	2
MUS 19-420 Choral Conducting	2
MUS 19-481 Methods in Elementary School Music	2
MUS 19-592 General Music Methods	2
MUS 19-593 Choral Literature for Secondary Schools	2
Vocal ensembles taken for either academic or activity credit: MUS 19-112, or 113 University Chorale (each fall and spring trimester of full-time enrollment, 7 trimesters minimum)	(7)
MUS 19-484 Methods in Secondary School Vocal Music	2

This major meets Missouri teacher certification requirements in vocal music K–12.

Comprehensive Major in Music, 41 hours: B.A.–No Minor Required

CIP: 500901

Required Courses	Semester Hours
Music Core Requirements	28
Applied music courses as recommended by advisor	10
University music ensembles taken for academic or activity credit selected from MUS 19-110 or 111, 19-115 or 116, 19-118 or 119, 19-209 or 210, 19-112 or 113. (each fall and spring trimester of full-time enrollment, 8 trimesters minimum)	(8)
Approved music electives as needed to total 41 hours	

SPECIAL NOTES: Care should be exercised in choosing courses to assure a minimum of 32 semester hours of work in courses numbered above 300.

The B.A. degree with a Comprehensive Major in Music provides the student with a broad liberal arts education and the opportunity to pursue specialized work in the performance area.

MINOR

Minor in Music, 24 hours

CIP: 500901

Required Courses	Semester Hours
MUS 19-171 Beginning Sight Singing and Ear Training	1
MUS 19-172 Intermediate Sight Singing and Ear Training	1
MUS 19-173 Theory of Music	3
MUS 19-174 Theory of Music	3
Literature and History of Music (by advisement)	6
Applied music courses	6
MUS 19-299 Music Recital Attendance (activity credit)	(4)
Music electives as needed to total 24 hours	
University music ensembles taken for either academic or activity credit selected from MUS 19-110 or 111, 19-115 or 116, 19-118 or 119, 19-209 or 210, 19-112 or 113. (7 trimesters minimum)	(7)

(See ensemble participation under department policies.)

This minor does not meet Missouri teacher certification requirements. It is recommended for students pursuing a B.A. or B.S. degree.

Course Descriptions

Music / 19

180 Introduction to Music Education (1 hour)

This course provides an introduction to teaching music as a profession. (S)

200 Special Offerings (1-4 hours)

Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable with a change in topic.

201 The Enjoyment of Music (3 hours)

A general education course designed to provide the student a better understanding and appreciation of the varied styles of music. Fulfills Fine Arts component of General Education requirements. (F, S, SS)

202 Jazz Appreciation (3 hours)

A general education course designed to provide the student with a better understanding and appreciation of this uniquely American art form. Fulfills Fine Arts component of General Education requirements. (F, SS)

222 American Popular Music (3 hours)

This course provides a cultural, social, and historical analysis of American popular music and an overview of relevant musical elements. Fulfills Fine Arts component of General Education requirements. (F)

225 Jazz Improvisation (2 hours)

Designed to enable students to understand the basic concepts of jazz improvisation and to utilize the basic tools of jazz improvisation in order to express themselves musically in the jazz idiom.

280 World Music (3 hours)

World Music surveys the music of cultures outside the Western art tradition, with an emphasis on understanding the music within the context of the culture. Areas of focus include Africa, Latin America, India, Japan, Native American, Indonesia, China, and others. The course includes the fundamentals of music as paralleled in GenEd music classes. Fulfills the Multicultural Diversity component of Institutional Requirements. No prerequisite. (S, SS)

299 Music Recital Attendance (1 activity hour)
Attendance at recitals and concerts presented by the Department of Music is required of each music major and minor. B.M.E. majors must pass 7 trimesters prior to graduation. B.A. majors must pass 8 trimesters prior to graduation. Minors must pass 4 trimesters prior to graduation. (F, S)

400 Special Offerings (1-4 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable with a change in topic.

419 Independent Study in Music (1-2 hours)
Specialized study in areas such as music history and literature, and theory and composition to be conducted under the direction of a faculty member. Prerequisite: Permission of instructor. May be repeated for a total of four hours with a change in topic and/or new content.

499 Senior Recital and Seminar (1 hour)
The presentation of a public recital as prescribed in the Music Department Student Handbook. Attendance at senior seminar and completion of required portfolio. Prerequisite: Senior standing. (F, S)

500 Special Offerings (1-4 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable with a change in topic.

APPLIED MUSIC

Study in applied music is open to all University students contingent upon the availability of faculty, with priority being given first to music majors, second to music minors, third to non-music majors and minors participating in ensembles and fourth to other University students. Such study is offered at three levels: lower level (courses numbered below 300), upper level (courses numbered in the 300s and 400s) and senior/graduate level (courses numbered in the 500s). Instructors may request the Registrar to delete a student from the class roster for failure to schedule a lesson time within the first five days of a trimester and the first three days of a summer session.

Prerequisites: For all levels of applied music, students must have the permission of the instructor and/or the faculty within the area of study. For upper level, a qualifying examination must be passed; for senior/graduate level, a satisfactory senior recital must have been given.

Class Instruction: Applied music with group instruction is available in piano and in voice with enrollment directed by the faculty within the area of study.

Class Piano (1 hour each)
MUS 131, 132, 231, 232. Class Piano 1-4

Voice Class (1 hour each)
MUS 151, 152. Applied Voice Class

Individual Instruction: Students may enroll in one or two hours of private lessons per trimester. Each semester hour credit provides a one-half hour lesson per week in a trimester and requires a minimum of five hours of practice per week. Individual instructors may have additional requirements. These courses may be repeated so that the student can develop sufficient skills and repertoire over the course of their entire program in order to receive a degree. Students must complete a minimum of 8 hours (B.M.E.) to 10 hours (B.A.) in their applied area of concentration while only being able to take 2 to 4 credit hours each year.

Brass (1-2 hours each)
MUS 123, 323, 523. Applied Trumpet
MUS 124, 324, 524. Applied French Horn
MUS 125, 325, 525. Applied Trombone
MUS 126, 326, 526. Applied Baritone
MUS 127, 327, 527. Applied Tuba

Harpsichord (1-2 hours each)
MUS 137, 337, 537. Applied Harpsichord

Organ (1-2 hours each)
MUS 135, 335, 535. Applied Organ

Percussion (1-2 hours each)
MUS 128, 328, 528. Applied Percussion

Piano (1-2 hours each)
MUS 130, 330, 530. Applied Piano

Strings (1-2 hours each)
MUS 145, 345, 545. Applied Violin
MUS 146, 346, 546. Applied Viola
MUS 147, 347, 547. Applied Cello
MUS 148, 348, 548 Applied Bass

Voice (1-2 hours each)
MUS 155, 355, 555. Applied Voice

Woodwind (1-2 hours each)
MUS 164, 364, 564. Applied Flute
MUS 165, 365, 565. Applied Oboe
MUS 166, 366, 566. Applied Clarinet
MUS 167, 367, 567. Applied Saxophone
MUS 168, 368, 568. Applied Bassoon

136 Applied Accompanying (1 hour)
The development of skills in accompanying vocal and instrumental music at the keyboard. May be repeated for credit. This course will count toward keyboard enrollment requirements for music majors. A maximum of two credits may count toward applied keyboard requirements. Prerequisite: Permission of the instructor. (F, S)

520 Secondary Applied Study (1 hour)
Private lessons in the areas of vocal, instrumental and keyboard study which are outside the student's primary area of applied accomplishment. Repeatable. Prerequisite: Consent of instructor.

ENSEMBLES

Performing ensembles listed below are open to all University students regardless of majors. Some, as noted, do require auditions for participation and credit. All ensemble courses may be repeated for additional credit as per the limitations in individual course descriptions because each term new literature for that ensemble is studied and ensemble performance skills are improved.

110 Marching Band (1 hour)
Marching activities and performance during the football season. May be taken as many as four times for academic credit. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-111. (F)

111 Marching Band Activity (1 hour activity credit)
Marching activities and performance during the football season. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-110. (F)

112 University Chorale (1 hour)
Large choir performing a variety of literature including major choral works. May be taken as many as four times for academic credit. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-113. (F, S)

113 University Chorale Activity (1 hour activity credit)
Large choir performing a variety of literature including major choral works. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-112. (F, S)

115 Symphonic Band (1 hour)
A large concert band with open enrollment performing a variety of music. May be taken as many as four times for academic credit. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-116. (S)

116 Symphonic Band Activity (1 hour activity credit)
A large concert band with open enrollment performing a variety of music. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-115. (S)

118 Orchestra (1 hour)
A select instrumental group that specializes in performing the repertoire written for orchestra. This performing ensemble is open to all University students regardless of major. All ensembles as courses may be repeated for additional credit. Prerequisite: Audition.

119 Orchestra Activity (1 hour activity credit)
A select instrumental group that specializes in performing the repertoire written for orchestra. This performing ensemble is open to all University students regardless of major. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-118.

203 Madrigal/Show Choir (1 hour)
Select choral group specializing in madrigal, vocal jazz and swing choir literature. Prerequisite: Audition. May be taken as many as four times for academic credit. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-204. (F, S)

204 Madrigal/Show Choir Activity (1 hour activity credit)
Select choral group specializing in madrigal, vocal jazz and swing choir literature. Prerequisite: Audition. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-203. (F, S)

205 Jazz Ensemble (1 hour)
Big-band jazz ensemble and may include vocalists. Prerequisite: Audition. May be taken as many as four times for academic credit. Credit cannot be

received for this course in the same trimester of enrollment in MUS 19-206. (F, S)

206 Jazz Ensemble Activity (1 hour activity credit)
Big-band jazz ensemble and may include vocalists. Prerequisite: Audition. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-205. (F, S)

207 Tower Choir (1 hour)
Select choral ensemble. Prerequisite: Audition. May be taken as many as four times for academic credit. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-208. (F, S)

208 Tower Choir Activity (1 hour activity credit)
Select choral ensemble. Prerequisite: Audition. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-207. (F, S)

209 Wind Symphony (1 hour)
A select instrumental group that specializes in performing the repertoire written for the large and small instrumental combinations, including concert band music. Prerequisite: Audition. May be taken as many as four times for academic credit. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-210. (F, S)

210 Wind Symphony Activity (1 hour activity credit)
A select instrumental group that specializes in performing the repertoire written for the large and small instrumental combinations, including concert band music. Prerequisite: Audition. Credit cannot be received for this course in the same trimester of enrollment in MUS 19-209. (F, S)

212 Brass Ensemble (1 hour activity credit)
A variety of brass ensembles of varying sizes and instrument combinations. Prerequisite: Permission of instructor. (F, S)

214 Woodwind Ensemble (1 hour activity credit)
A variety of woodwind ensembles of varying sizes and instrument combinations including such groups as flute choir, woodwind quintet and clarinet choir. Prerequisite: Permission of instructor. (F, S)

215 Jazz Combo (1 hour activity credit)
This course is designed to provide the student with a small ensemble to learn and use the concepts of Jazz Improvisation and to learn to perform in a small group setting in order to express themselves musically through the jazz idiom. Prerequisite: Permission of instructor (F, S)

218 University Singers (1 hour activity credit)
Small choral group performing a variety of literature. Prerequisite: Permission of instructor. (F, S)

219 Percussion Ensemble (1 hour activity credit)
A variety of percussion ensembles of varying sizes and instrument combinations. Prerequisite: Permission of instructor. (F, S)

LITERATURE AND HISTORY

385 Music Literature: Antiquity through Renaissance (BC-1600) (3 hours)
Survey of the development of Western music from the time of the ancient Greeks through the Renaissance, with emphasis on development of listening skills. Prerequisite: MUS 19-173 or 174, or 201 for non-majors. (F)

386 Music Literature: Baroque through Classical (3 hours)
A survey of the development of Western music from the Baroque and Classical eras, with continued emphasis on development of listening skills. Prerequisite: MUS 19-173 or 174, or 201 for non-majors. (S)

387 Music Literature: Romantic through the Present (3 hours)
A survey of the development of Western music from the Romantic period to the present with continued emphasis on the development of listening skills. Prerequisite: MUS 19-385 or 386, or 201 for non-majors. (F)

METHODS AND MATERIALS

220 Brass Methods I (1 hour)
Development of basic skills and techniques of brass instrument performance and pedagogy. (F, odd years)

221 Percussion Methods I (1 hour)
Development of basic skills and techniques of playing and teaching percussion with an emphasis on unpitched instruments. (F, odd years)

223 Brass Methods II (1 hour)
Development of intermediate skills and techniques of brass instrument performance and pedagogy. (S, even years)

224 Percussion Methods II (1 hour)
Development of basic skills and techniques of playing and teaching percussion with an emphasis on pitched instruments. (S, even years)

240 String Methods I (1 hour)
Development of the basic skills and techniques of playing and teaching orchestral string instruments. (F, even years)

241 String Methods II (1 hour)
Development of the intermediate skills and techniques of playing and teaching orchestral string instruments. (S, odd years)

250 Vocal Methods (2 hours)
A study of the basic principles of voice production: quality, diction, range, breathing, vocalization, dynamics, agility and vocal hygiene as a basis for an approach to vocal teaching. Students will also learn the International Phonetic Alphabet (IPA) and its application to the English, Italian, German and French languages. (S)

260 Woodwind Methods I (1 hour)
The introduction and development of the basic skills needed to teach beginning woodwind students on Clarinet and Saxophone. These skills include performance, pedagogy, and instrument care.

261 Woodwind Methods II (1 hour)
The introduction and development of the basic skills needed to teach flute and double reed students. These skills include performance, pedagogy, and instrument care. (S, odd years)

270 Instrumental Methods for Non-Instrumental Majors (2 hours)
Development of functional ability in wind, string, brass and percussion instruments. Instrumental music majors may not receive credit for this course. (S)

380 Music in the Elementary School (2 hours)
Current concepts of music learning procedures and materials for the elementary classroom. Elements of music are presented with concrete experiences to explore appropriate methods and materials. Music majors cannot receive credit for this course. Prerequisite: MUS 19-201, 19-202, 19-222, or ART 13-102 (F, S, SS)

391 Elements of Conducting (2 hours)
Baton technique and the elements of interpretation in conducting choral and instrumental groups. (F)

402 Music Practicum (1 hour)
Supervised classroom/rehearsal observation and teaching in various music activities. Enrollment by faculty selection. May be repeated with a change in topic and/or new content but only two hours may count as an elective toward an undergraduate degree.

420 Choral Conducting (2 hours)
A refinement and augmentation of the choral foundation provided in MUS 19-391. Prerequisite: MUS 19-391. (S)

421 Instrumental Conducting (2 hours)
A refinement and augmentation of the foundation provided in MUS 19-391, with specific attention to instrumental (orchestra and band) conducting. Prerequisite: MUS 19-391. (S)

481 Methods in Elementary School Music (2 hours)
A study of methods and materials for music in the elementary school. Music majors or minors only. Prerequisite: MUS 19-180. (S)

482 Methods in Secondary School Instrumental Music (2 hours)
Problems peculiar to the junior and senior high school band. Analysis of materials and methods including instructional observation. Music majors only. Prerequisites: Passing of piano proficiency and admission to teacher education. Meets requirements for special secondary methods in education sequence. (F)

484 Methods in Secondary School Vocal Music (2 hours)
Problems peculiar to junior and senior high school choral programs. Analysis of materials and methods including instructional observation. Music majors only. Prerequisite: Passing of piano proficiency examination and admission to teacher education. Meets requirements for special secondary methods in education sequence. (F)

501 Elementary Music Education: Special Topics (1-3 hours)
A study of selected materials and/or methods for music instruction in the elementary school with particular attention being given to recent developments and current issues. Repeatable for additional experience, new material and progression of study.

502 Junior High Music Education: Special Topics (1-3 hours)
A study of selected methods and/or materials for music instruction in the junior high or middle school with particular attention being given to recent developments and current issues. Repeatable for additional experience, new material and progression of study. (SS)

503 Senior High Music Education: Special Topics (1-3 hours)
A study of selected methods and/or materials for music instruction in the senior high school with particular attention being given to recent developments and current issues. Repeatable for additional experience, new material and progression of study. (SS)

551 Principles of Singing (2 hours)
Processes in vocal pedagogy: respiration, phonation, articulation and resonance. Students will study English, Italian, German and French diction and there will be a survey of the vocal repertoire. (SS, even years)

582 Advanced Instrumental Conducting (2 hours)
An application of conducting practices in interpretation, style and performance through the study of representative works for concert band, wind ensemble and orchestra. (SS, even years)

583 Advanced Choral Conducting (2 hours)
Study of representative large works through conducting practices in interpretation, style and performance. (SS, odd years)

587 Literature for Elementary and Middle Schools (2 hours)
A study of course materials and methods for elementary and middle school music classrooms.

590 Early Childhood Music (2 hours)
Designed to assist the early childhood teacher in developing better techniques of teaching music to ones' specific levels.

591 Marching Band Technique (2 hours)
A study of the fundamentals of marching maneuvers, parade routines, computer-assisted drill design, and the administration and organization of a successful marching band program. (F, odd years)

592 General Music Methods (2 hours)
A study of the materials and methods for teaching general music middle school through high school. (S)

593 Choral Literature for Secondary Schools (2 hours)
A survey of choral literature including the music of all periods, both sacred and secular, and a study of the style and interpretation of music from each period. (F)

594 Instrumental Literature for Secondary Schools (2 hours)
A historical and stylistic survey of music for the wind band with particular emphasis on compositions appropriate for secondary school ensembles. (F)

595 Contemporary Issues in Instrumental Music (2 hours)
A study of current trends, standards, materials and practices in administering, organizing and maintaining a successful instrumental music program. (S)

596 Contemporary Issues in Vocal Music (2 hours)
Current practices in administration and organization of school vocal programs. (S)

597 Comparative Methods in Elementary Music (2 hours)
A survey of today's methods of teaching music education in the elementary school with emphasis on techniques employed by Zoltan Kodaly, Carl Orff and Dalcroze.

THEORY

103 Foundations of Music Theory (2 hours)
An introduction to traditional pitch and rhythmic notation as well as the study of basic materials such as tempo, meter, key signatures, intervals, scales and simple triad spellings. This course does not satisfy the general education requirement in music nor count as a music elective toward any major or minor in the Department of Music. (F)

171 Beginning Sight Singing and Ear Training (1 hour)
Development of skills in dictation, sight singing, notation and the aural comprehension of music. Prerequisite: MUS 19-103 or score of 70 on Theory Placement Examination. (S)

172 Intermediate Sight Singing and Ear Training (1 hour)
A continuation of MUS 19-171 including chromatic relationships, more difficult rhythmic grouping and two-part music. Prerequisite: MUS 19-171. (F)

173 Theory of Music (3 hours)
An intensive course in the fundamentals of music including scales, modes, intervals, tonality and the four types of triads. Prerequisite: MUS 19-103 or score of 70 on Theory Placement Examination. (S)

174 Theory of Music (3 hours)
Introduction to harmony and part-writing, figured bass, the principal triads in root position and the dominant seventh in root position. Prerequisite: MUS 19-173. (F)

271 Advanced Sight Singing and Ear Training I (1 hour)
A continuation of MUS 19-172 including more difficult intervallic, melodic, harmonic and rhythmic problems. Prerequisite: MUS 19-172. (S)

272 Advanced Sight Singing and Ear Training II (1 hour)
A continuation of MUS 19-271 progressing to the most difficult intervallic, melodic, harmonic and rhythmic problems. Prerequisite: MUS 19-271. (F)

273 Theory of Music (3 hours)
A continuation of MUS 19-174 including figured bass, triads, and seventh chords in all inversions, nonharmonic tones, secondary dominants and secondary leading tone chords and the neapolitan sixth chord. Prerequisite: MUS 19-174. (S)

274 Theory of Music (3 hours)
Completion of the study of harmony including advanced progression, enharmonic modulations and augmented sixth chords. Study of late romantic trends and impressionism. Introduction to dodecaphonic techniques. Prerequisite: MUS 19-273. (F)

472 Musical Form and Analysis (2 hours)
Analytical study of the musical forms employed in the vocal and instrumental compositions of Bach, Mozart, Beethoven, Wagner and other master composers. Prerequisite: MUS 19-274. (F)

493 Choral Composition and Arranging (2 hours)
Principles and practices of composing and arranging for choirs and small vocal ensembles. Prerequisites: MUS 19-272 and 274. (S)

494 Instrumental Composition and Arranging (2 hours)
Principles and practices of composing and arranging for school orchestras, bands, and other instrumental ensembles. Prerequisites: MUS 19-173,174, 273, and two of the following: MUS 19-220, 221, 240, 260. (S)

Theatre / 43

Statement of Purpose for Theatre

Supporting Northwest's institution-wide vision and mission, the Discipline of Theatre has a threefold purpose: (1) to serve the educational needs of the students of Northwest by providing programs of study that integrate theory and practice in Theatre; (2) to provide quality cultural performances and experiences for the University and surrounding communities; and (3) to make a significant contribution to the advancement of knowledge in these fields. The department seeks to accomplish this by: (a) attracting students who have the potential to become competent professionals, (b) preparing students in department majors for successful employment in those fields or for advanced study in graduate programs, (c) providing all students with competency training that is essential to their success in school and in the world, and (d) maintaining a relationship with alumni and supporting their continual development as professionals and citizens.

Students in the Discipline of Theatre are provided with both a solid theoretical understanding of the field and numerous opportunities for hands-on competence. Student organizations within the department provide additional experiential learning opportunities. Whether majoring in a

theatre field (Performance, Technical/Design or Comprehensive), or seeking teacher certification in one of those areas, students in the department learn from their instructors and classroom experiences, learn by doing, learn from one another and learn from professionals in their fields.

Majors and non-majors alike are eligible and encouraged to participate in performance or technical positions in the mainstage and laboratory production theatre series, forensics activities, multicultural events, and student organizations.

The department also serves as a center for cultural activity and enrichment for the University and surrounding communities. Public performances of dramatic literature from all major periods and of all major styles are produced throughout the academic year. The high caliber of these performances instills an appreciation for the performance process and the aesthetics of production arts.

By encouraging and supporting its faculty members to continuously engage in creative and scholarly activities, the department fulfills its obligation to not only partake of the field of knowledge but also to enlarge that field. This ensures that students taking courses within the department receive the best and most current education possible. By providing opportunities and encouraging its majors to engage in additional creative activities and scholarly research outside of the classroom, the department offers students the opportunity to further enhance their educational experience and to join with the faculty in expanding their fields of knowledge.

DEGREE PROGRAMS IN THEATRE

The comprehensive Bachelor of Science in Theatre (60 hours) does not require an outside minor and provides students with a foundation in all major areas of theatre study while allowing concentration in a specific production activity. Specialization options, available in performance and technical/design areas, prepare the student to enter the professional field or to undertake advanced study and training.

The Bachelor of Arts in Theatre (30 hours), which requires a minor in another area, provides students with theoretical and practical knowledge in all areas of theatre study in preparation for advanced training, graduate work or entry into the nonprofessional field.

The comprehensive Bachelor of Science in Education in Speech/Theatre (55 hours) prepares students to teach and direct speech and theatre in secondary schools. This major does not require a minor and, when completed under the B.S.Ed., Secondary Education Program, meets the State of Missouri teacher certification standards for grades 9-12.

The non-comprehensive Bachelor of Science in Education in Speech/Theatre (38 hours) requires a minor. This major, when completed under the B.S.Ed., Secondary Education Program, also meets the State of Missouri teacher certification standards for grades 9-12.

The minor in Theatre (24 hours) provides students majoring in other departments with a general knowledge of all major areas of theatre study and the opportunity to apply that knowledge in a production environment.

A minor in Speech/Theatre Education (32 hours) is available to students majoring in another area. This minor, when completed under the B.S.Ed., Secondary Education Program, meets the State of Missouri teacher certification standards for grades 9-12.

The department also offers an endorsement in Speech/Theatre for students seeking Missouri Middle School (grades 5-9) certification. The middle school program is advised through the College of Education and Human Services.

DEPARTMENTAL POLICIES FOR THEATRE

Portfolio Requirement

Successful completion of all degrees requires the presentation of an academic and professional portfolio during the student's senior year. Immediately upon declaring a major, the student must request a portfolio packet from his/her advisor.

Speech/Theatre Education Directing Requirement

All candidates for the B.S.Ed. degree with a secondary speech/theatre major or certifiable minor must demonstrate their ability to direct a complete theatrical presentation that is approved by and acceptable to department faculty. Opportunities for meeting this requirement will be discussed with the academic advisor and include lab series, second stage, and external venue shows. THEA 43-373 Directing must be successfully completed prior to attempting this requirement.

Advanced Standing Requirement

Students majoring in theatre must complete Freshman Seminar (1 hour), English Composition (6 hours), Oral Communication (3 hours), and Mathematics (3-4 hours) by the end of the sophomore year. A student must present a cumulative grade point average of 2.00 for all courses listed above. No departmental major may be enrolled in and pursue advanced departmental courses (numbered 300 or above) until these courses and the specific advanced standing requirements for the student's major are met.

Students seeking exemption or who are not granted advanced standing in theatre may appeal by submitting a written petition to the dean of the College of Arts and Sciences through the chair of the department.

Theatre Majors

Students seeking a major in theatre are expected to demonstrate a capacity to integrate, from the theatre core courses, principles of a common formal language, process of seeing, and perception of content. Through visual, written and verbal evidence, students must show understanding of conceptual purposes behind directed work in the theatre core courses and sufficient commitment to expand their knowledge in order to successfully pursue advanced study.

No theatre major may be enrolled in and pursue advanced theatre courses (numbered 300 and above) until theatre advanced standing has been granted. Theatre minors must complete the theatre core sequence with a grade of "C" or better in all core courses prior to being enrolled in and pursuing advanced theatre courses.

To achieve theatre advanced standing, a student 1) must have no grade lower than "C" in any theatre core course, and 2) must demonstrate his/her readiness for advanced theatre courses by satisfactorily responding to written and oral questions related to the current theatre reading list and from theatre core courses.

Theatre majors may apply for theatre advanced standing during the trimester they are completing the theatre core. Transfer theatre majors seeking to enroll in advanced theatre courses must apply for theatre advanced standing at the time of registration. There will be a review of the transfer students' portfolio of work in the first week of their first term. Upon approval of advanced standing, the department chair will assign the student a faculty advisor who is knowledgeable of the student's program.

Speech/Theatre Education Majors
Students seeking a major in speech/theatre education are expected to demonstrate a capacity to integrate, from the required communication and theatre core courses, principles of common formal language, process of seeing, and perception of content, as well as sufficient commitment to expand their knowledge in order to successfully pursue advanced study.

No speech/theatre education major may be enrolled in and pursue advanced communication or theatre courses (numbered 300 and above) until advanced standing has been granted. Speech/theatre education minors must complete the required communication and theatre core courses with a grade of "C" or better in all core courses prior to being enrolled in and pursuing advanced communication and theatre courses.

To achieve speech/theatre education advanced standing, a student (1) must have no grade lower than "C" in any communication or theatre core course and (2) must demonstrate his/her readiness for advanced communication and theatre courses by satisfactorily responding to written and oral questions related to the required communication and theatre core courses.

Speech/theatre education majors may apply for advanced standing during the trimester they are completing the required communication and theatre core courses. Transfer speech/theatre majors seeking to enroll in advanced communication or theatre courses must apply for advanced standing at the time of registration. There will be a review of each transfer student's portfolio of work in the first week of their first term.

MAJORS

Core Requirements for Majors and Minors in Theatre	**Semester Hours**
THEA 43-110 Theatre Foundations	3
THEA 43-210 Design Principles	3
THEA 43-225 Oral Interpretation and Textual Analysis	3
THEA 43-230 Acting	3
Total Hours	**12**

Major in Theatre, 30 hours: B.A.–Minor Required

CIP: 500501

Required Courses	**Semester Hours**
Theatre Core Requirements	12
THEA 43-305 Independent Practicum in Theatre	1
THEA 43-373 Directing	3
THEA 43-407 History of Theatre I	3
THEA 43-408 History of Theatre II	3
THEA 43-498 Theatre Seminar	2
THEA 43-499 Senior Project	1
Two hours of technical skills from:	2
THEA 43-211 Technical Skills: Scenery (2)	
THEA 43-212 Technical Skills: Costumes (2)	
THEA 43-213 Technical Skills: Electrics (2)	
Three hours of theatre design from:	3
THEA 43-354 Stage Lighting (3)	
THEA 43-391 Costuming (3)	
THEA 43-395 Scene Design (3)	

Comprehensive Major in Theatre, 60 hours: B.S.–No Minor Required

CIP: 500501

Required Courses	Semester Hours
Theatre Core Requirements	12
THEA 43-211 Technical Skills: Scenery	2
THEA 43-212 Technical Skills: Costumes	2
THEA 43-213 Technical Skills: Electrics	2
THEA 43-305 Independent Practicum in Theatre (enroll 3 trimesters)	3
THEA 43-373 Directing	3
THEA 43-407 History of Theatre I	3
THEA 43-408 History of Theatre II	3
THEA 43-498 Theatre Seminar	2
THEA 43-499 Senior Project	1
Specialization option (see list below)	27

Performance Specialization Option (27 hours)

- THEA 43-235 Theatre Voice and Movement (3)
- THEA 43-258 Stage Makeup (3)
- THEA 43-330 Advanced Acting (3)
- THEA 43-335 Acting Period Styles and Techniques (3)
- THEA 43-426 Interpreter's Theatre (3)
- Performance-related course(s) from 19- or 22-prefix departments, approved by advisor (3)
- Theatre electives, approved by advisor (9)

Technical Theatre and Design Option (27 hours)

- THEA 43-221 Drafting (3)
- THEA 43-222 Advanced Drafting (3)
- THEA 43-354 Stage Lighting (3)
- THEA 43-383 Stage and Theatre Management (3)
- THEA 43-391 Costuming (3)
- THEA 43-395 Scene Design (3)
- Tech/design-related course(s) from 13- or 15-prefix departments, approved by advisor (3)
- Theatre electives, approved by advisor (6)

MINOR

Minor in Theatre, 24 hours

CIP: 500501

Required Courses	Semester Hours
Theatre Core Requirements	12
THEA 43-305 Independent Practicum in Theatre	1
THEA 43-373 Directing	3
Two hours of technical skills from:	**2**
THEA 43-211 Technical Skills: Scenery (2)	
THEA 43-212 Technical Skills: Costumes (2)	
THEA 43-213 Technical Skills: Electrics (2)	

Three hours of theatre design from:	**3**
THEA 43-354 Stage Lighting (3)	
THEA 43-391 Costuming (3)	
THEA 43-395 Scene Design (3)	
Three hours of theatre history from:	**3**
THEA 43-407 History of Theatre I (3)	
THEA 43-408 History of Theatre II (3)	

SPEECH/THEATRE EDUCATION MAJORS

Core Requirements for Speech/Theatre Education Majors/Minors	**Semester Hours**
THEA 43-110 Theatre Foundations	3
THEA 43-210 Design Principles	3
THEA 43-225 Oral Interpretation and Textual Analysis	3
THEA 43-230 Acting	3
COM 29-210 Communication Theory	3
COM 29-230 Public Speaking	3
Total Hours in Speech/Theatre Education Core	18

Comprehensive Major in Speech/Theatre Education, 55 hours: B.S.Ed.–No Minor Required (Certifies Grades 9-12)

CIP: 131399

Required Courses	**Semester Hours**
Speech/Theatre Education Core Requirements	18
COM 29-133 Practicum in Debate and Forensics AND /OR	
COM 29-338 Advanced Practicum in Debate and Forensics	2
COM 29-232 Small Group Communication	3
COM 29-325 Listening Behavior and Skills	3
COM 29-332 Propaganda and Persuasion	3
COM 29-335 Interpersonal Communication	3
COM 29-341 Argumentation and Debate	3
THEA 43-305 Independent Practicum in Theatre	1
THEA 43-373 Directing	3
THEA 43-460 Creative Dramatics	3
Two hours of technical skills from:	**2**
THEA 43-211 Technical Skills: Scenery	2
THEA 43-212 Technical Skills: Costumes	2
THEA 43-213 Technical Skills: Electrics	2
Three hours of theatre history from:	**3**
THEA 43-407 History of Theatre I	3
THEA 43-408 History of Theatre II	3
Eight hours of approved speech communication, theatre, or mass communication electives (8)	

This major, when completed under the B.S.Ed., Secondary Program, meets Missouri teacher certification standards for speech/theatre secondary level.

Students must take COM 29-480 Methods in Teaching Speech/Theatre in the Secondary School as part of their professional education requirements.

Major in Speech/Theatre Education 38 hours: B.S.Ed.– Minor Required (Certifies Grades 9-12)

Required Courses	Semester Hours
Speech/Theatre Education Core Requirements	18
COM 29-133 Practicum in Debate and Forensics AND /OR	
COM 29-338 Advanced Practicum in Debate and Forensics	2
COM 29-332 Propaganda and Persuasion	3
COM 29-335 Interpersonal Communication	3
COM 29-341 Argumentation and Debate	3
THEA 43-305 Independent Practicum in Theatre	1
THEA 43-373 Directing	3
Two hours of technical skills from:	
THEA 43-211 Technical Skills: Scenery	2
THEA 43-212 Technical Skills: Costumes	2
THEA 43-213 Technical Skills: Electrics	2
Three hours of theatre history from:	
THEA 43-407 History of Theatre I	3
THEA 43-408 History of Theatre II	3

This major, when completed under the B.S.Ed. Secondary Program, meets Missouri teacher certification standards for speech/theatre secondary level.

Students must take COM 29-480 Methods in Teaching Speech/Theatre in the Secondary School as part of their professional education requirements.

MINOR

Minor in Speech/Theatre Education, 32 hours (Certifies Grades 9-12. See Professional Education Requirements.)

CIP: 131324

Required Courses	Semester Hours
Speech/Theatre Education Core Requirements	18
COM 29-133 Practicum in Debate and Forensics	1
COM 29-335 Interpersonal Communication	3
COM 29-341 Argumentation and Debate	3
THEA 43-305 Independent Practicum in Theatre	1
THEA 43-373 Directing	3
Three hours from:	
COM 29-325 Listening Behavior and Skills	3
COM 29-332 Propaganda and Persuasion	3
THEA 43-407 History of Theatre I	3
THEA 43-408 History of Theatre II	3

Students must take COM 29-480 Methods in Teaching Speech/Theatre in the Secondary School as part of their professional education requirements.

Area of Endorsement in Speech/Theatre for the Middle School, 21 hours

CIP: 131331

Certifies Grades 5-9 when completed with the Middle School major

Required Courses	Semester Hours
THEA 43-110 Theatre Foundations	3
THEA 43-230 Acting	3
THEA 43-373 Directing	3
THEA 43-460 Creative Dramatics	3
COM 29-210 Communication Theory	3
COM 29-230 Public Speaking	3
COM 29-341 Argumentation and Debate	3

The completion of the above requirements meets the Speech/Theatre Area of Endorsement for use with Missouri Middle School Certification, grades 5-9. Students must take COM 29-480 Methods of Teaching Speech/Theatre in the Secondary School. Advisement for Middle School Certification is provided by the Department of Professional Education in the College of Education and Human Services. See that section of this catalog.

Course Descriptions

Theatre / 43

101 Theatre Appreciation (3 hours)
An introductory course surveying the aesthetic process by which plays are translated into theatrical terms and projected from a stage to an audience, including play analysis, acting, directing, scene design, costume, makeup and stage lighting. (F, S, SS)

110 Theatre Foundations (3 hours)
Provides an introduction to the study of theatre, including the play production process, the basic crafts and skills required for both technical theatre and performance, and script analysis. Lab hours are required. (F)

200 Special Offerings (1-4 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable with topics changing.

210 Design Principles in Theatre (3 hours)
An introductory course in the theory, process, and techniques of set, lighting, sound, and costume design. Students will study the principles and dynamics of design, the development of a design concept, script analysis from the designer's perspective, and collaborative work. Lab hours are required. (S)

211 Technical Skills: Scenery (2 hours)
Provides theory and practice in basic skills and crafts related to scenery and properties in the theatrical production process. Lab hours are required. (Rotates every third trimester, excluding summer) (F, S)

212 Technical Skills: Costumes (2 hours)
Provides theory and practice in basic skills and crafts related to costuming in the theatrical production process. Lab hours are required. (Rotates every third trimester, excluding summer) (F, S)

213 Technical Skills: Electrics (2 hours)
Provides theory and practice in basic skills and crafts related to lighting and sound in the theatrical production process. Lab hours are required. (Rotates every third trimester, excluding summer) (F, S)

221 Drafting (3 hours)
Introduces the student to drafting rules and procedures. Students will begin the trimester with hand-drafting (paper and pencil) work and will move on to basic 2D CAD skills using the program VectorWorks. (F, alt. years)

222 Advanced Drafting (3 hours)
Building upon skills acquired in THEA 43-221 Drafting, the student will continue with advanced 2D projects, and will be introduced to 3D modeling/rendering using the CAD program VectorWorks. Prerequisite: THEA 43-221 (S, alt. years)

225 Oral Interpretation and Textual Analysis (3 hours)
Introduces the student to principles of literary analysis and techniques of oral interpretation as the foundation for all performance experiences. (S)

230 Acting (3 hours)
Provides training in fundamental principles and techniques of modern acting. Emphasis is given to the formation and development of the actor's imagination, intellect, and overall working process. (F)

235 Theatre Voice and Movement (3 hours)
A survey of and practice with multiple theatre movement and voice theories designed to develop student awareness and skill related to the body's expressive potential. Prerequisite: THEA 43-230 or permission of instructor. (S, alt. years)

258 Stage Makeup (3 hours)
Acquaints the student with basic principles of the art and technique of makeup and assisting the actor in the development and projection of his or her character on stage. (F)

305 Independent Practicum in Theatre (1 hour)
Involves focused and mentored participation in various practical aspects of play production and/or performance; may be repeated for a total of four semester hours for further mastery. (F, S)

330 Advanced Acting (3 hours)
Concentrated study in character analysis and acting methods. Prerequisite: THEA 43-230 or permission of instructor. (S, alt. years)

335 Acting Period Styles and Techniques (3 hours)
Provides training in the performance of character roles from various periods of dramatic literature and genres. Prerequisite: THEA 43-230 or permission of instructor. (S, alt. years)

354 Stage Lighting (3 hours)
Concerns the role that lighting has to play in production, the lighting designer's place in the production process and the procedures involved in designing lighting for stage. Prerequisite: THEA 43-110 or permission of instructor. (F, alt. years)

373 Directing (3 hours)
Discusses the basic function of a director in the production of a play including selection, interpretation, composition, movement, characterization, rhythm, design concept and actor training. Prerequisites: THEA 43-110 and 230 or permission of instructor. (F)

383 Stage and Theatre Management (3 hours)
This course will explore the duties, responsibilities, and technique of modern stage and theatrical managers. (S, alt. years)

391 Costuming (3 hours)
Examines the use of clothing and stage costumes by major periods through style and design. Prerequisite: THEA 43-110 or permission of instructor. (S, alt. years)

395 Scene Design (3 hours)
Provides the student with a basic knowledge of the techniques and methods for designing scenery for the theatre, opera, musical, ballet and television. Prerequisites: THEA 43-110, 211, and 221, or permission of instructor. (S, alt. years)

400 Special Offerings (1-4 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable with topics changing.

401 Special Topics (1-3 hours)
Provides concentrated study in special areas within theatre. Topics vary trimester to trimester. Prerequisites as announced. Repeatable with topics changing.

