The College of Arts and Sciences

Dr. Charles A. McAdams, Dean

- Department of Art
- Department of Biological Sciences
- Department of Chemistry and Physics
- Department of Communication, Theatre and Languages
- Department of English
- Department of Geology and Geography
- Department of History, Humanities, Philosophy and Political Science
- Department of Mathematics and Statistics
- Department of Military Science
- Department of Music
- English as a Second Language Program
- Honors Program

College of Arts and Sciences

Dean: Charles A. McAdams

The College of Arts and Sciences includes the Departments of Art; Biological Sciences; Chemistry and Physics; Communication, Theatre and Languages; English; Geology and Geography; History, Humanities, Philosophy and Political Science; Mathematics and Statistics; Military Science; Music; the English as a Second Language Program; 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 short study tour, 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, International Student Exchange Program (ISEP), Maastricht Program, Magellan Exchange, Mexico Exchange, Missouri-London Program, Korea Exchange, and faculty-led study 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 Art / 13

Chairperson: Kim Spradling

Faculty: Paul Falcone, Laura Kukkee, Philip Laber, Armin Muhsam, Craig Warner, Glenn Williams

Statement of Mission

The four degree programs of the Department 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.

The Department of Art 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. In its varied course offerings, the Department of Art plays a large part in fulfilling the University's Educational Key Quality Indicators and Core Values.

The Department 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 of the Department of Art, 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

The Department of Art participates in four degree programs through its offering of four comprehensive majors and two minors.

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, 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 departments 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.

DEPARTMENT POLICIES

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 Art 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 Art does not accept Advanced Placement or Dual Enrollment credit for any of its degree programs, majors or minors. Credit by examination through the department is not available for any course in the department. The Department 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 art core sequence appropriate to their degree specialization 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, 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 13-110 Survey of Art; (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 and must apply for Art Advanced Standing at the time of registration. A review of the student's portfolio of work occurs in the first week of their first trimester. 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 Art 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 Art chairperson. The purpose of this review is to provide an opportunity for advisement, appropriate to the background of the student, in meeting Department of Art requirements for Advanced Standing and to determine which transfer credits will be accepted by the Department of Art 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 during the student's final trimester 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 13-161 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 13-292 Introduction to Creative Electronic Imaging	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

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
Art History Requirements: Art 13-110 Survey of Art plus four of the following courses (12 hours): Art 13-311, 313, 315, 316, 317 and 318	15
Studio specialization requirements: A minimum of 12 hours in one studio area at or above the 300 level and at least 10 hours in supporting electives of 300 level or above.	22
Graphic Design Requirements: Art 13-294, 394, 396, 398, 492, 497	
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.)	

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

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 13-382 Methods in Elementary Art	3
Art 13-395 Design with Fibers	3
Art 13-315 Nineteenth and Early Twentieth Century Art	3
Art 13-317 Twentieth Century Art	3
Approved art electives as needed to total 55 hours in the major	9
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

Required Courses	Semester Hours
Art Major Core Requirements	28
Art History: choice of courses	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

Visual Imaging Concentration

This is an interdisciplinary major in conjunction with Art, Computer Science/Information Systems and Mass Communication. Three concentrations are available for this major: Computer Science Programming (Computer Science/Information Systems), New Media (Mass Communication), and Visual Imaging (Art).

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 Letterforms and Graphic Design	3
MC 20-120 Introduction to Mass Media	3
MC 20-243 Media Design I	3
MC 20-303 Introduction to Web Publishing	3
MC 20-314 Communication Law	3
CSIS 44-143 Script Programming I	3
CSIS 44-333 Multimedia and Web Development	3
CSIS 44-335 Script Programming II	3
Mkt 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 Mass Communication Department

Concentration in Computer Science Programming – see the Computer Science/ Information Systems Department

MINORS

Minor in Art, 24 hours

Required Courses	Semester Hours
Art 13-120 Drawing	3
Art 13-191 Introduction to Design OR Art 13-192 Three-Dimensional Design	3
Art 13-110 Survey of Art (Art 13-102 Art Appreciation may be substituted if previously taken)	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

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.	

If Art 13-102 Art Appreciation or Art 13-110 Survey of Art 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 Interactive Digital Media, 24 hours

This is an interdisciplinary minor in conjunction with Art, Computer Science/Information Systems and Mass Communication.

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
MC 20-243 Media Design I	3
MC 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)	
MC 20-301 Multimedia Audio/Video Production (3)	
MC 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)

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.

299 Individual Problems in Studio (2 hours)
Individual direction using previously learned skills and techniques. Prerequisite: Permission of instructor. May be repeated once for additional credit. (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.

402 Senior Seminar (1 hour)
A seminar dealing with the problems of the art teacher, artists, and those active in digital media. Exhibition techniques, preparation of resumes, 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, resume 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.

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. (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. May be repeated once for additional credit. (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

110 Survey of Art (3 hours)
A topical survey of outstanding works from major periods of Western art with emphasis placed on the purposes of art and the roles of artists. (S)

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 13-110. (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 13-110. (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 13-110. (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 13-110 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 13-110. (F, even years)

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. May be repeated for a total of 15 semester hours. (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. May be repeated for a total of six semester hours. 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. (F, S)

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. May be repeated for a total of 15 semester hours. (F, S)

529 Drawing Processes (2-6 hours)
Advanced studio work providing students with opportunities for extended studies in various media and directions. May be repeated for a total of six semester hours. 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, digital photography and video. 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 Art13-120 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)
Advanced principles and procedures for creative digital imaging using computers, scanners, digital photography, and video. 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)
Principles of creative graphic design applied in a computer-assisted context using desktop publishing systems and related software. Projects encourage development of creative thinking and problem solving, both aesthetically and technically. Prerequisites: Art 13-120 and 396. (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)

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. May be repeated for a total of 15 semester hours. (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 major with 3.00 GPA in graphic design or IDM-VI major. (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. May be repeated for a total of six semester hours. 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. May be repeated for a total of 15 semester hours. (F, S)

549 Painting Processes (2-6 hours)
Advanced studio work providing students with opportunities for extended study in various media, and directions. May be repeated for a total of six semester hours. 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. (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 Color and Digital Photography (3 hours)
An exploratory continuation of creative photography with an introduction to and emphasis on color photography using digital processes. Photography as an art and expressive medium will be stressed. Prerequisites: Art 13-303 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. May be repeated for a total of 15 semester hours. (F, S)

509 Photography Processes (2-6 hours)
Advanced directed studies in various techniques in black and white or digital photography. May be repeated for a total of six semester hours. 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. May be repeated for a total of 15 semester hours. (F)

539 Printmaking Processes (2-6 hours)
Advanced directed studies in various print media, techniques and directions. May be repeated for a total of six semester hours. Prerequisite: Permission of instructor. (F)

SCULPTURE/THREE-DIMENSIONAL DESIGN

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. May be repeated for a total of 15 semester hours. (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. May be repeated for a total of six semester hours. Prerequisite: Permission of instructor. (F, S)

Department of Biological Sciences / 04

Chairperson: Gregg Dieringer

Faculty: David Easterla, Suzanne Frucht, Kurt Haberyan, Peter Kondrashov, Phillip Lucido, Janette Padgitt, Karen Schaffer, Jeffry Thornsberry

Statement of Mission

The department offers coursework leading to a wide spectrum of majors and minors. These majors include biology, wildlife ecology and conservation, medical technology, pre-professional zoology and secondary education. In addition, the department offers minors in education and biology for the Bachelor of Science degree and biology for the Bachelor of Arts degree. Graduates of the programs are routinely accepted into professional schools, graduate schools and employment in positions compatible with their fields of study.

The department offers quality undergraduate educational opportunities that provide students with a rich collegiate experience and the technical and intellectual skills necessary for competence in their chosen fields. Given the continuous technological advances being made, the department provides students with exposure to many of the scientifically-based technological changes. The traditional classroom setting is complemented by laboratory classes and practical field experiences, which enable a student to put into immediate practice those concepts and understandings gained in the classroom.

The department stresses the importance of critical thinking to its students and emphasizes the ability of students to logically collect, collate, analyze and interpret information. These abilities, on the part of the student, further strengthen the concept of the scientific theory. Students are encouraged to develop their methods of communication through the written and spoken word, the use of available technology and through visual means.

The department encourages undergraduates to become active in undergraduate research projects and thereby become creators of knowledge in addition to consumers of knowledge.

The department also offers general education courses to University students. These courses provide an understanding of the role of the scientific thought processes in daily living. These courses also apply and expand the current knowledge of the students, as well as broaden their educational experiences to enable students to make logical, critical and intelligent decisions concerning their lives.

DEGREE PROGRAMS

The Department of Biological Sciences offers a wide range of programs leading to the Bachelor of Arts or Bachelor of Science degrees in the areas of biology, cell biology, environmental science, ecology, biology/psychology, molecular biology, botany, zoology, pre-professional zoology, and wildlife ecology and conservation. The department also offers the biology endorsement of the Unified Science Major leading to a Bachelor of Science in Education degree. A Bachelor of Science in Clinical Laboratory Sciences (formerly Medical Technology) is offered through

the department in cooperation with approved schools of clinical laboratory sciences at several medical centers. The affiliated medical centers are accredited through the National Accreditation Agency for Clinical Laboratory Sciences (NAACLS). Graduate programs leading to the Master of Science degree are also provided. See the *Graduate Catalog* for details.

In addition to the various degree programs, the Department of Biological Sciences provides guidance and information in many areas of the life sciences. Specific non-degree, pre-professional programs for physical therapy, occupational therapy, respiratory therapy, physician's assistant, pharmacy, dental hygiene and others are offered. In cooperation with the Melvin and Valorie Booth College of Business and Professional Studies, the department offers a two-year program for medical administrative assistants.

Biology minor programs are offered for the B.A., B.S., and B.S.Ed. degrees. A biology minor provides a basic background for many applied and non-science programs, especially for majors in psychology, family and consumer sciences, horticulture, agronomy, animal science, health education and geography. A biology major or minor in combination with chemistry, physics, geology, or mathematical sciences will provide a strong background for graduate work in biochemistry, biophysics, paleontology, taxonomy, biometrics, ecology and other basic science fields.

Test-Out Policy

The Department of Biological Sciences does not offer test-out for any of its courses.

Advanced Standing Requirement

A student applies for advanced standing in the Department of Biological Sciences after the completion of 45 semester hours. In addition, all Biology majors and minors must complete the following classes with a "C" grade or better: Bio 04-112/113 General Botany and Laboratory and Bio 04-114/115 General Zoology and Laboratory. All Biology majors and minors must also earn a grade of "C" or better in all departmentally-offered biology course prerequisites prior to moving to the next higher level course.

The department expects all majors to earn a score of 50th percentile or better on the Academic Profile Assessment exam that is administered the junior year. Students not receiving the minimum score need to retake the Academic Profile exam until the minimum score is achieved.

Department Resources

The department annually awards the Dr. Irene Mueller, the William T. Garrett, the B.D. and Janet Scott, and the Fred C. and Grace E. Nelson Scholarships to biology majors, and the Mark B. Robbins, and the David B. Hoffman Scholarships to wildlife ecology and conservation majors. The Department of Biological Sciences annually honors two outstanding graduating seniors, one female and one male, with awards. Students receiving these awards are nominated by their advisors and voted on by the faculty.

The department also supports the 102 River Wildlife Club, the Pre-Medical Professional Club, and the Beta Beta Beta Honorary Society.

The department regularly takes advantage of three field sites for hands-on experience in support of the objectives of various courses. Dobbins Woodland is a mature 40-acre forest, managed for the Nature Conservancy. Mozingo Biological Reserve is a 120-acre tract of mixed grassland and forest, with access to Lake Mozingo. The Conservation Pond is a 16-acre parcel near campus, which includes a two-acre pond.

DEPARTMENT POLICIES

Students enrolled in laboratory courses are expected to purchase dissecting kits, laboratory coats and eye protection devices for their own safety. In addition, students will be expected to purchase laboratory manuals and/or fields guides to supplement the textbook.