407 History of Theatre I (3 hours)
An examination of theatre's evolution from its origins through 1700 as a reflection of and influence on society. (F)

408 History of Theatre II (3 hours)
An examination of western theatre trends from the 18th to the 21st century as a reflection of and influence on society. (S)

426 Interpreter's Theatre (3 hours)
Provides study and practical application in selecting and adapting literature for group reading. Culminates in a public performance. Prerequisite: Permission of instructor. (F, alt. years)

440 Preparing Repertory (3 hours)
Provides instruction and training in the methods required for preparing a repertory theatre season. May be repeated for a total of nine semester hours for further mastery. (SS)

445 Summer Repertory Theatre (3 hours)
Provides instruction and training in the various activities involved in the operation of a repertory theatre company. May be repeated for a total of nine semester hours for further mastery. (SS)

460 Creative Dramatics (3 hours)
Introduces the methods, techniques, and rationale for teaching and using creative dramatics activities with students from pre-school through secondary grades. (S, alt. years)

468 Internship in Theatre Performance (1-3 hours)
Professional experience in theatre performance. The particular interests of the students are addressed through practical application with theatre practitioners. Prerequisite: Permission of instructor. Repeatable for new experience.

469 Internship in Technical Theatre (1-3 hours)
Professional experience in technical theatre. The particular interests of the students are addressed through practical application with theatre practitioners. Prerequisite: Permission of instructor. Repeatable for new experience.

498 Theatre Seminar (2 hours)
Examines current theatre trends and practices preparing the student for entry into the field or advanced study. This course includes a formal presentation of the student's professional portfolio. Prerequisite: Junior or senior standing and permission of department chairperson.

499 Senior Project (1 hour)
A public performance or exhibition of materials comprising the student's area of emphasis in theatre. Prerequisites: THEA 43-498 or concurrent enrollment; Must meet the current departmental cut score(s) on the current standardized general education test(s) (contact the department office for specific information), and permission of department chairperson. (F, S)

500 Special Offerings (1-4 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable with topics changing.

509 Advanced Theatre Production (1-3 hours)
Involves a practical approach to the art of producing a play. Specialized elements in mounting a play for production are discussed, relating to the specific needs of the students enrolled. The course culminates in a public performance. Repeatable for further mastery. (SS)

572 Independent Study in Acting (1-2 hours)
Repeatable with topics changing.

573 Independent Study in Directing (1-2 hours)
Repeatable with topics changing.

574 Independent Study in Dramaturgy (1-2 hours)
Repeatable with topics changing.

575 Independent Study in Technical Theatre (1-2 hours)
Repeatable with topics changing.

Department of Humanities and Social Sciences

Chairperson: Michael Steiner

Faculty: Joel Benson, Jeremy Bryson, Kimberly Casey, Mark Corson, Robert Dewhirst, Patricia Drews, James Eiswert, Matthew Engel, Richard Field, Elyssa Ford, Richard Fulton, Dawn Gilley, Theodore Goudge, Brian Hesse, Ming-Chih Hung, Matthew Johnson, Yanfen Le, Curtis Richardson, Daniel Smith, Thomas Spencer, Michelle Wade, Yi-Hwa Wu

Statement of Mission

The Department of Humanities and Social Sciences includes the disciplinary areas of geography, geographic information science, history, humanities, philosophy, political science, and social science education, thus serving a kaleidoscope of constituencies on campus. Throughout the department, academic experiences that embrace broad, general, liberal education as well as applied skills encourage students to be inquisitive, creative, and imaginative as well as functional. The department strives to prepare students to be adaptable and flexible in their occupational and professional pursuits but ever cognizant of and responsible to the human and environmental conditions. The disciplines represented by the department should serve as a foundation upon which every person bases his or her professional career as well as being integral to their lives and the lives of those around them.

DEGREE PROGRAMS

The Department of Humanities and Social Sciences offers eleven majors, twelve minors and certification in middle and secondary school social sciences.

The Bachelor of Arts (30 hours) and the Bachelor of Science (37 hours) degrees in Geography provide students the opportunity to prepare themselves to pursue positions in government, business, education, urban and regional planning, environmental analysis, and natural resource management. The comprehensive Bachelor of Science (53 hours) degree in Geographic Information Science prepares students for careers that apply GIS and related geospatial technologies to these fields.

The Bachelor of Arts (30 hours) and Bachelor of Science in History (36 hours) provide a traditional liberal arts program and prepares students for careers in such diverse areas as government, public service, business and industry, archives, museums, historical preservation, writing and research.

The Bachelor of Arts in Philosophy (31 hours) provides students with the rich history of the Western philosophical tradition and the values of free, impartial and disciplined inquiry embodied therein. The major in philosophy fosters skills of critical thinking and clear expression which are transferable to any field, and integrates philosophical study with other fields through interdisciplinary electives.

A Bachelor of Science in Education degree in Social Science (51 hours) draws upon economics, geography, government, history and sociology in providing preparation for teaching social science. This major must be completed as a part of the B.S.Ed. degree, Secondary Education Program, thus meeting Missouri teacher certification standards for social studies grades 9-12, as well as preparing the student to become a facilitator for lifelong learning in a world of diversity and change. This is a comprehensive major; no minor is required. However, students are free to complete a minor in another field appropriate to the B.S.Ed. degree, Secondary Program, if seeking another teaching area.

The Bachelor of Arts (31 hours) and Bachelor of Science (37 hours) degrees in Political Science introduce the student to the decision-making processes that guide, direct and determine a society's behavior. Courses focus on the politics and administration of government and factors involved in the competition for political power. The political science program prepares students for a number of careers as well as advanced study in law, municipal planning, city management, urban affairs, education and public policy analysis.

The Bachelor of Science in Public Administration (37 hours) prepares the student for a career in local, state or national government as well as nonprofit organizations. Like the political science major, public administration requires a minor. Majors are required to intern at a governmental agency or at a nonprofit organization.

The Bachelor of Science in Comprehensive Crisis Response (36 hours) uses a multi-disciplinary approach to study crisis, drawing from courses and faculty in communications, geography, psychology, and social sciences. In addition to the crisis management core, multiple options, and electives within those options, provide flexibility so that students can tailor the major to their individual and specific academic and professional needs. This approach provides the student with both theoretical and practical knowledge that is valued in the public, private, and non-profit sectors.

Minors are available in the areas of geography, geographic information science, history, humanities, philosophy, public history, criminal justice, political science, public administration, international relations and comprehensive crisis response. These minor programs assist students interested in a variety of careers, including museum studies, archives, historic preservation, national park service, law enforcement, juvenile justice, theology, crisis management, business and graduate studies.

Test-Out Policy

Credit by examination through the Department of Humanities and Social Sciences is not available for courses in this catalog.

Department Policies

All students selecting majors or minors in this department must have a departmental advisor from the appropriate area who shall approve all programs, deviations or options. An advisement file shall be maintained on each major as well as for each minor. Advanced standing requirements for each of the majors in the department are indicated preceding each major.

Humanities / 26

MINOR

Minor in Humanities, 18 hours

CIP: 240103

Required Courses	Semester Hours
HUM 26-341 Greek Civilization	3
HUM 26-342 Roman Civilization	3
HIST 33-503 The Middle Ages	3
HIST 33-506 The Renaissance and Reformation	3
Two 300-level or higher courses in art history, literature or philosophy	6

Directed General Education Requirement
ART 13-109 Survey of Art I: Prehistory through Medieval Art (3 hours) OR ART 13-111 Survey of Art II: Renaissance to the Present (3 hours) is required as a foundation course for advanced study and must be completed as one of the humanistic studies options within the General Education Requirement for the minor in humanities.

Geography / 32

Internship and Independent Study

Students may apply for no more than six credit hours of combined internship and independent study hours toward their major requirements.

Major/Minor Shared Core Requirements

For students who have a major in Geography and a minor in Geographic Information Systems (GIS), only the Maps and Map Interpretation course may be counted toward both the major and minor.

Core Requirements for All Majors in Geography	Semester Hours
GEOG 32-201 Maps and Map Interpretation	3
GEOG 32-221 Economic Geography	3
GEOG 32-340 Geography of North America	3
GEOG 32-362 Cartography	3
GEOG 32-410 Geographic Thought and Research Methods	3
GEOG 32-499 Senior Seminar	1
Total Hours	**16**

MAJORS

Major in Geography, 30 hours: B.A.–Minor Required

CIP: 450701

Required Courses	Semester Hours
Geography Major Core Requirements:	**16**
Electives in Regional Geography: (Choose two)	6
GEOG 32-441 Geography of Europe (3)	

GEOG 32-442 Geography of Asia (3)
GEOG 32-443 Geography of the Middle East (3)
GEOG 32-444 Geography of Africa (3)
GEOG 32-445 Geography of Latin America (3)
GEOG 32-511 Special Topics in Geography (regional)

Electives in Systematic Geography: 8

**GEOG 32-102 People and Cultures of the World (3)
GEOG 32-207 GPS Fundamentals (3)
GEOG 32-211 Special Topics in Geography (6 hours maximum)
GEOG 32-302 Cadastral Mapping (2)
GEOG 32-360 Dynamic and Synoptic Meteorology (3)
GEOG 32-361 Climatology (3)
GEOG 32-363 Remote Sensing (3)
GEOG 32-365 Geographic Information Systems (3)
GEOG 32-370 Natural Disasters (3)
GEOG 32-409 Independent Study in Geography (1-3)
GEOG 32-415 Internship in Geography (1-6)
GEOG 32-465 Introduction to Customized GIS (3)
GEOG 32-501 Conservation of Natural Resources (3)
GEOG 32-510 Geographic Education: Themes and Materials (2)
GEOG 32-511 Special Topics in Geography (6 hours maximum or 2 courses)
GEOG 32-520 Military Geography (3)
GEOG 32-521 Political Geography (3)
GEOG 32-522 Urban Geography (3)
GEOG 32-562 Digital Cartography and GeoVisualization (3)
GEOG 32-563 Digital Image Processing (3)
GEOG 32-565 Advanced Geographic Information Systems (3)
GEOL 27-326 Geology of the National Parks (3)
GEOL 27-360 Environmental Geology (4)
GEOL 27-455 Geologic Field Methods (3)
GEOL 27-510 Geomorphology (3)
GEOL 27-515 Environmental Regulations (2)

****GEOG 32-102 cannot be used as a Multicultural/Diversity institutional requirement course if used as an elective in the B.A. Geography major.**

Major in Geography, 37 hours: B.S.–Minor Required

CIP: 450701

Required Courses	Semester Hours
Geography Major Core Requirements	**16**
Electives in Regional Geography: (Choose one or two)	**3-6**
GEOG 32-441 Geography of Europe (3)	
GEOG 32-442 Geography of Asia (3)	
GEOG 32-443 Geography of the Middle East (3)	
GEOG 32-444 Geography of Africa (3)	
GEOG 32-445 Geography of Latin America (3)	
Electives in Systematic Geography:	15-18
**GEOG 32-102 People and Cultures of the World (3)	
GEOG 32-207 GPS Fundamentals (3)	

GEOG 32-211 Special Topics in Geography (6 hours maximum)
GEOG 32-302 Cadastral Mapping (2)
GEOG 32-360 Dynamic and Synoptic Meteorology (3)
GEOG 32-361 Climatology (3)
GEOG 32-363 Remote Sensing (3)
GEOG 32-365 Geographic Information Systems (3)
GEOG 32-370 Natural Disasters (3)
GEOG 32-409 Independent Study in Geography (1-3)
GEOG 32-415 Internship in Geography (1-6)
GEOG 32-465 Introduction to Customized GIS (3)
GEOG 32-501 Conservation of Natural Resources (3)
GEOG 32-510 Geographic Education: Themes and Materials (2)
GEOG 32-511 Special Topics in Geography (1-4)
GEOG 32-520 Military Geography (3)
GEOG 32-521 Political Geography (3)
GEOG 32-522 Urban Geography (3)
GEOG 32-562 Digital Cartography and GeoVisualization (3)
GEOG 32-563 Digital Image Processing (3)
GEOG 32-565 Advanced Geographic Information Systems (3)
GEOL 27-326 Geology of the National Parks (3)
GEOL 27-360 Environmental Geology (4)
GEOL 27-455 Geologic Field Methods (3)
GEOL 27-510 Geomorphology (3)
GEOL 27-515 Environmental Regulations (2)

****GEOG 32-102 cannot be used as a Multicultural/Diversity institutional requirement course if used as an elective in the B.S. Geography major.**

Comprehensive Major in Geographic Information Science, 53 hours: B.S.—No Minor Required

CIP: 450799

Required Courses	Semester Hours
GEOG 32-201 Maps and Map Interpretation	3
GEOG 32-207 GPS Fundamentals	3
GEOG 32-221 Economic Geography	3
GEOG 32-362 Cartography	3
GEOG 32-363 Remote Sensing	3
GEOG 32-365 Geographic Information Systems	3
GEOG 32-410 Geographic Thought and Research Methods	3
GEOG 32-465 Introduction to Customized GIS	3
GEOG 32-499 Senior Seminar	1
GEOG 32-565 Advanced Geographic Information Systems	3
CSIS 44-140 Visual Basic Application Programming	3
CSIS 44-346 Database Applications	1
Electives in GIS (Choose six hours)	6
GEOG 32-302 Cadastral Mapping (2)	
GEOG 32-415 Internship in Geography (1-6)	
GEOG 32-562 Digital Cartography and Geovisualization (3)	
GEOG 32-563 Digital Image Processing (3)	
Other advisor-approved electives	

Electives in Regional Geography: (Choose three hours) 3
- GEOG 32-340 Geography of North America (3)
- GEOG 32-441 Geography of Europe (3)
- GEOG 32-442 Geography of Asia (3)
- GEOG 32-443 Geography of the Middle East (3)
- GEOG 32-444 Geography of Africa (3)
- GEOG 32-445 Geography of Latin America (3)

Area of Emphasis 12

Choose one area of emphasis from the following options:

Data and Technology Emphasis, 12 hours

Required Courses
- CSIS 44-141 Computer Programming I 3
- CSIS 44-241 Computer Programming II 3
- CSIS 44-460 Database Systems 3

Electives (Choose 3 hours) 3
- CSIS 44-540 Visual Application Development (3)
- CSIS 44-560 Advanced Topics in Database Systems (3)
- CSIS 44-563 Developing Web Applications and Services (3)

Geographic Emphasis, 12 hours

Required Course
- GEOG 32-522 Urban Geography 3

Electives (Choose 9 hours) 9
- GEOG 32-360 Dynamic and Synoptic Meteorology (3)
- GEOG 32-361 Climatology (3)
- GEOG 32-501 Conservation of Natural Resources (3)
- GEOG 32-520 Military Geography (3)
- GEOG 32-521 Political Geography (3)
- GEOL 27-510 Geomorphology (3)

Earth Technology Emphasis, 12 hours

Required Courses
- GEOL 27-360 Environmental Geology 4
- GEOL 27-515 Environmental Regulations 2

Electives (Choose 6 hours) 6
- GEOL 27-335 Physical Oceanography (3)
- GEOL 27-340 Introduction to Hydrogeology (3)
- GEOL 27-510 Geomorphology (3)
- GEOG 32-370 Natural Disasters (3)
- GEOG 32-501 Conservation of Natural Resources (3)
- BIOL 04-420 Environmental Issues (4)
- BIOL 04-474 Wildlife Management and Conservation (2)

Civil/Public Emphasis, 12 hours

Required Courses
- GEOG 32-522 Urban Geography 3
- POLS 34-355 Economic Development 3

Electives (Choose 6 hours) 6
- POLS 34-203 State and Local Government (3)
- POLS 34-332 Principles of Public Administration (3)
- POLS 34-502 Public Policy (3)

SOC 35-316 Urban Sociology (3)
ENGL 10-315 Writing for the Professions (3)

Emergency Management Response Emphasis, 12 hours
Required Courses

SOSC 36-301 Introduction to Disaster Response and Recovery	3
SOSC 36-302 Principles of Humanitarian Relief	3
Electives (Choose 6 hours)	6

GEOG 32-370 Natural Disasters (3)
HIST 33-450 Homeland Security and Defense (3)
PSYC 08-345 Disaster Psychology (3)
COM 29-420 Crisis Communication (3)

Directed General Education Courses

GEOG 32-101 Introduction to Geography	3
GEOL 27-114/115 General Earth Science and Laboratory OR GEOL 27-110/111 General Geology and Laboratory	4
MATH 17-114 General Statistics I	3

Note: Students with the comprehensive B.S. in Geographic Information Science can fulfill the Geography minor with an additional regional class (3 hours) and 12 hours of advisor approved 300-level or above courses.

MINORS

Minor in Geography, 24 hours

CIP: 450701

Required Courses	Semester Hours
GEOG 32-201 Maps and Map Interpretation	3
GEOG 32-221 Economic Geography	3
GEOG 32-340 Geography of North America	3
GEOG 32-410 Geographic Thought and Research Methods	3
Geography electives (approved) (Electives must include at least 3 hours from each of the two groupings: Regional and Systematic)	12

Minor in Geographic Information Systems, 28 hours

CIP: 450702

This is an interdisciplinary minor in conjunction with the Department of Computer Science/ Information Systems.

Directed Institutional Requirement

CSIS 44-130 Computers and Information Technology	3

Required Courses	Semester Hours
Geography	
GEOG 32-201 Maps and Map Interpretation	3
GEOG 32-365 Geographic Information Systems	3
GEOG 32-565 Advanced Geographic Information Systems	3
Computer Science	
CSIS 44-140 Visual Basic Application Programming	3
CSIS 44-141 Computer Programming I	3

CSIS 44-241 Computer Programming II	3
CSIS 44-346 Database Applications	1
CSIS 44-460 Database Systems	3
Advisor-Approved Electives	6
GEOG 32-362 Cartography (3)	
GEOG 32-363 Remote Sensing (3)	
GEOG 32-562 Digital Cartography and GeoVisualization (3)	
GEOG 32-563 Digital Image Processing (3)	
CSIS 44-242 Data and File Structures (3)	
CSIS 44-320 Advanced Word Processing (1)	
CSIS 44-330 Presentation Graphics (1)	
CSIS 44-340 Digital Media (1)	
CSIS 44-540 Visual Application Development (3)	
CSIS 44-590 Current Topics in Computer Science (1-3)	

History / 33

Advanced Standing Requirement

Majors in history may be admitted to advanced standing in their major when they have 1) been assigned an advisor in their major; and 2) completed, with a grade of "C" or better, at least one course in each of the areas of history, government, social science and humanities/philosophy from the General Education Requirements.

Core Requirements for Majors In History	**Semester Hours**
*HUM 26-102 Western Civilization I: The Ancient World to 1500	3
*HUM 26-103 Western Civilization II: 1500 to the Present	3
HIST 33-301 The Historian's Craft and Its Uses	2
HIST 33-401 Senior Seminar	1
Six hours from the following:	6
HIST 33-524 Colony to Nation 1607-1828 (3)	
HIST 33-525 United States Since 1945 (3)	
HIST 33-534 Civil War and Reconstruction (3)	
HIST 33-556 Roots of U.S. Reform (3)	
Six hours from the following:	6
HIST 33-370 History of the Near and Middle East (3)	
HIST 33-375 History of Latin America (3)	
HIST 33-386 The Pacific Rim (3)	
HIST 33-389 Early Modern Europe: The West Meets the World (3)	
HIST 33-589 Europe in the Age of Nationalism (3)	
Total Hours	**21**

***Cannot be used to fulfill any General Education Requirement.**

MAJORS

Major in History, 30 hours: B.A.–Minor Required

CIP: 540101

Required Courses	Semester Hours
Core Requirements	21
Approved departmental electives	9

Major in History, 36 hours: B.S.–Minor Required

CIP: 540101

Required Courses	Semester Hours
Core Requirements	21
Approved departmental electives	15

MINORS

Minor in History, 24 hours

CIP: 450801

Required Courses	Semester Hours
*HUM 26-102 Western Civilization I: The Ancient World to 1500	3
*HUM 26-103 Western Civilization II: 1500 to the Present	3
Choose one course from the following:	3
HIST 33-524 Colony to Nation 1607-1828 (3)	
HIST 33-525 United States Since 1945 (3)	
HIST 33-534 Civil War and Reconstruction (3)	
HIST 33-556 Roots of U.S. Reform (3)	
Choose one course from the following:	3
HIST 33-370 History of the Near and Middle East (3)	
HIST 33-375 History of Latin America (3)	
HIST 33-386 The Pacific Rim (3)	
HIST 33-389 Early Modern Europe: The West Meets the World (3)	
HIST 33-589 Europe in the Age of Nationalism (3)	
Approved departmental electives	**12**

***Cannot be used to fulfill any General Education requirement.**

Minor in Public History, 23 hours

CIP: 450805

Required Courses	Semester Hours
HIST 33-344 History of American Folklife	3
HIST 33-320 Introduction to Public History	3
HIST 33-590 Historical Resources Internship	3
HIST 33-590 Historical Resources Internship (Directed Archival)	2
POLS 34-332 Principles of Public Administration	3
Electives (Choose from any of the following):	9
HIST 33-350 American Military History (3)	

HIST 33-360 The American Woman (3)
HIST 33-534 The Civil War and Reconstruction (3)
HIST 33-562 The History of Missouri (3)
HIST 33-582 Frontiers in American History (3)
Other advisor-approved electives could include:
Geographic Information Systems
Public Relations
Management
Federalism
Desktop Publishing (Journalism)
Advertising

Philosophy / 39

Advanced Standing Requirement

To be granted advanced standing, all philosophy majors must have 1) been assigned an advisor in their major; and 2) completed, with a grade of "C" or better, at least one course in each of the areas of history, government, social science and humanities from the General Education Requirements; and 3) completed, with a grade of "C" or better, PHIL 39-171 Introduction to Philosophy.

Core Requirements for Majors In Philosophy	**Semester Hours**
PHIL 39-273 Introduction to Logic	3
*PHIL 39-274 Introduction to Ethics: Historical/Theoretical OR PHIL 39-275 Introduction to Ethics: Professional OR PHIL 39-276 Introduction to Ethics: Bio-Medical	3
PHIL 39-376 History of Ancient and Medieval Philosophy	3
PHIL 39-377 History of Modern and Contemporary Philosophy	3
PHIL 39-570 Metaphysics	3
PHIL 39-571 Epistemology	3
PHIL 39-401 Senior Seminar	1
Total Hours	**19**

***Cannot be used to fulfill any General Education requirement.**

MAJOR

Major in Philosophy, 31 hours: B.A.–Minor Required

CIP: 380101

Required Courses	**Semester Hours**
Core Requirements	**19**
Two courses from each of the following groups:	
Group A: HIST 33-542 American Ideas (3) PHIL 39-374 Philosophy of Religion (3) PHIL 39-475 Aesthetics (3) PHIL 39-590 Advanced Topics in Philosophy (if appropriate) (3) COM 29-235 Introduction to Classical Rhetoric (3)	6

Group B: 6

PHIL 39-473 Philosophical Anthropology (3)
PHIL 39-474 Philosophy of the Sciences (3)
PHIL 39-590 Advanced Topics in Philosophy (if appropriate) (3)
PSYC 08-310 Cognitive Psychology (3)
PSYC 08-423 History and Systems of Psychology (3)
POLS 34-440 Early Western Political Thought (3)
POLS 34-441 Modern Western Political Thought (3)
SCED 28-550 History of Science and Technology (3)

NOTE: PHIL 39-590 Advanced Topics in Philosophy cannot be used for the major more than twice. PSYC 08-310 and 423 have prerequisite courses determined by their appropriate departments. It is recommended that a student interested in these electives explore the possibility of a minor in these areas.

MINOR

Minor in Philosophy, 18 hours

CIP: 380101

Required Courses	**Semester Hours**
*PHIL 39-274 Introduction to Ethics: Historical/Theoretical OR	3
PHIL 39-275 Introduction to Ethics: Professional OR	
PHIL 39-276 Introduction to Ethics: Bio-Medical	
PHIL 39-376 History of Ancient and Medieval Philosophy OR	
PHIL 39-377 History of Modern and Contemporary Philosophy	3
PHIL 39-570 Metaphysics	3
PHIL 39-571 Epistemology	3
One elective from each of the groups (A and B) listed in the major requirements, with the following additional options:	
Group A:	
PHIL 39-376 History of Ancient and Medieval Philosophy OR	
PHIL 39-377 History of Modern and Contemporary Philosophy	3
Group B:	
PHIL 39-273 Introduction to Logic	3

***Cannot be used to fulfill any General Education requirement.**

Political Science / 34

Advanced Standing Requirement

All political science majors wishing to apply for advanced standing must have completed the General Education requirement for political science (POLS 34-102).

Participation in the Assessment Program

Graduating seniors are expected to take the ACAT, Political Science exam as part of the University's exit assessment program.

Core Requirements for Majors in Political Science

Core A—American Government and Politics	**Semester Hours**
POLS 34-301 Parties and Interest Groups	3
POLS 34-302 The American Presidency	3

POLS 34-303 The American Congress	3
POLS 34-401 News Media and Politics	3
POLS 34-502 Public Policy	3
Core B—Comparative Politics and International Relations	
POLS 34-310 Comparative Government	3
POLS 34-421 International Conflict Resolution	3
POLS 34-425 Transnational Politics	3
Core C—Public Administration	
POLS 34-203 State and Local Government	3
POLS 34-332 Principles of Public Administration	3
POLS 34-434 Modern Organizational Theory	3
POLS 34-439 Federalism and Intergovernmental Relations	3
Core D—Law and Courts	
POLS 34-340 Law and Politics	3
POLS 34-436 Constitutional Law	3
POLS 34-438 Civil Liberties	3

MAJORS

Major in Political Science, 31 hours: B.A.–Minor Required

CIP: 451001

Required Courses	Semester Hours
One course from each of Core A, B, C, D	12
An additional course from 3 of the 4 cores (A, B, C, D)	9
POLS 34-440 Early Western Political Thought OR POLS 34-441 Modern Western Political Thought	3
POLS 34-490 Senior Seminar	1
Political Science Electives	6

Major in Political Science, 37 hours: B.S.–Minor Required

CIP: 451001

Required Courses	Semester Hours
One course from each of Core A, B, C, D	12
An additional course from 3 of the 4 cores (A, B, C, D)	9
POLS 34-440 Early Western Political Thought OR POLS 34-441 Modern Western Political Thought	3
POLS 34-490 Senior Seminar	1
Political Science Electives	12

Major in Public Administration, 37 hours: B.S.–Minor Required

CIP: 440401

Required Courses	Semester Hours
POLS 34-203 State and Local Government	3
POLS 34-332 Principles of Public Administration	3
POLS 34-434 Modern Organizational Theory	3
POLS 34-439 Federalism and Intergovernmental Relations	3
POLS 34-490 Senior Seminar	1

POLS 34-495 Field Problems in Public Administration (Credit depending upon nature of problem undertaken)	3-8
POLS 34-502 Public Policy	3
Political Science Electives	9
Electives	4-9

MINORS

Minor in Political Science, 24 hours

CIP: 451001

Required Courses	Semester Hours
One course from each of Core A, B, C, D	12
POLS 34-440 Early Western Political Thought OR POLS 34-441 Modern Western Political Thought	3
Political Science Electives	9

Minor in Public Administration, 24 hours

CIP: 440401

Required Courses	Semester Hours
POLS 34-203 State and Local Government	3
POLS 34-332 Principles of Public Administration	3
POLS 34-434 Modern Organizational Theory	3
POLS 34-439 Federalism and Intergovernmental Relations	3
POLS 34-502 Public Policy	3
Political Science Electives	6
Approved Electives	3

Minor in Criminal Justice, 24 hours

CIP: 430104

Required Courses	Semester Hours
POLS 34-205 Introduction to Criminal Justice	3
POLS 34-315 Juvenile Justice System in America	3
POLS 34-338 Courts and Rights of the Accused	3
PSYC 08-223 Abnormal Psychology OR PSYC 08-333 Developmental Psychology	3
SOC 35-320 Delinquency OR SOC 35-421 Criminology	3
SOC 35-375 Police and Society	3
Approved Electives	6

Minor in International Studies, 24 hours

CIP: 450901

Required Courses	Semester Hours
Modern Language (Minimum of 3 hours must be 200-level or above; all 6 hours must be in the same language)	6

****Regional Geography Course**	3
Choose one course from the following:	
GEOG 32-340 Geography of North America (3)	
GEOG 32-441 Geography of Europe (3)	
GEOG 32-442 Geography of Asia (3)	
GEOG 32-444 Geography of Africa (3)	
GEOG 32-445 Geography of Latin America (3)	
POLS 34-310 Comparative Government	3
**Non-Western History Course	3
Choose one course from the following:	
HIST 33-370 History of the Near and Middle East (3)	
HIST 33-375 History of Latin America (3)	
HIST 33-386 The Pacific Rim (3)	
POLS 34-305 Global Events and Trends	3
Electives	6
Choose two courses from the following:	
ART 13-399 International Studies in Studio (3)	
GEOG 32-521 Political Geography (3)	
POLS 34-421 International Conflict Resolution (3)	
POLS 34-425 Transnational Politics (3)	
ECON 52-450 International Economics (3)	
MKTG 55-438 International Business (3)	
Advisor approved courses	

***Cannot be used to fulfill any General Education requirement.**

****Elective sequences should be chosen in consultation with the International Studies advisor.**

Social Science / 36

Advanced Standing Requirement

Majors in social science may be admitted to advanced standing in their major when they have 1) been assigned an advisor in their major; and 2) completed, with a grade of "C" or better, at least one course in each of the areas of history, government, social science and humanities/philosophy from the General Education Requirements.

Core Requirements for Majors in Social Science	**Semester Hours**
ECON 52-151 General Economics II	3
GEOG 32-101 Introduction to Geography	3
HIST 33-301 The Historian's Craft and Its Uses	2
HIST 33-401 Senior Seminar	1
*HUM 26-103 Western Civilization II: 1500 to the Present	3
SOC 35-101 General Sociology OR	
SOC 35-108 General Anthropology	3
Total Hours	**15**

***Cannot be used to fulfill any General Education Requirement.**

MAJORS

Comprehensive Major in Social Science, 51 hours: B.S.Ed.–No Minor Required (Certifies Grades 9-12)

CIP: 131317

Required Courses	Semester Hours
Core Requirements	**15**
American History	**12**
HIST 33-484 U.S. Economic System–A Comparative History (3)	
HIST 33-524 Colony to Nation 1607-1828 (3)	
Electives in American History *(6)*	
World History	**12**
HIST 33-517 England: From Stonehenge to Versailles (3)	
HIST 33-386 The Pacific Rim (3) OR	
HIST 33-370 The History of the Near and Middle East (3)	
HIST 33-312 History of Russia to 1914 (3) OR	
HIST 33-513 Modern Russia (3)	
Electives in World History (3)	
Political Science	**9**
Choose two from the following:	
POLS 34-203 State and Local Government (3)	
POLS 34-302 The American Presidency (3)	
POLS 34-303 The American Congress (3)	
POLS 34-401 News Media and Politics (3)	
Elective in Political Science (3)	
Behavioral Science Elective	**3**
Choose one class from Anthropology, Sociology or Psychology	
Directed General Education Requirement	
ECON 52-150 General Economics 1 (3)	

PSYC 08-303 Educational Psychology and PSYC 08-322 Adolescent Psychology are completed as part of the Professional Education requirements.

SOSC 36-480 Methods in Secondary School Social Sciences is to be completed as part of the Professional Education requirements.

This major, when completed under the B.S.Ed. Secondary Program will meet Missouri teacher certification standards for Social Studies grades 9-12.

Major in Comprehensive Crisis Response, 36 hours: B.S.–Minor Required

CIP: 430302

Core Requirements	Semester Hours
COM 29-420 Crisis Communication	3
GEOG 32-370 Natural Disasters	3
HIST 33-450 Homeland Security and Defense	3
POLS 34-439 Federalism and Intergovernmental Relations	3
PSYC 08-345 Disaster Psychology	3

SOSC 36-301 Introduction to Disaster Response and Recovery	3
SOSC 36-302 Principles of Humanitarian Relief	3
Total Core Requirements	**21**
Required Courses	
SOSC 36-490 Internship in Crisis Response	3
SOSC 36-491 Field Experience in Crisis Response	3
Choose one option below:	
Option 1: General	**9**
Select one course from each group:	
Group A: Spatial Operations	
GEOG 32-201 Maps and Map Interpretation (3)	
GEOG 32-365 Geographic Information Systems (3)	
GEOG 32-522 Urban Geography (3)	
Group B: Problems and Resolutions	
HIST 33-380 Humanitarian Crises of the Modern World (3)	
POLS 34-332 Principles of Public Administration (3)	
POLS 34-421 International Conflict Resolution (3)	
Group C: Administration and Management	
PSYC 08-315 Psychology of Groups and Teams (3)	
COM 29-432 Organizational Communication (3)	
COM 29-360 Principles of Public Relations (3)	
POLS 34-434 Modern Organizational Theory (3)	
POLS 34-502 Public Policy	
Option 2: Business Continuity	**9**
*Advisor-approved electives	
Option 3: Hazardous Material	**9**
*Advisor-approved electives	

***Courses taken through University of Central Missouri online.**

MINOR

Certification in Social Science, 21 hours: B.S.Ed., Major in Middle School (Certifies Grades 5-9)

CIP: 131317

Required Courses	**Semester Hours**
*HUM 26-103 Western Civilization II: 1500 to the Present	3
ECON 52-150 General Economics I	3
SOC 35-101 General Sociology	3
GEOG 32-101 Introduction to Geography	3
POLS 34-203 State and Local Government	3
Select two courses in History numbered 33-300 and above	6

***Cannot be used to fulfill any General Education Requirement.**

This listing meets the Missouri certification standards for concentration requirements under the Middle School Major.

Minor in Comprehensive Crisis Response, 27 hours

Core Requirements	Semester Hours
PSYC 08-345 Disaster Psychology	3
COM 29-420 Crisis Communication	3
HIST 33-450 Homeland Security and Defense	3
SOSC 36-301 Introduction to Disaster Response and Recovery	3
SOSC 36-302 Principles of Humanitarian Relief	3
Total Core Requirements	15
Select one course from each group:	**9**
Group A—Spatial Operations:	
GEOG 32-201 Maps and Map Interpretation (3)	
GEOG 32-365 Geographic Information Systems (3)	
GEOG 32-522 Urban Geography (3)	
Group B—Problems and Resolutions:	
HIST 33-380 Humanitarian Crises of the Modern World (3)	
POLS 34-332 Principles of Public Administration (3)	
POLS 34-421 International Conflict Resolution(3)	
Group C—Administration and Management:	
PSYC 08-315 Psychology of Groups and Teams (3)	
COM 29-360 Principles of Public Relations (3)	
COM 29-432 Organizational Communication (3)	
POLS 34-434 Modern Organizational Theory (3)	
POLS 34-502 Public Policy (3)	
Electives/Special Projects	**3**

Course Descriptions

Humanities / 26

102 Western Civilization I: The Ancient World to 1500 (3 hours)
An introduction to the development of Western Culture from the Ancient World through the Renaissance. (F, S, SS)

103 Western Civilization II: 1500 to the Present (3 hours)
An introduction to the development of Western Culture from 1500 to the present. (F, S, SS)

104 The Humanities: The Eastern World (3 hours)
An introductory survey covering the literary, artistic, philosophical and religious traditions of selected Eastern cultures with special emphasis on China and Japan. (S)

105 Information Technology and Culture (3 hours)
How contemporary technology shapes, positively and negatively, our interactions with the world, and the ability to understand and use contemporary information technology in that world. (F)

162 Comparative Religions (3 hours)
An introduction to and a comparative analysis of selected religious traditions. (S)

341 Greek Civilization (3 hours)
A broad study of the major trends, events and personalities in Greek history until the decline of the Hellenistic monarchies before the rising power of Rome. Special stress is laid upon those controlling concepts of Greek life and thought which form the roots of our modern artistic and intellectual culture. (F, alt. years)

342 Roman Civilization (3 hours)
The study of the major trends, events and personalities in Rome's history from its origin to its decline. (S)

380 Special Topics in Humanities (3 hours)
A survey course in the humanities with topics to be selected by the instructor. May be taken more than once with approval of advisor for new topics.

401 Senior Seminar (1 hour)
An intensive study of an issue in humanities of the student's choice, in consultation with a faculty advisor, concluding with a research paper and a formal presentation. Prerequisite: The student must have completed at least 21 hours toward the major. (F, S)

409 Independent Study in the Humanities (1-2 hours)
Investigation of special problems in any area of study offered (humanities, classics or religion). Consent of instructor necessary. Repeatable for new topics.

500 Special Offerings (1-3 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable for new topics.

Geography / 32

101 Introduction to Geography (3 hours)
Survey course designed to familiarize students with the geographic studies including the relationship between humans and the natural environment as well as spatial patterns of human activities. Cultural, socio-economic, political and physical spatial patterns relating to an increased understanding of contemporary local, national and global issues will be emphasized. (F, S, SS)

102 People and Cultures of the World (3 hours)
Course introduces a geographical perspective that examines the cultural, political, and physical processes that shape the diverse regions of the world. (F, S, SS)

201 Maps and Map Interpretation (3 hours)
This course introduces concepts such as map projections, map distortion, coordinate systems, and map measurement techniques designed to help students learn how to analyze and interpret map information. (F, S)

207 GPS Fundamentals (3 hours)
An introductory course to the Global Positioning System and the integration with other geospatial technologies, such as Geographic Information Systems (GIS) and remote sensing, for field or in-office work. (F, S, SS)

211 Special Topics in Geography (1-4 hours)
This course will be offered according to student needs and interest. Each offering will be designed to incorporate the latest information pertaining to a timely topic in geography. May be repeated once for a new area of study to earn no more than six credits total. (F, S, SS)

221 Economic Geography (3 hours)
Survey course dealing with the interrelationships of geography and the human attempt to make a living. Such topics as capitalism, population, resources, and industry will be considered. (F, S)

302 Cadastral Mapping (2 hours)
A course in the theory, concepts, and practice of creating and maintaining a digital database of property boundaries using current software tools. Prerequisite: GEOG 32-201 or permission of instructor. (SS)

340 Geography of North America (3 hours)
An introduction to the regional approach that examines variations in the physical and human geography focused on the United States and Canada. (F)

360 Dynamic and Synoptic Meteorology (3 hours)
A study of the physical characteristics of the atmosphere and the variables that control day-to-day weather at local and regional (synoptic) scales. Prerequisite: GEOG 32-101 or GEOL 27-114/115. (alt. trimesters, alt. years)

361 Climatology (3 hours)
Climate types and their significance to ecosystems and human activities are discussed. Emphasis is placed on applied climatology, paleoclimatology and the significance of climate change. Prerequisite: GEOG 32-360 or GEOL 27-114/115. (alt. trimesters, alt. years)

362 Cartography (3 hours)
An introductory course on map design, compilation and construction. The course utilizes computer cartography and map design encompassing the theoretical and applied aspects of the collection, organization, manipulation, and display of geographical data. Prerequisite: GEOG 32-201 or permission of instructor. (F)

363 Remote Sensing (3 hours)
A study of the technologies used in earth observation. The focus is on the use of aerial photography and satellite imagery for geological and geographic research. Prerequisite: GEOG 32-201 or permission of instructor. (S)

365 Geographic Information Systems (3 hours)
An introduction to geographic information systems encompassing the theoretical and applied aspects of the collection, storage, analysis and display of spatial (geographical) data. Prerequisite: GEOG 32-201 or junior standing. (F, S)

370 Natural Disasters (3 hours)
A course designed to analyze the processes that result in disasters, both natural and human-induced. Topics such as preparedness, mitigation and prevention of disasters will also be discussed Prerequisites: GEOG 32-101, GEOL 27-114 or permission of instructor. (SS)

409 Independent Study in Geography (1-3 hours)
Offered only by special arrangement and with the consent of the instructor involved and the department chairperson. Requires written proposal at time of registration. Repeatable for additional experience.