Problem courses (Bio 04-419, 429, 439, 449, 459, 469, 479, 489) supplement regular course offerings. 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 of work per week expected for each credit hour, depending on the nature of the problem. A maximum of three hours is allowed on 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 microbiology, marine vertebrate zoology and ichthyology, physical marine geology, chemical marine geology and marine chemistry) are available during the summers at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi. Contact the chairperson, Department of Biological Sciences, for information and arrangements by February 1, as applications are required due to limited enrollment.

All students desiring a degree must complete a minimum of 15 hours from the Biological Sciences Department.

All graduating seniors (majors and minors) are required to take the ETS subject matter test and provide the department with test results prior to graduation approval. All unified science majors are also required to take the PRAXIS II in their endorsement areas for state certification.

Bachelor of Science in Clinical Laboratory Sciences

(formerly Medical Technology)

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.

Application to the clinical year is usually made in the fall of the junior year. 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. Minimum grade point average ranges from 2.00 to 2.50 for both cumulative GPA and science courses.

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 69-72)	**42**
Science	**46**
Electives	**6**
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 Medical Center—Dr. Vijaya L. Dhanwada, Medical Director
Kyla Deibler, MS, MT (ASCP), CLS (NCA), Program Director

Kansas City, Mo.
St. Luke's Hospital of Kansas City—Dr. Marjorie Zuker, Medical Administrator
Jane Rachel, MA, MT (ASCP), Program Director

North Kansas City, Mo.
North Kansas City Memorial Hospital—Dr. Mark Stivers, Medical Director
Jean E. Cooper, MPA, MT (ASCP), Program Director

Bachelor of Science in Clinical Laboratory Sciences

Required Courses	**Semester Hours**
Chem 24-114/115 General Chemistry I and Laboratory	4
Bio 04-102/103 General Biology and Laboratory	4
Bio 04-140 General Microbiology	4
Bio 04-310 Cell Biology (4) OR Bio 04-440 Molecular Biology (4) OR Math 17-114 General Statistics I (3)	3-4
Bio 04-438 Human Physiology	4
Bio 04-350 Genetics	3
Bio 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 Quantitative Analysis 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:	
Math 17-118 College Algebra	3
Bio 04-114/115 General Zoology and Laboratory	4
Phys 25-112/113 General Physics II and Laboratory	4
General Education Requirements (less directed General Education courses)	**31**
Electives	**6-7**
Total Degree Requirements	**124**

MAJORS

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

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**
Chem 24-114/115 General Chemistry I and Laboratory	4
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-310 Cell Biology	4
Bio 04-350 Genetics	3
Bio 04-376 Basic Ecology	4
Bio 04-491 Biological Science Seminar	1
Bio 04-383 Biology Practicum	1
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	
Bio 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 prerequisites	4

Biology: Botany Emphasis

Required Courses	Semester Hours
Biology Core	21
Bio 04-261 Local Flora	2
Bio 04-318 Principles of Taxonomy and Evolution	4
Bio 04-412 Plant Anatomy and Morphology	4
Bio 04-430 Plant Physiology	4
Bio 04-575 Methods in Plant Ecology	2
Total Hours	**37**

Biology: Cellular/Molecular Emphasis

Required Courses	Semester Hours
Biology Core	21
Bio 04-140 Microbiology	4
Bio 04-440 Molecular Biology	4
Bio 04-444 Immunology	4
Bio 04-430 Plant Physiology OR Bio 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
Bio 04-261 Local Flora	2
Bio 04-575 Methods in Plant Ecology	2
Bio 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 Ag 03-334 Soils	4
Advisor-approved biology electives above 300 level	3
Total Hours	**37**

Biology: Environmental Science Emphasis

Required Courses	Semester Hours
Biology Core	21
Bio 04-575 Methods in Plant Ecology OR Bio 04-577 Methods in Animal Ecology	2
Bio 04-420 Environmental Issues	4
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
Ag 03-334 Soils (4)	
Bio 04-307 Environmental Internship (1-3)	
Bio 04-474 Wildlife Management and Conservation (2)	
Chem 24-322/323 Quantitative Analysis 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
Total Hours	**37**

The following courses may be counted either as animal or plant courses:

Bio 04-140 Microbiology
Bio 04-318 Principles of Taxonomy and Evolution
Bio 04-420 Environmental Issues
Bio 04-440 Molecular Biology
Bio 04-474 Wildlife Management and Conservation

Biology: Zoology Emphasis

Required Courses	**Semester Hours**
Biology Core	21
Bio 04-312 Invertebrate Zoology	4
Bio 04-322 Comparative Anatomy	4
+Biology Electives	8
Total Hours	**37**

+Courses selected from the approved electives listed:

Bio 04-130 Animal Anatomy and Physiology
Bio 04-362 Mammalogy
Bio 04-364 Ornithology
Bio 04-366 Entomology
Bio 04-418 Vertebrate Histology
Bio 04-436 Human Anatomy
Bio 04-438 Human Physiology
Bio 04-460 Herpetology
Bio 04-474 Wildlife Management and Conservation
Bio 04-575 Methods in Plant Ecology
Bio 04-577 Methods in Animal Ecology

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)

Required Courses in Endorsement Area: Biology	Semester Hours
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-130 Animal Anatomy and Physiology	4
Bio 04-140 General Microbiology	4
Bio 04-310 Cell Biology	4
Bio 04-350 Genetics	3
Bio 04-318 Principles of Taxonomy and Evolution	4
*Bio 04-419 Problems in General Biology (1-3) OR	
*Bio 04-489 Problems in Biological Education (1-3)	1
Bio 04-491 Biological Science Seminar	1
Bio 04-420 Environmental Issues	4
Bio 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	
Sci Ed 28-550 History of Science and Technology	3
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
Phys 25-110/111 General Physics I and Laboratory	4
Phys 25-112/113 General Physics II and Laboratory	4
Geol 27-212 Historical Geology	4
Math 17-119 Trigonometry	2
Total Hours in Major	**60-61**

Directed General Education Courses	
Bio 04-112/113 General Botany and Laboratory	4
Math 17-118 College Algebra	3
Geol 27-114/115 General Earth Science and Laboratory	4
Professional Education Requirements	**30**
Including Sci Ed 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)