410 Geographic Thought and Research Methods (3 hours)
An advanced course in geographic research, emphasizing data collection, analysis and presentation. The course will also examine the history of geographic thought in the U.S. Prerequisites: GEOG 32-201 and junior standing. (F)

415 Internship in Geography (1-6 hours)
Students register for internship credit with the permission of the instructor, department chairperson, and a written proposal at the time of registration. The internship packet available from the Department of Humanities and Social Sciences specifies the requirements for earning academic credit for the internship. Students enroll in the appropriate number of credit hours for the workload of the internship. As a guideline, 160 work hours are worth 3 credit hours. Repeatable for additional experience. (F, S, SS)

441 Geography of Europe (3 hours)
An advanced regional course focused on the physical and human geography of Europe from the North Atlantic to the Urals. (S, odd years)

442 Geography of Asia (3 hours)
An advanced regional course focused on the physical and human geography of Asia (including Southeast, East, and South Asia). (S)

443 Geography of the Middle East (3 hours)
An advanced regional course focused on the physical and human geography of Southwest Asia and North Africa. (S, even years).

444 Geography of Africa (3 hours)
A comprehensive course study of the physical and cultural geography of the African continent. (S, even years)

445 Geography of Latin America (3 hours)
A systematic and regional approach to the physical and human geography of Latin America. The course emphasizes culture, politics, development and resource utilization. (F)

465 Introduction to Customized GIS (3 hours)
A course designed to apply state-of-the-art programming language to customize and automate GIS tasks. Customization of GIS provides users with personalized and specialized functions and interfaces while automation makes daily geoprocessing analysis easier and faster. Prerequisite: GEOG 32-365 (S)

499 Senior Seminar (1 hour)
A capstone course in geography. The course is designed to assess the student's ability to synthesize and evaluate geographic knowledge as it applies toward professional enhancement and/or further professional development in higher education. Prerequisites: Senior standing and completion of the Geography Core. (F, S)

500 Special Offerings (1-4 hours)
One time course offering in a timely area of geography. Repeatable for new topics.

501 Conservation of Natural Resources (3 hours)
A study of the earth's environment and resource limits as related to population growth and humankind's need to provide food, water, mineral resources and energy in order to survive and prosper. Emphasis is placed on developing an appreciation for the interconnectedness of the natural world and the potential consequences of disrupting those connections. (alt trimesters, alt. years)

510 Geographic Education: Themes and Materials (2 hours)
Designed for elementary or secondary teachers wishing to incorporate an instructional unit in geography in either the social science or science curriculum. (SS)

511 Special Topics in Geography (1-4 hours)
Will be offered according to student needs and interest. Each offering will be designed to incorporate the latest information pertaining to a timely topic in geography. Topics may include: applied geographic information systems, urban and regional planning, location analysis, geography of sport, etc. Prerequisites: 12 hours of geography and permission of instructor. Repeatable for new area of study to earn no more than six credits total. (F, S, SS)

520 Military Geography (3 hours)
An advanced course in geography that applies both physical and human spatial approaches to the study of military issues across the spectrum of conflict. (F, odd years).

521 Political Geography (3 hours)
An advanced course in geopolitics with emphasis on fundamental principles and their application to the major regions and nations of the world today. Prerequisite: Junior standing or permission of instructor. (F, even years)

522 Urban Geography (3 hours)
An advanced course offering an in-depth study of characteristics of cities and problems faced in urban environments. The course emphasizes how historical, social, and cultural factors shape cities. Prerequisite: Junior standing or permission of instructor. (S)

543 Applications of Remotely Sensed Data (3 hours)
This course integrates the use of remotely sensed information into a Geographic Information System (GIS) environment. Emphases are placed on understandings of image formats, sources on the Internet, composite color display scheme, visual interpretation, and extracting data from images. (online, F, SS)

545 Principles of GIS (3 hours)
GIS is a powerful technology for managing and analyzing geographic data. This course provides students with the conceptual background including a rigorous study of fundamental geographic information systems principles, including the nature of spatial data, vector and raster data models, and key GIS analysis operations. It provides a strong foundation for advanced courses or work in GIS. (online, alt. trimesters, alt. years)

562 Digital Cartography and GeoVisualization (3 hours)
A computer aided cartography course surveying various mapping techniques with GIS software. This course emphasizes the quality of the map as a whole and individual map elements as well as introducing various techniques for visualizing geographic data. Prerequisite: GEOG 32-362. (S)

563 Digital Image Processing (3 hours)
An advanced remote sensing course focusing on techniques for displaying, processing, modifying, transforming, and analyzing remotely sensed images. This course stresses the ability to extract data and information from images. Prerequisite: GEOG 32-363. (F)

565 Advanced Geographic Information Systems (3 hours)
Builds on the techniques and concepts learned in Geographic Information Systems (GEOG 32-365). Stresses research and project design strategies and advanced analytical techniques using geographic information systems to solve spatial problems. Prerequisite: GEOG 32-365. (F, S)

580 Spatial Analysis and Geostatistics (3 hours)
Designed to make the student familiar with the analysis and statistical tools used by geographers. Covers the fundamental aspects of geostatistics that are used in research and business environments. (online, alt. trimesters, alt. years)

History / 33

155 America–A Historical Survey (3 hours)
A general education course that will survey the scope of American history through selected chronologically-arranged topics. (F, S, SS)

225 Ethnicity in America (3 hours)
Focuses on the historical development of ethnic and racial minorities in America, their inclusion and exclusion, from politics and economy to the mainstream U.S. culture of the middle class. (F, alt. years)

301 The Historian's Craft and Its Uses (2 hours)
This course is designed to introduce the student to the tools of the craft; to research, to writing and to critical thinking, as well as to the product of the craft–the uses of history–both academic and public, with grant writing experience. (F, S)

310 France Since Louis XIV (3 hours)
An advanced survey of French history from the reign of Louis XIV to the European Community. (F, alt. years)

312 History of Russia to 1914 (3 hours)
This course constitutes a survey of Russian history from the Medieval state of Kiev to the Revolution of 1905. (F, alt. years)

320 Public History (3 hours)
Course is designed to introduce the undergraduate student to the field of public history. It will introduce the student to historic preservation, museum management, archives and cultural resource management. (S alt. years)

344 History of American Folklife (3 hours)
A course based on (a) the nature and content of American folklife and folklore, and (b) a practical experience in collecting folklife artifacts of northwest Missouri. (S, alt. years)

350 American Military History (3 hours)
A course in the military history of the United States and the relationships of society, politics, diplomacy and economics to the military. (S)

360 The American Woman (3 hours)
A survey of the changing roles of women, the changing perception of what women should be and the development of feminism in the United States since settlement. (F, alt. years)

365 American Religious History (3 hours)
A survey of the diversity of religion in the U.S. focusing on the ways in which American life (politics, economics, foreign policy, social reform) has been influenced by religious movements and ideas in the past, and the challenges offered today by religious pluralism. (F, alt. years)

370 History of the Near and Middle East (3 hours)
A survey of the history of the Near and Middle East since the time of Mohammed. (S alt. years)

375 History of Latin America (3 hours)
A brief survey of the history of Latin America designed for the general student, foreign language majors and business administration majors. (S, alt. years)

380 Humanitarian Crises of the Modern World (3 hours)
This course examines both the history and evolution of genocide and the changes in humanitarian responses in the operating environment. This course will cover a broad range of subjects including: the normative frameworks of humanitarian action-international humanitarian law, humanitarian principles, and codes of conduct; the impact of conflicts and the "global war on terror" on populations and humanitarian action; methodologies developed to improve the effectiveness and accountability of humanitarian action; the evolving structure of the international humanitarian system.

386 The Pacific Rim (3 hours)
The course examines the history of East Asian development with emphasis on the nineteenth and twentieth centuries. Following an introduction to the origins of Chinese, Japanese, Korean and Southeast Asian cultures, the course assesses conflict along the Pacific rim driven by historically rooted tensions and especially European influence. (S)

389 Early Modern Europe: The West Meets the World (3 hours)
An in-depth examination of the society, culture, and international expansion of Europe from the mid-16th to the mid-18th century, a bloody and often unstable era, but one in which art and science flourished and the world economy and modern political systems were created. (S, alt. years)

401 Senior Seminar (1 hour)
A supervised program demonstrating the use of historical research methods with a formal presentation. For senior history/social science majors. Prerequisite: HIST 33-301. (F, S)

450 Homeland Security and Defense (3 hours)
A course in the history of homeland security and defense in the United States and the relationships of society, politics, diplomacy, and economics to the topic since 1915. (S)

484 U.S. Economic System– A Comparative History (3 hours)
A study of the historical development and an analysis of U.S. economic thought and institutions, and their role as a major force in world economic systems. (F)

490 Advanced Studies in History (3 hours)
The content of this course will vary when offered. Selected areas of history and historical problems will be given. May be repeated once with permission of advisor for new topics.

499 Independent Study in History (1-3 hours)
Offered by special arrangement and petition approved by the student's advisor, the instructor involved and the department chairperson. Repeatable for new topic areas.

500 Special Offerings (1-3 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable for new topics.

503 The Middle Ages (3 hours)
A survey of the political and cultural history of Europe from the fall of the Roman Empire to the Renaissance. (F, alt. years)

506 The Renaissance and Reformation (3 hours)
An advanced course which presents an in-depth study of the eras of Renaissance and Reformation in Western Europe. (S, alt. years)

513 Modern Russia (3 hours)
After a brief introduction this course will consist of a detailed study of the Bolshevik Revolution in Russia, policies and programs of the Communist Party and Government since 1917, and both domestic and international affairs. (F, alt. years)

517 England: From Stonehenge to Versailles (3 hours)
Course is designed as a survey of English history from the earliest inhabitants to the treaty of Versailles. (F)

521 History of Germany Since 1648 (3 hours)
An advanced course dealing with the history of modern Germany. (S, alt. years)

524 Colony to Nation 1607-1828 (3 hours)
A study of the social, economic, intellectual, cultural and political institutions that arose and developed from English colony to a self-sustaining nation. Emphasis is placed on the colonial experience of Europeans, Africans and Indians continuing through the constitutional period and the development of the new nation. (S)

525 United States Since 1945 (3 hours)
An advanced course which will look at the development of the contemporary United States through an examination of foreign affairs as well as selected social movements within the country. (S)

526 Constitutional History of the United States (3 hours)
An advanced course in American history which deals with the constitutional aspects of our development with considerable reference to constitutional law and interpretation. Recommended particularly for pre-law students and all students planning to teach American Government. (F alt. years)

534 The Civil War and Reconstruction (3 hours)
An advanced course in American history which analyzes the conflicting theories and issues of the antebellum period, interprets the coming of the Civil War, the conduct of the government, military operations and foreign relations during the war and problems of the Reconstruction Period. (F)

542 American Ideas (3 hours)
A study of political, religious, social and other aspects of American life. Among the issues to be emphasized are Puritanism, the Enlightenment, the Federalist/Anti-Federalist controversy, 19th century democratic ideas, Social Darwinism, the progressive era, Humanism, New Deal thought, the New Conservatism of the Fifties and the New Left movement. (S, alt. years)

556 Roots of U.S. Reform (3 hours)
Industrialization, Populism and Progressivism as the basis of reform then continuing with the culmination of Reform in the New Deal. (F, alt. years)

562 The History of Missouri (3 hours)
A brief survey of the Spanish and French rule followed by a study of the history and development of Missouri from the acquisition of the territory by the United States to the present day. Special emphasis is placed on its historical significance, important figures, government, constitution, current problems and local history. (S, alt. years)

565 The History of American Foreign Relations (3 hours)
An introduction to the history of U.S. foreign policy. This course will concentrate on the key episodes in U. S. foreign policy with an emphasis on the assumptions that formed the context for power relationships in the European, Asian and American worlds from the time of American independence to the present. (S, alt. years)

582 Frontiers in American History (3 hours)
A study of America's territorial expansion from the colonial period to the close of the 19th century, including the impact on the nation's people, institutions, policies and ideas. Special emphasis will be devoted to the conflict between settlers and native people. (SS, alt. years)

589 Europe in the Age of Nationalism (3 hours)
An examination of the impact of nationalism upon Europe since the French Revolution. (S, alt. years)

590 Historical Resources Internship (1-5 hours)
On-site activity in libraries, museums, historic sites and parks. Credit will vary according to time spent and type of activity. Instructor's permission and prearrangement are required. Maximum credit to be earned is five semester hours. Repeatable for new experiences.

Philosophy / 39

171 Introduction to Philosophy (3 hours)
Basic problems and ideas encountered in the moral and intellectual life of humankind are analyzed in a systematic, rather than an historical manner. Attention is devoted to the philosophies and theories of knowledge, metaphysics, religion, morals, politics and science. (F, S, SS)

273 Introduction to Logic (3 hours)
A consideration of the principal techniques of traditional and symbolic logic–syllogistic logic, sentential logic, and predicate logic–and their relationship to language. (F, alt. years)

274 Introduction to Ethics: Historical/Theoretical Ethics (3 hours)
An examination of the fundamental concepts, principles and major theoretical approaches of ethics used to determine the moral demands of human conduct with applications to important ethical questions of contemporary interests. This course takes a historical/theoretical approach to ethics. (S, alt. years; SS alt. years)

275 Introduction to Ethics: Professional Ethics (3 hours)
An examination of the fundamental concepts, principles and major theoretical approaches of ethics used to determine the moral demands of human conduct with applications to ethical questions of contemporary interests. This course focuses on professional ethics. (F, S)

276 Introduction to Ethics: Bio-Medical Ethics (3 hours)
An examination of the fundamental concepts, principles and major theoretical approaches of ethics used to determine the moral demands of human conduct with applications to ethical questions of contemporary interests. This course focuses on bio-medical ethics. (F, S)

374 Philosophy of Religion (3 hours)
Philosophical inquiry into the nature and function of religion with special emphasis on the problems of the existence and essence of deity. Prerequisite: PHIL 39-171 or consent of instructor. (S, alt. years)

376 History of Ancient and Medieval Philosophy (3 hours)
A survey of the main strands of Western philosophy from the beginnings in Ancient Greece and Rome to the dawn of the Modern era. Prerequisite: PHIL 39-171 or consent of instructor. (F, alt. years)

377 History of Modern and Contemporary Philosophy (3 hours)
A survey of the main strands of Western philosophy from the rise of Modernism to the present day. Prerequisite: PHIL 39-171 or consent of instructor. (S, alt. years)

401 Senior Seminar (1 hour)
Intensive study of a philosophical issue of the student's choice, in consultation with a faculty advisor, concluding with a research paper and a formal presentation. Prerequisites: PHIL 39-171 and majors with 21 hours in philosophy. (F, S.)

473 Philosophical Anthropology (3 hours)
A study of various philosophical understandings of the nature and functioning of the human mind and their implications. Prerequisite: PHIL 39-171 or consent of instructor. (S, alt. years)

474 Philosophy of the Sciences (3 hours)
An introduction to the fundamental concepts, methods, and models of science, and how they shape the content of the various scientific disciplines. Prerequisite: PHIL 39-171 or consent of instructor. (S, alt. years)

475 Aesthetics (3 hours)
A consideration of the major concepts and theories of aesthetics, dealing with questions concerning the value of art, the nature of artistic creation and the appropriate criteria for the evaluation of artistic works. Prerequisite: PHIL 39-171 or consent of instructor. (F, alt. years)

500 Special Offerings (1-3 hours)
Courses which are offered on only one occasion or variable issue-oriented courses which have the content described in the title. Credit and prerequisites as announced. Repeatable for new topics.

570 Metaphysics (3 hours)
A study of the nature of reality, including a consideration of questions concerning what constitutes the unity of a thing, the nature of causation, the relationship between mind and matter and the nature of God. Prerequisite: PHIL 39-171 or consent of instructor. (S, alt. years)

571 Epistemology (3 hours)
An inquiry into the nature and function of knowledge claims, the validity of induction and deduction, theories of justification and truth. Prerequisite: PHIL 39-171 or consent of instructor. (S, alt. years)

579 Independent Study in Philosophy (1-3 hours)
Investigation into special problems in philosophy. Offered only by special arrangement. For majors and minors only. Repeatable for new topics.

590 Advanced Topics (1-3 hours)
This course covers a specialized topic in the history of philosophy or current issues and trends in philosophy as announced. Course may be repeated for a total of six hours provided that the topics are not the same. Prerequisites: PHIL 39-171 and 15 hours in philosophy or consent of instructor.

Political Science / 34

102 Introduction to American Government and Politics (3 hours)
Attention is directed toward the fundamental principles, institutions, and problems of American Constitutional Government–national, state, and local. Particular stress is given to the Missouri Constitution, as well as to national Constitutional growth. (F, S, SS)

105 The African World (3 hours)
An introduction into Africa's rich histories and cultures, as well as its complex social, economic and political realities. (F, alt. years)

201 Missouri Politics (1 hour)
The provisions and principles of the Constitution of the State of Missouri will be examined. (F, S)

203 State and Local Government (3 hours)
A study of the functions and structures of state, county and city governments. (F, S)

205 Introduction to Criminal Justice (3 hours)
A study of the agencies and processes involved in the criminal justice system: legislature, the police, the prosecutor, the public defender, the courts and corrections. (F)

301 Parties and Interest Groups (3 hours)
This course will examine, compare and contrast the development, organization and function of both political parties and interest groups in American politics within the context of elections at all levels of government. (S)

302 The American Presidency (3 hours)
This course will encompass the political, legal, organizational and policy-making aspects of the American presidency. (S)

303 The American Congress (3 hours)
This course will examine the political and institutional development of Congress. The study will span both the formal legal powers and the internal dynamics of this major national policy-making institution. (F)

305 Global Events and Trends (3 hours)
This course is structured to give students a better understanding of global events and trends. Among other topics the course addresses the illicit trade in people, guns and drugs, the political economy of religions, and the politics surrounding emerging technologies. Course topics change from semester to semester, depending on what is happening in the world. (F)

310 Comparative Government (3 hours)
A study of the various types of political and governmental structures operative in the contemporary world as well as the various types of political functions performed within national systems. Emphasis is placed on the comparative study of national political systems. (F)

311 Practicum in Political Science (1-2 hours)
A course designed to provide structure and academic focus to non-traditional work by students within the curricular structure of the department. Activities given credit under this course must be relevant to the student course of study, approved by the chairperson and mentored by a faculty member. A student may accumulate no more than two hours of credit for this course. Repeatable for new experiences.

315 Juvenile Justice System in America (3 hours)
An investigation of the American criminal justice system's response to socially dysfunctional youth: prevention, diversion, law enforcement, the courts, probation, parole, schools, correctional institutions and alternative placement. (S)

320 Propaganda in the Movies (3 hours)
An investigation into the definition and use of motion pictures as a means of spreading political propaganda. Feature movies, cartoons and documentaries will be studied to illustrate the varied themes used as propaganda in both domestic and international contexts. The course studies the environment within which the movies were made and the techniques used by the moviemakers that enhance their value as propaganda. (S)

332 Principles of Public Administration (3 hours)
A study of decision-making processes in public organizations. (F)

338 Courts and the Rights of the Accused (3 hours)
Examines the American judicial system as applied to individuals accused of crimes against the state. (F)

340 Law and Politics (3 hours)
An introduction to the American legal system, its functions, constituting elements, and role in our democratic system. (F)

345 Women and American Politics (3 hours)
A study of women's role in American politics. This course will examine women's struggle for suffrage and equal rights, women's participation in the electoral process and political institutions, and the impact of public policy on women. (S, alt. years)

365 Africa in Popular Media (3 hours)
How do media reflect and shape realities, impressions and imagery of "Africa"? The course uses audio, visual and print media from within and outside the continent to explore this question. (S)

401 News Media and Politics (3 hours)
An examination of the theories and studies of how public opinion is formed, measured and related to the behavior of public officials. The final third of the course focuses on the politics of the relations between public officials and journalists during the news-gathering process. (F;)

421 International Conflict Resolution (3 hours)
This course focuses on the principles of international relations, illustrated through the use of international conflict resolution. (S)

425 Transnational Politics (3 hours)
An investigation of the structures and functions of international organizations of a political and economic nature. This is an interdisciplinary course that emphasizes the interdependency of international political and economic organizations of a governmental and non-governmental nature. (S)

434 Modern Organizational Theory (3 hours)
An examination of the evolution of organizational theory in the public sector. Emphasis will be placed upon the public organization's role in society, as well as theory of public management, organizational goals, structure and behavior. (F)

436 Constitutional Law (3 hours)
Examines the Supreme Court's role in dealing with basic problems of constitutional Law. Topics covered include the powers of the three branches of the national government, federal-state power relations, Congressional power over commerce, equal protection of the laws, and the conduct of elections. (F)

438 Civil Liberties (3 hours)
Investigates the legal and political context influencing the exercise of fundamental rights. It is a study of the lines that must be drawn by a democratic

society as it attempts to reconcile individual freedom with the rights of the community. In so doing it examines the way in which the U.S. Constitution, as judicially interpreted, has shaped the American concepts of civil liberties (outside the realm of criminal law) and civil rights. (S)

439 Federalism and Intergovernmental Relations (3 hours)
Investigation and analysis of the American federal system, including its constitutional, political and administrative characteristics. (S)

440 Early Western Political Thought (3 hours)
Main currents of political thought in their historical setting from Plato to the 17th century, with a critical evaluation of those elements of continuing worth. (S, alt. years)

441 Modern Western Political Thought (3 hours)
Main currents of political thought from the 17th century to the present, with a critical evaluation of the elements of continuing worth. (S, alt. years)

490 Senior Seminar (1 hour)
A one hour course designed to give pre-graduation students the opportunity to 1) integrate diverse elements of the substance of the major in a meaningful way; and 2) to review key skills targeted by the major and departmental mentor. (F, S)

495 Field Problems in Public Administration (3-8 hours)
A supervised internship in an approved local, state or federal governmental agency including the preparation of a formal written report. Award of credit hours will vary according to the nature of the project undertaken. Repeatable for new experiences. (F, S, SS)

499 Independent Study in Political Science (1-3 hours)
Offered only by special arrangement with the consent of the instructor involved and the department chairperson. Repeatable for new topics. (F, S)

502 Public Policy (3 hours)
An intensive, advanced course in American policy making processes and problems of policy development at the national level. The focus is on the analysis of current public policies and their consequences. (S)

511 Special Topics in Political Science (1-3 hours)
A variable topics course designed to meet curricular and student needs not fulfilled by the rest of the political science curriculum. Content of the course will be described in the title. The course may be repeated for new topics to earn no more than six credit hours in total, subject to the approval of the instructor.

Social Science / 36

301 Introduction to Disaster Response and Recovery (3 hours)
This course provides a broad introduction to the field of emergency management. It focuses on the different types of hazards, the individuals and agencies involved in response and recovery operations, human behaviors in disaster situations, hazard detection, warning, evacuation and sheltering, care for the injured, dead, and distressed, management of media relations, donations and volunteers, methods for facilitating recovery and mitigation, and the role of technology. (S)

302 Principles of Humanitarian Relief (3 hours)
An examination of the principles, practitioners, and practices of humanitarianism since 1863 with special emphasis on the United States. This course provides students with historical, theoretical, and practical understanding of humanitarianism in the modern world. (F)

480 Methods in Secondary School Social Sciences (3 hours)
A course for prospective teachers in the social sciences stressing materials, methods and techniques in teaching social studies in terms of the needs and problems of secondary education. This course must be taken before student teaching. (F)

490 Internship in Comprehensive Crisis Response (1-3 hours)
A supervised internship in an approved experience in crisis response management including preparation of a formal written report. Credit will vary according to the time spent and type of activity. Instructor's permission and prearrangement required. Repeatable for new experiences.

491 Field Experience in Crisis Response (1-3 hours)
A supervised field experience in an approved exercise in crisis response management including preparation of a formal written report. Credit will vary according to the time spent and type of activity. Instructor's permission and prearrangement are required. Repeatable for new experiences.

500 Special Offerings (1-3 hours)
Courses which are offered on only one occasion or variable issue-oriented course which have the content described in the title. Credit and prerequisites as announced. Repeatable for new topics.

Department of Mathematics, Computer Science and Information Systems

Chairperson: Phillip Heeler

Faculty: Joni Adkins, Christine Benson, Judy Clark, Russell Euler, Kurtis Fink, Brian Haile, Carolyn Hardy, Christina Heintz, Lynda Hollingsworth, Diana Linville, Cheryl Gregorson Malm, Gary McDonald, Merry McDonald, Michael Rogers, Jawad Sadek, Matthew Schieber, Mary Shepherd, Carol Spradling, Csilla Tasi, David Vlieger, Jennifer Wall, Denise Weiss, Han Yu, Nancy Zeliff

Statement of Mission

The mission of the Department of Mathematics, Computer Science and Information Systems is to provide programs through which students learn to solve problems and gain professional competence in the areas of mathematics, computer science, and information systems. In addition to courses supporting our majors, we offer general education and service courses that reflect the pivotal role of mathematics, computer science and information systems in all disciplines. The goal of each major is to provide a sufficiently focused curriculum to enable each student to compete successfully in the job market, while also providing sufficient breadth to facilitate lifelong learning, whether that learning continues through formal graduate study or on-the-job experiences. Each major offers the student opportunities to obtain thorough knowledge of the field of study, develop the professional competencies to communicate that knowledge, and acquire a value system to make sound decisions regarding the issues that confront professionals in the work place.

DEGREE PROGRAMS

The Department of Mathematics, Computer Science, and Information Systems offers programs leading to the Bachelor of Arts degree in Mathematics and the Bachelor of Science degrees in the areas of mathematics, computer science, interactive digital media, management information systems and business technology. For students interested in teaching mathematics or business and economics, in grades 9-12, the department offers the Bachelor of Science in Education degree with majors in mathematics education and business education. In addition, there are minors in business education (as well as non-degree business technology and information systems programs), computer applications, computer networking, computer science, data management, geographic information systems, interactive digital media, marketing and cooperative education, mathematics education (grades 9-12), mathematics education (middle school), statistics, and systems management.

Students in the mathematics major develop their abilities to interpret, solve, and explain problems. Through a balanced selection of coursework from both pure and applied mathematics students expand their understanding of how data analysis and mathematical modeling impact aspects of contemporary society. Education majors also learn how to help students understand

these aspects of mathematics. Students who incorporate preparatory work in actuarial science into a mathematics major (with possible economics minor) can choose courses leading to VEE credit from the Society of Actuaries in Economics, Corporate Finance, and Applied Statistical Methods, as well as courses preparing them for three actuarial exams (administered by the Society of Actuaries).

The focus of the computer science major is software design and implementation. The program also provides a solid background in the fundamental principles of computer networks, computer organization, database systems, operating systems and programming languages.

Interactive digital media students will possess cross-disciplinary knowledge and skills in areas that deal with visual aesthetic understanding and communication, integrated with technological knowledge. Students in the computer science programming concentration will design and implement computer programs, and explore the additional topics of computer organization, networking, database development and other computer technologies.

Students in the management information systems program develop a solid, interrelated combination of business knowledge and applied computer technology skills. This combination makes graduates suited for a variety of information technology careers.

Business technology and business education students develop technology and computer-related skills as well as interpersonal, decision making, and analytical skills. Graduates will effectively assist organizations with business, computer, and technology operations. Additionally, education majors learn to motivate students to develop these same skills and attributes.

In all of these programs, students learn fundamental concepts while engaging in activities similar to those encountered in the workplace. Small classes taught by full-time faculty using active learning instructional paradigms focus on the student's learning process, with the teacher's role that of guide, facilitator and mentor.

All of these programs are supported by a wide variety of computing facilities ranging from local area networks of microcomputers to campus--wide access to an international network of computing services.

Test-Out Policy

Undergraduate students may test out of certain lower division courses in mathematics. Examinations are available each trimester. See the department chairperson for courses that are available for test-out.

Students may challenge their placement in MATH 17-090 Math Skills by taking combined modules test and showing mastery (80% proficiency) in each of the 10 modules of instruction. Students will be required to enroll in 17-090 Math Skills to complete instruction in those modules for which proficiency is not achieved. Students should contact the department for additional details.

Developmental Mathematics

MATH 17-090/091 Math Skills is required of students with an ACT Mathematics score of 20 or below. Students must achieve mastery (80%) in each of 10 modules of instruction prior to enrolling in a college-level mathematics course. Evidence of mastery may be shown through successful completion of each module in the 17-090/091 course or through successful completion of a proctored proficiency examination indicating 80% mastery in each of the 10 modules of instruction.

Advanced Standing Requirement

In order to achieve advanced standing in the Mathematics, a student must have a grade of "C" or better in each of the courses MATH 17-120 Calculus I, MATH 17-121 Calculus II and MATH 17-215 Discrete Mathematics. As long as proper prerequisites are satisfied, all mathematics courses are open to enrollment, regardless of whether or not advanced standing has been granted. In exceptional cases, a student who has not met the criteria may appeal to a departmental committee. The committee will hear the appeal and decide whether advanced standing should be granted.
To achieve Advanced Standing in Computer Science, the student must:

1. Attain at least a cumulative 2.00 GPA and a 2.00 GPA in all major courses
2. Attain a score at level 1 or higher on all areas of the Academic Profile
3. Attain at least a grade of "C" or better in each of the courses listed below:

MATH 17-215 Discrete Mathematics	4
CSIS 44-130 Computers and Information Technology	3
CSIS 44-141 Computer Programming I	3
CSIS 44-241 Computer Programming II	3
CSIS 44-242 Data and File Structures	3
Total	**16**

To achieve Advanced Standing in Management Information Systems, the student must:

1. Attain at least a cumulative 2.00 GPA and a 2.00 GPA in all major courses
2. Attain a score at level 1 or higher on all areas of the Academic Profile

To achieve Advanced Standing in Business Education or Business Technology, the student must:

1. Receive a "C" or better for each required course taken in the area of Computer Science or Information Systems
2. Attain a score at level 1 or higher on all areas of the Academic Profile

Business Education majors and minors must also meet the requirements for Admittance to Teacher Education as specified on page 316 of this catalog.

Students who have met this Advanced Standing requirement are official members of the department and can pursue any major course, assuming the prerequisites have been met.

NOTE: Students who have not successfully achieved Advanced Standing prior to becoming an academic senior (90 or more academic credit hours) will be prohibited from enrolling in any major course until they have achieved Advanced Standing. In exceptional cases, a student not meeting the "90-hour rule" may appeal to the department's Advanced Standing Committee.

Senior Assessment

For each of the majors in the Computer Science or Information Systems area, a senior-level major field assessment must be completed by each student.

Mathematics / 17

Core Requirements for Majors in Mathematics and Mathematics Education

To achieve the common objectives, all majors in Mathematics are required to complete a common core of 26 semester hours and participate in senior assessment. The area's common core requirements are:

*MATH 17-120 Calculus I	4

MATH 17-121 Calculus II	4
MATH 17-215 Discrete Mathematics	4
MATH 17-230 Probability and Statistics	3
MATH 17-311 Elementary Linear Algebra	3
MATH 17-321 Multivariate Calculus	4
MATH 17-496 Senior Paper	1
**CSIS 44-149 Scientific Computing	3
Total Hours	**26**

***This course counts as a General Education course as well as a course in the major area.**

****An institutional requirement for Information Technology is a prerequisite course.**

MAJORS

Comprehensive Major in Mathematics, 54 hours: B.A., B.S.—No Minor Required

CIP: 270101

Required Courses	Semester Hours
Core Requirements	26
MATH 17-316 General Statistics II	3
MATH 17-390 Logic of the Exact Sciences	3
MATH 17-415 Introduction to Abstract Algebra	3
MATH 17-421 Intermediate Analysis	3
MATH 17-492 Seminar in Readings in Mathematics Literature	1
Approved departmental electives	9
Approved electives in a quantitative field (physics, chemistry, economics, computer science)	6

Comprehensive Major in Mathematics Education, 48 hours: B.S.Ed.—No Minor Required (Certifies Grades 9-12)

CIP: 131311

Required Courses	Semester Hours
Core Requirements	26
MATH 17-280 Methods in Teaching with Technology	3
MATH 17-351 College Geometry	3
MATH 17-390 Logic of the Exact Sciences	3
MATH 17-415 Introduction to Abstract Algebra	3
MATH 17-421 Intermediate Analysis	3
MATH 17-490 Seminar in History of Mathematics	1
Approved departmental electives	6

MATH 17-580 Methods in Secondary School Mathematics is the required subject field methods course.

This major meets Missouri certification standards.

MINORS

Minor in Mathematical Sciences, 24 hours

CIP: 270101

Required Courses	Semester Hours
*MATH 17-120 Calculus I	4
MATH 17-121 Calculus II	4
MATH 17-215 Discrete Mathematics	4
MATH 17-230 Probability and Statistics	3
**CSIS 44-149 Scientific Computing	3
Electives from both mathematics and statistics at the 300, 400, or 500 levels, to total 24 hours	6

***This course counts as a General Education course as well as a course in the minor area.**

****An institutional requirement for Information Technology is a prerequisite course.**

Minor in Statistics, 24 hours

CIP: 270501

Required Courses	Semester Hours
MATH 17-114 General Statistics I OR MATH 17-230 Probability and Statistics	3
MATH 17-316 General Statistics II	3
*CSIS 44-149 Scientific Computing	3
Electives from mathematics or statistics, with at least 2 semester hours in statistics, to total 24 hours	15

***An institutional requirement for Information Technology is a prerequisite course.**

Minor in Mathematics Education, 23 hours: B.S.Ed.

CIP: 131311

Required Courses	Semester Hours
*MATH 17-171 Fundamentals of Mathematics	3
MATH 17-114 General Statistics I	3
MATH 17-117 Precalculus	4
MATH 17-120 Calculus I	4
MATH 17-280 Methods in Teaching with Technology	3
MATH 17-371 Algebra & Geometry for Elementary & Middle School Teachers	3
MATH 17-473 Advanced Topics for Middle School Teachers	3

23 Hour Concentration: The required courses total 23 hours. This minor will meet the concentration requirements for the Middle School Major.

MATH 17-582 Mathematical Methods for Middle School Teachers is the required subject field methods course.

***This course counts as a General Education course as well as a course in the minor area.**

Minor in Mathematics Education, 30 hours: B.S.Ed., Secondary Program (Certifies Grades 9-12)

CIP: 131311

Required Courses	Semester Hours
*MATH 17-120 Calculus I	4
MATH 17-121 Calculus II	4
MATH 17-215 Discrete Mathematics	4
MATH 17-280 Methods in Teaching with Technology	3
MATH 17-351 College Geometry OR	
MATH 17-555 Non-Euclidean Geometry	3
**CSIS 44-149 Scientific Computing	3
Approved electives to total 30 hours, chosen from the following:	9
MATH 17-114 General Statistics I (3) OR	
MATH 17-230 Probability and Statistics (3)	
MATH 17-321 Multivariate Calculus (4)	
MATH 17-311 Elementary Linear Algebra (3)	
MATH 17-415 Introduction to Abstract Algebra (3)	
MATH 17-421 Intermediate Analysis (3)	
MATH 17-518 Number Theory (3)	
A geometry course not used as the required course	

In addition to the 30 hours, MATH 17-580 Methods in Secondary School Mathematics must be completed as a degree requirement.

*Requires a knowledge of trigonometry. MATH 17-119 Trigonometry may not be counted as a part of the 30 hours required for this minor.

***This course counts as a General Education course as well as a course in the minor area.**

****An institutional requirement for information technology is a prerequisite course.**

With proper choice of electives, this minor meets minimum Missouri certification standards for grades 9-12. Students should obtain a minor advisor early in the program.

Computer Science and Information Systems / 44

MAJORS

Comprehensive Major in Computer Science: B.S.–No Minor Required

CIP: 110101

Directed Institutional Requirement	
CSIS 44-130 Computers and Information Technology	3
Required Courses	**Semester Hours**
CSIS 44-141 Computer Programming I	3
CSIS 44-241 Computer Programming II	3
CSIS 44-242 Data and File Structures	3

CSIS 44-296 Professional Development Seminar	3
CSIS 44-345 Computer Organization	3
CSIS 44-349 Survey of Algorithms	3
CSIS 44-356 CCNA: Network Fundamentals	3
CSIS 44-460 Database Systems	3
CSIS 44-525 Theory and Implementation of Programming Languages	3
CSIS 44-550 Operating Systems	3
CSIS 44-561 Software Engineering I	3
CSIS 44-562 Software Engineering II	3
Computer Science Options	
Choose 9 hours from the following electives:	
CSIS 44-325 Programming Languages	3
CSIS 44-543 Mobile Computing	3
CSIS 44-555 Network Security	3
CSIS 44-560 Advanced Topics in Database Systems	3
CSIS 44-563 Developing Web Applications and Services	3
Science Options	
*PHYS 25-110/111 and 25-112/113 General Physics I, II, and Laboratories OR 25-120/121 and 25-230/231 Fund. of Classical Physics I, II, and Labs OR CHEM 24-114/115 and 24-116/117 General Chemistry I, II, and Labs	8-10
Math Option A: (15 hours)	
Directed General Education: MATH 17-117 Precalculus (4)	
MATH 17-215 Discrete Mathematics (4)	
MATH 17-120 Calculus I (4)	
MATH 17-230 Probability and Statistics (3) OR MATH 17-114 General Statistics I (3)	
Math Option B: (13 hours)	
Directed General Education: MATH 17-118 College Algebra (3)	
MATH 17-215 Discrete Mathematics (4)	
MATH 17-114 General Statistics I (3)	
MATH 17-316 General Statistics II (3)	
Total Major Requirements**	**63-66**

***Cannot be used to fulfill any General Education requirement.**

**** Does not include Directed General Education and Institutional Requirement.**

NOTE: All required and elective computer science courses must be passed with a grade of "C" or better. A major field assessment is required of all senior year students majoring in computer science.

Comprehensive Major in Interactive Digital Media: 61 hours, B.S.–No Minor Required

CIP: 110801

Computer Science Programming Concentration

This is an interdisciplinary major in conjunction with the Department of Fine and Performing Arts, the Department of Mathematics, Computer Science and Information Systems, and the Department of Communication and Mass Media. Three concentrations are available for this major: Computer Science Programming (Mathematics, Computer Science and Information Systems), New Media (Communication and Mass Media), and Visual Imaging (Fine and Performing Arts).

Directed Institutional Requirement	
CSIS 44-130 Computers and Information Technology	3
Required Core Courses	**Semester Hours**
ART 13-191 Introduction to Design	3
ART 13-207 Digital Photography	3
ART 13-292 Introduction to Creative Electronic Imaging	3
ART 13-294 Letter Forms and Graphic Design	3
MCOM 20-120 Introduction to Mass Media	3
MCOM 20-243 Media Design I	3
MCOM 20-303 Introduction to Web Publishing	3
MCOM 20-314 Communication Law and Ethics	3
CSIS 44-143 Script Programming I	3
CSIS 44-333 Web Development	3
CSIS 44-335 Script Programming II	3
MKTG 55-330 Principles of Marketing	3
Total Core Requirements	**36**
Required Courses for Concentration in Computer Science Programming:	
CSIS 44-141 Computer Programming I	3
CSIS 44-241 Computer Programming II	3
CSIS 44-242 Data and File Structures	3
CSIS 44-345 Computer Organization	3
CSIS 44-356 CCNA: Network Fundamentals	3
CSIS 44-415 Interactive Digital Media Seminar	1
CSIS 44-460 Database Systems	3
CSIS 44-563 Developing Web Applications and Services	3
Choose one from the following electives:	3
CSIS 44-325 Programming Languages (3)	
CSIS 44-349 Survey of Algorithms (3)	
CSIS 44-525 Theory and Implementation of Programming Languages (3)	
CSIS 44-540 Visual Application Development (3)	
CSIS 44-543 Mobile Computing (3)	
CSIS 44-550 Operating Systems (3)	
CSIS 44-560 Advanced Topics in Database Systems (3)	
CSIS 44-561 Software Engineering I (3)	
CSIS 44-590 Special Topics (3)	
Total Concentration Hours	**25**
Total Major Requirements	**61**

NOTE: All required and elective computer science courses must be passed with a grade of "C" or better.

Concentration in New Media – see the Department of Communication and Mass Media

Concentration in Visual Imaging – see the Department of Fine and Performing Arts

Comprehensive Major in Management Information Systems: B.S.–No Minor Required

CIP: 521201

Students choosing a Comprehensive Major in Management Information Systems must take the Common Professional Component courses outlined on page 252 plus fulfill the following major requirements:

Required Courses	**Semester Hours**
CSIS 44-141 Computer Programming I	3
CSIS 44-241 Computer Programming II	3
CSIS 44-312 Information Technology Hardware and Software	3
CSIS 44-356 CCNA: Network Fundamentals	3
CSIS 44-411 Systems Analysis and Design	3
CSIS 44-418 Information Technology Project Management	3
CSIS 44-460 Database Systems	3
Choose one from the following electives:	3
CSIS 44-242 Data and File Structures (3)	
CSIS 44-333 Web Development (3)	
CSIS 44-358 CCNA: Routing Protocols and Concepts (3)	
CSIS 44-555 Network Security (3)	
CSIS 44-560 Advanced Topics in Database Systems (3)	
CSIS 44-563 Developing Web Applications and Services (3)	
Total Major Requirements	**24**

NOTE: Grade Requirement: Students must earn a grade of "C" or better in each of the CS and IS and Common Professional Component courses in this major. A major field assessment is required of all senior year students majoring in MIS.

Comprehensive Major in Business Technology: B.S.–No Minor Required

CIP: 520401

Students choosing a Comprehensive Major in Business Technology must take the Common Professional Component courses outlined on page 252 plus fulfill the following major requirements:

Required Courses	**Semester Hours**
CSIS 44-211 Spreadsheet Applications	1
CSIS 44-212 Advanced Spreadsheets and Charting	1
CSIS 44-312 Information Technology Hardware and Software	3
CSIS 44-320 Advanced Word Processing	1
CSIS 44-330 Presentation Graphics	1
CSIS 44-340 Digital Media	1
- CSIS 44-343 Digital Communications	3
CSIS 44-344 Desktop Publishing	3
CSIS 44-346 Database Applications	1
Advisor-approved elective	3
Choose one of the following emphasis areas for six hours	6
Interactive Digital Media Emphasis	
CSIS 44-143 Script Programming I (3)	
CSIS 44-333 Web Development (3)	
OR	

 # ACBSP accredited program

Management Emphasis
MGMT 54-314 Human Resource Management (3)
MGMT 54-316 Organizational Behavior and Theory (3)

OR

Networking Emphasis
CSIS 44-356 CCNA: Networking Fundamentals (3)
CSIS 44-358 CCNA: Routing Protocols and Concepts (3)

Total Major Requirements **24**

Major in Business Education: B.S.Ed., Secondary Program– No Minor Required (Certifies Grades 9-12)

CIP: 131303

Students choosing a Major in Business Education must take the Common Professional Component courses totaling 48 hours outlined on page 252, plus fulfill the following major requirements:

Required Courses	**Semester Hours**
CSIS 44-320 Advanced Word Processing	1
CSIS 44-330 Presentation Graphics	1
CSIS 44-333 Web Development	3
CSIS 44-340 Digital Media	1
CSIS 44-343 Digital Communications OR CSIS 44-495 Internship in Computer Science/Information Systems	3
CSIS 44-344 Desktop Publishing	3
CSIS 44-584 Implementing Business and Marketing Education Programs	3
Total Major Requirements	**15**

CSIS 44-580 Methods of Teaching Business and Marketing is the required subject field methods course.

MINORS

Minor in Computer Science, 21 hours

CIP: 110101

Directed Institutional Requirement
CSIS 44-130 Computers and Information Technology 3

Required Courses	**Semester Hours**
CSIS 44-141 Computer Programming I	3
CSIS 44-241 Computer Programming II	3
CSIS 44-242 Data and File Structures	3
CSIS 44-345 Computer Organization	3

NOTE: CSIS 44-241 has a prerequisite of MATH 17-110 or 118, and CSIS 44-345 has a prerequisite of one trimester of chemistry, physics or physical sciences. Students electing to take this minor should choose their general studies math and science courses to satisfy these prerequisites.

Choose at least 9 hours from the following electives: 9
CSIS 44-149 Scientific Computing (3)
CSIS 44-325 Programming Languages (3)
CSIS 44-349 Survey of Algorithms (3)
CSIS 44-356 CCNA: Network Fundamentals (3)
CSIS 44-460 Database Systems (3)

 # ACBSP accredited program

CSIS 44-525 Theory and Implementation of Programming Languages (3)
CSIS 44-543 Mobile Computing (3)
CSIS 44-550 Operating Systems (3)
CSIS 44-561 Software Engineering I (3)
CSIS 44-540 Visual Application Development (3)
CSIS 44-590 Special Topics (3)

Total Minor Requirements **21**

NOTE: Grade Requirement: Students must earn a grade of "C" or better in each of the Computer Science courses in the 21-hour minor.

Minor in Computer Networking, 21 hours

CIP: 110901

Directed Institutional Requirement

CSIS 44-130 Computers and Information Technology 3

Required Courses	**Semester Hours**
CSIS 44-312 Information Technology Hardware and Software OR CSIS 44-345 Computer Organization	3
CSIS 44-356 CCNA: Network Fundamentals	3
CSIS 44-358 CCNA: Routing Protocols & Concepts	3
CSIS 44-456 CCNA: LAN Switching and Wireless	3
CSIS 44-458 CCNA: Accessing the WAN	3
CSIS 44-555 Network Security	3

Select an additional three hours from the following or advisor approved elective: 3

CSIS 44-140 Visual Basic Application Programming (3)
CSIS 44-141 Computer Programming I (3)
CSIS 44-333 Web Development (3)
CSIS 44-460 Database Systems (3)
CSIS 44-540 Visual Application Development (3)
CSIS 44-550 Operating Systems (3)
CSIS 44-563 Developing Web Applications and Services (3)

Total Minor Requirements **21**

NOTE: Grade Requirement: Students must earn a grade of "C" or better in each of the Computer Science courses in the 21-hour minor.

Minor in Business Education, 30-33 hours: B.S.Ed., Secondary Program (Certifies Grades 9-12)—See Professional Education Requirements

CIP: 131303

Directed Institutional Requirement

CSIS 44-130 Computers and Information Technology 3

Required Courses	**Semester Hours**
CSIS 44-320 Advanced Word Processing	1
CSIS 44-330 Presentation Graphics	1
CSIS 44-333 Web Development	3
CSIS 44-340 Digital Media	1
CSIS 44-343 Digital Communications	3
ACCT 51-201 Accounting I	3
ECON 52-150 General Economics I	3

 # ACBSP accredited program

FIN 53-311 Business Law I	3
MGMT 54-310 Managerial Communication	3
MGMT 54-313 Principles of Management	3
MKTG 55-330 Principles of Marketing	3
CSIS 44-584 Implementing Business and Marketing Education Programs	3
CSIS 44-495 Internship in Computer Science/Information Systems (3) OR 2,000 Work Hours in a Business/Office	0-3
Total Minor Requirements	**30*-33****

*** 30 hours is minimum required for initial business education certification as prescribed by DESE.**
**** 33 hours is minimum required if a student does not have 2000 hours in business/office related work experience.**

Minor in Marketing and Cooperative Education, 32 hours

CIP: 131310

Required Courses	**Semester Hours**
ACCT 51-201 Accounting 1	3
ACCT 51-202 Accounting II	3
VOED 02-510 Coordination of Cooperative Education	2
CSIS 44-584 Implementing Business and Marketing Education Programs	3
ECON 52-150 General Economics I	3
FIN 53-324 Fundamentals of Business Finance	3
MGMT 54-313 Principles of Management	3
MKTG 55-330 Principles of Marketing	3
MKTG 55-438 International Business	3
Choose six hours from the following:	**6**
MKTG 55-331 Retailing (3)	
MKTG 55-332 Promotion (3)	
MKTG 55-333 Consumer Behavior (3)	
MKTG 55-430 Sales and Sales Management (3)	
MKTG 55-431 Logistics Management (3)	
Total Minor Requirements	**32**

Approved occupational experience or appropriate internship is required.

Endorsement for Middle School Certification–Business Education, Grades 5-9

CIP: 131303

Certifies grades 5-9 when completed with the Middle School Major

Directed Institutional Requirement	
CSIS 44-130 Computers and Information Technology	3
Required Courses	**Semester Hours**
CSIS 44-211 Spreadsheets	1
CSIS 44-212 Advanced Spreadsheets and Charting	1
CSIS 44-320 Advanced Word Processing	1
CSIS 44-330 Presentation Graphics	1
CSIS 44-333 Web Development	3
CSIS 44-340 Digital Media	1
CSIS 44-343 Digital Communications	3

CSIS 44-344 Desktop Publishing	3
CSIS 44-346 Database Applications	1
ECON 52-130 Survey of Economics	3
FIN 53-120 Personal Money Management	3
Total Endorsement Requirements	**21**

Computer Concentration—Elementary Education

Concentration in Subject Area, 20 hours

This alternative is recommended for persons who wish to extend their competencies in a particular subject area, but do not seek additional certification at this time. Students should see the coordinator of Elementary Education for specific subject area requirements.

Directed Institutional Requirement	
CSIS 44-130 Computers and Information Technology	3
Required Courses	**Semester Hours**
CSIS 44-211 Spreadsheets	1
CSIS 44-212 Advanced Spreadsheets and Charting	1
CSIS 44-320 Advanced Word Processing	1
CSIS 44-330 Presentation Graphics	1
CSIS 44-333 Web Development	3
CSIS 44-340 Digital Media	1
CSIS 44-346 Database Applications	1
CSIS 44-471 Practicum in Computer Science Teaching 1	1
CSIS 44-471 Practicum in Computer Science Teaching 1	1
Advisor-Approved Electives	**6**
CSIS 44-312 Information Technology Hardware and Software (3)	
CSIS 44-343 Digital Communications (3)	
CSIS 44-344 Desktop Publishing (3)	
Total Endorsement Requirements	**20**

Minor in Data Management, 21 hours

CIP: 110802

Directed Institutional Requirement	
CSIS 44-130 Computers and Information Technology	3
Required Courses	**Semester Hours**
CSIS 44-141 Computer Programming I	3
CSIS 44-211 Spreadsheet Applications	1
CSIS 44-212 Advanced Spreadsheets and Charts	1
CSIS 44-241 Computer Programming II	3
CSIS 44-346 Database Applications	1
CSIS 44-460 Database Systems	3
CSIS 44-560 Advanced Topics in Database Systems	3
Choose six hours of electives:	**6**
CSIS 44-242 Data and File Structures (3)	
CSIS 44-411 Systems Analysis and Design (3)	
CSIS 44-540 Visual Application Development (3)	
CSIS 44-561 Software Engineering I (3)	

CSIS 44-563 Developing Web Applications and Services (3)	
Total Minor Requirements	**21**

NOTES: 1) CSIS 44-241 has a prerequisite of MATH 17-110, 114 or 118. 2) CSIS 44-411 has a prerequisite of MGMT 54-313 and CSIS 44-317. 3) Grade Requirement: Students must earn a grade of "C" or better in each of the Computer Science courses in the 21-hour minor.

Minor in Computer Applications, 24 hours

CIP: 110899

Required Courses	**Semester Hours**
CSIS 44-130 Computers and Information Technology	3
CSIS 44-140 Visual Basic Application Programming	3
CSIS 44-211 Spreadsheet Applications	1
CSIS 44-212 Advanced Spreadsheets and Charting	1
CSIS 44-312 Information Technology Hardware and Software	3
CSIS 44-320 Advanced Word Processing	1
CSIS 44-330 Presentation Graphics	1
CSIS 44-333 Web Development	3
CSIS 44-340 Digital Media	1
CSIS 44-344 Desktop Publishing	3
CSIS 44-346 Database Applications	1
Select at least three hours from the following electives:	3
CSIS 44-141 Computer Programming I (3)	
CSIS 44-143 Script Programming I (3)	
CSIS 44-356 CCNA: Network Fundamentals (3)	
Total Minor Requirements	**24**

NOTE: Students with a Comprehensive Major in Business Technology are not permitted to minor in Computer Applications.

Minor in Systems Management, 24 hours

CIP: 521201

Required Courses	**Semester Hours**
CSIS 44-130 Computers and Information Technology	3
CSIS 44-140 Visual Basic Application Programming OR	
CSIS 44-141 Computer Programming I	3
CSIS 44-317 Management Information Systems	3
CSIS 44-411 Systems Analysis and Design	3
CSIS 44-418 Information Technology Project Management	3
ACCT 51-201 Accounting I	3
MGMT 54-313 Principles of Management	3
MKTG 55-330 Principles of Marketing	3
Total Minor Requirements	**24**

Note: Students with a comprehensive major in Management Information Systems are not permitted to minor in Systems Management.

Minor in Interactive Digital Media, 24 hours

CIP: 110801

This is an interdisciplinary minor in conjunction with the Department of Fine and Performing Arts, the Department of Mathematics, Computer Science and Information Systems, and the Department of Communication and Mass Media.

Directed Institutional Requirement	
CSIS 44-130 Computers and Information Technology	3
Required Courses	**Semester Hours**
ART 13-191 Introduction to Design	3
ART 13-292 Introduction to Creative Electronic Imaging	3
MCOM 20-243 Media Design I	3
MCOM 20-303 Introduction to Web Publishing	3
CSIS 44-143 Script Programming I	3
CSIS 44-333 Web Development	3
Electives (Select any six hours from the following):	**6**
ART 13-120 Drawing (3)	
ART 13-207 Digital Photography (3)	
MCOM 20-334 Multimedia Production (3)	
CSIS 44-141 Computer Programming I (3)	
CSIS 44-335 Script Programming II (3)	
Total Minor Requirements	**24**

Minor in Geographic Information Systems, 28 hours

CIP: 450702

This is an interdisciplinary minor in conjunction with Computer Science/Information Systems and Geography.

Directed Institutional Requirement	
CSIS 44-130 Computers and Information Technology	3
Required Courses	**Semester Hours**
Geography	
GEOG 32-201 Maps and Map Interpretation	3
GEOG 32-365 Geographic Information Systems	3
GEOG 32-565 Advanced Geographic Information Systems	3
Computer Science	
CSIS 44-140 Visual Basic Application Programming	3
CSIS 44-141 Computer Programming I	3
CSIS 44-241 Computer Programming II	3
CSIS 44-346 Database Applications	1
CSIS 44-460 Database Systems	3
Advisor-Approved Electives	**6**
GEOG 32-362 Cartography (3)	
GEOG 32-363 Remote Sensing (3)	
GEOG 32-562 Advanced Cartography (3)	
GEOG 32-563 Digital Image Processing (3)	
CSIS 44-242 Data and File Structures (3)	
CSIS 44-320 Advanced Word Processing (1)	
CSIS 44-330 Presentation Graphics (1)	

CSIS 44-340 Digital Media (1)
CSIS 44-540 Visual Application Development (3)
CSIS 44-590 Current Topics in Computer Science (1-3)

Total Minor Requirements **28**

NON-DEGREE PROGRAMS

The Computer Science and Information Systems area offers a two-year business technology program. On the successful completion of a program, the student is awarded a certificate. Unless otherwise noted, all courses in this program are fully accredited and may be applied to a degree program should a student later decide to complete a college degree. A student must maintain a "C" average. All non-degree programs in the Computer Science and Information Systems area require CSIS 44-130 Computers and Information Technology, as a prerequisite course as required by course descriptions.

Business Technology Certificate, 60 hours

CIP: 520499

Required Courses	Semester Hours
CPAS 76-101 Freshman Seminar	1
PSYC 08-103 General Psychology	3
ENGL 10-111/112 Composition OR	
ACT English credit/10-115 Honors Composition	6
COM 29-102 Fundamentals of Oral Communication	3
CSIS 44-130 Computers and Information Technology	3
CSIS 44-211 Spreadsheet Applications	1
CSIS 44-212 Advanced Spreadsheets and Charting	1
CSIS 44-320 Advanced Word Processing	1
CSIS 44-330 Presentation Graphics	1
CSIS 44-333 Web Development	3
CSIS 44-340 Digital Media	1
CSIS 44-343 Digital Communications	3
CSIS 44-346 Database Applications	1
ACCT 51-201 Accounting I	3
ACCT 51-202 Accounting II	3
FIN 53-311 Business Law I	3
MGMT 54-310 Managerial Communication	3
MGMT 54-313 Principles of Management	3
Advisor approved electives to total 60 hours	17

Required courses plus advisor-approved electives to total 60 hours with a 2.00 grade point average.

Information Systems Certificate, 15 hours

Required Courses	Semester Hours
CSIS 44-130 Computers and Information Technology	3
CSIS 44-140 Visual Basic Application Programming	3
CSIS 44-320 Advanced Word Processing	1
CSIS 44-330 Presentation Graphics	1
CSIS 44-333 Web Development	3
CSIS 44-340 Digital Media	1
CSIS 44-344 Desktop Publishing	3

Course Descriptions

Mathematics and Statistics / 17

MATHEMATICS

090 Math Skills (1-3 hours)
A basic developmental course structured in 10 modules designed to build mastery of the College Entry Level Competencies. Topics include real numbers; data representation; linear equations and inequalities; graphing linear equations and inequalities; polynomials; factoring; rational expressions and equations; systems of equations and inequalities; radical expression and equations; and quadratic equations and functions. These modules prepare students for MATH 17-114, 115, 117, 118, 119 and 171. The course does not satisfy the General Education requirements in mathematics or any graduation requirement. Required of students with an ACT Math score of 20 or below. (F, S)

091 Math Skills (1-2 hours)
A continuation of 17-090: a basic developmental course structured in 10 modules designed to build mastery of the College Entry Level Competencies. Topics include real numbers; data representation; linear equations and inequalities; graphing linear equations and inequalities; polynomials; factoring; rational expressions and equations; systems of equations and inequalities; radical expression and equations; and quadratic equations and functions. These modules prepare students for MATH 17-114, 115, 117, 118, 119 and 171. The course does not satisfy the General Education requirements in mathematics or any graduation requirement. Prerequisite: completion of MATH 17-090. (F, S)

110 Finite Mathematics (4 hours)
Topics include set algebra, matrices, functions, analytics of the straight line, linear programming and probability spaces, with emphasis on applications from business and economics. Will satisfy the General Education requirement in mathematics. Proficiency examination is available. Prerequisite: An ACT Math score of 21 or higher or evidence of mastery (80% proficiency) in each of 10 modules in MATH 17-090/091.

115 Concepts of Mathematics (3 hours)
An explanation of ways in which mathematics is used to understand the contemporary world. Will satisfy the General Education requirement in mathematics. A proficiency examination is available. Prerequisite: An ACT Math score of 21 or higher or evidence of mastery (80% proficiency) in each of 10 modules in MATH 17-090/091.(F, S)

117 Precalculus (4 hours)
A course to prepare students to take calculus. Topics include functions and graphs, equations and inequalities, and analytic geometry and trigonometry. A student cannot receive credit for MATH 17-117 and 118 or 119. Will satisfy the General Education requirement in mathematics. Prerequisite: An ACT Math score of 21 or higher or evidence of mastery (80% proficiency) in each of 10 modules in MATH 17-090/091 and one unit of high school geometry. (F, S)

118 College Algebra (3 hours)
Topics include functions and graphs, systems of equations and inequalities and analytic geometry. Designed for students who plan continued study in college mathematics. Will satisfy the General Education requirement in mathematics. Proficiency examination is available. Prerequisite: An ACT Math score of 21 or higher or evidence of mastery (80% proficiency) in each of 10 modules in MATH 17-090/091. (F, S, SS)

119 Trigonometry (2 hours)
Trigonometric functions and analytic trigonometry. Proficiency examination is available. Prerequisites: One unit of high school geometry and an ACT Math score of 21 or higher or evidence of mastery (80% proficiency) in each of 10 modules in 17-090/091. (F, S)

120 Calculus I (4 hours)
An introduction to single-variable calculus. Topics include intuitive treatment of limits and continuity, differentiation of elementary functions, curve sketching, extreme values, areas, rates of change, definite integral and fundamental theorem of calculus. Will satisfy the General Education requirement in mathematics. Proficiency examination is available. Prerequisites: MATH 17-117 or 118 and 119 or equivalent. ACT Math score of at least 27 recommended. (F, S)

121 Calculus II (4 hours)
Topics include sequences and series, approximations, techniques and applications of integration

and plane curves. Prerequisite: MATH 17-120 or consent of instructor. (F, S)

171 Fundamentals of Mathematics (3 hours)
An analytic exploration of elementary mathematics concepts, including set theory, operations in numeration systems and bases, number theory, operations and applications with rational and real numbers, probability and statistics, logic, relations and modular arithmetic. Will satisfy the General Education requirement in Mathematics. Proficiency examination is available. Prerequisite: An ACT Math score of 21 or higher or evidence of mastery (80% proficiency) in each of 10 modules in MATH 17-090/091. (F, S)

215 Discrete Mathematics (4 hours)
An introduction to discrete models; topics include sets, symbolic logic, relations, combinatorics, mathematical induction, probability, vectors and matrices and graph theory. Prerequisites: One unit of high school geometry and an ACT Math score of 21 or higher or evidence of mastery (80% proficiency) in each of 10 modules in MATH 17-090/091. (F, S)

311 Elementary Linear Algebra (3 hours)
An elementary introduction to finite-dimensional vector spaces and matrices. Topics include linear independence, bases, matrix operations, canonical forms, similarity, invertibility, geometric applications and determinants. (F)

321 Multivariate Calculus (4 hours)
Topics include functions of several variables, partial differentiation and multiple integration. Prerequisite: MATH 17-121 or consent of instructor. (F, S)

351 College Geometry (3 hours)
A survey of geometry with an emphasis on the theorems and proofs of Euclidean and neutral geometry. Prerequisites: MATH 17-120 or consent of instructor. (S)

361 Differential Equations (3 hours)
A study of solutions of elementary differential equations. Topics include standard first-order forms, special higher-order linear equations, Laplace transform techniques, power series solutions and applications. Prerequisite: MATH 17-121 or consent of instructor. (F)

390 Logic of the Exact Sciences (3 hours)
Topics include the propositional and predicate calculus and methods of mathematical proof. Prerequisites: MATH 17-120 and 215 or consent of instructor. (S)

415 Introduction to Abstract Algebra (3 hours)
An introduction to standard abstract algebraic systems. Prerequisite: MATH 17-215 or consent of instructor. MATH 17-390 recommended. (S)

421 Intermediate Analysis (3 hours)
A careful examination of the main theorems of elementary calculus. Topics include completeness of R, limits of sequences and functions, continuity, mean-value theorem, Riemann integration and representation of functions. Prerequisite: MATH 17-321 or consent of instructor. MATH 17-390 recommended. (S)

490 Seminar in History of Mathematics (1 hour)
This course is an in-depth study of great historical innovations, thoughts and theories in mathematics. Prerequisite: 22 hours of mathematics. (S)

492 Seminar in Readings in Mathematical Literature (1 hour)
This course is an in-depth study of timely topics for senior students of mathematics. Prerequisite: 22 hours of mathematics. (F)

496 Senior Paper (1 hour)
A supervised paper required of all majors in the department. Prerequisite: 12 hours of mathematics at the 300+ level. (F, S)

499 Independent Study (1-3 hours)
Prerequisite: Consent of instructor. May be repeated with different topics.

511 Applied Linear Algebra (3 hours)
A second course in linear algebra with emphasis on applications. Topics may include linear programming, graph theory, game theory, Markov chains, computer graphics, equilibrium temperature distributions, electrical networks and least squares models. Prerequisite: MATH 17-311 or consent of instructor. (Alt. years)

518 Number Theory (3 hours)
A standard course in classical number theory. Topics include divisibility, congruences, theory of quadratic residues and Diophantine analysis. Prerequisite: 22 hours in mathematics or consent of instructor. (Alt. years)

520 Advanced Calculus (3 hours)
An advanced course in analysis; may include vector analysis, differentials and integration theory. Pre-

requisite: MATH 17-321 or consent of instructor. (Alt. years)

521 Complex Analysis (3 hours)
Topics may include the algebra and geometry of complex numbers, elementary and analytic functions of a complex variable, contour integration, residues, Taylor and Laurent series and basic fundamental theorems. Prerequisite: MATH 17-321 or consent of instructor. (Alt. years)

555 Non-Euclidean Geometry (3 hours)
An introduction to plane hyperbolic, elliptic and projective geometries and geometric transformation groups. Prerequisite: 22 hours of mathematics or consent of instructor. (Alt. years)

556 Introduction to Point Set Topology (3 hours)
Topics include metric spaces and axiomatic topology including the separation axioms, product spaces, derived sets, limit points and convergence. Prerequisite: MATH 17-321 or consent of instructor. (Alt. years)

561 Applied Mathematics (3 hours)
Topics may include construction and use of mathematical models, probability theory, Markov chains, network analysis, linear programming, differentiation and integration. Prerequisites: MATH 17-121, 215 and CSIS 44-149, or consent of instructor. (Alt. years)

565 Numerical Analysis (3 hours)
Topics may include finite differences, numerical differentiation and integration and eigenvalue problems. Prerequisites: CSIS 44-149 and MATH 17-121, or consent of instructor. (Alt. years)

599 Special Projects (1-6 hours)
Prerequisites: 30 hours in mathematics or computer science and consent of instructor. May be repeated with different topics.

STATISTICS

114 General Statistics I (3 hours)
Basic concepts of decision making, central values, variability, probability and statistical inference, elementary concepts of correlation, parametric tests of significance, and regression analysis. Will satisfy the General Education requirement in mathematics. Proficiency examination is available. Prerequisite: An ACT Math score of 21 or higher or evidence of mastery (80% proficiency) in each of 10 modules in MATH 10-090/091. (F, S, SS)

230 Probability and Statistics (3 hours)
Fundamental principles and techniques of statistical investigations including probability, discrete and continuous random variables, estimation and hypothesis testing. Prerequisites: MATH 17-120 or consent of instructor. (F, S)

316 General Statistics II (3 hours)
Applied course in statistics, including analysis of variance, multiple regression and the use of SAS, a statistical package. Prerequisite: MATH 17-114 or 230, or consent of instructor. (F, SS)

531 Applied Time Series (2 hours)
A course in forecasting and some of the statistical techniques that can be used to produce forecasts. Prerequisites: MATH 17-114 or 230 or consent of instructor. (Alt. years)

535 Probability Theory (3 hours)
A mathematical development of probability with emphasis on continuous random variables. Prerequisites: MATH 17-121 and 230, or consent of instructor. (F, odd years)

536 Statistical Inference (3 hours)
A mathematical development of statistics with emphasis on continuous random variables. Prerequisite: MATH 17-535. (S, even years)

537 Design of Experiments (3 hours)
A course covering many of the statistical designs and techniques widely used in research and applications. Prerequisite: MATH 17-316. (Alt. years)

MATHEMATICS EDUCATION

280 Methods in Teaching with Technology (3 hours)
Introduces technological tools and appropriate methods for using them to teach mathematics and science. Prerequisite: Successful completion of an institutional requirement for Information Technology. (S)

371 Algebra and Geometry for Elementary and Middle School Teachers (3 hours)
Topics include plane and space figures, congruence, similarity, mensuration and transformation geometry. For elementary and middle school education majors only. Proficiency examination is available. Prerequisite: A grade of "C" or better in MATH 17-171. (F, S)

471 Mathematical Methods for Elementary Teachers (3 hours)
A study of current techniques, this course is designed to acquaint prospective teachers with both the content of elementary school mathematics and the materials available to aid in the teaching of this content. Activities are incorporated to provide experience with the various methods of teaching mathematics to elementary students. Prerequisite: A grade of "C" or better in MATH 17-371. (F, S, SS)

473 Advanced Topics for Middle School Teachers (3 hours)
A course designed to provide more fundamental treatment of mathematical topics for the middle school. Topics include algebraic systems, trigonometry, number theory, problem-solving techniques, graphing, logic, probability and its applications to statistics. Prerequisite: Consent of instructor. (F)

498 Seminar in Teaching Elementary School Mathematics (1 hour)
Supervised practice in teaching mathematics in the elementary school with weekly seminar on teaching issues. Prerequisite: MATH 17-471.

575 Workshop in Mathematics Education (1-6 hours)
Prerequisite: Consent of instructor. May be repeated with different topics.

580 Methods in Secondary School Mathematics (3 hours)
A study of teaching procedures and current literature useful in teaching secondary school mathematics. (S)

582 Mathematical Methods for Middle School Teachers (3 hours)
This course is a study of current techniques for teaching middle school mathematics, including a two-week practicum experience in the school. Prerequisite: A grade of "C" or better in MATH 17-371. (F)

Computer Science/ Information Systems / 44

130 Computers and Information Technology (3 hours)
Introduction to computer systems. Topics include integrated office applications, hardware, software, Internet, and the rights and responsibilities of computer users. (F, S, SS)

495 Internship in Computer Science/ Information Systems (1-3 hours)
Prerequisites: 9 hours in computer science/ information systems and permission of department chairperson. May be repeated for new experience. (F, S)

499 Independent Study (1-3 hours)
Prerequisite: Consent of instructor. Repeatable for new material. (F, S)

599 Special Projects (1-6 hours)
Prerequisites: 30 hours in the department and consent of instructor. Repeatable for additional experience, new material, and progression of study. (F, S)

COMPUTER SCIENCE

140 Visual Basic Application Programming (3 hours)
An introduction to event-driven programming in an object-oriented environment. Prerequisites: 2 units of high school algebra and CSIS 44-130 with a grade of "C" or better, or department chair's permission. (F, S)

141 Computer Programming I (3 hours)
An introduction to object-oriented programming; analyze problems, design and implement solutions. Prerequisites: 2 units of high school algebra and CSIS 44-130 with a grade of "C" or better, or department chair's permission. (F, S)

149 Scientific Computing (3 hours)
Tools and techniques for using a computer to solve numeric problems with an emphasis on scientific and mathematical applications. Prerequisites: MATH 17-117 or 17-120 and a course in the computer competency section of Institutional Requirements with a grade of "C" or better in each. (S)

241 Computer Programming II (3 hours)
Intermediate computer programming, design of algorithms and introduction to data structures. Prerequisites: CSIS 44-141, and MATH 17-110 or 114 or 117 or 118 or 120, with a grade of "C" or better. (F, S)

242 Data and File Structures (3 hours)
Abstract data structures including stacks, queues, lists and trees. File structures emphasizing random access files. Construction of graphical user interfaces. Prerequisite: CSIS 44-241, with a grade of "C" or better, or consent of instructor. (F, S)

296 Professional Development Seminar (3 hours)
Emphasis on ethical issues in the workplace and professional development for the field of computing. Prerequisite: Sophomore standing and CSIS 44-141. (F)

325 Programming Languages (3 hours)
A survey of the features of contemporary programming languages chosen to illustrate two different programming paradigms. Extensive programming in each of the languages. Prerequisite: CSIS 44-242, with a grade of "C" or better. (S)

345 Computer Organization (3 hours)
Introduction to computer systems organization with emphasis on machine language and assembler programming. Prerequisites: CSIS 44-242, with a grade of "C" or better, and one trimester of chemistry, physics or physical science. (S)

349 A Survey of Algorithms (3 hours)
A study of algorithms central to the major areas of computer science. Prerequisites: CSIS 44-242 and MATH 17-120 and 215, each with a grade of "C" or better. (S)

356 CCNA: Network Fundamentals (3 hours)
Course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The Open Systems Interconnection (OSI) and Transport Control Protocol (TCP) layered models are used to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media and operations are introduced. The first of four courses leading to a Cisco Certified Network Associate (CCNA) certification. Prerequisite: CSIS 44-130 with a grade of "C" or better. (F)

358 CCNA: Routing Protocols and Concepts (3 hours)
Describes the architecture, components, and operation of routers, and explains the principles of routing and routing protocols. Students analyze, configure, verify, and troubleshoot the primary routing protocols Routing Information Protocol (RIP) v1, RIPv2, Enhanced Interior Gateway Routing Protocol (EIGRP), and Open Shortest Path First (OSPF). The second of four courses to prepare students for the Cisco Certified Network Associate (CCNA) certification. Prerequisite: CSIS 44-356 with a grade of "C" or better. (S)

456 CCNA: LAN Switching and Wireless (3 hours)
Helps students develop an in-depth understanding of how switches operate and are implemented in the LAN environment for small and large networks. Beginning with a foundational overview of Ethernet, this course provides detailed explanations of Local Area Network (LAN) switch operation, Virtual LAN (VLAN) implementation, Rapid Spanning Tree Protocol (RSTP), VLAN Trunking Protocol (VTP), Inter-VLAN routing, and wireless network operations. Students analyze, configure, verify, and troubleshoot VLANs, STP, VTP, and wireless networks. Campus network design and Layer 3 switching concepts are introduced. The third of four courses leading to a Cisco Certified Network Associate (CCNA) certification. Prerequisite: CSIS 44-358 with a grade of "C" or better. (F)

458 CCNA: Accessing the Wide Area Network (3 hours)
Introduction to Wide Area Network (WAN) technologies including configuring, verifying, and troubleshooting. Basic network security is introduced as well as Access Control Lists (ACLs), Virtual Private Networks (VPNs), Dynamic Host Configuration Protocol (DHCP), Network Address Translation (NAT), Port Address Translation (PAT), and IPv6. The fourth of four courses leading to a Cisco Certified Network Associate (CCNA) certification. Prerequisite: CSIS 44-456 with a grade of "C" or better. (S)

460 Database Systems (3 hours)
An introduction to database systems, including data modeling, design, and implementation. Prerequisite: CSIS 44-241, with a grade of "C" or better. (S)

471 Practicum in Computer Science Teaching (1 hour)
Supervised practice in an educational computing environment. Through the use of journals, observation by staff members and curriculum projects, students will develop their teaching skills, plan teaching strategies, and develop organizational and instructional competencies. May be repeated for additional experience. Prerequisites: 10 hours of computer science and 5 hours of education. (F, S)

525 Theory and Implementation of Programming Languages (3 hours)
Syntax and semantics of programming languages; the translation process; and features of procedural, applicative, and object-oriented languages. Prerequisite: CSIS 44-242, with a grade of "C" or better, or consent of instructor. (F)

540 Visual Application Development (3 hours)
An introduction to programming Microsoft Windows applications. Prerequisite: CSIS 44-460, or CSIS 44-241 and 346, with a grade of "C" or better; or equivalent (prerequisite may be taken concurrently). (S)

542 Object-Oriented Programming (3 hours)
Provides fast-paced coverage of object-oriented programming and data structures. Students will gain extensive programming experience. Prerequisites: Graduate standing and an undergraduate course in data structures with a grade of "C" or better; no previous experience with object-oriented programming is necessary. (F, S)

543 Mobile Computing (3 hours)
Students will learn the intricacies of mobile computing development. Prerequisite: CSIS 44-242 or 542, with a grade of "C" or better. (F, S)

550 Operating Systems (3 hours)
Course covers concepts of operating systems, including process and storage management, protection, security and distributed systems. Prerequisite: CSIS 44-345, with a grade of "C" or better. (F)

555 Network Security (3 hours)
A study of computer network security issues. Includes hands-on experience in server applications as well as some practice in client/server programming. Prerequisite: CSIS 44-356, with a grade of "C" or better. (F, S)

560 Advanced Topics in Database Systems (3 hours)
Advanced topics in database systems, including database administration, distributed databases, data warehousing and object-oriented databases. Hands-on experience using a DBMS in a client/server environment. Prerequisite: CSIS 44-241 and 460, with a grade of "C" or better. (F, S)

561 Software Engineering I (3 hours)
A study of systems analysis, requirements specification, and human computer interaction. Prerequisites: CSIS 44-242 and 460, with a grade of "C" or better. (F)

562 Software Engineering II (3 hours)
A study of software design, testing and project management. Prerequisite: CSIS 44-561, with a grade of "C" or better. (S)

563 Developing Web Applications and Services (3 hours)
Technologies and protocols supporting web applications and web services. Students gain experience in client-side and server-side programming. Prerequisites: CSIS 44-241 and 460, each with a grade of "C" or better. (F, S)

590 Current Topics in Computer Science (1-3 hours)
Courses emphasizing current topics in computer science which are offered according to student need and interest, and have the content described in the title. May be repeated provided the content is different. Prerequisite dependent upon topic.