Required Courses	Semester Hours
Chem 24-114/115 General Chemistry I and Laboratory	4
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-140 General Microbiology	4
Bio 04-310 Cell Biology	4
Bio 04-350 Genetics	3
Bio 04-318 Principles of Taxonomy and Evolution	4
Bio 04-420 Environmental Issues	4
Bio 04-383 Biology Practicum	1

Bio 04-419 Problems in General Biology (1-3) OR	
Bio 04-489 Problems in Biology Education (1-3)	1-2
Bio 04-491 Biological Science Seminar	1
Bio 04-130 Animal Anatomy and Physiology (4) OR	
Bio 04-430 Plant Physiology (4) OR	
Bio 04-438 Human Physiology (4)	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
Sci Ed 28-550 History of Science and Technology	3
Phys 25-110/111 General Physics I and Laboratory (4) OR	
Phys 25-112/113 General Physics II and Laboratory (4)	4
Directed General Education Courses	
Math 17-118 College Algebra	3
Bio 04-112/113 General Botany and Laboratory	4
Geol 27-114/115 General Earth Science and Laboratory	4
Professional Education Requirements	**30**
Including Sci Ed 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

Required Courses	**Semester Hours**
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-310 Cell Biology	4
Bio 04-312 Invertebrate Zoology	4
Bio 04-350 Genetics	3
*Bio 04-351 Oceanography I: Physical, Chemical and Geology	5
*Bio 04-352 Oceanography II: Marine Biology	5
Bio 04-376 Basic Ecology	4
Bio 04-383 Biology Practicum	1
Bio 04-491 Biological Science Seminar	1
**Approved electives above 300 level	5

*** Taught at the Gulf Coast Research Laboratory each summer**

****Bio 04-362 Mammalogy and/or additional marine lab courses are recommended**

Collateral Courses	
Math 17-114 General Statistics I	3
Chem 24-116/117 General Chemistry II and Laboratory	5
Chem 24-342/343 Organic Chemistry I and Laboratory	5
Phys 25-110/111 General Physics I and Laboratory	4
Phys 25-112/113 General Physics II and Laboratory	4
Geog 32-365 Geographic Information Systems	3
Directed General Education Courses	
Bio 04-112/113 General Botany and Laboratory	4

Math 17-118 College Algebra (3) OR	
Math 17-120 Calculus I (4)	3-4
Chem 24-114/115 General Chemistry I and Laboratory	4

NOTE: Although not required, students planning graduate study are encouraged to take Math 17-120 Calculus I, Bio 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

Required Courses	Semester Hours
Chem 24-114/115 General Chemistry I and Laboratory	4
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-140 General Microbiology	4
Bio 04-322 Comparative Anatomy	4
Bio 04-350 Genetics	3
Bio 04-418 Vertebrate Histology	4
Bio 04-438 Human Physiology	4
Bio 04-310 Cell Biology	4
Bio 04-444 Immunology	4
Bio 04-491 Biological Science Seminar	1
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	
Math 17-118 College Algebra	3
Bio 04-112/113 General Botany and Laboratory	4
Phys 25-110/111 General Physics I and Laboratory	4

Comprehensive Major in Wildlife Ecology and Conservation, 60 hours: B.S.–No Minor Required

Required Courses	Semester Hours
Chem 24-114/115 General Chemistry I and Laboratory	4
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-130 Animal Anatomy and Physiology	4
Bio 04-261 Local Flora	2
Bio 04-366 Entomology	3
Bio 04-312 Invertebrate Zoology	4
Bio 04-350 Genetics	3
Bio 04-362 Mammalogy	4
Bio 04-364 Ornithology	3
Bio 04-376 Basic Ecology	4
Bio 04-474 Wildlife Management and Conservation	2
Bio 04-491 Biological Science Seminar	1
Bio 04-575 Methods in Plant Ecology	2
Bio 04-577 Methods in Animal Ecology	2

Ag 03-334 Soils	4
Collateral Courses	
Chem 24-116/117 General Chemistry II and Laboratory	5
Geog 32-365 Geographic Information Systems	3
Ag 03-382 Woody Landscape Plants	3
Math 17-114 General Statistics I	3
Directed General Education Courses	
Math 17-118 College Algebra	3
Bio 04-112/113 General Botany and Laboratory	4
Phys 25-110/111 General Physics I and Laboratory OR Phys 25-112/113 General Physics II and Laboratory	4

NOTE: One additional credit hour of botany is required to meet the wildlife biologist position for the Federal Register; take as an elective.

Comprehensive Major in Wildlife Ecology and Conservation, 56 hours: B.A.–No Minor Required

Required Courses	**Semester Hours**
Chem 24-114/115 General Chemistry I and Laboratory	4
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-130 Animal Anatomy and Physiology	4
Bio 04-261 Local Flora	2
Bio 04-366 Entomology	3
Bio 04-312 Invertebrate Zoology	4
Bio 04-350 Genetics	3
Bio 04-362 Mammalogy	4
Bio 04-364 Ornithology	3
Bio 04-376 Basic Ecology	4
Bio 04-474 Wildlife Management and Conservation	2
Bio 04-491 Biological Science Seminar	1
Ag 03-334 Soils	4
Collateral Courses	
Chem 24-116/117 General Chemistry II and Laboratory	5
Math 17-114 General Statistics I	3
Geog 32-365 Geographic Information Systems	3
Ag 03-382 Woody Landscape Plants	3
Directed General Education Courses	
Math 17-118 College Algebra	3
Bio 04-112/113 General Botany and Laboratory	4
Phys 25-110/111 General Physics I and Laboratory OR Phys 25-112/113 General Physics II and Laboratory	4

NOTE: Three additional credit hours in botany are required to meet the wildlife biologist position for the Federal Register; take as an elective.

Comprehensive Major in Biology/Psychology, 67-68 hours: B.S.–No Minor Required

This major allows students to complete individual programs of study arranged by advisors in both the Department of Biological Sciences and the Department of Psychology, Sociology and Counseling. While requiring students to complete half their class work as advised by each

department, the number of elective hours gives this 67-68 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.

Required Courses for Psychology	**Semester Hours**
Psych 08-223 Abnormal Psychology	3
Psych 08-333 Developmental Psychology	3
Psych 08-343 Biological Psychology	3
Psych 08-443 Advanced Biological Psychology	3
Psych 08-373 Learning and Motivation	3
Electives as determined and approved by the psychology advisor	15
Required Courses for Biology	
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-350 Genetics	3
Bio 04-491 Biological Science Seminar	1
Chem 24-114/115 General Chemistry I and Laboratory	4
Chem 24-116/117 General Chemistry II and Laboratory	5
Choose one of the following with advisor approval:	
*Phys 25-110/111 General Physics I and Laboratory (4) OR	
*Phys 25-112/113 General Physics II and Laboratory (4) OR	
Chem 24-242/243 Organic Chemistry and Laboratory (4) OR	
Chem 24-342/343 Organic Chemistry I and Laboratory (5)	4-5
Electives as determined and approved by the biology advisor	16
Directed General Education Courses	
Psych 08-103 General Psychology	3
Math 17-118 College Algebra	3
Bio 04-112/113 General Botany and Laboratory	4
Phys 25-110/111 General Physics I and Laboratory (4) OR	
Phys 25-112/113 General Physics II and Laboratory (4)	4

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

MINORS

Minor in Biology, 24 hours: B.S.

Required Courses	**Semester Hours**
*Bio 04-112/113 General Botany and Laboratory	4
*Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-350 Genetics	3
Bio 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.

Required Courses	**Semester Hours**
*Bio 04-112/113 General Botany and Laboratory	4
*Bio 04-114/115 General Zoology and Laboratory	4

Bio 04-350 Genetics	3
Bio 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)

Required Courses	Semester Hours
Bio 04-112/113 General Botany and Laboratory	4
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-140 General Microbiology	4
Bio 04-130 Animal Anatomy and Physiology	4
Bio 04-310 Cell Biology	4
Bio 04-350 Genetics	3
Bio 04-318 Principles of Taxonomy and Evolution	4
Bio 04-383 Biology Practicum	1
Sci Ed 28-550 History of Science and Technology	3

Professional Education Requirements

Sci Ed 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

Required Courses	Semester Hours
Chem 24-114/115 General Chemistry I and Laboratory	4
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-376 Basic Ecology	4
Geol 27-360 Environmental Geology OR Bio 04-420 Environmental Issues	4
Geol 27-340 Hydrogeology	3
Geog 32-501 Conservation of Natural Resources	3
Advisor-approved electives (choose 4 hours):	4

Ag 03-334 Soils (4)
Bio 04-140 General Microbiology (4)
Bio 04-307 Environmental Internship (1-3)
Bio 04-474 Wildlife Management and Conservation (2)
Bio 04-575 Methods in Plant Ecology (2)
Bio 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

Bio 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 major in the Department of Biological Sciences. 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.

DEPARTMENT NON-DEGREE PROGRAM

Medical Administrative Assistant: Two-year curriculum, 60 hours

Required Courses	Semester Hours
CPAS 76-101 Freshman Seminar	1
Eng 10-111/10-112 Composition OR	
ACT English credit/10-115 Honors Composition	6
Bio 04-102/103 General Biology and Laboratory	4
Bio 04-104 Medical Terminology	3
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-140 General Microbiology	4
Bio 04-436 Human Anatomy	4
Chem 24-112/113 General Chemistry and Laboratory	4
Math 17-118 College Algebra	3
CSIS 44-130 Computers and Information Technology	3
CSIS 44-211 Spreadsheet Applications	1
CSIS 44-212 Advanced Spreadsheet and Charting	1
CSIS 44-245 DigiTools	3
CSIS 44-331 Integrated Software Applications	3
CSIS 44-343 Virtual Workplace	3
CSIS 44-346 Database Applications	1
Acct 51-201 Accounting I	3
Mgmt 54-310 Managerial Communications	3
Mgmt 54-313 Principles of Management	3
Choose three hours from the following:	3
CSIS 44-221 Web Development (1)	
Bio 04-293 Medical Transcription and Medical Records (2)	
Fin 53-311 Business Law (3)	
Psych 08-103 General Psychology (3)	
Total Hours	**60**

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 in Nanoscience, 72 hours: B.S.–No Minor Required

The offering of this major is contingent upon State approval. First planned offering of this major is Fall 2006.

Nanoscale Biology Emphasis

This is an interdisciplinary major in conjunction with the Departments of Biological Sciences, Chemistry and Physics, and Mathematics and Statistics. Three emphasis areas are available for this major: Nanoscale Biology, Nanoscale Chemistry and Nanoscale Physics.

Required Core Courses	Semester Hours
Bio 04-140 Microbiology	4
Bio 04-310 Cell Biology	4
Bio 04-350 Genetics	3
Bio 04-440 Molecular Biology	4
Math 17-114 General Statistics I	3
Math 17-121 Calculus II	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
Phys 25-230/231 Classical Physics II and Laboratory	5
Nano 48-314 Nanoscale Science I	4
Nano 48-315 Nanoscale Science II	4
Total Core Requirements	**56**
Nanoscale Biology Emphasis Required Courses	
Bio 04-444 Immunology	4
Bio 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	
Bio 04-112/113 General Botany and Laboratory	4
Math 17-120 Calculus I	4
Phys 25-120/121 Classical Physics I and Laboratory	5
Phil 39-274 Introduction to Ethics	3

Nanoscale Chemistry Emphasis – see the Chemistry and Physics Department

Nanoscale Physics Emphasis – see the Chemistry and Physics Department

Science Education / 28

DEGREE PROGRAMS AND SCIENCE TEACHING CERTIFICATION

The major objectives of the science education programs are (a) to provide courses related to the teaching of science to meet the special needs of prospective elementary and secondary school teachers; (b) to provide programs for special science teachers for elementary schools and for science teachers for middle schools and junior high schools; and (c) to provide a graduate program leading to the M.S.Ed. in Science Education for science teachers and science supervisors. (See *Graduate Catalog* for more details about Northwest's master's programs.)