599 Special Projects (1-6 hours)
Study of special topics as related to computer science. Prerequisites: 30 hours in the department and consent of instructor. (F, S, SS)

INTERACTIVE DIGITAL MEDIA

143 Script Programming I (3 hours)
An introduction to a script language for multimedia software applications. Prerequisite: CSIS 44-130. (F)

333 Web Development (3 hours)
This course will acquaint the student with a variety of multimedia resources that could be incorporated in the design and production of a multimedia project on a variety of computer platforms. The focal points in this class will be on the proper design and generation of multimedia projects with an emphasis on web pages. Prerequisite: CSIS 44-130. (F, S)

335 Script Programming II (3 hours)
An introduction to a scripting language that enables web browser interactivity. Prerequisites: CSIS 44-333 and some previous programming experience (CSIS 44-141 or 143 for example) is required. (S)

415 Interactive Digital Media Seminar (1 hour)
A seminar dealing in issues faced by multimedia professionals and preparation for advanced study. Major emphasis will be placed on the development of a professional portfolio, resume writing and interviews for the field of multimedia. Prerequisites: Junior or senior standing by advisement. (F)

MANAGEMENT INFORMATION SYSTEMS

312 Information Technology Hardware and Software (3 hours)
Course provides the hardware and software technology background to enable systems development personnel to understand trade-offs in computer architecture for effective use in a business environment. System architecture is explored for single use, central, and networked computing systems; single and multi-user operating systems. Prerequisite: CSIS 44-130. (S)

317 Management Information Systems (3 hours)
A study of business systems and their relationship with computer systems. The interaction of various systems of the organization and computer technology is emphasized. Prerequisites: MGMT 54-313 and CSIS 44-130. (F, S, SS)

411 Systems Analysis and Design (3 hours)
A study of the procedures necessary to analyze and design computerized business systems. Written and oral proposals based on design methods and techniques will be used to develop the student's analysis and communication skills. Prerequisites: CSIS 44-317 and advanced standing, or consent of the instructor. (F)

418 Information Technology Project Management (3 hours)
A detailed study of project management including life cycle, scope, integration, controls and the use of project management software. Prerequisite: CSIS 44-317 and 411 with a grade of "C" or better. (S)

516 Current Topics in Information Systems (1-3 hours)
Selected topics in information systems emphasizing current development in the field. May be repeated provided the content is different. Prerequisites: CSIS 44-317 and one high-level programming language or consent of instructor.

BUSINESS TECHNOLOGY

211 Spreadsheet Applications (1 hour)
A course on the intensive use of spreadsheets including features such as financial functions, querying a list, web queries for real-time data and what-if analysis. Prerequisite: CSIS 44-130 with a grade of "C" or better, or equivalent course. (F)

212 Advanced Spreadsheets and Charting (1 hour)
A course on the intensive use of spreadsheet features such as using templates, data consolidation, macros, solver, scenarios, and pivot tables and charts. Prerequisites: CSIS 44-130 with a grade of "C" or better, or equivalent course, and 44-211. (F)

320 Advanced Word Processing (1 hour)
Advanced word processing skills and concepts will be emphasized to manipulate, organize, and enhance documents. Prerequisite: CSIS 44-130 with a grade of "C" or better, or equivalent course. (S)

330 Presentation Graphics (1 hour)
Concepts, design elements, and preparation of presentation graphics. Projects with electronic presentation and imaging software will be completed. Prerequisite: CSIS 44-130 with a grade of "C" or better, or equivalent course. (S)

340 Digital Media (1 hour)
Designing and using digital media to produce multimedia projects with audio and video. Prerequisite: CSIS 44-130 with a grade of "C" or better, or equivalent course. (S)

343 Digital Communications (3 hours)
A study of varied input technologies and business procedures including the selection and use of tablet and handheld computers, scanning, speech recognition, and digital communication devices. Prerequisite: CSIS 44-130 with a grade of "C" or better, or equivalent course. (S)

344 Desktop Publishing (3 hours)
Course will identify the concepts and applications of desktop publishing and develop competencies using a powerful computer language as a desktop publishing tool. Prerequisite: CSIS 44-130 with a grade of "C" or better, or equivalent course. (S, odd years)

346 Database Applications (1 hour)
Applications of database management software for creating, querying and manipulating databases. Prerequisite: CSIS 44-130 with a grade of "C" or better, or equivalent course. (F)

447 Current Topics in Office Information Systems (1-3 hours)
Topics selected to emphasize the current developments in office systems. May be repeated provided the content is different.

BUSINESS EDUCATION

580 Methods of Teaching Business and Marketing (3 hours)
The selection, development, and presentation of the business, marketing, and cooperative education curriculum. Includes methods, techniques, assessment, and current issues and trends. (F)

582 Technology Curriculum and Integration (3 hours)
An examination of standards and curriculum for the integration of technology in educational and business environments. The integration of technology throughout K-12 classrooms will be emphasized. (F, odd years)

584 Implementing Business and Marketing Education Programs (3 hours)
Fundamental concepts in business, marketing, and cooperative education programs are studied for implementing effective programs. The study includes organization and development of curriculum, student organizations, funding, advisory committees and program evaluation. (SS)

585 Instructional Technology and the Learning Process (3 hours)
An in-depth study of the cognitive process as it relates to the technology-enhanced classroom. (SS, even years)

Department of Military Science / 42

Faculty Liaison to Military Science: Mark Corson

U.S. Army Faculty: Lieutenant Colonel Shay Howard, Master Sergeant Joseph Wilson, Sergeant First Class Grady DuBose

Statement of Mission

The Army Reserve Officers Training Corps (ROTC) provides an opportunity for qualified college students to pursue a commission in the United States Army while attending college as a full-time student. The program also provides the general student body the opportunity to attend leadership and confidence building classes without incurring a military obligation. A commission as a Second Lieutenant in the U.S. Army, Army Reserve or National Guard is awarded to individuals who have successfully completed the ROTC program and obtain a baccalaureate degree from Northwest Missouri State University.

Northwest Missouri State University has a partnership agreement with Missouri Western State University in order to provide the Reserve Officers Training Corps (ROTC) program to Northwest Missouri State University students. Other partnership schools include Rockhurst University, University of Missouri-Kansas City, Benedictine College, Park College and Avila College. These combined schools constitute the Pony Express ROTC Battalion.

PROGRAM DESCRIPTIONS

Four-year ROTC Program

This program consists of 26 credit hours of Military Science offered on campus: six credit hours from the basic ROTC program MILS 100- and 200-level courses, and 20 credit hours from the advanced ROTC program MILS 300- and 400-level courses. First-time sophomores who did not take Military Science during the freshman year may compress the basic program during their sophomore year by taking a 100- and a 200-level course (for 3 credit hours total) for two trimesters.

Two-year ROTC Program

This program option is designed for junior- and senior-level students who were unable to enroll in ROTC during their first two academic years. As a prerequisite, the two-year program substitutes a paid five-week leadership internship at Fort Knox, Ken., for the MILS 100- and 200-level courses. This Basic Course Qualification is designed for students with no prior military training. Students must attend in the summer between their sophomore and junior years to qualify for the program.

Advanced Standing Requirements

Qualified students seeking a commission in the U.S. Army may apply for advanced standing in the Military Science Department. Students who have completed the basic courses

(MILS 42-100- and 200-level) are eligible to apply along with prior active duty service members, Army Reserve and National Guardsmen who have completed basic training. Eligible students must receive permission from the chairperson of Military Science to enter the advanced courses prior to enrolling in the advanced courses.

To be granted advanced standing placement into the advanced ROTC program (last two years of military science), a student must have consent of the department chairperson, a minimum cumulative GPA of 2.00, be a citizen of the United States and have completed one of the following requirements:

1. Completed 100- and 200-level military science courses.
2. Prior military active duty personnel, Army Reservists and National Guardsmen who have completed basic training.
3. Four-year high school Junior ROTC graduate.
4. Written and oral communication skills (one from each category)
   Written Communication Skills (Required)
      ENGL 10-112 Composition (3)
      ENGL 10-115 Honors Composition (3)
      ENGL 10-311 Advanced Composition (3)
      ENGL 10-315 Writing for the Professions (3)
   Oral Communication Skills (Required)
      COM 29-102 Fundamentals of Oral Communication (3)

Financial Assistance

Financial assistance is available through the U.S. Army Scholarship Program. Two- and three-year scholarships are awarded each year to selected students who are enrolled or will enroll in the Army ROTC program. The scholarships provide payment directly to the college for applicable tuition and fees. Each student receives a textbook allowance of $1,200 annually paid in two increments of $600. In addition, a tiered monthly tax-free stipend is paid directly to the student for the duration of the scholarship, not to exceed 10 months for each year of the scholarship. These scholarships are available for both undergraduate and graduate students. Non-scholarship contracted cadets in the advanced course also receive the tiered monthly tax-free stipend, not to exceed 10 months per year for two years. Students are furnished free textbooks for military science classes.

The Simultaneous Membership Program (SMP) allows students to be a member of a National Guard or Reserve unit while enrolled in ROTC. Advanced-course SMP students receive E5 pay, plus the tiered monthly tax-free stipend from ROTC, tuition assistance, and any Active Duty GI Bill entitlement.

The tiered stipend pay is: first year contracted cadets MSI, $300; second year MSII, $350; third year MSIII, $450; and 4th year MSIV, $500; per month not to exceed 10 months of the year.

Commission Requirements

This program requires all students seeking a commission to attend a paid four-week advanced training camp, normally the summer between the junior and senior years, at Fort Lewis, Wash. Attendance at camp may be deferred until after the senior year for exceptional cases with the recommendation of the chairperson of Military Science and approval from the ROTC chain of command.

Military Science Basic Courses (14 hours)

MILS 42-102 Leadership Practicum (2)
MILS 42-112 Leadership Practicum (2)
MILS 42-116 Foundations of Officership (1)
MILS 42-126 Basic Leadership (1)
MILS 42-202 Leadership Practicum (2)
MILS 42-212 Leadership Practicum (2)
MILS 42-216 Individual Leadership Studies (2)
MILS 42-226 Leadership and Teamwork (2)

Minor in Military Science, 23 hours

CIP: 290101

Qualified students accepted into the advanced classes of the ROTC program are eligible for this minor when declared at the time of entry into the advanced ROTC program.

Required Courses	Semester Hours
MILS 42-300 Leadership and Management I	3
MILS 42-302 Leadership Practicum	2
MILS 42-310 Small Unit Leadership and Tactics	3
MILS 42-312 Leadership Practicum	2
MILS 42-400 Leadership and Management II	3
MILS 42-402 Leadership Practicum	2
MILS 42-410 Army Management and Organizational Systems	3
MILS 42-412 Leadership Practicum	2
HIST 33-350 American Military History	3

Courses Recommended to Enhance Military Leadership (Choose one from each group)

Human Behavior Studies
PSYC 08-103 General Psychology (3)
SOC 35-101 General Sociology (3)
SOC 35-365 Social Psychology (3)
PHIL 39-274 Introduction to Ethics (3)

Management and Economics
MGMT 54-313 Principles of Management (3)
MGMT 54-314 Human Resource Management (3)
MGMT 54-316 Organizational Theory and Behavior (3)
ECON 52-150 General Economics (3)

National Security Studies
POLS 34-102 Introduction to American Government and Politics (3)
POLS 34-421 International Conflict Resolution (3)
GEOG 32-521 Political Geography (3)
GEOG 32-101 Introduction to Geography (3)
GEOG 32-102 Peoples and Cultures of the World (3)

General Information

Military Obligations: All students are eligible to take MILS 100- and 200-level courses without incurring any military obligation. However, MILS 300- and 400-level courses are reserved for students who have a signed contract with ROTC to become an officer upon graduation. Currently a college graduate who is commissioned through ROTC is placed on active or reserve duty depending on his or her desires and on the needs of the service at the time of graduation.

Course Credit: This curriculum does not lead to a degree by itself, but is intended to complement and be utilized in conjunction with the student's academic degree program. Credits earned in military science courses are applicable toward graduation requirements as general electives.

Class Location: With the exception of a five-week paid summer camp, most basic course instruction is presented on campus. Various field trips are conducted to further enrich students' leadership skills for advanced-course students.

Course Descriptions

Military Science / 42

102 Leadership Practicum (2 hours)
Examines leadership in basic tactical and patrolling operations. A tactical application exercise and participation in physical fitness conditioning are required. Students practice leadership according to 16 principles and learn basic individual soldier skills. (F)

112 Leadership Practicum (2 hours)
Continuation of MILS 42-102. Examines advanced squad and platoon tactical operations with emphasis on patrolling operations. Topics include: leadership techniques, basic first aid and problem-solving exercises. A tactical field application exercise and physical fitness conditioning program are required. Students perform various leadership roles and present classroom instruction. (S)

116 Foundations of Officership (1 hour)
Introduces the student to issues and competencies central to a commissioned officer's responsibilities. These initial lessons establish a framework for understanding officership, leadership, and Army values. Addresses "life skills" including fitness and time management. Designed to give the student an accurate insight into the Army profession and the officer's role in the Army. (F)

126 Basic Leadership (1 hour)
Course builds upon the fundamentals introduced in MILS 42-116 Foundations of Officership, by focusing on leadership theory and decision making. "Life skills" lessons include: problem solving, critical thinking, leadership theory, followership, group interaction, goal setting, and feedback mechanisms. Prepares students to advance to more complex leadership instruction concerning the dynamics of organization. Students are increasingly required to demonstrate knowledge of leadership fundamentals and communications. (S)

202 Leadership Practicum (2 hours)
Course examines squad and platoon offensive and defensive operations and leadership procedures in patrolling operations. A tactical application exercise and participation in physical fitness conditioning are required. Students perform various leadership roles and present classroom instruction. (F)

212 Leadership Practicum (2 hours)
Continuation of MILS 42-202 to examine advanced squad and platoon offensive and defensive operations, reaction to obstacles and leadership procedures in patrolling operations. A tactical application exercise and participation in physical fitness conditioning are required. Students perform various leadership roles and present classroom instruction. (S)

216 Individual Leadership Studies (2 hours)
Designed to develop within the student a knowledge of self, self-confidence and individual skills. Through experiential learning activities, students develop problem-solving and critical-thinking skills, and apply communication, feedback, and conflict-resolution skills. Builds upon the fundamentals introduced in MILS 42-116 and 126, this course delves into several aspects of communication and leadership theory. Focuses on critical "life skills" which enable the student's future success. Includes a major leadership and problem-solving case study which draws upon previous instruction. Prerequisite: MILS 42-116 and 126. To be taken concurrently with MILS 42-202. (F)

226 Leadership and Teamwork (2 hours)
Course focuses on self-development guided by knowledge of self and group processes. Experiential learning activities are designed to challenge students' current beliefs, knowledge and skills. Takes the approach of placing students in a wide variety of group exercises designed to emphasize various leadership competencies and insights. The instructor, acting as facilitator, helps guide student processing of the events to derive the leadership, group dynamics and problem-solving lessons that the exercises offer. Practical "life skills" are emphasized. Prerequisites: MILS 42-116, 126 and 216. To be taken concurrently with MILS 42-212. (S)

300 Leadership and Management I (3 hours)
Provides the student with an examination of ethics, career professionalism, attributes of leadership and selected light infantry tactical skills. Prerequisite: Advanced-course status, required to be taken concurrently with MILS 42-302. (F)

302 Leadership Practicum (2 hours)
Examines squad and platoon offensive and defensive operations, the patrol leader in patrolling operations, and a tactical application exercise is required. Students perform in various leadership roles and present classroom instruction. Prerequisite: Advanced-course status, required to be taken concurrently with MILS 42-300. (F)

310 Small Unit Leadership and Tactics (3 hours)
Course studies principles and fundamentals of military operations, the decision-making process, planning and execution of light infantry operations, and a thorough examination of military ethics. Prerequisite: MILS 42-300, advanced-course status, required to be taken concurrently with MILS 42-312. (S)

312 Leadership Practicum (2 hours)
Familiarization with military firearms, including assembly and disassembly, tactical communications and a field artillery request and application exercise is required. Prerequisite: Advanced-course status, required to be taken concurrently with MILS 42-310. (S)

400 Leadership and Management II (3 hours)
Study of the principles of decision making, the planning and conduct of unit training, the role of the military in the U.S., professional ethical standards, and the use of those standards in situations involving power, influence, and subordinate counseling. Prerequisite: Advanced-course status, required to be taken concurrently with MILS 42-402. (F)

402 Leadership Practicum (2 hours)
Practical applications in problem analysis, decision making, planning and organization, delegation and control, and development of interpersonal skills required for effective management. Participation in physical fitness conditioning and tactical application exercise required. Students perform in various leadership positions and present classroom instruction. Prerequisite: Advanced-course status, required to be taken concurrently with MILS 42-400. (F)

410 Army Management and Organizational Systems (3 hours)
Advanced study of leadership and management that examines administration at the company level and military justice and an overview of the obligations and responsibilities of an officer. Prerequisite: Advanced course status, required to be taken concurrently with MILS 42-412. (S)

412 Leadership Practicum (2 hours)
Practical applications in problem analysis, decision making, planning and organization, delegation and control, and development of interpersonal skills required for effective management. A tactical application exercise and participation in physical fitness conditioning are required. Students perform various leadership roles and conduct classroom instruction. Prerequisite: Advanced-course status, required to be taken concurrently with MILS 42-410. (S)

450 Independent Study in Military Science (1-5 hours)
Investigates selected leadership problems or topics on an individual or conference basis. Course may be repeated with a change in topic. Prerequisite: Consent of department chairperson.

Department of Natural Sciences

Chairperson: Mark Corson

Faculty: Peter Adam, Michael Bellamy, Angela Bickford, Kelsey Bowlin, Jeffrey Bradley, Himadri Chakraborty, Gregg Dieringer, David Easterla, Kurt Haberyan, Heidi Hensen, Michael Hull, Rafiq Islam, Aaron Johnson, Ahmed Malkawi, Mohammed Meziani, Natalia Omelchenko, John Pope, David Richardson, Shelley Riley, Renee Rohs, Karen Schaffer, John Shaw, Rená Smith, Kathleen Spears, Lisa Stobbe, Gretchen Thornsberry, Jeffry Thornsberry, Richard Toomey

Statement of Mission

Northwest Missouri State University focuses on student success—every student every day.

DEGREE PROGRAMS

The Department of Natural Sciences offers a wide range of programs leading to Bachelor of Arts and Bachelor of Science degrees in the area of biology, biochemistry, biology/psychology, botany, cell biology, chemistry, A.C.S. accredited chemistry, clinical laboratory sciences, earth science, ecology, environmental geology, environmental science, geology, marine biology, medicinal chemistry, molecular biology, nanoscale biology, nanoscale chemistry, nanoscale physics, pre-professional zoology, radiologic sciences, wildlife ecology and conservation, and zoology.

The Department also offers Bachelor of Science in Education degrees in the areas of biology, chemistry, unified science: chemistry, and unified science: earth science. The Department of Natural Sciences also offers a Bachelor of Science in Nursing Completion Degree.

In addition to the various degree programs, the Department of Natural Sciences provides guidance, information, and preparatory coursework on many career path areas including dental hygiene, engineering, occupational therapy, optometry, physical therapy, pharmacy, physicians assistant, and respiratory therapy.

Advanced Standing Requirement

A student qualifies for advanced standing as a biology major after the completion of 45 semester hours. In addition, all Biology majors and minors must complete the following classes with a grade of "C" or better: BIOL 04-112/113 General Botany and Laboratory and BIOL 04-114/115 General Zoology and Laboratory. All Biology majors and minors must also earn a grade of "C" or better in all biology course prerequisites prior to moving to a higher level course.

A student can receive advanced standing for the Bachelor of Science degree in Chemistry and A.C.S. accredited Bachelor of Science degree in Chemistry when he/she has earned a grade of "C" or better in MATH 17-120, CHEM 24-114/115 and 24-116/117. Requirements to achieve advanced standing for the Bachelor of Arts degree are a grade of "C" or better in MATH 17-118,

CHEM 24-114/115 and CHEM 24-116/117. All chemistry courses that are prerequisites to other chemistry courses must be passed with a grade of "C" or higher before a more advanced course may be taken. It is recommended that students take sequential courses in adjacent trimesters.

All geology courses that are prerequisites to other geology courses must be passed with grade of "C" or higher before a more advanced course may be taken.

DEPARTMENT POLICIES

Students enrolled in biology and chemistry laboratory courses are expected to sign a safety contract, purchase dissecting kits, laboratory coats and eye protection devices. In addition, students will be expected to purchase laboratory manuals and/or field guides to supplement the textbook.

Problem courses (BIOL 04-419, 429, 439, 449, 459, 469, 479, 489) supplement regular course offering. They may consist of acquisition of information from library sources, the actual pursuit of a research project, special courses on demand, or similar activities. The student is expected to work independently, but under the supervision of an instructor familiar with the area being studied. It is imperative that the student obtain written consent from the intended instructor prior to enrolling in the course. Written reports are due upon completion of the project and oral reports may be required. Credit is variable (1-3 hours) with a minimum of three to five hours per week expected for each credit hour, depending on the nature of the problem. A maximum of three hours is allowed to be applied toward a biology major or minor, but additional hours may be counted as general electives.

Current topics courses (BIOL 04-210, 510) may be repeated for additional experience, new material and progression of study. A maximum of eight credit hours is allowed to be applied toward a biology major or minor, but additional hours may be counted as general electives.

Special courses in marine science (marine botany, marine zoology, marine invertebrate zoology, estuarine and marsh ecology, marine mammals, marine ornithology, marine microbiology, marine vertebrate zoology and ichthyology, physical marine geology, chemical marine geology and marine chemistry) are available during the summer at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi. Contact the Marine Biology advisor, Department of Natural Sciences, for information and arrangements by February 1, as applications are required due to limited enrollment.

All students desiring a biology degree must complete a minimum of 15 hours of biology coursework (BIOL 04-xxx) from the Natural Sciences Department.

All biology graduating seniors (majors and minors) are required to take the ETS subject matter test and provide the department with the test results prior to graduation approval. All secondary education majors are also required to take the PRAXIS II exam in their endorsement areas for state certification.

Test-Out Policy

Undergraduate students may test out of certain lower division courses in chemistry and physics. Examinations are only available during the first week of class.

Internship and Independent Study

Geology students may apply for no more than six credit hours of combined internship and independent study hours toward their major requirements.

Biology / 04

Bachelor of Science in Clinical Laboratory Sciences

In conjunction with approved hospitals and medical centers.
The curriculum leading to the Bachelor of Science in Clinical Laboratory Sciences degree emphasizes biology and chemistry. Minimum academic prerequisites are established by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) and are taken on the Northwest campus during the first three years along with other courses required by the University. The fourth year (senior year) is a structured educational program in an affiliated clinical laboratory. The clinical program is accredited through NAACLS. Upon satisfactory completion of the clinical program, a minimum of 30 hours of credit are granted and the student is awarded a B.S. in Clinical Laboratory Sciences degree. Acceptance into an affiliated program is competitive and will be determined by the quality of academic work completed by the student during the first three years of study. Admission to the clinical program is decided entirely by the hospitals. **Acceptance into the University program does not guarantee acceptance of the student by an affiliated clinical program.**

Students who already have a bachelor's degree and who wish to enter the field may do so by applying directly to the hospital having an approved program. Applicants who have completed minimum requirements seven or more years before application must update microbiology and biochemistry. If a B.S. in Clinical Laboratory Sciences degree is desired, then University requirements for the degree must also be filled.

Complete application deadlines vary with the clinical program. Programs should be contacted during the spring trimester prior to the year you want to start. As an example, application deadlines can vary from July 1 to October 15. Applications are processed through the program director/education coordinator of the clinical program.

Selection is done by each clinical program. Criteria include state of health, academic performance, and personal characteristics. Usually, a 2.5 minimum grade point average is required.

Enrollment is limited by the class size of each clinical program. Costs vary with each clinical program. Upon graduation, students are eligible to take a national certification examination. Passing the examination is not a condition for receiving the B.S. in Clinical Laboratory Sciences degree. Financial assistance varies with each clinical program. The student should contact each program and the Office of Scholarships and Financial Assistance.

B.S. in Clinical Laboratory Sciences Degree Requirements

	Semester Hours
General Education Requirements (See pages 66-68)	**42**
Institutional Requirements (See pages 68-69)	**6**
Science	**45-46**
Elective	0-1
Clinical Laboratory Sciences Courses at Approved Teaching Hospital or Clinic*	30
TOTAL MINIMUM ACADEMIC	**124**

*Some clinical programs do have early acceptance policies, and one can usually apply to these programs during the sophomore year. Early acceptance will guarantee the student a position after all pre-clinical coursework is completed provided all other criteria are satisfied.

Hospitals and officials in association with the Clinical Laboratory Sciences degree:

Des Moines, Iowa
Mercy College of Health Sciences Clinical Laboratory Science Program
Kyla Dippold, MS, MLS (ASCP), Program Chair and Assistant Professor

Kansas City, Mo.
St. Luke's Hospital of Kansas City—Clinical Laboratory Science Program
Jane Rachel, MA, MT (ASCP), Program Director

North Kansas City, Mo.
North Kansas City Memorial Hospital—School of Clinical Laboratory Science
Marisa K. James, MA, MT (ASCP), Program Director

Bachelor of Science in Clinical Laboratory Sciences

CIP: 511005

Required Courses	**Semester Hours**
CHEM 24-114/115 General Chemistry I and Laboratory	4
BIOL 04-102/103 General Biology and Laboratory	4
BIOL 04-140 General Microbiology	4
BIOL 04-310 Cell Biology (4) OR	
BIOL 04-440 Molecular Biology (4) OR	
MATH 17-114 General Statistics I (3)	3-4
BIOL 04-350 Genetics	3
BIOL 04-438 Human Physiology	4
BIOL 04-444 Immunology	4
Total Hours	**26-27**
Clinical Laboratory Sciences	**30**
In conjunction with approved hospitals and medical centers.	
Collateral Courses	
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-322/323 Analytical Chemistry and Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-362/363 Elementary Biochemistry and Laboratory	4
Directed General Education Courses	
The following courses are to be taken to fulfill General Education requirements:	
BIOL 04-114/115 General Zoology and Laboratory	4
MATH 17-118 College Algebra	3
PHYS 25-112/113 General Physics II and Laboratory	4
General Education Requirements (less directed General Education courses)	**31**
Institutional Requirements	**6**
Elective	**0-1**
Total Degree Requirements	**124**

Completion Degree Program in Nursing, 53 hours: B.S.N.–No Minor Required

CIP: 513801

The curriculum leading to the Bachelor of Science in Nursing allows licensed nurses to complete a B.S.N. degree. As a liberal arts degree, the program includes the General Education and Institutional requirements, as well as upper-division nursing courses. Successful completion of the program results in the conferral of the B.S.N. degree.

Required Courses (38 hours)	**Semester Hours**
NURS 01-301 Theories and Models of Nursing	3
NURS 01-311 Health Care Delivery Systems	3
NURS 01-371 Pathophysiology	3
NURS 01-381 Intermediate Pharmacology	3
NURS 01-401 Leadership and Management in Nursing	5
NURS 01-411 Health Assessment	5
NURS 01-421 Community Nursing	5
NURS 01-431 Family and Child Nursing	5
NURS 01-481 Research Methods in Nursing	3
HPER 22-552 Health Promotion	3
Collateral Courses (12 hours)	
BIOL 04-140 General Microbiology	4
BIOL 04-236 Anatomy Allied Health OR	
BIOL 04-436 Human Anatomy	4
BIOL 04-238 Physiology Allied Health OR	
BIOL 04-438 Human Physiology	4
Electives (3 hours: choose one course)	**3**
HPER 22-554 Human Sexuality (3)	
NURS 01-452 Gerontological Nursing (3)	
NURS 01-454 Informatics in Nursing (3)	
General Education Requirements (See pages 66-68)	**42**
Directed General Education Courses	
BIOL 04-102/103 General Biology/Lab (4)	
CHEM 24-112/113 General Chemistry/Lab (4)	
MATH 17-114 General Statistics (3)	
PHIL 39-276 Introduction to Ethics: Bio-Medical (3)	
PSYC 08-103 General Psychology (3)	
SOC 35-101 General Sociology (3)	
Institutional Requirements (See pages 68-69)	**6**
Electives	**23-24**
TOTAL MINIMUM ACADEMIC	**124-125**

Completion Degree Program in Radiologic Sciences, 81 hours: B.S.–No Minor Required

CIP: 510911

Acceptance into an affiliated clinical program is competitive and will be determined by the quality of academic work completed by the student during the first two years of study. Admission to the clinical portion of the program is decided entirely by the affiliated medical center. Acceptance into the University does not guarantee acceptance of the student by an affiliated clinical program.

Required Courses (19 hours)	**Semester Hours**
BIOL 04-104 Medical Terminology	3
BIOL 04-140 General Microbiology	4
BIOL 04-236 Anatomy Allied Health	4
BIOL 04-238 Physiology Allied Health	4
CHEM 24-114/115 General Chemistry I and Laboratory	4
Radiologic Sciences (62 hours)	
*RAD 49-301 Radiographic Anatomy and Physiology I	2
*RAD 49-302 Clinical Education I	1
*RAD 49-303 Medical Imaging I	2
*RAD 49-304/305 Radiographic Positioning and Procedures I and Laboratory	3
*RAD 49-306 Clinical Education II	2
*RAD 49-307 Introduction to Radiologic Science	2
*RAD 49-308 Literature Review	1
*RAD 49-309 Radiographic Physics	2
*RAD 49-310/311 Radiographic Positioning and Procedures II and Laboratory	3
*RAD 49-312 Radiographic Anatomy and Physiology II	2
*RAD 49-313 Clinical Education II	2
*RAD 49-314 Image Evaluation	1
*RAD 49-315 Medical Imaging II	2
*RAD 49-316 Radiographic Physics II	2
*RAD 49-317 Radiographic Anatomy and Physiology III	2
*RAD 49-318/319 Radiographic Positioning and Procedures III and Laboratory	3
*RAD 49-401 Clinical Education IV	4
*RAD 49-402 Clinical Education V	2
*RAD 49-403 Medical Imaging III	2
*RAD 49-404 Pathology I	2
*RAD 49-405 Radiation Biology and Radiation Protection	2
*RAD 49-406 Radiographic Positioning and Procedures IV	2
*RAD 49-407 Radiographic Anatomy and Physiology IV	2
*RAD 49-408 Clinical Education VI	2
*RAD 49-409 Correctec	2
*RAD 49-410 Imaging Modalities	2
*RAD 49-411 Pathology II	2
*RAD 49-412 Quality Assurance	2
*RAD 49-413 Radiography Curriculum Review	2
*RAD 49-414 Cross Sectional Anatomy	2

*These courses are taught by the affiliated hospitals' schools of radiologic technology.

General Education Requirements (See pages 66-68)	**42**
Directed General Education Courses	
BIOL 04-102/103 General Biology/Lab (4)	
MATH 17-118 College Algebra (3)	
PHYS 25-110/111 General Physics I/Lab (4)	
PHIL 39-276 Introduction to Ethics: Bio-Medical (3)	
SOC 35-101 General Sociology (3)	
Institutional Requirements (See pages 68-69)	**6**
TOTAL MINIMUM ACADEMIC	**129**

MAJORS

Major in Biology, 37 hours: B.S.–Minor Required

CIP: 260101

Areas of Emphasis: Botany, Cellular/Molecular, Ecology, Environmental Science, General Biology, and Zoology

This degree program is designed to give the student the opportunity to study in any of several areas of biology. The core courses are required of all the students, and each area of emphasis has additional requirements specific for that emphasis. Additional courses in the area, to total 37 hours, will be selected with the advice and consent of the advisor. Core courses plus areas of emphasis must total 37 hours with approved biology electives.

Core Courses for a Major in Biology	**Semester Hours**
BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-310 Cell Biology	4
BIOL 04-350 Genetics	3
BIOL 04-376 Basic Ecology	4
BIOL 04-383 Biology Practicum	1
BIOL 04-491 Biological Science Seminar	1
CHEM 24-114/115 General Chemistry I and Laboratory	4
Total Hours	**21**
Required Collateral Areas for a Major in Biology	
PHYS 25-112/113 General Physics II and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
Additionally, the following are required for the Cellular/Molecular Emphasis:	
CHEM 24-344/345 Organic Chemistry II and Laboratory AND	5
CHEM 24-362/363 Elementary Biochemistry and Laboratory (4) OR	
CHEM 24-562/563 General Biochemistry and Laboratory (5)	4-5
Directed General Education Courses for a Major in Biology	
BIOL 04-112/113 General Botany and Laboratory	4
PHYS 25-110/111 General Physics I and Laboratory	4
MATH 17-118 College Algebra	3
NOTE: MATH 17-120 Calculus replaces 17-118 for the	
Cellular/Molecular Emphasis; note Calculus prerequisite	4

Biology: Botany Emphasis

Required Courses	Semester Hours
Biology Core	21
BIOL 04-261 Local Flora	2
BIOL 04-318 Principles of Taxonomy and Evolution	4
BIOL 04-412 Plant Anatomy and Morphology	4
BIOL 04-430 Plant Physiology	4
BIOL 04-575 Methods in Plant Ecology	2
Total Hours	**37**

Biology: Cellular/Molecular Emphasis

Required Courses	Semester Hours
Biology Core	21
BIOL 04-140 General Microbiology	4
BIOL 04-440 Molecular Biology	4
BIOL 04-444 Immunology	4
BIOL 04-430 Plant Physiology OR	
BIOL 04-438 Human Physiology	4
Total Hours	**37**

Please note the collateral and directed general education requirements for the Cellular/Molecular Emphasis listed above.

Biology: Ecology Emphasis

Required Courses	Semester Hours
Biology Core	21
BIOL 04-261 Local Flora	2
BIOL 04-575 Methods in Plant Ecology	2
BIOL 04-577 Methods in Animal Ecology	2
One additional animal course above 300 level with advisor's consent	3
GEOL 27-114/115 General Earth Science and Laboratory OR	
GEOL 27-110/111 General Geology and Laboratory OR	
AGRI 03-234 Fundamentals of Soil Science	4
Advisor-approved biology electives above 300 level	3
Total Hours	**37**

Biology: Environmental Science Emphasis

Required Courses	Semester Hours
Biology Core	21
BIOL 04-420 Environmental Issues	4
BIOL 04-575 Methods in Plant Ecology OR	
BIOL 04-577 Methods in Animal Ecology	2
GEOL 27-110/111 General Geology and Laboratory OR	
GEOL 27-114/115 General Earth Science and Laboratory	4
Choose 6 hours from the following:	6
AGRI 03-234 Fundamentals of Soil Science (4)	
BIOL 04-307 Environmental Internship (1-3)	
BIOL 04-474 Wildlife Management and Conservation (2)	
CHEM 24-322/323 Analytical Chemistry and Laboratory (5)	

GEOL 27-340 Introduction to Hydrogeology (3)
GEOL 27-360 Environmental Geology (4)
GEOL 27-424 Geochemistry (3)
GEOL 27-515 Environmental Regulations (2)
Other advisor-approved electives

Total Hours **37**

Biology: General Biology Emphasis

Required Courses	**Semester Hours**
Biology Core	21
As equal a number of hours as possible in plant and animal biology are to be selected with the advice and consent of the advisor.*	16

*NOTE: Either BIOL 04-236 Anatomy Allied Health OR BIOL 04-436 Human Anatomy can apply to the Emphasis; either BIOL 04-238 Physiology Allied Health OR BIOL 04-438 Human Physiology can apply to the Emphasis.

Total Hours **37**

The following courses may be counted either as animal or plant courses:
BIOL 04-140 General Microbiology
BIOL 04-318 Principles of Taxonomy and Evolution
BIOL 04-420 Environmental Issues
BIOL 04-440 Molecular Biology
BIOL 04-474 Wildlife Management and Conservation

Biology: Zoology Emphasis

Required Courses	**Semester Hours**
Biology Core	21
BIOL 04-312 Invertebrate Zoology	4
BIOL 04-322 Comparative Anatomy	4
+Biology Electives	8

Total Hours **37**

+Advisor-approved electives (Choose 8 hours)
BIOL 04-130 Animal Anatomy and Physiology (4)
BIOL 04-236 Anatomy Allied Health (4)
BIOL 04-238 Physiology Allied Health (4)
BIOL 04-362 Mammalogy (4)
BIOL 04-364 Ornithology (4)
BIOL 04-366 Entomology (3)
BIOL 04-418 Vertebrate Histology (4)
BIOL 04-436 Human Anatomy (4)
BIOL 04-438 Human Physiology (4)
BIOL 04-460 Herpetology (4)
BIOL 04-474 Wildlife Management and Conservation (2)
BIOL 04-575 Methods in Plant Ecology (2)
BIOL 04-577 Methods in Animal Ecology (2)

NOTE: Either BIOL 04-236 Anatomy Allied Health OR BIOL 04-436 Human Anatomy can apply to the Emphasis; either BIOL 04-238 Physiology Allied Health OR BIOL 04-438 Human Physiology can apply to the Emphasis.

NOTE: Gulf Coast courses will count as biology electives along with CHEM 24-362/363 Elementary Biochemistry and Laboratory and CHEM 24-562/563 General Biochemistry and Laboratory.

Unified Science Major in Biology, 60-61 hours: B.S.Ed., Secondary Program—No Minor Required (Certifies Grades 9-12, Endorsement Area: Biology)

CIP: 131316

Required Courses in Endorsement Area: Biology	Semester Hours
BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-130 Animal Anatomy and Physiology	4
BIOL 04-140 General Microbiology	4
BIOL 04-310 Cell Biology	4
BIOL 04-318 Principles of Taxonomy and Evolution	4
BIOL 04-350 Genetics	3
*BIOL 04-419 Problems in General Biology (1-3) OR	
*BIOL 04-489 Problems in Biological Education (1-3)	1
BIOL 04-420 Environmental Issues	4
BIOL 04-491 Biological Science Seminar	1
BIOL 04-383 Biology Practicum	1
CHEM 24-114/115 General Chemistry I and Laboratory	4

*** Only one credit hour is required, but may be taken for up to 3 hours credit.**

Required Collateral Courses for the Unified Science Major	
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-242/243 Organic Chemistry and Laboratory OR	
CHEM 24-342/343 Organic Chemistry I and Laboratory	4-5
GEOL 27-212 Historical Geology	4
MATH 17-119 Trigonometry	2
PHYS 25-110/111 General Physics I and Laboratory	4
PHYS 25-112/113 General Physics II and Laboratory	4
SCED 28-550 History of Science and Technology	3
Total Hours in Major	**60-61**

Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory	4
GEOL 27-114/115 General Earth Science and Laboratory	4
MATH 17-118 College Algebra	3
Professional Education Requirements	**30**
Including SCED 28-580 Methods in Secondary School Science (3)	

NOTE: Although not required, the department recommends that students take the following courses: CHEM 24-135 Laboratory Safety and MATH 17-114 General Statistics I.