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
*Bio 04-112/113 General Botany and Laboratory OR	
*Bio 04-114/115 General Zoology and Laboratory	4
Geol 27-114/115 General Earth Science and Laboratory	4
Phy Sci 40-122/123 Descriptive Astronomy and Laboratory	4
Phy Sci 40-102/103 The Physical Sciences 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
Sci Ed 28-550 History of Science and Technology	3
Directed General Education Course	
Bio 04-102/103 General Biology and Laboratory	4
Professional Education Requirement	
Sci Ed 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 Bio 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 Bio 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, S)

111 Emergency Medical Techniques (2 hours)
A brief refresher of Bio 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, S)

112 General Botany (3 hours)
A fundamental study of plants: life histories, structure, physiology, ecology and economic importance. Must co-register for Bio 04-113. Prerequisites: Bio 04-102/103 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 Bio 04-112. (F, S, SS)

114 General Zoology (3 hours)
Introduction to animal life including life histories, structure, functions and reproduction. Must co-register for Bio 04-115. Three hours of lecture per week. Prerequisites: Bio 04-102/103 or equivalent of two years of high school biology. (F, S, SS)

115 General Zoology Laboratory (1 hour)
Two-hour laboratory which must be taken concurrently with Bio 04-114. (F, S, SS)

130 Animal Anatomy and Physiology (4 hours)
A study of the basic physiological functions and anatomical concepts of the primary systems of the animal body. Three hours of lecture and two hours of laboratory per week. Prerequisites: Bio 04-102/103 or equivalent, Chem 24-112/113 or 24-114/115 or 24-116/117 or taken concurrently. Recommended prerequisite: Bio 04-114/115. (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: Bio 04-102/103 or 112/113 or 114/115 and Chem 24-114/115. Pre-nursing and medical administrative assistant 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.

261 Local Flora (2 hours)
A two-hour laboratory course designed to acquaint the student with plants of this region and their classification. Prerequisite: Bio 04-112/113. (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. (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. (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. (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. (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: 8 hours of biology and 8 hours of chemistry. Recommended prerequisites: Chem 24-342/343 and either Chem 24-362/363 or 24-562/563. (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: Bio 04-114/115. (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: Bio 04-112/113 and 04-114/115. (S, even years)

322 Comparative Anatomy (4 hours)
The comparative anatomical evolution of the vertebrates. Laboratory consists of dissection of various vertebrates. Two hours of lecture and six hours of laboratory per week. Prerequisite: Bio 04-114/115. (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: Bio 04-112/113, 04-114/115 and/or permission of instructor. Recommended Chem 24-242/243 or 24-342/343. (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: Bio 04-114/115. (F)

364 Ornithology (3 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 man. One hour lecture and two two-hour laboratories per week. Prerequisite: Bio 04-114/115. (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: Bio 04-114/115. (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: Bio 04-112/113 and 114/115 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. Bio 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. (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: Bio 04-112/113. (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: Bio 04-322. (S)

419 Problems in General Biology (1-3 hours)
Permission of instructor necessary.

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. Recommended prerequisites: Bio 04-102/103, Chem 24-114/115, Geol 27-110/111 or Geol 27-114/115. 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.

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: Bio 04-112/113, Chem 24-114/115, and Chem 24-342/343. Highly recommended prerequisites: Chem 24-362/363 or 24-562/563. (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 three hours of laboratory per week. Prerequisites: Bio 04-102/103 and 04/114/115. 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: 12 hours of biology and Chem 24-112/113 or 24-114/115. An anatomy course is recommended. (F, S)

439 Problems in Molecular-Physiological Biology (1-3 hours)
Permission of instructor necessary.

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: Bio 04-350. Recommended prerequisites: Bio 04-140, 04-310, Chem 24-362/363. (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. Prerequisite: Bio 04-140. (S)

449 Problems in Microbial Biology (1-3 hours)
Permission of instructor necessary.

459 Problems in Genetical Biology (1-3 hours)
Permission of instructor necessary.

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: Bio 04-114/115. (S)

469 Problems in Taxonomical Biology (1-3 hours)
Permission of instructor necessary.

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: Bio 04-376 and senior standing. (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: Bio 04-114/115 and 376 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: Bio 04-310, 440; Chem 24-114/115, 116/117 and 342/343. (F, alt. years)

479 Problems in Environmental Biology (1-3 hours)
Permission of instructor necessary.

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. (F, S, SS)

489 Problems in Biological Education (1-3 hours)
Permission of instructor necessary. Prerequisites: Bio 04-112/113 and 04-114/115.

491 Biological Science Seminar (1 hour)
Individual reports and group discussion of problems and current research in biological sciences. May be repeated for additional credit; maximum two semester hours. Prerequisite: Senior standing in major or minor or permission of department chairperson. (F, S)

500 Special Offerings (1-4 hours)

510 Current Topics in Biology (1-3 hours)
Each current topic is specifically designed to address a timely topic in biology.

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: Bio 04-350. (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 Bio 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 Bio 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: Bio 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. Six hours of laboratory per week. Prerequisite: Bio 04-376. (S, second block)

CLINICAL LABORATORY SCIENCES

(formerly Medical Technology)

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, **designated GC**, are not taught on the Northwest campus, but at the accredited Gulf Coast Research Center.

GC 351 Oceanography I: Physical, Chemical and Geology (5 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, 8-9 hours of chemistry. (SS)

GC 352 Oceanography II: Marine Biology (5 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)

GC 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)

GC 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)

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, Bio 04-112/113, 04-350, Phys 25-120/121, 25-230/231, and junior standing. (S, even years)

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: Bio 04-102/103, and Phy Sci 40-102/103 or Phys 25-110/111 or 25-112/113. (F, S)

400 Special Offerings (1-4 hours)

500 Special Offerings (1-4 hours)

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, Sec. Ed 65-570, 15 hours of science. (F)

Department of Chemistry / 24 and Physics / 25

Chairperson: Patricia Lucido

Faculty: Michael Bellamy, Angela Bickford, Barrett Eichler, Rafiqul Islam, Ahmed Malkawi, David Richardson, John Shaw, Richard Toomey

Statement of Mission

The mission of the department is to provide quality major programs that prepare our graduates to compete in graduate school and to secure industrial and/or teaching positions. Also, the department offers quality general education and service courses that assure an understanding of the basic scientific process and the relation between science and society. The general education science courses stress the scientific method and are designed to help students learn to use simple mathematical models to analyze complex problems.

Test-Out Policy

Undergraduate students may test out of certain lower division courses in chemistry and physics. Examinations are only available each trimester during the first week of class. See the department chairperson for courses that are available for test-out.

Chemistry / 24

DEGREE PROGRAMS

Students majoring in chemistry may work toward the Bachelor of Science degree, the Bachelor of Science degree (A.C.S. accredited), the Bachelor of Arts degree, or select from two Bachelor of Science in Education degrees. The Bachelor of Science degree (A.C.S. accredited) is designed as a professional degree program for chemists and to prepare students for graduate work toward the master's or Ph.D. in chemistry. This program is fully accredited by the American Chemical Society. The Bachelor of Science or Bachelor of Arts degree program is for students who wish pre-professional training in medicine, veterinary medicine, dentistry or pharmacy. The Bachelor of Science in Education, Secondary Program is designed to prepare students for teaching chemistry in secondary schools and meets Missouri, Iowa and most other state certification requirements.

Advanced Standing Requirement

A student can receive advanced standing for the Bachelor of Science degree and the A.C.S. accredited Bachelor of Science degree when he/she has earned a grade of "C" or better in Math 17-120, Chem 114/115 and Chem 24-116/117. The requirements to achieve advanced standing for the Bachelor of Arts degree are a grade of "C" or better in Math 17-118, Chem 114/115 and

Chem 24-116/117. All chemistry courses that are prerequisites to other chemistry courses must be passed with a "C" or higher grade before the advanced course may be taken. It is recommended that students take sequential courses in adjacent trimesters.

MAJORS

Comprehensive Major in Chemistry, A.C.S. Accredited, 69 hours: B.S.—No Minor Required

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 Quantitative Analysis 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 Using Computers is a prerequisite course 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 hours: B.S.—No Minor Required

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 Quantitative Analysis and Laboratory	5
Chem 24-342/343 Organic Chemistry I and Laboratory	5
Chem 24-344/345 Organic Chemistry II and Laboratory	5
Chem 24-532/533 Physical Chemistry I and Laboratory	4
Chem 24-534/535 Physical Chemistry II and Laboratory	4
Chem 24-552 Advanced Inorganic Chemistry	3
Chem 24-592 Chemistry Seminar	1

Collateral Courses

Math 17-114 General Statistics I	3
Math 17-121 Calculus II	4
Phys 25-230/231 Fundamentals of Classical Physics II and Laboratory	5
Departmental approved electives chosen from physics, chemistry mathematics, biology or *computer science	4

***CSIS 44-130 Using Computers is a prerequisite course 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, 30 hours: B.A.–Minor Required

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 Quantitative Analysis 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. Degree, Secondary Program–No Minor Required (Certifies Grades 9-12, Endorsement Area: Chemistry)

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 Quantitative Analysis and Laboratory	5
Chem 24-342/343 Organic Chemistry I and Laboratory	5
Chem 24-499 Special Investigations in Chemistry	1
Chem 24-534 Physical Chemistry II	3
Chem 24-592 Chemistry Seminar	1
Chem 24-362/363 Elementary Biochemistry and Laboratory OR Chem 24-562/563 General Biochemistry and Laboratory	4-5
Chem 24-370 Chemistry Practicum	1
Required Collateral Courses for the Unified Science Major	
Sci Ed 28-550 History of Science and Technology	3
Bio 04-112/113 General Botany and Laboratory	4
Bio 04-420 Environmental Issues	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
Geol 27-212 Historical Geology	4

Math 17-114 General Statistics I	3
Math 17-121 Calculus II	4
Total Hours in Major	**63-64**
Directed General Education Courses	
Math 17-120 Calculus I	4
Bio 04-114/115 General Zoology and Laboratory	4
Geol 27-114/115 General Earth Science and Laboratory	4
Professional Education Requirements	**30**
Including Sci Ed 28-580 Methods in Secondary School Science (3)	

Major in Chemistry Education, 56 hours: B.S.Ed., Secondary Program (Certifies Grades 9-12)

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 Quantitative Analysis 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 24-532/533 Physical Chemistry I and Laboratory (4) OR	
Chem 24-344/345 Organic Chemistry II and Laboratory (5)	4-5
Collateral Courses	
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
Bio 04-420 Environmental Issues	4
Sci Ed 28-550 History of Science and Technology	3
Directed General Education Courses	
Math 17-120 Calculus I	4
Bio 04-102/103 General Biology and Laboratory	4
Geol 27-114/115 General Earth Science and Laboratory	4
Professional Education Requirements	**30**
Including Sci Ed 28-580 Methods in Secondary School Science (3)	

Major in Alternative Energy, 70 hours: B.S.—No Minor Required

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 Quantitative Analysis and Laboratory	5
Chem 24-342/343 Organic Chemistry I and Laboratory	5
Chem 24-344 Organic Chemistry II	3
Chem 24-510 Fundamentals of Alternative Energy	3
Chem 24-530 Fundamentals of Industrial Biotechnology	3

Chem 24-534 Physical Chemistry II	3
Chem 24-562/563 General Biochemistry and Laboratory	5
Approved elective	2
Collateral Courses	
Math 17-114 General Statistics I	3
Math 17-121 Calculus II	4
Phys 25-230/231 Fundamentals of Classical Physics II and Laboratory	5
Bio 04-140 General Microbiology	4
Bio 04-310 Cell Biology	4
Bio 04-350 Genetics	3
Bio 04-440 Molecular Biology	4
Phys 25-540 Energy Conversions with Alternative Energy	3
Directed General Education Courses	
Math 17-120 Calculus I	4
Bio 04-112/113 General Botany and Laboratory	4
Phys 25-120/121 Classical Physics I and Laboratory	5

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

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 Quantitative Analysis 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

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	
Bio 04-310 Cell Biology (4) OR	
Bio 04-350 Genetics (3)	3-4

Directed General Education Courses

Math 17-118 College Algebra	3
Bio 04-102/103 General Biology and Laboratory OR Bio 04-112/113 General Botany and Laboratory OR Bio 04-114/115 General Zoology and Laboratory OR Ag 03-130 Plant Science	4

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

NOTE: Students with a Cellular/Molecular Emphasis must take 5 hours of chemistry electives from 300-level or above courses, excluding Chem 24-362/363.