Major in Biology Education, 55-57 hours: B.S.Ed., Secondary Program—No Minor Required (Certifies Grades 9-12)

CIP: 131322

Required Courses	Semester Hours
BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-130 Animal Anatomy and Physiology (4) OR	
BIOL 04-430 Plant Physiology (4) OR	
BIOL 04-438 Human Physiology (4)	4
BIOL 04-140 General Microbiology	4

BIOL 04-310 Cell Biology	4
BIOL 04-318 Principles of Taxonomy and Evolution	4
BIOL 04-350 Genetics	3
BIOL 04-383 Biology Practicum	1
BIOL 04-419 Problems in General Biology (1-3) OR BIOL 04-489 Problems in Biology Education (1-3)	1-2
BIOL 04-420 Environmental Issues	4
BIOL 04-491 Biological Science Seminar	1
CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-362/363 Elementary Biochemistry and Laboratory (4) OR CHEM 24-562/563 General Biochemistry and Laboratory (5)	4-5
PHYS 25-110/111 General Physics I and Laboratory (4) OR PHYS 25-112/113 General Physics II and Laboratory (4)	4
SCED 28-550 History of Science and Technology	3
Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory	4
GEOL 27-114/115 General Earth Science and Laboratory	4
MATH 17-118 College Algebra	3
Professional Education Requirements	**30**
Including SCED 28-580 Methods in Secondary School Science (3)	

NOTE: Although not required, the department recommends that students take the following courses: CHEM 24-135 Laboratory Safety and MATH 17-114 General Statistics I.

Comprehensive Major in Marine Biology, 60 hours: B.S.—No Minor Required

CIP: 261302

Required Courses	**Semester Hours**
BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-310 Cell Biology	4
BIOL 04-312 Invertebrate Zoology	4
BIOL 04-350 Genetics	3
*BIOL 04-351 Marine Science I: Oceanography	3
*BIOL 04-353 Marine Science I Lab	2
*BIOL 04-352 Marine Science II: Marine Biology	3
*BIOL 04-354 Marine Science II Lab	2
BIOL 04-376 Basic Ecology	4
BIOL 04-383 Biology Practicum	1
BIOL 04-491 Biological Science Seminar	1
**Approved electives above 300 level	5

*** Taught at the Gulf Coast Research Laboratory each summer**

****BIOL 04-362 Mammalogy and/or additional marine lab courses are recommended.**

Collateral Courses	
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
GEOG 32-365 Geographic Information Systems	3

MATH 17-114 General Statistics I	3
PHYS 25-110/111 General Physics I and Laboratory	4
PHYS 25-112/113 General Physics II and Laboratory	4
Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory	4
CHEM 24-114/115 General Chemistry I and Laboratory	4
MATH 17-118 College Algebra (3) OR	
MATH 17-120 Calculus I (4)	3-4

NOTE: Although not required, students planning graduate study are encouraged to take MATH 17-120 Calculus I, BIOL 04-140 General Microbiology, and either GEOL 27-114/115 General Earth Science and Laboratory or GEOL 27-110/111 General Geology and Laboratory.

Comprehensive Major in Pre-Professional Zoology, 58 hours: B.S.–No Minor Required

CIP: 260101

Required Courses	**Semester Hours**
BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-140 General Microbiology	4
BIOL 04-310 Cell Biology	4
BIOL 04-322 Comparative Anatomy	4
BIOL 04-350 Genetics	3
BIOL 04-418 Vertebrate Histology	4
BIOL 04-438 Human Physiology	4
BIOL 04-444 Immunology	4
BIOL 04-491 Biological Science Seminar	1
CHEM 24-114/115 General Chemistry I and Laboratory	4
Collateral Courses	
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-344/345 Organic Chemistry II and Laboratory	5
CHEM 24-362 Elementary Biochemistry OR	
CHEM 24-562 General Biochemistry	3
PHYS 25-112/113 Physics II and Laboratory	4
Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory	4
MATH 17-118 College Algebra	3
PHYS 25-110/111 General Physics I and Laboratory	4

Comprehensive Major in Pre-Professional Zoology–Chiropractic Emphasis, 58 hours: B.S.–No Minor Required

CIP: 260101

Required Courses	**Semester Hours**
BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-350 Genetics	3
BIOL 04-436 Human Anatomy	4
BIOL 04-438 Human Physiology	4

Collateral Courses	
CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-344/345 Organic Chemistry II and Laboratory	5
Courses taken at approved chiropractic schools	
Biochemistry I and Laboratory*	4
BIOL 04-140 General Microbiology*	5
BIOL 04-418 Vertebrate Histology*	4
Gross Anatomy I*	6
Neuroanatomy*	5
Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory	4
MATH 17-118 College Algebra	3
PHYS 25-110/111 General Physics I and Laboratory	4

*Course taken at chiropractic college with existing articulation agreement with Northwest.

Comprehensive Major in Wildlife Ecology and Conservation, 65 hours: B.S.—No Minor Required

CIP: 030601

Required Courses	**Semester Hours**
BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-130 Animal Anatomy and Physiology	4
BIOL 04-261 Local Flora	2
BIOL 04-312 Invertebrate Zoology	4
BIOL 04-350 Genetics	3
BIOL 04-362 Mammalogy	4
BIOL 04-364 Ornithology	4
BIOL 04-366 Entomology	3
BIOL 04-376 Basic Ecology	4
BIOL 04-460 Herpetology	4
BIOL 04-474 Wildlife Management and Conservation	2
BIOL 04-491 Biological Science Seminar	1
BIOL 04-575 Methods in Plant Ecology	2
BIOL 04-577 Methods in Animal Ecology	2
AGRI 03- 234 Fundamentals of Soil Science	4
CHEM 24-114/115 General Chemistry I and Laboratory	4
Collateral Courses	
AGRI 03-382 Woody Landscape Plants	3
CHEM 24-116/117 General Chemistry II and Laboratory	5
GEOG 32-365 Geographic Information Systems	3
MATH 17-114 General Statistics I	3
Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory	4
MATH 17-118 College Algebra	3
PHYS 25-110/111 General Physics I and Laboratory OR PHYS 25-112/113 General Physics II and Laboratory	4

Comprehensive Major in Wildlife Ecology and Conservation, 61 hours: B.A.–No Minor Required

CIP: 030601

Required Courses	Semester Hours
BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-130 Animal Anatomy and Physiology	4
BIOL 04-261 Local Flora	2
BIOL 04-312 Invertebrate Zoology	4
BIOL 04-350 Genetics	3
BIOL 04-362 Mammalogy	4
BIOL 04-364 Ornithology	4
BIOL 04-366 Entomology	3
BIOL 04-376 Basic Ecology	4
BIOL 04-460 Herpetology	4
BIOL 04-474 Wildlife Management and Conservation	2
BIOL 04-491 Biological Science Seminar	1
AGRI 03- 234 Fundamentals of Soil Science	4
CHEM 24-114/115 General Chemistry I and Laboratory	4
Collateral Courses	
AGRI 03-382 Woody Landscape Plants	3
CHEM 24-116/117 General Chemistry II and Laboratory	5
GEOG 32-365 Geographic Information Systems	3
MATH 17-114 General Statistics I	3
Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory	4
MATH 17-118 College Algebra	3
PHYS 25-110/111 General Physics I and Laboratory OR PHYS 25-112/113 General Physics II and Laboratory	4

Comprehensive Major in Biology/Psychology, 66-69 hours: B.S.–No Minor Required

CIP: 422706

This major allows students to complete individual programs of study arranged by advisors in both the Department of Natural Sciences and the Department of Behavioral Sciences. While requiring students to complete half their class work as advised by each department, the number of elective hours gives this 66-69 hour program of study flexibility that allows students to tailor the major to their individual and specific academic needs. This program provides interdisciplinary training for a future career and/or graduate level training in psychology, biology, allied health or related fields. Students are urged to see advisors in both departments at an early date to contract a program of study.

Directed General Education Courses

BIOL 04-112/113 General Botany/Lab (4)
CHEM 24-114/115 General Chemistry/Lab (4)
MATH 17-114 General Statistics (3)
PSYC 08-103 General Psychology (3)

Required Courses for Psychology **18**

PSYC 08-223 Abnormal Psychology (3)
PSYC 08-234 Introduction to Psychological Experimentation (3)
PSYC 08-333 Developmental Psychology (3)
PSYC 08-334 Experimental Psychology (3)
PSYC 08-343 Biological Psychology (3)
PSYC 08-443 Advanced Biological Psychology (3)

Required Courses for Biology **8**

BIOL 04-114/115 General Zoology/Lab (4)
BIOL 04-350 Genetics (3)
*BIOL 04-491 Biological Science Seminar (1)

Biology Electives (12 hours from the following or other advisor approved courses) **12**

BIOL 04-104 Medical Terminology (3)
BIOL 04-140 General Microbiology (4)
BIOL 04-301 Health Science Internship (1-3)
BIOL 04-310 Cell Biology (4)
BIOL 04-322 Comparative Anatomy (4)
BIOL 04-418 Vertebrate Histology (4)
BIOL 04-436 Human Anatomy (4)
BIOL 04-438 Human Physiology (4)
BIOL 04-440 Molecular Biology (4)
BIOL 04-444 Immunology (4)

Psychology Electives (6 hours from the following or other advisor approved courses) **6**

PSYC 08-310 Cognitive Psychology (3)
PSYC 08-323 Child and Adolescent Psychopathology (3)
PSYC 08-335 Psychological Assessment (3)
PSYC 08-344 Drugs, Brain and Behavior (3)
PSYC 08-353 Psychology of Gender (3)
PSYC 08-363 Psychology of Personality (3)
PSYC 08-370 Applied Behavior Analysis (3)
PSYC 08-383 Psychology of Aging (3)
PSYC 08-438 Principles of Counseling (3)
SOC 35-365 Social Psychology (3)

Collateral Requirements **16-17**

CHEM 24-116/117 General Chemistry II/Lab (5)
CHEM 24-242/243 Organic Chemistry/Lab (4) OR
CHEM 24-342/343 Organic Chemistry I/Lab (5)
MATH 17-118 College Algebra (3)
PHYS 25-110/111 General Physics I/Lab (4)

Collateral Electives (choose two) **6-8**

CHEM 24-344 Organic Chemistry II (3)
CHEM 24-362/363 Elementary Biochemistry/Lab (4) OR
CHEM 24-562 General Biochemistry (3)
PHYS 25-112/113 General Physics II/Lab (4)

Total Major Requirements **66-69**

***Must take Biology ACAT in this course.**

MINORS

Minor in Biology, 24 hours: B.S.

CIP: 260101

Required Courses	Semester Hours
*BIOL 04-112/113 General Botany and Laboratory	4
*BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-350 Genetics	3
BIOL 04-491 Biological Science Seminar	1
CHEM 24-114/115 General Chemistry and Laboratory	4
Approved biology electives (two hours must be at 300 level)	8

***Cannot be used to fulfill any General Education requirement.**

Minor in Biology, 21 hours: B.A.

CIP: 260101

Required Courses	Semester Hours
*BIOL 04-112/113 General Botany and Laboratory	4
*BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-350 Genetics	3
BIOL 04-491 Biological Science Seminar	1
CHEM 24-114/115 General Chemistry I and Laboratory	4
Approved biology electives (two hours must be at 300 level)	5

***Cannot be used to fulfill any General Education requirement.**

Minor in Biology Education, 31 hours: B.S. Ed., Secondary (Certifies 9-12)

CIP: 131322

Required Courses	Semester Hours
BIOL 04-112/113 General Botany and Laboratory	4
BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-130 Animal Anatomy and Physiology	4
BIOL 04-140 General Microbiology	4
BIOL 04-310 Cell Biology	4
BIOL 04-318 Principles of Taxonomy and Evolution	4
BIOL 04-350 Genetics	3
BIOL 04-383 Biology Practicum	1
SCED 28-550 History of Science and Technology	3

Professional Education Requirements

SCED 28-580 Methods in Secondary School Science is the required subject field methods course.

NOTES: Although not required, the department recommends that students take the following courses: CHEM 24-135 Laboratory Safety and MATH 17-114 General Statistics I.

Interdisciplinary Minor in Environmental Science, 26 hours

CIP: 030104

Required Courses	Semester Hours
BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-376 Basic Ecology	4
CHEM 24-114/115 General Chemistry I and Laboratory	4
GEOL 27-340 Hydrogeology	3
GEOL 27-360 Environmental Geology OR	
BIOL 04-420 Environmental Issues	4
GEOG 32-501 Conservation of Natural Resources	3
Advisor-approved electives (choose 4 hours):	**4**
AGRI 03-234 Fundamentals of Soil Science (4)	
BIOL 04-140 General Microbiology (4)	
BIOL 04-307 Environmental Internship (1-3)	
BIOL 04-474 Wildlife Management and Conservation (2)	
BIOL 04-575 Methods in Plant Ecology (2)	
BIOL 04-577 Methods in Animal Ecology (2)	
GEOG 32-361 Climatology (3)	
GEOL 27-424 Geochemistry (3)	
GEOL 27-515 Environmental Regulations (2)	
GEOL 27-530 Sedimentology (3)	
Other courses as approved by the advisor	
Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory	4
GEOL 27-114/115 General Earth Science and Laboratory	4

NOTES: No biology course in the Environmental Science Minor may also be counted toward any biology major. Therefore, biology majors who select this minor must replace all biology courses in the minor with an equal number of hours in advisor-approved electives. At least eight of these replacement hours must be in biology courses.

This minor may not be paired with the Environmental Science Emphasis of the B.S. in Biology. If combined with the B.A. in Geology, the student must add an additional 4-hour course to achieve the 56-hour combined minimum number of hours required for the major plus the minor.

No systematic electives may count for both a major in geology or geography and this minor.

Chemistry / 24

MAJORS

Comprehensive Major in Chemistry, A.C.S. Accredited, 69 hours: B.S.—No Minor Required

CIP: 400501

Required Courses	Semester Hours
CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-135 Laboratory Safety	2
CHEM 24-322/323 Analytical Chemistry and Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5

CHEM 24-344/345 Organic Chemistry II and Laboratory	5
CHEM 24-522/523 Instrumental Analysis and Laboratory	4
CHEM 24-532/533 Physical Chemistry I and Laboratory	4
CHEM 24-534/535 Physical Chemistry II and Laboratory	4
CHEM 24-552 Advanced Inorganic Chemistry	3
CHEM 24-555 Inorganic Synthesis Laboratory	1
CHEM 24-562 General Biochemistry	3
CHEM 24-592 Chemistry Seminar	1
Chemistry electives from courses numbered above 400	3
Collateral Courses	
MATH 17-114 General Statistics I	3
MATH 17-121 Calculus II	4
MATH 17-321 Multivariate Calculus	4
PHYS 25-230/231 Fundamentals of Classical Physics II and Laboratory	5
Departmental approved courses from the areas of business, modern language, statistics or *computer science	4

***CSIS 44-130 Computers and Information Technology is a prerequisite for programming courses.**

Directed General Education Courses	
MATH 17-120 Calculus I	4
PHYS 25-120/121 Fundamentals of Classical Physics I and Laboratory	5
Biological sciences: one course	4

Major in Chemistry, 54-58 hours: B.S.—No Minor Required

CIP: 400501

Areas of Emphasis: General, Biochemistry, and Medicinal Chemistry

This degree program is designed to give students the opportunity to study in chemistry with several areas of concentrations (emphasis) that allow students to tailor the major to their individual interests and specific academic needs. While the General emphasis provides students with a broader chemistry background, the Biochemistry emphasis will provide training for a future career and/or graduate level in training in biochemistry, cellular/molecular biology and biotechnology. The Medicinal Chemistry emphasis prepares students for a career in the pharmaceutical industry, regulatory government agency or graduate studies in Medicinal Chemistry/related discipline. This emphasis meets the requirements for pre-professional training in medicine, and may partially or completely fulfill pre-pharmacy requirements for Pharm D programs. The core courses are required of all students, and each emphasis area has additional specific requirements.

Core Courses for a Major in Chemistry	Semester Hours
CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-322/323 Analytical Chemistry and Laboratory	5
CHEM 24-342-343 Organic Chemistry I and Laboratory	5
CHEM 24-344/345 Organic Chemistry II and Laboratory	5
CHEM 24-592 Chemistry Seminar	1
Total Hours	**25**

Chemistry: General Emphasis, 54 hours

Required Courses	Semester Hours
Chemistry Core	25
CHEM 24-135 Laboratory Safety	2
CHEM 24-532/533 Physical Chemistry I and Laboratory	4
CHEM 24-534/535 Physical Chemistry II and Laboratory	4
CHEM 24-552 Advanced Inorganic Chemistry	3
MATH 17-114 General Statistics	3
MATH 17-121 Calculus II	4
PHYS 25-230/231 Fundamentals of Classical Physics II and Laboratory	5
Department approved electives chosen from physics, chemistry, mathematics, biology or *computer science	4
Total Hours	**54**

***CSIS 44-130 Computers and Information Technology is a prerequisite for programming courses.**

Directed General Education Courses	
MATH 17-120 Calculus I	4
PHYS 25-120/121 Fundamentals of Classical Physics I and Laboratory	5
Biological Sciences: choose one course	4

Chemistry: Biochemistry Emphasis, 55-56 hours

Required Courses	Semester Hours
Chemistry Core	25
CHEM 24-562/563 General Biochemistry and Laboratory	5
CHEM 24-450 Macromolecular Structure	4
BIOL 04-310 Cell Biology	4
BIOL 04-350 Genetics	3
BIOL 04-440 Molecular Biology	4
PHYS 25-112/113 General Physics II and Laboratory OR	
PHYS 25-230/231 Fundamentals of Classical Physics II and Laboratory	4-5
Approved electives from chemistry or biology at or above 300 level	6
Total Hours	**55-56**

Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory OR	
BIOL 04-114/115 General Zoology and Laboratory	4
MATH 17-120 Calculus I OR	
MATH 17-118 College Algebra	3-4
PHYS 25-110-111 General Physics I and Laboratory OR	
PHYS 25-120/121 Fundamentals of Classical Physics I and Laboratory	4-5

Chemistry: Medicinal Chemistry Emphasis, 57-58 hours

Required Courses	Semester Hours
Chemistry Core	25
CHEM 24-562 General Biochemistry	3
*CHEM 24-436 Medicinal Chemistry I	3
*CHEM 24-438 Medicinal Chemistry II	3
BIOL 04-140 General Microbiology	4
BIOL 04-310 Cell Biology	4
BIOL 04-350 Genetics	3

PHYS 25-112/113 General Physics II and Laboratory OR	
PHYS 25-230/231 Fundamentals of Classical Physics II and Laboratory	4-5
**Choose a minimum of two courses from the following:	8
BIOL 04-438 Human Physiology (4)	
BIOL 04-440 Molecular Biology (4)	
BIOL 04-436 Human Anatomy (4)	
CHEM 24-522/523 Instrumental Analysis and Laboratory (4)	
CHEM 24-534/535 Physical Chemistry II and Laboratory (4)	
CHEM 24-552/555 Advanced Inorganic Chemistry/Inorganic Synthesis Lab (4)	
Total Hours	**57-58**

*Online courses taken through University of Florida or other accredited institution.

**Note: Students applying to medical or pharmacy programs are encouraged to consult with their advisor and the school of interest to determine specific admission requirements and tailor their curriculum accordingly.

Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory OR	
BIOL 04-114/115 General Zoology and Laboratory	4
MATH 17-120 Calculus I OR	
MATH 17-117 Precalculus	4
PHYS 25-110-111 General Physics I and Laboratory OR	
PHYS 25-120/121 Fundamentals of Classical Physics I and Laboratory	4-5

Major in Chemistry, 30 hours: B.A.—Minor Required

CIP: 400501

Required Courses	**Semester Hours**
CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-322/323 Analytical Chemistry and Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-344 Organic Chemistry II	3
CHEM 24-592 Chemistry Seminar	1
Chemistry electives from courses numbered above 300	7
Directed General Education Courses	
MATH 17-118 College Algebra	3
PHYS 25-110/111 General Physics I and Laboratory OR	
PHYS 25-112/113 General Physics II and Laboratory	4
Biological sciences: one course	4

Unified Science Major in Chemistry, 63-64 hours: B.S.Ed., Secondary Program—No Minor Required (Certifies Grades 9-12, Endorsement Area: Chemistry)

CIP: 131316

Required Courses in Endorsement Area: Chemistry	**Semester Hours**
CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-135 Laboratory Safety	2

CHEM 24-322/323 Analytical Chemistry and Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-362/363 Elementary Biochemistry and Laboratory OR	
CHEM 24-562/563 General Biochemistry and Laboratory	4-5
CHEM 24-499 Special Investigations in Chemistry	1
CHEM 24-534 Physical Chemistry II	3
CHEM 24-592 Chemistry Seminar	1
CHEM 24-370 Chemistry Practicum	1
Required Collateral Courses for the Unified Science Major	
BIOL 04-112/113 General Botany and Laboratory	4
BIOL 04-420 Environmental Issues	4
GEOL 27-212 Historical Geology	4
MATH 17-114 General Statistics I	3
MATH 17-121 Calculus II	4
PHYS 25-120/121 Fundamentals of Classical Physics I and Laboratory	5
PHYS 25-230/231 Fundamentals of Classical Physics II and Lab	5
SCED 28-550 History of Science and Technology	3
Total Hours in Major	**63-64**
Directed General Education Courses	
BIOL 04-114/115 General Zoology and Laboratory	4
GEOL 27-114/115 General Earth Science and Laboratory	4
MATH 17-120 Calculus I	4
Professional Education Requirements	**30**
Including SCED 28-580 Methods in Secondary School Science (3)	

Major in Chemistry Education, 56 hours: B.S.Ed., Secondary Program (Certifies Grades 9-12)

CIP: 131323

Required Courses	**Semester Hours**
CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-135 Laboratory Safety	2
CHEM 24-322/323 Analytical Chemistry and Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-370 Chemistry Practicum	1
CHEM 24-499 Special Investigations in Chemistry	1
CHEM 24-534/535 Physical Chemistry II and Laboratory	4
CHEM 24-562/563 General Biochemistry and Laboratory	5
CHEM 24-592 Chemistry Seminar	1
Choose from the following chemistry electives:	
CHEM 24-344/345 Organic Chemistry II and Laboratory (5) OR	4-5
CHEM 24-532/533 Physical Chemistry I and Laboratory (4)	
Collateral Courses	
BIOL 04-420 Environmental Issues	4
MATH 17-114 General Statistics I	3
MATH 17-121 Calculus II	4
PHYS 25-120/121 Fundamentals of Classical Physics I and Laboratory	5
SCED 28-550 History of Science and Technology	3

Directed General Education Courses	
BIOL 04-102/103 General Biology and Laboratory	4
GEOL 27-114/115 General Earth Science and Laboratory	4
MATH 17-120 Calculus I	4
Professional Education Requirements	***30***
Including SCED 28-580 Methods in Secondary School Science (3)	

MINORS

If the requirements for both the minor in Chemistry and the minor in Biochemistry have been met, the student must choose one of the minors.

Minor in Chemistry, 24 hours

CIP: 400501

Required Courses	**Semester Hours**
*CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-322/323 Analytical Chemistry and Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
Chemistry electives from courses numbered above 300	5
Directed General Education Courses	
MATH 17-118 College Algebra	3
PHYS 25-110/111 General Physics I and Laboratory OR	
PHYS 25-112/113 General Physics II and Laboratory	4

***Cannot be used to fulfill any General Education requirement.**

Minor in Biochemistry, 27-28 hours

CIP: 260202

Students majoring in chemistry are not permitted to select this minor.

Required Courses	**Semester Hours**
*CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-344/345 Organic Chemistry II and Laboratory	5
CHEM 24-562/563 General Biochemistry and Laboratory	5
Collateral Courses	
BIOL 04-310 Cell Biology (4) OR	
BIOL 04-350 Genetics (3)	3-4
Directed General Education Courses	
MATH 17-118 College Algebra	3
BIOL 04-102/103 General Biology and Laboratory OR	
BIOL 04-112/113 General Botany and Laboratory OR	
BIOL 04-114/115 General Zoology and Laboratory OR	
AGRI 03-130 Plant Science	4

***Cannot be used to fulfill any General Education requirement.**

NOTE:

1) Students with a Biology major: Cellular/Molecular Emphasis must take 5 hours of chemistry electives from 300-level or above courses, excluding CHEM 24-362/363.

2) Students with a comprehensive major in Pre-Professional Zoology must take 3 hours of chemistry electives from courses numbered 300 or above excluding CHEM 24-362/363.

Minor in Chemistry Education, 24-26 hours: B.S.Ed. (Certifies 9-12)

CIP: 131323

Required Courses	Semester Hours
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-135 Laboratory Safety	2
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-362/363 Elementary Biochemistry and Laboratory (4) OR CHEM 24-562/563 General Biochemistry and Laboratory (5)	4-5
CHEM 24-499 Special Investigations in Chemistry	1
CHEM 24-534/535 Physical Chemistry II and Laboratory (4) OR CHEM 24-322/323 Analytical Chemistry and Laboratory (5)	4-5
SCED 28-550 History of Science and Technology	3
Directed General Education Courses	
CHEM 24-114/115 General Chemistry I and Laboratory	4
MATH 17-114 General Statistics I	3
Professional Education Requirements	
SCED 28-580 Methods in Secondary School Science is the required subject field methods course.	

NOTE: Students with a non-science education major will also be required to take SCED 28-550 History of Science and Technology.

Geology / 27

MAJORS

Core Requirements for Majors in Geology	Semester Hours
GEOL 27-110/111 General Geology and Laboratory OR GEOL 27-114/115 General Earth Science and Laboratory	4
GEOL 27-212 Historical Geology	4
GEOL 27-220 Mineralogy	4
GEOL 27-420 Petrology	4
GEOL 27-498 Senior Seminar	1
Total Hours	**17**

Major in Geology, 31 hours: B.A.–Minor Required

CIP: 400601

Geology Major Core Requirements	**17**
GEOL 27-360 Environmental Geology	4
Geology electives (No more than 2 field trips)	10
Directed General Education Course	
CHEM 24-112/113 General Chemistry and Laboratory OR CHEM 24-114/115 General Chemistry I and Laboratory	4

Comprehensive Major in Geology, 54-59 hours (depending on area of concentration): B.S.–No Minor Required

CIP: 400601

Areas of Concentration	Semester Hours
General Geology	55-59
Environmental Geology	54

General Geology Concentration 55-59 hours

Required Courses	Semester Hours
Geology Major Core Requirements	**17**
GEOL 27-440 Stratigraphy OR	
GEOL 27-530 Sedimentology	4
GEOL 27-450 Structural Geology	4
GEOL 27-540 Paleontology	4
Geology Summer Field Camp (approved through institution)	6
Required Geology Electives (one course from each group)	
Group I	3-4
GEOL 27-423 Economic Geology (4)	
GEOL 27-424 Geochemistry (3)	
GEOL 27-510 Geomorphology (3)	
GEOL 27-555 X-Ray Analysis (3)	
GEOL 27-560 Optical Mineralogy (3)	
Group II	3-4
GEOG 32-361 Climatology (3)	
GEOG 32-363 Remote Sensing (3)	
GEOL 27-335 Physical Oceanography (3)	
GEOL 27-340 Introduction to Hydrogeology (3)	
GEOL 27-360 Environmental Geology (4)	
GEOL 27-515 Environmental Regulations (2)	
Required Collateral Courses	
MATH 17-119 Trigonometry or any calculus course	2
Chemistry: One course with laboratory beyond the directed General Education course; choose from:	
CHEM 24-114/115 General Chemistry I and Laboratory (4) OR	
CHEM 24-116/117 General Chemistry II and Laboratory (5)	4-5
PHYS 25-110/111 General Physics I and Laboratory (4) AND	
PHYS 25-112/113 General Physics II and Laboratory (4)	
OR	
PHYS 25-120/121 Fundamentals of Classical Physics I and Laboratory (5) AND	
PHYS 25-230/231 Fundamentals of Classical Physics II and Lab. (5)	8-10
Directed General Education Courses	
MATH 17-118 College Algebra or any calculus course	3
CHEM 24-112/113 General Chemistry and Laboratory OR	
CHEM 24-114/115 General Chemistry I and Laboratory	4
BIOL 04-102/103 General Biology and Laboratory OR	
BIOL 04-112/113 General Botany and Laboratory OR	
BIOL 04-114/115 General Zoology and Laboratory	*4*

Environmental Geology Concentration, 54 hours: B.S.– No Minor Required

Required Courses	Semester Hours
Geology Major Core Requirements	**17**
GEOL 27-340 Introduction to Hydrogeology	3
GEOL 27-360 Environmental Geology	4
GEOL 27-455 Geologic Field Methods OR	
Field Camp in Geology, Hydrogeology or Environmental Geology	3
Required Geology Electives (choose a combination to total 15 hours)	**15**
GEOL 27-326 Geology of the National Parks (3)	
GEOL 27-335 Physical Oceanography (3)	
GEOL 27-423 Economic Geology (4)	
GEOL 27-424 Geochemistry (3)	
GEOL 27-440 Stratigraphy (4)	
GEOL 27-450 Structural Geology (4)	
GEOL 27-510 Geomorphology (3)	
GEOL 27-530 Sedimentology (4)	
GEOL 27-540 Paleontology (4)	
GEOL 27-555 X-Ray Analysis (3)	
GEOL 27-560 Optical Mineralogy (3)	
Required Collateral Courses (choose a combination to total 12 hours)	**12**
AGRI 03-234 Fundamentals of Soil Science (4)	
BIOL 04-420 Environmental Issues (4)	
CHEM 24-242/243 Organic Chemistry and Laboratory (4)	
GEOG 32-201 Maps and Maps Interpretation (3)	
GEOG 32-207 GPS Fundamentals (3)	
GEOG 32-221 Economic Geography (3)	
GEOG 32-361 Climatology (3)	
GEOG 32-362 Cartography (3)	
GEOG 32-363 Remote Sensing (3)	
GEOG 32-365 Geographic Information Systems (3)	
GEOG 32-501 Conservation of Natural Resources (3)	
GEOG 32-522 Urban Geography (3)	
GEOG 32-562 Digital Cartography and GeoVisualization (3)	
GEOG 32-563 Digital Image Processing (3)	
GEOG 32-565 Advanced Geographic Information Systems (3)	
GEOL 27-515 Environmental Regulations (2)	
MATH 17-114 General Statistics I (3)	
Directed General Education Courses	
CHEM 24-112/113 General Chemistry and Laboratory OR	4
CHEM 24-114/115 General Chemistry I and Laboratory	

Unified Science Major in Earth Science, 58 hours: B.S.Ed., Secondary Program–No Minor Required (Certifies Grades 9-12, Endorsement Area: Earth Science)

CIP: 131316

Required Courses in Endorsement Area: Earth Science	Semester Hours
GEOG 32-360 Dynamic and Synoptic Meteorology	3

GEOL 27-114/115 General Earth Science and Laboratory	4
GEOL 27-212 Historical Geology	4
GEOL 27-220 Mineralogy	4
GEOL 27-305 Practicum in Teaching Laboratory	1
GEOL 27-335 Physical Oceanography	3
GEOL 27-360 Environmental Geology	4
GEOL 27-420 Petrology	4
GEOL 27-498 Senior Seminar	1
GEOL 27-540 Paleontology	4
Required Collateral Courses for the Unified Science Major	
BIOL 04-112/113 General Botany and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
MATH 17-119 Trigonometry	2
PHSC 40-122/123 Descriptive Astronomy and Laboratory	4
PHYS 25-110/111 General Physics I and Laboratory	4
PHYS 25-112/113 General Physics II and Laboratory	4
SCED 28-550 History of Science and Technology	3
Total Hours in Major	**58**
Directed General Education Courses	
MATH 17-118 College Algebra	3
BIOL 04-114/115 General Zoology and Laboratory	4
CHEM 24-114/115 General Chemistry I and Laboratory	4
Professional Education Requirements	**30**
Including SCED 28-580 Methods in Secondary School Science (3)	

MINORS

Minor in Geology, 24 hours

CIP: 400601

Required Courses	**Semester Hours**
GEOL 27-110/111 General Geology and Laboratory OR	
GEOL 27-114/115 General Earth Science and Laboratory	4
GEOL 27-212 Historical Geology	4
GEOL 27-220 Mineralogy	3
Required Geology Electives	13
(Must include one 400- or 500-level 3-5 credit course from Geology offerings and no more than one field trip)	
Directed General Education Course	
CHEM 24-112/113 General Chemistry and Laboratory OR	
CHEM 24-114/115 General Chemistry I and Laboratory	4

Minor in Earth Science Education, 22-23 hours

CIP: 131316

Required Courses	**Semester Hours**
GEOG 32-360 Dynamic and Synoptic Meteorology	3
*GEOL 27-114/115 General Earth Science and Laboratory	4
GEOL 27-212 Historical Geology	4

GEOL 27-305 Practicum in Teaching Laboratory	1
GEOL 27-335 Physical Oceanography	3
GEOL 27-360 Environmental Geology (4) OR	
GEOG 32-501 Conservation of Natural Resources (3)	3-4
PHSC 40-122/123 Descriptive Astronomy and Laboratory	4

***This course counts as a General Education course as well as a course in the minor area.**

NOTES: This minor may be paired with a major in Geography, but not a major in Geology. If paired with a major in Geography, courses listed in both the major and minor may not count toward both. This minor will not certify to teach unless taken on a B.S.Ed. degree.

Students with a non-science education major will also be required to take SCED 28-550 History of Science and Technology.

Interdisciplinary Minor in Environmental Science, 26 hours

CIP: 030104

Required Courses	**Semester Hours**
BIOL 04-114/115 General Zoology and Laboratory	4
BIOL 04-376 Basic Ecology	4
CHEM 24-114/115 General Chemistry I and Laboratory	4
GEOG 32-501 Conservation of Natural Resources	3
GEOL 27-340 Hydrogeology	3
GEOL 27-360 Environmental Geology OR	
BIOL 04-420 Environmental Issues	4
Advisor-Approved Electives (choose 4 hours):	4
AGRI 03-234 Fundamentals of Soil Science (4)	
BIOL 04-140 General Microbiology (4)	
BIOL 04-307 Environmental Internship (1-3)	
BIOL 04-474 Wildlife Management and Conservation (2)	
BIOL 04-575 Methods in Plant Ecology (2)	
BIOL 04-577 Methods in Animal Ecology (2)	
GEOL 27-424 Geochemistry (3)	
GEOL 27-515 Environmental Regulations (2)	
GEOL 27-530 Sedimentology (3)	
GEOG 32-361 Climatology (3)	
Other courses as approved by the advisor	
Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory	4
GEOL 27-114/115 General Earth Science and Laboratory	4

NOTES: No biology course in the Environmental Science Minor may also be counted toward any biology major. Therefore, biology majors who select this minor must replace all biology courses in the minor with an equal number of hours in advisor-approved electives. At least eight of these replacement hours must be biology courses.

This minor may not be paired with the Environmental Science Emphasis of the B.S. in Biology.

If combined with the B.A. in Geology, the student must add an additional 4-hour course to achieve the 56-hour combined minimum number of hours required for the major plus the minor.

No systematic electives may count for both a major in geology or geography and this minor.

Physics / 25

MINORS

Minor in Physics, 24 hours

CIP: 400801

Required Courses	Semester Hours
PHYS 25-120/121 Fundamentals of Classical Physics I and Laboratory	5
PHYS 25-230/231 Fundamentals of Classical Physics II and Laboratory	5
MATH 17-121 Calculus II	4
Physics electives from courses numbered above 300	10
Directed General Education Course	
MATH 17-120 Calculus I	4

Minor in Physics Education, 27 hours: B.S.Ed. (Certifies Grades 9-12)

CIP: 131329

Required Courses	Semester Hours
PHYS 25-120/121 Fundamentals of Classical Physics I and Laboratory	5
PHYS 25-230/231 Fundamentals of Classical Physics II and Laboratory	5
PHYS 25-350/351 Introduction to Modern Physics and Laboratory	4
MATH 17-121 Calculus II	4
SCED 28-550 History of Science and Technology	3
Physics electives from courses numbered above 300	6
Directed General Education Course	
MATH 17-120 Calculus I	4

Professional Education Requirement

SCED 28-580 Methods in Secondary School Science is the required subject field methods course.

NOTE: Students with a non-science education major will also be required to take SCED 28-550 History of Science and Technology.

Nanoscale Science / 48

DEGREE PROGRAM

The main objectives of the courses in the nanoscience program are to provide interdisciplinary training in biology, chemistry, physics and mathematics needed for the highly technical fields related to nanotechnology. The curriculum is composed of a core sequence required for all participants in the program as well as three emphasis tracks that allow students to focus on specific areas of interest.

MAJOR

Major in Nanoscience, 72 hours: B.S.–No Minor Required

CIP: 300101

Nanoscale Biology Emphasis

This is an interdisciplinary major in conjunction with the Departments of Natural Sciences, and Mathematics, Computer Science and Information Systems. Three emphasis areas are available for this major: Nanoscale Biology, Nanoscale Chemistry and Nanoscale Physics.

Required Core Courses	**Semester Hours**
BIOL 04-140 General Microbiology	4
BIOL 04-310 Cell Biology	4
BIOL 04-350 Genetics	3
BIOL 04-440 Molecular Biology	4
CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-135 Laboratory Safety	2
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-562/563 Biochemistry and Laboratory	5
MATH 17-114 General Statistics I	3
MATH 17-121 Calculus II	4
NANO 48-314 Nanoscale Science I	4
NANO 48-315 Nanoscale Science II	4
PHYS 25-230/231 Classical Physics II and Laboratory	5
Total Core Requirements	**56**

Nanoscale Biology Emphasis Required Courses	
BIOL 04-444 Immunology	4
BIOL 04-511 Techniques in Biotechnology	4
CHEM 24-344/345 Organic Chemistry II and Laboratory	5
CHEM 24-450 Macromolecular Structures	3
Total Emphasis Hours	**16**

Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory	4
MATH 17-120 Calculus I	4
PHIL 39-274 Introduction to Ethics	3
PHYS 25-120/121 Classical Physics I and Laboratory	5

Nanoscale Chemistry Emphasis

This is an interdisciplinary major in conjunction with the Departments of Natural Sciences, and Mathematics, Computer Science, and Information Systems. Three emphasis areas are available for this major: Nanoscale Biology, Nanoscale Chemistry and Nanoscale Physics.

Required Core Courses	**Semester Hours**
BIOL 04-140 General Microbiology	4
BIOL 04-310 Cell Biology	4
BIOL 04-350 Genetics	3
BIOL 04-440 Molecular Biology	4
CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-135 Laboratory Safety	2

CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-562/563 Biochemistry and Laboratory	5
MATH 17-114 General Statistics I	3
MATH 17-121 Calculus II	4
NANO 48-314 Nanoscale Science I	4
NANO 48-315 Nanoscale Science II	4
PHYS 25-230/231 Classical Physics II and Laboratory	5
Total Core Requirements	**56**
Nanoscale Chemistry Emphasis Required Courses	
CHEM 24-344/345 Organic Chemistry II and Laboratory OR CHEM 24-322/323 Analytical Chemistry and Laboratory	5
CHEM 24-532/533 Physical Chemistry I and Laboratory	4
CHEM 24-534 Physical Chemistry II	3
CHEM 24-552/555 Advanced Inorganic Chemistry and Inorganic Synthesis Laboratory	4
Total Emphasis Hours	**16**
Directed General Education Courses	
BIOL 04-112/113 General Botany and Laboratory	4
MATH 17-120 Calculus I	4
PHIL 39-274 Introduction to Ethics	3
PHYS 25-120/121 Classical Physics I and Laboratory	5

Nanoscale Physics Emphasis

This is an interdisciplinary major in conjunction with the Departments of Natural Sciences, and Mathematics, Computer Science, and Information Systems. Three emphasis areas are available for this major: Nanoscale Biology, Nanoscale Chemistry and Nanoscale Physics.

Required Core Courses	**Semester Hours**
BIOL 04-140 General Microbiology	4
BIOL 04-310 Cell Biology	4
BIOL 04-350 Genetics	3
BIOL 04-440 Molecular Biology	4
CHEM 24-114/115 General Chemistry I and Laboratory	4
CHEM 24-116/117 General Chemistry II and Laboratory	5
CHEM 24-135 Laboratory Safety	2
CHEM 24-342/343 Organic Chemistry I and Laboratory	5
CHEM 24-562/563 Biochemistry and Laboratory	5
MATH 17-114 General Statistics I	3
MATH 17-121 Calculus II	4
NANO 48-314 Nanoscale Science I	4
NANO 48-315 Nanoscale Science II	4
PHYS 25-230/231 Classical Physics II and Laboratory	5
Total Core Requirements	**56**
Nanoscale Physics Emphasis Required Courses	
CSIS 44-141 Computer Programming I	3
PHYS 25-332/333 Electronics and Laboratory OR PHYS 25-450/451 Computational Physics and Laboratory	4
PHYS 25-350/351 Introduction to Modern Physics I and Laboratory	4
PHYS 25-352 Modern Physics II	3
PHYS 25-479 Undergraduate Research	2
Total Emphasis Hours	**16**

Directed General Education Courses

BIOL 04-112/113 General Botany and Laboratory	4
MATH 17-120 Calculus I	4
PHIL 39-274 Introduction to Ethics	3
PHYS 25-120/121 Classical Physics I and Laboratory	5

Science Education / 28

MINOR

Minor in Middle School Science, 25 hours: B.S.Ed., Major in Middle School (Certifies Grades 5-9). Additional concentration area is required.

Required Courses	Semester Hours
*BIOL 04-112/113 General Botany and Laboratory OR	
*BIOL 04-114/115 General Zoology and Laboratory	4
CHEM 24-114/115 General Chemistry and Laboratory OR	
PHYS 25-110/111 General Physics and Laboratory OR	
PHYS 25-112/113 General Physics II and Laboratory	4
CHEM 24-135 Laboratory Safety	2
GEOL 27-114/115 General Earth Science and Laboratory	4
PHSC 40-102/103 The Physical Sciences and Laboratory	4
PHSC 40-122/123 Descriptive Astronomy and Laboratory	4
SCED 28-550 History of Science and Technology	3

Directed General Education Course

BIOL 04-102/103 General Biology and Laboratory	4

Professional Education Requirement

SCED 28-582 Methods in Middle School Science is included in Middle School major.

***Cannot be used to fulfill any General Education requirement.**

Course Descriptions

Biology / 04

102 General Biology (3 hours)
A general course in biology which provides students a broad understanding of the basic principles of biological science such as cells, energy production, photosynthesis, genetics, plant and animal physiology, ecology and diversity. Upon completion, students should be able to understand the intricate relationship between living organisms and their environment and more intelligently act upon important issues facing our society. Must co-register in BIOL 04-103. Three hours of lecture per week. (F, S, SS)

103 General Biology Laboratory (1 hour)
A two-hour laboratory which must be taken concurrently with BIOL 04-102 (F, S, SS)

104 Medical Terminology (3 hours)
Medical terms encountered in the anatomy, physiology and surgical procedures of the life support systems. (F, S)

110 Theory and Practice of Emergency Medical Techniques (4 hours)
Theory and clinical practice which allows one to gain and apply knowledge about the life support systems encountered in emergency medical

situations. Students will be presented symptoms, treatment, practical experience and use of emergency medical equipment. This course is approved and partially funded by the Missouri Bureau of Emergency Medical Services. (F)

111 Emergency Medical Techniques (2 hours)
A brief refresher of BIOL 04-110 which serves as a refresher course for those seeking to be re-licensed as emergency medical technicians. Funded in part by the Missouri Bureau of Emergency Medical Services. (F)

112 General Botany (3 hours)
A fundamental study of plants: life histories, structure, physiology, ecology and economic importance. Must co-register for BIOL 04-113. Prerequisites: BIOL 04-102/103 with a minimum grade of "C" or equivalent of two years of high school biology. Three hours of lecture per week. (F, S, SS)

113 General Botany Laboratory (1 hour)
A two-hour laboratory which must be taken concurrently with BIOL 04-112. (F, S, SS)

114 General Zoology (3 hours)
An introductory course on the life histories of animals taught using an evolutionary paradigm. Topics covered include taxonomy, diversity, anatomy, physiology, ecology, and reproductive strategies of major animal and protozoan clades. Must co-register for BIOL 04-115. Three hours of lecture per week. Prerequisites: BIOL 04-102/103 with a minimum grade of "C" or equivalent of two years of high school biology. (F, S, SS)

115 General Zoology Laboratory (1 hour)
Two-hour laboratory designed to supplement material taught in BIOL 04-114. Must be taken concurrently with BIOL 04-114. (F, S, SS)

130 Animal Anatomy and Physiology (4 hours)
Introductory course dealing with basic anatomy and physiology of major animal groups. This course is taught using a systems-based approach, with emphasis on how anatomy and physiology correlates with the ecology, behavior, and basic life history of animals. Three hours of lecture and two hours of laboratory per week. Prerequisites: BIOL 04-112/113 and 114/115 with a minimum grade of "C." (S)

140 General Microbiology (4 hours)
A study of the morphology, physiology and culturing of microorganisms. Studies on disease-producing organisms, the fundamentals of immunology, various laboratory techniques, and procedures and the applications of microbiology will be included. Two hours of lecture and four hours of laboratory per week. Prerequisites: BIOL 04-102/103 or 112/113 or 114/115 with a minimum grade of "C" and CHEM 24-114/115. Pre-nursing students may substitute CHEM 24-112/113. (F, S)

210 Current Topics in Biology (1-3 hours)
Each current topic is specifically designed to address a timely topic in biology. Repeatable for additional experience, new material and progression of study.

236 Anatomy Allied Health (4 hours)
An introduction to the anatomy of the human body, including cells, tissues, organs and organ systems. Comprehension is emphasized over memorization, but some basic terminology is also presented. This course is designed for beginning students in the allied health sciences, such as pre-nursing and pre-radiology. Prerequisites: BIOL 04-102/103 and CHEM 24-112/113 or 114/115. (F)

238 Physiology Allied Health (4 hours)
The study of human physiological processes from the perspective of an allied health professional. Topics include muscle, nervous, cardiovascular, respiratory, renal, gastrointestinal, reproductive and endocrine physiology. Physiological responses to important medications and patient nutrient status will be emphasized. Three hours of lecture and three hours of laboratory a week. Prerequisites: BIOL 04-102/103 and CHEM 24-112/113 or 114/115. (S)

261 Local Flora (2 hours)
A two-hour laboratory course designed to acquaint the student with plants of this region and their classification. Prerequisite: BIOL 04-112/113 and 114/115 with a minimum grade of "C." (F)

293 Medical Transcription and Medical Records Practicum (2 hours)
The practicum consists of the American Medical Association's Medical Transcription Course which is a programmed study and directed practice in the medical records department. The directed practice includes experiences in admitting procedures, dismissing procedures, insurance forms, coding

diseases and operations, medical record completion (inspecting charts for deficiencies), filing and computer data processing form completion. Two hours of lecture per week. (F, S)

301 Pre-Professional Health Science Internship (1-3 hours)
Each student will be supervised and be an active participant in an area of health care. A professional paper describing the supervised experience will be required. By permission only. Repeatable for additional experience, new material and progression of study. (F, S, SS)

303 Wildlife Ecology and Conservation Internship (1-3 hours)
Each student will be supervised and be an active participant in an area of wildlife ecology or conservation. A professional paper describing the supervised experience will be required, along with a program given to the department's 102 River Wildlife Club. May be repeated for a maximum of nine credit hours. Prerequisite: Permission of instructor. Repeatable for additional experience, new material and progression of study. (F, S, SS)

306 Undergraduate Research in Biology (1-3 hours)
This course is designed to allow students to become involved in undergraduate research projects directed by a departmental faculty member. The student will develop the project, write the proposal and present the results at a local, state or national meeting. Repeatable for additional experience, new material and progression of study. (F, S)

307 Environmental Internship (1-3 hours)
Students will be placed in a work setting and become an active participant in an environmental area. Sixty-four hours of on-site work plus a written report will be required. Prerequisite: Permission of instructor. Repeatable for additional experience, new material and progression of study. (F, S, SS)

310 Cell Biology (4 hours)
An introduction to the fundamentals of cellular structure and function. Cell physiology, molecular biology, cellular organelles, energy relationships and reproduction of cells are included. Three hours of lecture and three hours of laboratory per week. Prerequisites: BIOL 04-112/113 and 114/115 with a minimum grade of "C" and 8 hours of chemistry. Recommended prerequisites: CHEM 24-342/343 and either CHEM 24-362/363 or 562/563. (F)

312 Invertebrate Zoology (4 hours)
A systematic treatment of major invertebrate phyla, classes and other groups, including taxonomic, anatomical, physiological, embryological and ecological features. Two hours of lecture and two two-hour laboratories per week. Prerequisite: BIOL 04-112/113 and 114/115 with a minimum grade of "C." (S)

318 Principles of Taxonomy and Evolution (4 hours)
A study of the origin and diversity of life as well as both animal and plant classifications. Studies include contemporary systematic approaches, construction of keys, international rules of nomenclature, evolutionary principles, and origin of species. Two hours of lecture and four hours of laboratory per week. Prerequisites: BIOL 04-112/113 and 114/115 with a minimum grade of "C." (S, even years)

322 Comparative Anatomy (4 hours)
An advanced course designed to familiarize students with fundamental and in-depth aspects of anatomy, evolution, and functional morphology in vertebrate animals. Laboratory includes hands-on dissection and examination of all major body systems in selected vertebrates. Two hours of lecture and six hours of laboratory per week. Prerequisites: BIOL 04-112/113 and 114/115 with a minimum grade of "C" and PHYS 25-110/111 or permission of instructor. (F)

350 Genetics (3 hours)
An introduction to the fundamental facts and principles of inheritance including the physical, biochemical and cytological bases for Mendelian inheritance, selection and breeding, probability and human genetics. Two hours of lecture and two hours of laboratory per week. Prerequisites: BIOL 04-112/113, 114/115 with a minimum grade of "C" and/or permission of instructor. (F, S)

362 Mammalogy (4 hours)
A study of mammals with emphasis upon their classification, identification, evolution, life histories, ecology, habits, anatomy, physiology, aesthetic and economic values. One hour lecture and two three-hour laboratories per week. Prerequisite: BIOL 04-112/113 and 114/115 with a minimum grade of "C." (F)

364 Ornithology (4 hours)
A study of the habitats, life histories, structure, functions, evolution, ecology, classification and identification of the birds found primarily in this region, with emphasis upon their economic and

aesthetic values to humans. One hour lecture and two three-hour laboratories per week. Prerequisite: BIOL 04-112/113 and 114/115 with a minimum grade of "C." (S)

366 Entomology (3 hours)
An introduction to the world of insects: their structure and function, numbers, classification, life history, behavior, ecology and their relationship to humans. Two hours of lecture and one two-hour laboratory per week. Prerequisite: BIOL 04-112/113 and 114/115 with a minimum grade of "C." (F)

376 Basic Ecology (4 hours)
A basic study in ecological field techniques and ecological theory. Three hours of lecture and one three-hour laboratory per week. Prerequisites: BIOL 04-112/113 and 114/115 with a minimum grade of "C" or permission of instructor. (F)

383 Biology Practicum (1 hour)
Instruction and practical experience in development, teaching and the preparation of introductory biology laboratories. Coordinated by the bioscience coordinator. BIOL 04-483 may be taken for an additional practicum credit. One laboratory section per week. Prerequisites: Junior standing and four or more courses in biology or permission of instructor. Repeatable for additional experience, new material and progression of study. (F, S, SS)

412 Plant Anatomy and Morphology (4 hours)
A study of the development, structure and function of plant tissues and organs, as well as the form and structure of extinct plant groups found in the fossil record. Primary emphasis on vegetative and reproductive organs of gymnosperms and angiosperms. Two hours of lecture and four hours of laboratory per week. Prerequisites: BIOL 04-112/113 and 114/115 with a minimum grade of "C." (S, alt. years)

418 Vertebrate Histology (4 hours)
The study of vertebrate tissues and organs. Laboratory consists of a microscopic study of cells, tissues, organs and organ systems. Two hours of lecture and six hours of laboratory per week. Prerequisite: BIOL 04-322 with a minimum grade of "C." (S)

419 Problems in General Biology (1-3 hours)
Permission of instructor necessary. Repeatable for additional experience, new material and progression of study.

420 Environmental Issues (4 hours)
An overview of the science, politics and sociology of current environmental issues, including pollution, wastes, ozone depletion, acidic precipitation, greenhouse effect, deforestation, water use, energy and population. Prerequisites: BIOL 04-112/113 and 114/115 with a minimum grade of "C". Recommended prerequisites: CHEM 24-114/115, GEOL 27-110/111 or 114/115. Three hours of lecture plus one two-hour lab per week. (S)

429 Problems in Morphological-Anatomical Biology (1-3 hours)
Permission of instructor necessary. Repeatable for additional experience, new material and progression of study.

430 Plant Physiology (4 hours)
A study of the chemical and physical processes involved in the growth and functioning of plants. Three hours lecture and three hours laboratory per week. Prerequisites: BIOL 04-112/113 and 114/115 with a minimum grade of "C," CHEM 24-114/115 and 342/343. (S, even years)

436 Human Anatomy (4 hours)
The systematic study of human anatomy, including the skeletal, muscular, cardiovascular, digestive, respiratory, urinary, endocrine, reproductive, and integumentary systems. Three hours of lecture and two hours of laboratory per week. Prerequisites: BIOL 04-112/113 and 114/115 with a minimum grade of "C." Medical Terminology is recommended. (F)

438 Human Physiology (4 hours)
The study of the physiological processes of humans, including membranes, muscle, nervous, cardiovascular, respiratory, renal, gastrointestinal, endocrine and reproductive physiology. Three hours of lecture and three hours of laboratory per week. Prerequisites: BIOL 04-112/113 and 114/115 with a minimum grade of "C." An anatomy course is recommended. (F, S)

439 Problems in Molecular-Physiological Biology (1-3 hours)
Permission of instructor necessary. Repeatable for additional experience, new material and progression of study.

440 Molecular Biology (4 hours)
An advanced course that explores the molecular structures, processes, and regulatory mechanisms related to DNA, RNA, protein expression and function. Three hours of lecture and three hours of laboratory per week. Prerequisite: BIOL 04-350

with a minimum grade of "C." Recommended prerequisites: BIOL 04-140 and 310. (S, odd years)

444 Immunology (4 hours)
Principles of immunology: to include antigen-antibody relationships, host-antigen interaction, immunocytology, humoral and cellular response mechanisms, and serologic reactions. Two hours of lecture and six hours of laboratory per week. Prerequisites: BIOL 04-112/113, 114/115 and 140 with a minimum grade of "C" or permission of instructor. (S)

449 Problems in Microbial Biology (1-3 hours)
Permission of instructor necessary. Repeatable for additional experience, new material and progression of study.

459 Problems in Genetical Biology (1-3 hours)
Permission of instructor necessary. Repeatable for additional experience, new material and progression of study.

460 Herpetology (4 hours)
Anatomy, physiology, taxonomy, distribution, life history and ecology of amphibians and reptiles, emphasizing those in Missouri. One hour of lecture and two three-hour laboratories per week. Prerequisite: BIOL 04-112/113 and 114/115 with a minimum grade of "C." (S)

469 Problems in Taxonomical Biology (1-3 hours)
Permission of instructor necessary. Repeatable for additional experience, new material and progression of study.

470 Readings in Ecology (2 hours)
Directed reading in ecology. Designed to acquaint the student with both historical and current developments in animal and plant ecology. Two hours of discussion per week. Prerequisites: BIOL 04-376 with a minimum grade of "C" and senior standing. Repeatable for additional experience, new material and progression of study. (S, odd years)

474 Wildlife Management and Conservation (2 hours)
A course designed to apply field and laboratory techniques to the management of game and non game wildlife resources; management emphasis will entail conservation practices with consideration for threatened, rare and endangered species. Professionally written papers are required. One hour of lecture and three hours of laboratory per week. Prerequisites: BIOL 04-112/113, 114/115, 261, and 376 with a minimum grade of "C" and senior standing, or consent of instructor. (F)

478 Readings in Molecular Biology (2 hours)
Directed readings in advances and techniques in molecular biology. Prerequisites: BIOL 04-310 and 440 with a minimum grade of "C." Repeatable for additional experience, new material and progression of study. (F, alt. years)

479 Problems in Environmental Biology (1-3 hours)
Permission of instructor necessary. Repeatable for additional experience, new material and progression of study.

483 Advanced Biology Practicum (1 hour)
An advanced course in practical procedures of instruction and preparation in biological laboratories. A maximum of two semester hours in advanced biology practicum courses is allowed. Prerequisite: Successful completion of assigned course that the student teaches as lab assistant plus consent of instructor. Repeatable for additional experience, new material and progression of study. (F, S, SS)

489 Problems in Biological Education (1-3 hours)
Permission of instructor necessary. Prerequisites: BIOL 04-112/113 and 114/115 with a minimum grade of "C." Repeatable for additional experience, new material and progression of study.

491 Biological Science Seminar (1 hour)
Individual reports and group discussion of problems and current research in biological sciences. A maximum of two semester hours is allowed. Prerequisite: Senior standing in major or minor or permission of department chairperson. (F, S) Repeatable for additional experience, new material and progression of study.

500 Special Offerings (1-4 hours)
Repeatable for additional experience, new material and progression of study.

510 Current Topics in Biology (1-3 hours)
Each current topic is specifically designed to address a timely topic in biology. Repeatable for additional experience, new material and progression of study.

511 Techniques in Biotechnology (4 hours)
A studio course dedicated to hands-on experience with common techniques utilized in the field of biotechnology. Theory and practical experience will be provided for techniques in DNA isolation, manipulation, gene cloning, library screening, molecular detection, and protein expression. Two three-hour studio sessions per week with additional independent laboratory work required. Prerequisite: BIOL 04-350 with a minimum grade of "C." (F)

520 Genetic Modifications of Biotechnology Feedstocks (3 hours)
Classical and modern techniques in genetic improvement of plant species with an emphasis on industrially important chemicals or products. Three hours of lecture and discussion per week. Must be taken concurrently with one credit hour lab BIOL 04-521. Prerequisite: CHEM 24-510 or concurrently. (F)

521 Genetic Modifications of Biotechnology Feedstocks Laboratory (1 hour)
Classical and modern techniques in genetic improvement of plant species on industrially important chemicals or products. One hour laboratory which must be taken concurrently with BIOL 04-520. (F)

575 Methods in Plant Ecology (2 hours)
This course surveys field techniques for collection of data and analysis of plant communities. Emphasis is placed on methods of analysis of the plant community. Three hours of laboratory per week. Prerequisites: BIOL 04-376, MATH 17-114 highly recommended. (F)

577 Methods in Animal Ecology (2 hours)
This course will apply field techniques for the collection of data and analysis of animal communities. Emphasis is on methods of analysis and preparation of an environmental assessment of two animal communities. Four hours of laboratory per week. Prerequisite: BIOL 04-376 with a minimum grade of "C." (S, second block)

CLINICAL LABORATORY SCIENCES

The following senior-level courses, **designated CLS**, are taken by students in a hospital clinical laboratory internship program. They are taught by the hospitals' schools of clinical laboratory sciences. They are not offered on campus by Northwest Missouri State University. The variation in credit is the result of differences in the prescribed programs offered by the hospitals.

CLS 401 Clinical Microbiology (6-9 hours)
The theory and laboratory study of pathogenic bacteria, viruses, rickettsiae, fungi and parasites. Includes specimen handling, methods of isolation, cultivation, diagnostic procedures, asepsis, environmental monitoring, medical significance and quality control.

CLS 403 Clinical Chemistry (6-10 hours)
Identification and quantitation of specific chemical substances in blood and body fluids by various analytical techniques, clinical correlation with diagnosis and treatment of disease, principles of instrumentation, toxicology, and quality control.

CLS 405 Clinical Hematology (4-7 hours)
Theory of blood cell formation, morphology of cellular constituents, disease states, homeostasis and coagulation testing. Techniques and instrumentation used to determine major hematological and clotting parameters will be included, along with quality control procedures.

CLS 407 Clinical Immunohematology (3-7 hours)
A study of the common blood group systems, principles and procedures for antigen-antibody detection, cross-matching, blood collection and preservation, the evaluation of transfusion reaction(s), clinical correlation of abnormalities and quality control.

CLS 409 Clinical Immunology (2-6 hours)
Covers characteristics of antigen-antibody function and interaction, principles and procedures of humoral and cellular immune responses, performances of serological procedures, clinical correlation of abnormalities and quality control.

CLS 411 Clinical Urinalysis (Microscopy) (1-3 hours)
A study of renal physiology and function in healthy and diseased states. Includes chemical and microscopic examination of urine, other excreta, and body fluids in relation to disease processes, along with quality control procedures.

CLS 413 Topics in Medical Technology (0-4 hours)
Subject matter may include the following: hospital orientation, laboratory management, radioisotope techniques, laboratory safety, special projects, special techniques, quality control procedures and seminars on various subjects deemed necessary by hospital personnel.

GULF COAST RESEARCH

The following courses are not taught on the Northwest campus, but at the accredited Gulf Coast Research Center.

351 Marine Science I: Oceanography (3 hours)
An introductory course in oceanography which integrates chemical, geological and physical oceanography to provide fundamentals of oceanography at Gulf Coast Research Laboratory. Prerequisites: College algebra and 8-9 hours of chemistry. (SS)

352 Marine Science II: Marine Biology (3 hours)
A general introduction to marine biology with emphasis on local fauna and flora at Gulf Coast Research Laboratory. Prerequisite: 8 hours of biology. (SS)

353 Marine Science Lab I (2 hours)
Field and laboratory exercises that accompany GC 351, consisting of various sampling techniques, analytical methods, data analyses, chart reading, and shipboard procedures. Must co-register in GC 351. (SS)

354 Marine Science Lab II (2 hours)
Field and laboratory exercises that accompany GC 353, consisting of various sampling techniques, species identification, data analyses, chart reading and shipboard procedures. Must co-register in GC 352. (SS)

541 Marine Botany (4 hours)
A survey based upon local examples of the principal groups of the marine algae and marine flowering plants, treating structure, reproduction, distribution, identification and ecology at Gulf Coast Research Laboratory. Prerequisite: 10 hours of biology, including botany. Upper-level undergraduate and graduate credit. (SS)

549 Marine Microbiology (5 hours)
Microbiology and advanced microbiology students are introduced to the role of the microorganisms in the overall ecology of oceans and estuaries at Gulf Coast Research Laboratory. Prerequisite: General microbiology and environmental microbiology or consent of instructor. Upper-level undergraduate and graduate credit. (SS)

Chemistry / 24

112 General Chemistry (3 hours)
Beginning course for those who did not take chemistry in high school. Must be taken concurrently with CHEM 24-113. Serves as a refresher course for science majors and satisfies the general laboratory physical science requirement. Involves a study of elements, compounds and fundamental chemical laws. Three hours of lecture and recitation per week. Prerequisite: High school algebra. (F, S, SS)

113 General Chemistry Laboratory (1 hour)
Beginning laboratory course which must be taken concurrently with CHEM 24-112 lecture. Two hours of laboratory and recitation. (F, S, SS)

114 General Chemistry I (3 hours)
Beginning course for science majors with a good high school background in chemistry. Must be taken concurrently with CHEM 24-115. This course covers fundamental chemical principles such as atoms, molecules, chemical reactions, stoichiometry, and gas laws as it progresses towards detailed study of quantum chemistry, periodic relationships, and molecular structure and properties. Three hours of lecture and recitation per week. Prerequisite: High school algebra. (F, S)

115 General Chemistry I Laboratory (1 hour)
Laboratory course which must be taken concurrently with CHEM 24-114. Three hours of laboratory and recitation. (F, S)

116 General Chemistry II (4 hours)
A continuation of CHEM 24-114. Must be taken concurrently with CHEM 24-117. Four hours of lecture and recitation. This course involves a study of kinetics, principles of equilibrium and thermodynamics. Prerequisite: CHEM 24-114/115 with a minimum grade of "C." (F, S)

117 General Chemistry II Laboratory (1 hour)
Laboratory course which must be taken concurrently with CHEM 24-116. One three-hour period of laboratory and recitation per week. (F, S)

135 Laboratory Safety (2 hours)
A comprehensive introduction to the protocols and practices for working safely in a modern chemistry laboratory. The course seeks to facilitate students' awareness of safe practices for chemical handling and disposal, potential hazards, emergency response and personal protection. Two hours of lecture/lab per week. Prerequisites: CHEM 24-114/115 with a minimum grade of "C." (S)

200 Special Offerings (1-4 hours)
Repeatable for additional experience, new material and progression of study.

211 Special Topics in Chemistry (1-3 hours)
In-depth study of special topics which may include environmental chemistry, atomic and molecular structure, kinetics, industrial chemistry, polymer chemistry, computer applications in the laboratory, surface chemistry and colloidal chemistry. Can be repeated with different topics. Prerequisites: CHEM 24-114/115 with a minimum grade of "C."

242 Organic Chemistry (3 hours)
An introductory course in general organic chemistry designed for students majoring in fields other than chemistry who desire a general course. The carbon compounds, together with their relations to the life processes, are covered in this course. Must be taken concurrently with CHEM 24-243. Three hours of lecture. Prerequisite: CHEM 24-112 or 114 with a minimum grade of "C." (F)

243 Organic Chemistry Laboratory (1 hour)
Laboratory course which must be taken concurrently with CHEM 24-242. Three hours of laboratory and recitation. (F)

322 Analytical Chemistry (3 hours)
This course involves a study of the theory, methods and techniques for the quantitative separation and determination of the amounts of materials present in certain natural and manufactured products. Three hours of lecture and recitation. Must be taken concurrently with CHEM 24-323. Prerequisites: CHEM 24-116/117 with a minimum grade of "C," and MATH 17-114. (F)

323 Analytical Chemistry Laboratory (2 hours)
Laboratory course which must be taken concurrently with CHEM 24-322. Two three-hour periods of laboratory and recitation per week. (F)

324 An Introduction to Forensic Science (3 hours)
This course covers the basic techniques used to analyze forensic evidence. Basic concepts of chemistry, biology, and physics are used to understand how forensic science techniques function. The interdisciplinary nature of forensic science problems is emphasized. Prerequisite: One year of college chemistry or permission of instructor.

342 Organic Chemistry I (3 hours)
This is a general course in organic chemistry for students majoring in chemistry. It must be taken concurrently with CHEM 24-343. Three hours of lecture and recitation. Prerequisite: CHEM 24-116/117 with a minimum grade of "C." (F)

343 Organic Chemistry I Laboratory (2 hours)
Laboratory course in organic chemistry which must be taken concurrently with CHEM 24-342. (F)

344 Organic Chemistry II (3 hours)
This is a continuation of CHEM 24-342. Three hours of lecture and recitation. Prerequisite: CHEM 24-342 with a minimum grade of "C." (S)

345 Organic Chemistry II Laboratory (2 hours)
This course involves a study of the qualitative determination of functional groups and identification of compounds by gas chromatography, infrared spectroscopy and nuclear magnetic resonance. Two three-hour laboratory periods per week. Prerequisite: CHEM 24-343 with a minimum grade of "C." (S)

362 Elementary Biochemistry (3 hours)
A non-rigorous treatment of selected aspects of biologically oriented chemistry. Emphasis will be on acquainting the student with many of the substances of which living organisms consist, with their interrelationships, and with some of the better known biochemical changes which they undergo. Must be taken concurrently with CHEM 24-363. Prerequisite: CHEM 24-242 or 342. (S)

363 Elementary Biochemistry Laboratory (1 hour)
This is a laboratory course to be taken concurrently with CHEM 24-362. One three-hour period per week will be used for laboratory amplification of topics presented in CHEM 24-362. (S)

364 Forensic DNA Science (3 hours)
Covers the theory and techniques used to analyze DNA in forensic evidence. Basic concepts

of chemistry and biology are used to understand how DNA analysis functions. Emphasis will be on collecting specimens, isolating and analyzing DNA, and statistical analysis to link the specimen to individual. Two hours of lecture and three hours of laboratory per week. Prerequisites: CHEM 24-242 or any general chemistry with permission of instructor.

370 Chemistry Practicum (1-3 hours)
The practicum provides students with experience in teaching a chemistry laboratory. Students will assist faculty with the preparation and instruction of chemistry labs. Can be repeated for new experience. (F, S)

400 Special Offerings (1-4 hours)
Repeatable for additional experience, new material and progression of study.

435 Chemistry Internship (1-3 hours)
Students with junior or senior standing with a major or minor in chemistry may enroll in an intern program (paid or unpaid) with a chemical or pharmaceutical company or for an academic research experience. Student must have advanced standing, permission of the instructor and department chairperson and must prepare a written proposal at the time of registration. A minimum of 50 hours of work per credit hour is required. Can be repeated for new experience. Prerequisite: Permission of instructor and department chairperson. (F, S, SS)

436 Medicinal Chemistry I (3 hours)
Students are shown how to predict the solubilities, structure-activity relationships, basic synthesis routes for selected structures, metabolism and pharmacological activity/potency of drug classes and individual members of classes based on the contribution of their functional groups to their structures. Prerequisite: CHEM 24-344 with a minimum grade of "C". (F, S, SS)

438 Medicinal Chemistry II (3 hours)
This is a continuation of CHEM 24-436. Prerequisite: CHEM 24-436 with a minimum grade of "C". (F, S, SS)

450 Macromolecular Structure (4 hours)
Covers modern methods that have defined the molecular basis for macromolecular interactions and their function in biochemistry. Emphasis focuses on the physical principles of macromolecular structure and interactions, and will describe modern methods. Prerequisites: CHEM 24-562/563. (S)

499 Special Investigations in Chemistry (1-3 hours)
Special projects and experiments in chemistry which are not included in the regular coursework. May be selected successively for one or more hours of credit per trimester to a maximum credit of three hours. A minimum of 50 hours of work per credit hour is required. Can be repeated for new experience. Prerequisite: Permission of instructor. (F, S, SS)

500 Special Offerings (1-4 hours)
Repeatable for additional experience, new material and progression of study.

522 Instrumental Analysis (2 hours)
A study of modern techniques and theories of analysis including an introduction to basic instrumental analysis. Must be taken concurrently with CHEM 24-523. Two hours of laboratory and recitation per week. Prerequisite: CHEM 24-322/323 with minimum grade of "C." (S, even years)

523 Instrumental Analysis Laboratory (2 hours)
Must be taken concurrently with CHEM 24-522. Two three-hour laboratory periods per week. (S, even years)

532 Physical Chemistry I (3 hours)
The study of atomic and molecular phenomena through the scrutiny and interpretation of the physical laws that govern the structure and behavior of matter as it exchanges energy within and between itself and its surroundings in the atomic and molecular domains. Topics include the foundation of quantum chemistry, atomic and molecular structure, spectroscopy, and computational chemistry. It is strongly suggested that CHEM 24-532 be taken prior to 534. Prerequisites: CHEM 24-116/117 with a minimum grade of "C," PHYS 25-120 and MATH 17-121.

533 Physical Chemistry I Laboratory (1 hour)
Laboratory course in physical chemistry that must be taken concurrently with CHEM 24-532. (F)

534 Physical Chemistry II (3 hours)
The study of thermodynamic systems and processes and the rates at which chemical reactions occur through the scrutiny and interpretation of the physical laws that govern the structure and behavior of matter as it exchanges energy within and between itself and its surroundings in the macroscopic domain. Topics include thermochemistry, thermodynamics, equilibrium, solutions, gases,

chemical dynamics and chemical kinetics. Prerequisites: CHEM 24-532/533 with a minimum grade of "C", or permission of instructor. (S)

535 Physical Chemistry Laboratory II (1 hour)
Laboratory course in physical chemistry that must be taken concurrently with CHEM 24-534. (S)

552 Advanced Inorganic Chemistry (3 hours)
Modern aspects of inorganic chemistry, includes coordination chemistry, molecular orbital theory, group theory and catalysis, magnetic properties of elements and compounds. Three hours of lecture and recitation. Prerequisite: CHEM 24-532 with a minimum grade of "C" or concurrently. (S, odd years)

555 Inorganic Synthesis Laboratory (1 hour)
An introduction to fundamental methods and techniques used in the synthesis and manipulation of inorganic compounds. These techniques will include the synthesis, methods of purification and characterization of inorganic compounds. Prerequisite: CHEM 24-116/117 with minimum grade of "C" in both. (S, odd years)

562 General Biochemistry (3 hours)
An introductory course in biochemistry which deals with selected topics in the field. The description and functions of amino acids, proteins, fats, nucleic acids and certain carbohydrates will be discussed. Enzymes and their role in metabolic processes will be emphasized. Three hours of lecture and recitation per week. Prerequisite: CHEM 24-342 with a minimum grade of "C," or permission of instructor. (F)

563 General Biochemistry Laboratory (2 hours)
Experiments illustrating biochemical techniques and principles will be performed. Two three-hour laboratory periods per week. Prerequisite: CHEM 24-562 or concurrently. (F)

580 Special Topics (1-3 hours)
This is an in-depth study of special topics offered according to student need and interest. Topics include environmental chemistry, atomic and molecular structure, kinetics, industrial chemistry, polymer chemistry, computer applications in the laboratory, surface chemistry and colloidal chemistry. Can be repeated with different topics. Prerequisites: CHEM 24-342 and 532 or permission of instructor.

592 Chemistry Seminar (1 hour)
Students will prepare written and oral reports on a literature search of a chemistry topic. Prerequisite: CHEM 24-342. (F, S)

Geology / 27

110 General Geology (3 hours)
A study of Earth as a dynamic planet, with a focus on internal and external processes. Common themes include: earth materials, earthquakes, volcanism, mountain building, streams, groundwater, and surficial processes. When possible, these processes are placed in the context of human uses and other impacts. Three one hour lectures per week. GEOL 27-111 must be taken concurrently. (F, S, SS)

111 General Geology Laboratory (1 hour)
'Hands-on' laboratory instruction in identification of common minerals and rocks, the uses of topographic maps, surface and subsurface processes, and water and related resources. Laboratory methods may include physical identification, pen and paper analyses, and computer based data analyses. (F, S, SS)

114 General Earth Science (3 hours)
A general introductory survey of the earth sciences of physical geography, geology, oceanography, climatology and meteorology. The connections between the various components of the "earth system" will be analyzed. Recommended to fulfill General Education requirement. GEOL 27-115 must be taken concurrently. (F, S, SS)

115 General Earth Science Laboratory (1 hour)
This course give students a chance to apply, through written exercises, the concepts discussed in GEOL 27-114. (F, S, SS)

130 Information Technology and Science (3 hours)
Course studying the basics of computer systems and software used at Northwest as well as the professional world. Topics reviewed will include studies of PC-based computer systems, use of the NWMSU network system, effective use of Internet resources and common productivity software (such as office programs, suites, email, web-course) with particular emphasis on applications to science and technology. Three lecture hours each week. (SS)

212 Historical Geology (4 hours)
This course employs a study of deep time, important rock units, plate tectonics and the fossil and stratigraphic records to illuminate the physical and biological evolution of Earth. Special emphasis is placed on the formation and subsequent physical evolution of North America, and the origin and evolution of life as understood from evidence in the fossil record. The course consists of three lectures per week and concurrent enrollment in the weekly two-hour laboratory. Prerequisite: GEOL 27-110/111 or 114/115. (S)

214 Gemology (3 hours)
An introduction to gemology including description, identification, grading of gems and their substitutes. (alt. trimesters, alt. years)

220 Mineralogy (4 hours)
A survey of chemical and physical mineralogy including identification of minerals, structural grouping of minerals, occurrence of silicate minerals, as well as deposits and uses of nonsilicate minerals. Three lectures and one two-hour lab. Prerequisites: GEOL 27-110/111 or 114/115 and CHEM 24-112/113 or permission of instructor. (F)

305 Practicum in Teaching Laboratory (1 hour)
To assist faculty in beginning level laboratory situations in classes like GEOL 27-111, 115, 213, 220 and for preparation for teaching positions in graduate school. Prerequisites: Successful completion of the course, permission of the laboratory instructor and department chairperson and a major or minor in geology or geography. (F, S, SS)

320 Geology Field Trip (1-3 hours)
This course is designed to introduce students to the use of basic field investigation to understand geologic processes from evidence in the rocks. Field trip localities are selected to provide an introduction to minerals, rock types, fossils, structures, landforms, or other geologic phenomena that are not found locally. Prerequisite: GEOL 27-110/111 or 114/115 or permission of the instructor. Repeatable for new area of study. (F)

326 Geology of the National Parks (3 hours)
A study of the geologic features of the 38 U.S. National Parks including consideration of their causes and changes. Prerequisite: GEOL 27-110/111 or 114/115. (F)

335 Physical Oceanography (3 hours)
A study of the oceans including the physical properties of the oceans and marine geology. Prerequisite: Completion of general education science requirement. (F, alt. years)

340 Introduction to Hydrogeology (3 hours)
A study of practical hydrogeologic principles typically used in the environmental consulting industry. Topics studied cover the occurrence, movement, quality, contamination and management of groundwater. Two lecture hours and one two-hour laboratory session per week. Prerequisites: GEOL 27-110/111 or 114/115 and MATH 17-118. (S)

360 Environmental Geology (4 hours)
A study of geology focusing on the inter-relationship between man and his environment and resulting impacts to the Earth's systems. Topics investigated include natural processes as hazards, man's impact on earth resources as well as contemporary environmental issues. Three lecture hours and one two-hour laboratory session each week. Prerequisite: GEOL 27-110/111 or 114/115. (F)

415 Internship in Geology (1-6 hours)
Outreach efforts by students and faculty often generate internship opportunities with environmental consulting firms, natural resource companies and government agencies. Internship courses require approval of the instructor, department chairperson, and employer offering the opportunity along with a written proposal from the student at the time of registration. The student enrolls in the appropriate number of credit hours for the work load of the internship. Typically 160 work hours are worth 3 credit hours. Repeatable for additional experience. (F, S, SS)

420 Petrology (4 hours)
A study of igneous, sedimentary and metamorphic rocks including identification, mineral compositions, fabrics, textures, occurrences, genesis and classifications. Three lectures and one two-hour laboratory per week. Prerequisite: GEOL 27-220. (S)

423 Economic Geology (4 hours)
This course investigates the origin and distribution of metallic and industrial minerals in Earth's crust. Major types of ore deposits are discussed, with a focus on exploration, exploitation, and remediation. Where possible, deposits are discussed in the context of local, regional, and global economic and political impacts. Three one-hour lectures and one two-hour laboratory per week. Prerequisite: GEOL 27-220. (F, alt. years)

424 Geochemistry (3 hours)
This course focuses on theoretical and applied geochemical approaches to understanding geologic systems. Emphasis is placed on acid-base and solubility equilibria, and stable and radiogenic isotope chemistry, primarily as related to geochronology and the investigation of shallow crustal rocks. Prerequisites: GEOL 27-220. (F. alt. years)

440 Stratigraphy (4 hours)
A study of the principles and concepts used to study the stratigraphic sequence of rocks, including sedimentary environments, biostratigraphy and time-stratigraphic correlation. Three one-hour lectures and one two-hour lab. Prerequisite: GEOL 27-212. (F, alt. years)

450 Structural Geology (4 hours)
The study of the architecture of rock units of the crust of the earth insofar as it has resulted from deformation and the tectonic forces which produce them. Subject matter includes folds, faults, unconformities, rock fabric, geosynclines, continental drift and plate tectonics. Laboratory techniques utilize structure cross sections, projections, structure contour maps, geologic maps, isopach maps, strike and dip, stero nets, construction techniques, etc. Five hours of meeting time per week. Prerequisites: GEOL 27-212 and 420 and one mathematics course with trigonometry. (S)

455 Geologic Field Methods (3 hours)
Basic geological surveying techniques will be studied in the field. Notebook procedures and reporting will be stressed. Prerequisite: Geology major or minor with 20 hours in geology. (SS, Alt. years)

498 Senior Seminar (1 hour)
A capstone course in Geology. A student will examine current geologic research results and techniques, investigate employment opportunities, and assess his/her fundamental understanding of geology. Prerequisites: Senior standing as a Geology, Environmental Geology or Unified Science in Earth Science major, and a GPA of at least 2.0 in the major. (F)

500 Special Offerings (1-4 hours)
One-time course offering in a timely area of geology or earth science. Repeatable for additional experience, new material and progression of study.

501 Special Topics in Geology (1-4 hours)
Will be offered according to student needs and interest. Each offering will be designed to incorporate the latest information pertaining to a timely topic in geology. Topics may include rock and mineral origins and classifications, groundwater, energy, age of dinosaurs, fossils and the history of life, volcanoes and earthquakes and glacial geology. Prerequisite: One year of college-level science or permission of instructor. Repeatable for new area of study.

510 Geomorphology (3 hours)
A study of landforms, focusing on the description, recognition, classification and formation processes. Topics investigated include the origin and nature of geomorphologic processes shaping different landforms, along with the influence of geologic controls, climate and other factors impacting these processes. Two lecture hours per week. Prerequisite: GEOL 27-110/111 or 114/115. (S, alt. years)

515 Environmental Regulations (2 hours)
An introduction to federal and state regulations and major issues associated with the environment including air quality, groundwater quality and the disposal of hazardous waste. Two lecture hours each week. Prerequisites: GEOL 27-360 or BIOL 04-420 or GEOG 32-501 or permission of instructor. (S, alt. years)

520 Geology Field Trip (Advanced Level) (2 hours)
An advanced version of the introductory field course, this course combines basic field investigation with a short project that focuses on a feature of interest from the field trip area. Potential projects include thin section petrography and optical mineralogy, written descriptions of features of interest, reflective essays, or other projects as approved by the course instructor. Prerequisite: GEOL 27-212. Repeatable for new area of study. (F)

530 Sedimentology (4 hours)
A study of the production, transportation, deposition and lithification of sediments. To include comparisons of classifications, techniques of using sediments in environmental interpretations and laboratory techniques in sediment study. Three one-hour lectures and one two-hour laboratory. Prerequisite: GEOL 27-212. (F, alt. years)

540 Paleontology (4 hours)
A general study of fossils including classification of plants and animals, development and evolution of prehistoric life, paleontological techniques and use of fossils as time and ecological guides. Lab includes study and identification of the major fos-

sil groups. Emphasis is on invertebrate animals, with a general review also of microfossils, plants and vertebrates. Three one-hour lectures and one two-hour laboratory. Prerequisite: GEOL 27-212 or permission of instructor. (S)

555 X-Ray Analysis (3 hours)
Theory and application of x-ray diffraction. Consideration will be given to sample preparation, laboratory procedures and analysis of data. Prerequisite: GEOL 27-220 or permission of instructor. (S, alt. years)

560 Optical Mineralogy (3 hours)
A study of the optical properties of nonopaque minerals through the use of the petrographic (polarizing) microscope utilizing both oil immersion and thin section methods. Prerequisite: GEOL 27-220. (F, alt. years)

590 Seminar in the Earth Sciences (2 hours)
Seminar and studies of advanced topics in selected fields in geology and other earth sciences. Two hours per week in lecture, seminar or lab appropriate to the topics. Prerequisite: GEOL 27-110/111.

599 Special Investigation in the Earth Sciences (1-3 hours)
Independent studies in the earth sciences including but not limited to research and library studies. Enroll only with consent of department chairperson. Requires written proposal at time of registration. Repeatable for additional experience, new material and progression of study. (F, S)

Health Sciences / 49

The following junior-level and senior-level courses, designated RAD, are taken by students in the Radiologic Sciences, B.S. program. These courses are not offered on campus by Northwest Missouri State University, but are taught by the hospitals' schools of radiologic technology.

301 Radiographic Anatomy and Physiology (2 hours)
This course will introduce the students to the function and structure of the organizational levels and systems associated with the human body. An overview of the respiratory and digestive systems will be introduced to coincide with the chest and abdomen positioning phases of the procedures courses. The anatomy of the upper extremity will be a primary topic along with articulation classifications and fractures of the skeletal system.

302 Clinical Education I (1 hour)
A clinical course that focuses on procedures and functions in the radiology clinical setting. With direct supervision, the student will develop clinical skills through observation and assistance in general radiographic procedures of the chest, abdomen, and upper extremities. Limited competency testing is required during this semester.

303 Medical Imaging I (2 hours)
Concepts of radiological science including study of matter and energy, sources of radiation, x-ray properties, discovery of x-rays, basic radiation protection and the concept of the imaging team. Introduction to the x-ray tube, as well as prime radiographic factors and basic radiographic equipment.

304 Radiographic Positioning and Procedures I (2 hours)
Introduction to radiographic procedures, basic terminology, and topographical landmarks. Positioning, procedure, and image evaluation critique of the chest, abdomen and upper extremities will be performed. Students will use cognitive correlation of theory and practical application in the laboratory after didactic instruction. An overview of the respiratory and digestive systems will be introduced to coincide with the chest and abdomen positioning phases of this procedures class. The anatomy of the upper extremities will be presented along with various types of fractures associated with the bones of the upper body which will be included in the upper extremity positioning phase of this procedures class. Students will learn to apply basic patient care and critical thinking skills with trauma patients in this course. Must co-register for RAD 49-305.

305 Radiographic Position and Procedures I Lab (1 hour)
This course is designed to provide students with hands-on experience in a non-patient related clinical area. Radiographic Procedures lab will introduce the students to the function and structure of the different organizational levels and systems associated with the human body. The anatomy of the chest, abdomen and upper extremities will be presented along with various types of fractures associated with the upper extremities. Pathology and clinical findings will be discussed as well. Equipment manipulation, control panel maneuvers and table positioning, central ray angulations as well as image receptor placement and other medical imaging operations will be evaluated. Must co-register for RAD 49-304.

306 Clinical Education II (2 hours)
A clinical course that focuses on procedures and functions in the radiology clinical setting. With direct supervision, the student will develop clinical skills through participation and observation of studies of the lower extremity, digestive system, urinary system and biliary system. Prerequisite: Grade of "C" or better in RAD 49-302.

307 Introduction to Radiologic Science (2 hours)
This course will provide the student with an overview of radiology as a diagnostic tool and an allied health profession. Introduction to x-ray interaction, radiation protection, clinical education, patient communication and patient care are included in this course. Professional ethics and medical law overview complete this course.

308 Literature Review (1 hour)
This is a self-directed course which enables the student to research various technological and diagnostic advances within the field of radiology. Students will submit papers to present and/or projects to display at the annual society meeting in order to satisfy the course requirements. This course will allow the student to research into the branches of the field of radiology. Each student will select and research one of the following modalities for this course in literature review. The modality selections will range from Nuclear Medicine, Magnetic Resonance Imaging, Bone Densitometry, Diagnostic Radiography and Fluroscopy, Radiation Therapy/Oncology, Positron Emission Tomography/PET CT, Mammography, Interventional Radiography, Cardiovascular Radiography and Ultrasonography.

309 Radiographic Physics (2 hours)
This course will cover the fundamentals of basic physics with an emphasis of how physics is correlated to radiation technology. Topics include basic science concepts, the study of the atoms, the production and emission of x-rays and their interactions with matter. Prerequisite: Grade of "C" or better in RAD 49-303.

310 Radiographic Positioning and Procedures II (2 hours)
Radiographic Positioning and Procedures will introduce the students to the function and structure of the different organizational levels and systems associated with the human body. The anatomy of the lower extremities and pelvis will be presented along with various types of fractures associated with the bones of the lower body. Procedures of the digestive system, biliary system and genitourinary system will be demonstrated. Basic CT abdomen review and a recap of contrast review. Equipment manipulation, control panel maneuvers and table operation will be monitored by the instructor. Demonstration of radiographic positioning, central ray angulations as well as image receptor placement and other medical imaging operations will be evaluated. Must co-register for RAD 49-311. Prerequisites: Grade of "C" or better in RAD 49-304/305.

311 Radiographic Positioning and Procedures II Lab (1 hour)
This positioning and procedures lab course is designed to provide students with hands-on experience in a non-patient related clinical area. Radiographic Positioning and Procedures lab will introduce the students to the function and structure of the different organizational levels and systems associated with the human body. The anatomy of the lower extremities and pelvis will be presented along with various types of fractures associated with the bones of the lower body. Procedures of the digestive system, biliary system and genitourinary system will be demonstrated. Basic CT abdomen review and a recap of contrast review. Equipment manipulation, control panel maneuvers and table operation will be monitored by the instructor. Demonstration of radiographic positioning, central ray angulations as well as image receptor placement and other medical imaging operations will be evaluated. Must co-register for RAD 49-310. Prerequisites: Grade of "C" or better in RAD 49-304/305.

312 Radiographic Anatomy and Physiology II (2 hours)
Lower extremity anatomy will begin this course. An overview of the chemistry of life processes, chemical organization, bonding, organic and inorganic chemistry will be discussed. Size, shape and composition of cells as well as their function will be addressed. Sense organs that include the eye, ear and taste receptors, cell reproduction and division processes and genetic information will be covered. Tissue types and their locations and the integumentary system and membranes as well as the digestive, metabolism, nutrition and urinary tract anatomical structures and function will be a primary topic. This course is completed with the male and female reproductive systems. Prerequisite: Grade of "C" or better in RAD 49-301.

313 Clinical Education III (2 hours)
A clinical course that focuses on procedures and functions in the radiology clinical setting. With direct supervision, the student will develop clinical skills through participation of examinations to include the skull, sinuses, facial bones, and vertebral column. The student will have observation and limited participation in supplementary advanced imaging modalities and studies. The student will continue to expound on Clinical Education I and II exams. Prerequisite: Grade of "C" or better in RAD 49-306.

314 Image Evaluation (1 hour)
Seminar course designed to review radiographs of the thorax, vertebral column, abdomen, cranium, and extremities in regard to positioning, anatomy and technical factors for each image. Prerequisite: Completion of 2 semesters of radiology courses.

315 Medical Imaging II (2 hours)
This course is a continuation of the principles of Medical Imaging I. This imaging course will cover the principles of beam restriction, limiting and collimation, scatter radiation, minimizing patient dose, ESE, and the inverse square. The prime radiographic factors and image quality components of density, contrast, detail, and distortion are addressed. Radiographic grids structure and function as well as discussion of factors that affect image density and image quality will be also be included in this course. This imaging course will include a review of x-ray production and interaction with matter. X-ray film and screen properties which include construction, handling and storage and associated properties, sensitometry, automatic processing and silver recovery of radiographic film will be included. Prerequisite: Grade of "C" or better in RAD 49-303.

316 Radiographic Physics II (2 hours)
This course will continue covering the fundamentals of basic physics with an emphasis of how physics is correlated to radiation. Topics will include basic science concepts, the study of the atoms and the fundamentals of electromagnetism and the X-ray Imaging System. Additional topics include beam limitation, tomography and fluoroscopy. Prerequisite: Grade of "C" or better in RAD 49-309.

317 Radiographic Anatomy and Physiology III (2 hours)
The vertebral column, skull, sinus, and facial bone anatomy are presented. Radiographic images, models and diagrams will be utilized to reinforce learning. Ribs and sternum anatomy will also be included. Prerequisite: Grade of "C" or better in RAD 49-312.

318 Radiographic Positioning & Procedures III (2 hours)
Radiographic Positioning and Procedures will introduce the students to the function and structure of the different organizational levels and systems associated with the human body. Anatomy and positioning procedures for the ribs, sternum, sternoclavicular joints, cervical spine, thoracic spine, lumbar spine, sacrum, coccyx, sacroiliac joints, skull, facial bones, sinuses and nasal bones will be covered. Fractures and pathology associated with the above will also be discussed. Anatomy and positioning procedures for uncommon procedures of the upper and lower extremities, pelvis, spine, and head will be reviewed. Pediatric radiographic positioning and a study of immobilization will be taught in this course. Equipment manipulation, control panel maneuvers and table operation will be monitored by the instructor. Demonstration of radiographic positioning, central ray angulations as well as image receptor placement and other medical imaging operations will be evaluated. Must co-register for RAD 49-319. Prerequisites: Grade of "C" or better in RAD 49-310/311.

319 Radiographic Positioning and Procedures III Lab (1 hour)
This positioning and procedures lab course is designed to provide students with hands-on experience in a non-patient related clinical area. Radiographic Positioning and Procedures lab will introduce the students to the function and structure of the different organizational levels and systems associated with the human body. Anatomy and positioning procedures for the ribs, sternum, sternoclavicular joints, cervical spine, thoracic spine, lumbar spine, sacrum, coccyx, sacroiliac joints, skull, facial bones, sinuses and nasal bones will be covered. Fractures and pathology associated with the above will also be discussed. Anatomy and positioning procedures for uncommon procedures of the upper and lower extremities, pelvis, spine, and head will be reviewed. Pediatric radiographic positioning and a study of immobilization will be taught in this course. Equipment manipulation, control panel maneuvers and table operation will be monitored by the instructor. Demonstration of radiographic positioning, central ray angulations as well as image receptor placement and other medical imaging operations will be evaluated. Must co-register for RAD 49-318. Prerequisites: Grade of "C" or better in RAD 49-310/311.

401 Clinical Education IV (4 hours)
A clinical course with emphasis on supervised application and evaluation of procedures using image intensification, mobile radiography, and other diagnostic radiographic procedures. The student will have continued supervised application and evaluation of procedures involving interventional radiography and surgical suite examinations. The student will continue to expound on Clinical Education I, II and III exams. Prerequisite: Grade of "C" or better in RAD 49-313.

402 Clinical Education V (2 hours)
A clinical experience with limited supervision for continued emphasis in application and evaluation of procedures involving all aspects of radiology. The student will continue to expound on Clinical Education I, II, III and IV exams. Prerequisite: Grade of "C" or better in RAD 49-401.

403 Medical Imaging III (2 hours)
This course includes all aspects of digital imaging acquisition and display. Included are topics regarding understanding of the components, principles and operation of digital imaging systems. Factors that impact image acquisition, display, archiving and retrieval are discussed. Guidelines for selecting exposure factors and evaluating images within the digital system assist students to bridge between film based and digital imaging systems. Prerequisite: Grade of "C" or better in RAD 49-315.

404 Pathology I (2 hours)
Examination of pathologic conditions related to various radiologic procedures. Introduction to pathology is the study of significant diseases, which present radiologic findings. Studies will include the diagnosis, etiology, symptoms, treatment and radiographic correlations of pathologic conditions with relationship to cell pathology, inflammation, bone and joint disease, gastrointestinal system, respiratory, urinary system, male and female reproduction system. Students will learn how to select proper exposure factors for the pathology that is in existence and how the pathology will appear on radiographic images.

405 Radiation Biology and Radiation Protection (2 hours)
This course will continue covering the fundamentals of basic radiation biology as well as basic radiation safety theory. Biology topics will include the fundamental principles of radiation biology, molecular and cellular radiobiology and the early and late effects of radiation. Radiation protection topics will include health physics practices, considerations for design of equipment and facilities, as well as procedures for ensuring the safety of radiation workers, patients, and members of the public.

406 Radiographic Positioning and Procedures IV (2 hours)
Radiographic and gross anatomy and physiology and radiographic image terminology pertinent to the systems of the body to include: hepatobiliary, urinary, myelography, mammography, arteriography, venography, and orthopedic radiography. Contrast media usage and contraindications will be discussed. Prerequisite: Grade of "C" or better in RAD 49-318/319.

407 Radiographic Anatomy and Physiology IV (2 hours)
This course reveals the structural and functional anatomy of the nervous system. To be included in are the organs, divisions and cells of the nervous system, nerve tracts, reflex arc, impulses and synapses. Divisions of the brain and spinal cord to include coverings and fluid spaces will be discussed. Cranial and spinal nerves of the peripheral nervous system and the functional and structural components of the autonomic nervous system will complete the central nervous system anatomy. Introduction to blood components, blood types and coagulation will be introduced. Anatomy of the heart, major blood vessels and physiology of the cardiovascular system as well as pathologic conditions associated with the above anatomical structures. The endocrine, lymphatic and immune systems will be discussed. Prerequisite: Grade of "C" or better in RAD 49-317.

408 Clinical Education VI (2 hours)
Course emphasizes the development of expertise in all radiographic procedures with indirect supervision in proven competency areas and direct supervision in other related radiology areas. The student will continue to expound on Clinical Education I, II, III, IV and V exams. Prerequisite: Grade of "C" or better in RAD 49-402.

409 Correctec (2 hours)
Correctec has developed numerous computer programs to help radiography students learn the content required to be successful technologists and to pass the nationally required examination, the American Registry of Radiologic Technologists (ARRT). Correctec incorporated the review materials into an online review course. The online review course individualizes the learning experience by giving immediate feedback and review of the subject being tested. Additionally, the course

is frequently updated to reflect the latest changes in terminology and content in the subject area. Students will submit units to instructor at specific intervals throughout the semester.

410 Imaging Modalities (2 hours)
This course is designed to offer the students information about numerous imaging modalities available in the field of radiologic technology.

411 Pathology II (2 hours)
Examination of pathologic conditions related to various radiologic procedures. Introduction to pathology is the study of significant diseases, which present radiologic findings. Studies will include the diagnosis, etiology, symptoms, treatment and radiographic correlations of central nervous system, cardiovascular, endocrine system, fluid and hemodynamic disorders and liver, pancreas, biliary systems, neoplasia, breast, skin and muscles. Students will learn how to select proper exposure factors for the pathology that is in existence and how the pathology will appear on radiographic images. Prerequisite: Grade of "C" or better in RAD 49-404.

412 Quality Assurance (2 hours)
Quality control and quality assurance in the radiology department. Test tools and equipment utilized to ensure appropriate images. State and federal guidelines which are applicable to film screen radiography as well as digital radiography equipment. Laboratory experiments will be conducted to reinforce didactic lessons.

413 Radiography Curriculum Review (2 hours)
The student will participate in testing modules provided by The College of St. Catherine's Developmental Testing Program for Radiography located in Minneapolis, MN. The tests are comparative to registry examination questions. The results of the tests submitted on behalf of the St. Luke's Hospital class will be compared to students' scores across the United States participating in the same type of testing program

414 Cross Sectional Anatomy (2 hours)
Study of cross sectional anatomy of the head, chest, abdomen and extremities with correlation to Computed Tomography (CT) and Magnetic Resonance Imaging (MRI). Prerequisite: Grade of "C" or better in RAD 49-407.

Nanoscale Science / 48

314 Nanoscale Science I (4 hours)
A course dedicated to the interface of chemistry and physics at the nanometer scale. Topics will focus on the relationship between nanoscale structure and macroscopic properties, nanoscale instrumentation and characterization, creation of materials and devices, and the role and perception of nanotechnology in society. The course consists of four hours of lecture and hands-on studio activities per week. Prerequisites: MATH 17-120, 121, CHEM 24-114/115, 116/117, PHYS 25-120/121, 230/231, CHEM 24-342 and junior standing (F, odd years)

315 Nanoscale Science II (4 hours)
A course dedicated to the interface of biology and physics at the nanometer scale. Topics will focus on the application of physical concepts to biological systems in the developing field of nanobiotechnology. Prerequisites: MATH 17-120, BIOL 04-112/113, 350, PHYS 25-120/121, 230/231 and junior standing. (S, even years)

Nursing / 01

The following nursing courses are taken only by students in the B.S.N. Completion Program, and many are not offered on the campus of Northwest Missouri State University.

301 Theories and Models of Nursing (3 hours)
A theoretical foundation that focuses on critical thinking skills and their application to the professional nurse. Emphasis is placed on exploration of various nursing theories as a framework to more effectively promote health and sound nursing decisions. Prerequisite: admission to R.N.-to-B.S.N. program.

311 Health Care Delivery Systems (3 hours)
The structure and function of health care delivery systems. Emphasis is placed on policy and insurance issues, and explores technology, access, and budgeting. The course seeks to enhance the administration and effectiveness of health care services. Prerequisite: NURS 01-301 (may be taken concurrently).

371 Pathophysiology (3 hours)
An introduction to the physiology of diseases. Prerequisite: Grade of "C" or better in NURS 01-301.

381 Intermediate Pharmacology (3 hours)
Further consideration of drug therapeutics in nursing. Important classes of drugs are emphasized, along with their impact on physiology and biochemistry. Drug interactions are explored. Prerequisite: Grade of "C" or better in NURS 01-301.

401 Leadership and Management in Nursing (5 hours)
Effective leadership and management for the BSN-level nurse. Emphasis is placed on resource management through utilization of critical thinking, problem solving, and decision making abilities. The course also explores the impacts of theory, practice, and environment (both internal and external) on leadership and management. Includes clinical experience. Prerequisites: Grades of "C" or better in NURS 01-301 and 311.

411 Health Assessment (5 hours)
A systematic approach to the holistic assessment of individuals and groups at all ages. Emphasis is placed on analysis and synthesis of data in order to identify and differentiate between normal and abnormal states of health. Students will apply knowledge and skills to clinical field experiences. Three hours of lecture and five hours of clinical experience per week. Prerequisites Grades of "C" or better in NURS 01-371 and 381.

421 Community Nursing (5 hours)
Application of nursing concepts to the community environment. Emphasis is placed on identification of resources that facilitate health promotion and illness prevention. This course also explores community epidemiology in relation to the environment. Students will apply knowledge and skills to clinical practice. Three hours of lecture and five hours of clinical experience per week. Prerequisites: Grades of "C" or better in NURS 01-371 and 381.

431 Family and Child Nursing (5 hours)
Application of nursing concepts to the family, especially children. The course also includes the dynamics of family structure, member functions, communication and coping. Three hours of lecture and five hours of clinical experience per week. Prerequisite: Grade of "C" or better in NURS 01-411.

452 Gerontological Nursing (3 hours)
Special nursing considerations related to the aged population, including physical and psychological changes. Prerequisite: Grade of "C" or better in NURS 01-401.

454 Informatics in Nursing (3 hours)
The uses of computer technology in the nursing profession, focusing on data management, organization, and the development of metadata.. Prerequisite: Grade of "C" or better in NURS 01-401.

481 Research Methods in Nursing (3 hours)
An introduction to the critical evaluation of nursing reports, including evidence-based nursing. Emphasis is placed on statistical validity and limitations, as well as the critique of methods, conclusions, and assumptions. The ability to apply conclusions to new situations is also developed. Prerequisites: MATH 17-114, NURS 01-411 and 421 with a minimum grade of "C" in each.

Physical Science / 40

The main objectives of courses in the physical science program are: (a) to provide service courses to meet the special needs of other science majors, teacher education majors and other groups of students; (b) to provide general education courses in physical science to meet science area requirements in general education for all degree programs; and (c) to provide special programs for teacher certification in science.

102 The Physical Sciences (3 hours)
This is an introductory course that uses an inquiry approach to help students gain an understanding of the scientific process and how science relates to the real world. This is accomplished through the study of selected topics from the fields of physics and chemistry. Students will be asked to use problem solving and higher order thinking skills in order to apply the concepts they have learned. A knowledge of and ability to use simple algebra is necessary. This course is primarily designed to meet elementary and middle school teacher certification content, but it will also satisfy the physical science general education requirement. Students who already have college credit in physics are not eligible to enroll in this course. Three hours of lecture and discussion per week. Must be taken concurrently with PHSC 40-103. (F, S, SS)

103 Physical Science Laboratory (1 hour)
A laboratory course which must be taken concurrently with PHSC 40-102. Two hours per week. (F, S, SS)

106 Computational Methods in Science (3 hours)
Methods used in the computational analysis, interpretation, and presentation of data generated from scientific inquiry. Topics covered will encompass, but will not be limited to, spreadsheets, graphical, and statistical analysis of data, concept mapping, use of databases, scientific writing, and symbolic calculation techniques. Recommend two years of high school algebra or competence through College Algebra (MATH 17-118). (S, SS)

122 Descriptive Astronomy (3 hours)
This is an introductory general education course in astronomy. Topics covered involve the descriptive study of the physical universe including the earth-moon system, the solar system, general stellar system, stellar structure and evolution, galactic systems and cosmological models. The laboratory work emphasizes basic techniques and instruments used in observational astronomy. Three hours of lecture per week. Must be taken concurrently with PHSC 40-123. (F, S)

123 Descriptive Astronomy Laboratory (1 hour)
This laboratory meets two hours each week and must be taken concurrently with PHSC 40-122. (F, S)

200 Special Offerings (1-4 hours)
Repeatable for additional experience, new material and progression of study.

299 Independent Study in the Physical Sciences (1-2 hours)
Independent study in areas of physical sciences not covered in the introductory courses. May be elected successively in one or two hours credit per trimester to a maximum credit of four hours. Can be repeated for new topics. Prerequisites: Introductory course in physical science and permission of instructor. (F, S)

389 Practicum in Physical Science (1-2 hours)
This practicum provides students with experience in assisting faculty members with instruction of physical science in classes and laboratories. Can be repeated for additional mastery. Prerequisite: Permission of instructor. (F, S)

400 Special Offerings (1-4 hours)
Repeatable for additional experience, new material and progression of study.

500 Special Offerings (1-4 hours)
Repeatable for additional experience, new material and progression of study.

Physics / 25

110 General Physics I (3 hours)
This is a laboratory course in general physics designed to provide the necessary background in physics to fill general education requirements and to fill general physics needs for pre-professional programs. Major topics covered are structure and properties of matter, motion, mechanics, work, energy, momentum, elasticity, waves, temperature and heat. Three hours of lecture and discussion each week. Prerequisite: MATH 17-118 or permission of instructor. (F, SS)

111 General Physics I Laboratory (1 hour)
This laboratory meets two hours each week and must be taken concurrently with PHYS 25-110. (F, SS)

112 General Physics II (3 hours)
This is a continuation of PHYS 25-110. Major topics covered are electricity, electronics, optics, radioactivity, and atomic and nuclear structure. Three hours of lecture and discussion each week. Prerequisite: MATH 17-118 or permission of instructor. (S, SS)

113 General Physics II Laboratory (1 hour)
This laboratory meets a minimum of two hours each week and must be taken concurrently with PHYS 25-112. (S, SS)

120 Fundamentals of Classical Physics I (4 hours)
An introduction to classical kinematics, mechanics gravitation, energy, momentum, waves, heat and thermodynamics. Recommended for majors in science, mathematics and engineering. Four hours of lecture and discussion per week. Prerequisite: MATH 17-120 or concurrently. (F)

121 Fundamentals of Classical Physics I Laboratory (1 hour)
The laboratory meets a minimum of two hours each week and must be taken concurrently with PHYS 25-120. (F)

200 Special Offerings (1-4 hours)
Repeatable for additional experience, new material and progression of study.

211 Special Topics in Physics (1-3 hours)
An in-depth study of special physics topics. Can be repeated with different topics.

230 Fundamentals of Classical Physics II (4 hours)
A continuation of PHYS 25-120. Major topics include classical electricity, magnetism, electromagnetic waves, light and geometrical and physical optics. Four hours of lecture and discussion each week. Prerequisites: PHYS 25-120/121, MATH 17-121 or concurrently. (S)

231 Fundamentals of Classical Physics II Laboratory (1 hour)
This laboratory meets two hours each week and must be taken concurrently with PHYS 25-230. (S)

320 Classical Mechanics I (3 hours)
An introduction to classical mechanics. General topics include elements of Newtonian mechanics, motion of a particle in one dimension, motion of a particle in two and three dimensions, the motion of a system of particles, rigid bodies and gravitation. Three hours of lecture and discussion each week. Prerequisites: PHYS 25-120/121, MATH 17-121 or concurrently.

321 Classical Mechanics I Laboratory (1 hour)
This computer laboratory meets for a minimum of two hours each week. It is an introduction to computational methods as applied to solving differential and integral equations in mechanics. Prerequisites: PHYS 25-120/121, MATH 17-121, or concurrently.

322 Statics (3 hours)
Analysis of two- and three-dimensional force systems. Application of equilibrium principles to simple trusses, frames and machines. Additional topics chosen from distributed forces, centroids, friction and virtual work. Prerequisites: PHYS 25-120/121, MATH 17-121 or concurrently.

330 Electricity and Magnetism I (3 hours)
Classical electricity and magnetism including Coulomb's law, Gauss' law, Poisson's equation, charge-field potential differential and integral relationships, Biot-Savart law, Ampere's law, Lenz's law and vector properties of electric and magnetic fields. Three hours of lecture and discussion per week. Prerequisites: PHYS 25-230/231 and MATH 17-321.

331 Electricity and Magnetism I Laboratory (1 hour)
This laboratory meets a minimum of two hours each week and must be taken concurrently with PHYS 25-330. (F, even years)

332 Electronics (3 hours)
A study of the theory and applications of analog and digital electronics. Topics include transistors, operational amplifiers, TTL and CMOS logic gates and applications of these devices in various electronic circuits. Three hours of lecture and discussion each week. Prerequisite: PHYS 25-230/231. (F, odd years)

333 Electronics Laboratory (1 hour)
This laboratory meets a minimum of two hours each week and must be taken concurrently with PHYS 25-332. (F, odd years)

350 Introduction to Modern Physics (3 hours)
An introduction to the subjects of photo-electricity, relativity, quantum theory, x-rays, radioactivity, nuclear physics and cosmic radiation. Three hours of lecture and discussion each week. Prerequisites: PHYS 25-230/231, MATH 17-321 or concurrently. (F, odd years)

351 Introduction to Modern Physics Laboratory (1 hour)
This laboratory meets a minimum of two hours each week and must be taken concurrently with PHYS 25-350. (F, odd years)

352 Modern Physics II (3 hours)
A continuation of PHYS 25-350. Major topics covered are statistical physics, molecular structure, solid state physics and astrophysics. Three hours of lecture and discussion each week. Prerequisites: PHYS 25-350/351. (S, even years)

360 Quantum Mechanics (3 hours)
The philosophy and methods of selected topics from quantum mechanics. Topics include Schrodinger's equation, simple barrier problems, angular momentum, linear oscillator, hydrogen atom and elementary perturbation. Prerequisites: PHYS 350/351 or CHEM 24-532/533, MATH 17-321 or concurrently.

400 Special Offerings (1-4 hours)
This is a special, one-time offering. Topics include areas of physics not covered in regular courses. Repeatable for additional experience, new material and progression of study.

430 Optics (3 hours)
A study of modern optics, including reflection, refraction, interference, diffraction, polarization, lasers, holography, non-linear optics, optical detectors and modern applications. Three hours of lecture and discussion each week. Prerequisite: MATH 17-121.

431 Optics Laboratory (1 hour)
Laboratory meets at least two hours each week and must be taken concurrently with PHYS 25-430. (F, even years)

450 Computational Physics (3 hours)
Introduction to computational methods used to solve problems in physics. Numerical techniques for the analysis of experimental data and the solution of ordinary and partial differential equations will be studied. These numerical methods will be applied to the solution of a variety of problems that arise in classical physics. Visualization and simulation techniques will be studied and the power of these methods to enhance physical understanding will be emphasized. Prerequisites: PHYS 25-230/231 and CSIS 44-141 (S, odd years)

451 Computational Physics Laboratory (1 hour)
Laboratory meets at least two hours each week and must be taken concurrently with PHYS 25-450. (S, odd years)

479 Undergraduate Research (1-3 hours)
An independent research project done under supervision of a faculty member. The results of the research project are to be summarized in a paper or presentation at the discretion of the faculty member. Can be repeated for new experience. Prerequisite: Permission of instructor. (F, S, SS)

489 Physics Practicum (1-2 hours)
This practicum provides physics majors with experience in using, repairing and building equipment as well as experience in assisting physics faculty in instruction in classes and laboratories. Permission of instructor necessary. Physics minors only. (F, S)

499 Special Investigations in Physics (1-3 hours)
Special projects and special experiments in physics which are not included in the regular courses. May be elected successively in one or more hours of credit per trimester. Can be repeated for new experience. Permission of instructor necessary. (F, S)

500 Special Offerings (1-4 hours)
Repeatable for additional experience, new material and progression of study.

599 Selected Advanced Topics (1-4 hours)
Special investigation of experimental or theoretical areas which are not included in the regular courses. Often involves actual research projects. May be elected in successive trimesters. Can be repeated with different topic. Permission of instructor required. (F, S, SS)

Science Education / 28

380 Methods in Elementary School Science (3 hours)
This course is designed to acquaint the prospective teacher with science subject matter and science curricular materials used in modern elementary school science programs. The course provides classroom experiences in the use of scientific equipment and material available in many elementary school science programs. Individualized and small group activities are provided to give experience in using a variety of methods in teaching science. Prerequisites: BIOL 04-102/103, and PHSC 40-102/103 or PHYS 25-110/111 or 112/113 with a minimum grade of "C." (F, S)

400 Special Offerings (1-4 hours)
Repeatable for additional experience, new material and progression of study.

500 Special Offerings (1-4 hours)
Repeatable for additional experience, new material and progression of study.

550 History of Science and Technology (3 hours)
This course will develop a conceptual framework for scientific and technological literacy. The goals of the course will relate to the acquisition of knowledge, the development of learning skills and the development of values and ideas. Characteristics of science, technology and society instruction will be stressed. Prerequisite: Science majors (15 hours of science recommended). (S)

580 Methods in Secondary School Science (3 hours)
This course is designed to acquaint prospective science teachers with the methods and materials needed in teaching science at the secondary level. The course provides individualized experiences related to the teaching of the subject fields each student has elected for his or her major or minor area. Prerequisite: Science major or minor admitted to the Teacher Education Program. (F)

582 Methods in Middle School Science (3 hours)
A course to assist prospective middle school science teachers with the methods and materials needed in teaching science at the middle school level. Prerequisites: Science majors or minors, EDUC 61-570, 15 hours of science. (F)

The Honors Program / H

Dean of the College of Arts and Sciences: Charles A. McAdams

Director of the Honors Program: Thomas M. Spencer

Honors Faculty: Joel Benson, Rebecca Dunnell, Matthew Engel, James Eiswert, Dawn Gilley, Tom Hardee, Brian Hesse, Bayo Oludaja, Brenda Ryan, Thomas Spencer, Linda Sterling, Jeffry Thornsberry, David Vlieger and Nancy Zeliff

Statement of Mission

The Honors Program provides motivated and talented students with an enriched educational experience. Through limited class size and close interactions with faculty, the program provides talented students with a deeper understanding of content and an opportunity to develop critical thinking and discussion skills that prepare them for a dynamic world. In the Honors Program, a commitment to learning is combined with a spirit of inquiry and a critical understanding of the responsibilities of global citizenship. By bringing together the ideas from diverse traditions of knowledge, the Honors Program helps prepare creative and innovative leaders to meet emerging challenges in our global community.

The Honors Program Curriculum

Northwest Missouri State University's General Education Requirements are outlined on pages 68-71. The Honors Program requires a minimum of 21 credit hours in Honors sections of General Education courses. Honors sections will be designated with an "H" in the course title as listed online and on the student transcript. By the 2011-2012 academic year, Honors sections existed for 16 different GenEd or Institutional Requirements courses: Freshman Seminar, Accelerated Composition, Fundamentals of Oral Communication, Statistics, Introduction to American Government, America: A Historical Survey, General Biology, General Geology, Introduction to Literature, Western Civilization II, Introduction to Philosophy, The Enjoyment of Music, Introduction to Geography, General Psychology, People and Cultures of the World, and Computers and Information Technology.

Honors Program Policies, Expectations and Requirements

The Honors Program is designed for motivated and capable students. During the first trimester, the Honors student typically enrolls in two Honors classes. These classes are sections of existing courses enhanced for the Honors students. Class size limits for Honors sections provide ample opportunity for students to express themselves and interact more with professors and classmates:

Honors sections will typically involve:

- more extensive reading and/or more ambitious laboratory work
- in-depth conversation
- connections within and among disciplines
- relationship of course material to a diverse global society

- challenging educational experiences beyond the classroom
- opportunities for research and capstone experiences

Eligibility and Admission

- To be considered for entrance into the Honors program, a first-time/entering student must have a minimum ACT composite score of 26 and a minimum high school GPA of 3.50.
- Students will be selected from among eligible applicants.

Program Continuation Requirements

- Honors students must maintain a 3.50 Northwest cumulative grade point average to remain in the Honors Program. If a student falls below a 3.50 GPA after the first academic year, the student is placed on academic probation in the Honors Program. If after the following academic year, the student has not regained a 3.50 cumulative GPA, the student will be suspended from the Honors Program. The suspended student can apply for readmission to the program once their Northwest cumulative GPA is at or above 3.50.

Graduation Requirements

To graduate with honors, a student must:

- complete at least 21 hours in Honors sections of the required General Education courses or through honors credit agreements
- maintain a 3.50 cumulative GPA

Co-Curricular Activities

- Special colloquia, field trips, etc. are available for enrichment and limited to Honors students.
- Honors students have the privilege of an early preregistration for classes.

HONORS PROGRAM

- Honors students have opportunities for special access to selected campus-wide events.
- Honors students participate in various activities such as research projects and service learning activities.
- Honors students receive special advisement by the director of the Honors Program and/or by Honors faculty.
- A special dinner is held for Honors graduates and their families.
- Students receive an Honors medal for graduation (transcript and diploma will carry the Honors designation).

Course Description

Inter-College / 77

390 Advanced Studies in Honors (3 hours)

The content of this upper-level standalone honors course will vary when offered. It may be repeated with a change in topic. (SS)