Minor in Chemistry Education, 24-26 hours: B.S.Ed. (Certifies 9-12)

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 24-534/535 Physical Chemistry II and Laboratory (4) OR Chem 24-322/323 Quantitative Analysis and Laboratory (5)	4-5
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
Sci Ed 28-550 History of Science and Technology	3
Directed General Education Course	
Math 17-114 General Statistics I	3
Chem 24-114/115 General Chemistry I and Laboratory	4
Professional Education Requirements	
Sci Ed 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 Sci Ed 28-550 History of Science and Technology.

Physics / 25

DEGREE PROGRAMS

The main objectives of courses in the physics programs are (a) to provide service courses to meet special needs of other science majors, pre-engineering students and teacher education students; (b) to provide general education courses in physics to meet science area requirements in general education for all degree programs; and (c) to provide physics-related training for professions in industry or teaching.

Three different kinds of physics major programs are available for students depending upon the degree program they choose. (Bachelor of Science in Education-Unified Science, or a Major in Physics Education or Bachelor of Science degree).

Advanced Standing Requirement

A student can receive advanced standing when he/she has earned a grade of "C" or better in Math 17-120 Calculus I and Phys 25-230/231 Fundamentals of Classical Physics II.

MAJORS

Comprehensive Major in Physics, 52 hours: B.S.—No Minor Required

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 25-320/321 Classical Mechanics I and Laboratory	4
Phys 25-330/331 Electricity and Magnetism I and Laboratory	4
Phys 25-332/333 Electronics and Laboratory	4
Phys 25-350/351 Introduction to Modern Physics and Laboratory	4
Phys 25-352 Modern Physics II	3
Phys 25-450/451 Computational Physics and Laboratory	4
Phys 25-479 Physics Undergraduate Research OR Phys 25-489 Physics Practicum OR Phys 25-499 Special Investigation in Physics OR Phys 25-599 Selected Advanced Topics in Physics	2
Physics electives from courses numbered above 300	3
Collateral Courses	
Math 17-121 Calculus II	4
Math 17-321 Multivariate Calculus	4
Math 17-361 Differential Equations	3
CSIS 44-141 Computer Programming I OR CSIS 44-149 Scientific Programming	3
Directed General Education Courses	
Math 17-120 Calculus I	4
Chem 24-114/115 General Chemistry I and Laboratory	4
Biological science: one course from general biology, botany or zoology	4

Unified Science Major in Physics, 65 hours: B.S.Ed. Degree, Secondary Program—No Minor Required (Certifies Grades 9-12, Endorsement Area: Physics)

Required Courses in Endorsement Area: Physics	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
Phys 25-489 Physics Practicum	2
Phys 25-352 Modern Physics II	3
Phys 25-332/333 Electronics and Laboratory	4
Phys 25-330/331 Electricity and Magnetism I and Laboratory OR Phys 25-320/321 Classical Mechanics and Laboratory	4
Physics Electives (300-level and above)	3
Required Collateral Courses for the Unified Science Major	
Sci Ed 28-550 History of Science and Technology	3
Bio 04-112/113 General Botany and Laboratory	4
Bio 04-420 Environmental Issues	4
Chem 24-114/115 General Chemistry I and Laboratory	4
Chem 24-116/117 General Chemistry II and Laboratory	5
Geol 27-212 Historical Geology	4
Math 17-121 Calculus II	4

Math 17-321 Multivariate Calculus	4
CSIS 44-141 Computer Programming I OR	
CSIS 44-149 Scientific Programming	3
Total Hours in Major	**65**
Directed General Education Courses	
Math 17-120 Calculus I	4
Bio 04-114/115 General Zoology and Laboratory	4
Geol 27-114/115 General Earth Science and Laboratory	4
Professional Education Requirements	**30**
Including Sci Ed 28-580 Methods in Secondary School Science (3)	

Major in Physics Education, 53 hours: B.S.Ed., Secondary Program (Certifies Grades 9-12)

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 25-320/321 Classical Mechanics I and Laboratory OR	
Phys 25-330/331 Electricity and Magnetism I and Laboratory	4
Phys 25-332/333 Electronics and Laboratory	4
Phys 25-350/351 Introduction to Modern Physics and Laboratory	4
Phys 25-352 Modern Physics II	3
Phys 25-450/451 Computational Physics and Laboratory	4
Phys 25-489 Physics Practicum	2
Collateral Courses	
Bio 04-420 Environmental Issues	4
Sci Ed 28-550 History of Science and Technology	3
Math 17-121 Calculus II	4
Math 17-321 Multivariate Calculus	4
Chem 24-114/115 General Chemistry I and Laboratory	4
CSIS 44-141 Computer Programming I OR	
CSIS 44-149 Scientific Programming	3
Directed General Education	
Math 17-120 Calculus I	4
Bio 04-102/103 General Biology and Laboratory	4
Geol 27-114/115 General Earth Science and Laboratory	4
Professional Education Requirements	**30**
Including Sci Ed 28-580 Methods In Secondary School Science (3)	

MINORS

Minor in Physics, 24 hours

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 9-12)

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
Sci Ed 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	
Sci Ed 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 Sci Ed 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 in Nanoscience, 72 hours: B.S.–No Minor Required

The offering of this major is contingent upon State approval. First planned offering of this major is Fall 2006.

Nanoscale Chemistry Emphasis

This is an interdisciplinary major in conjunction with the Departments of Biological Sciences, Chemistry and Physics, and Mathematics and Statistics. Three emphasis areas are available for this major: Nanoscale Biology, Nanoscale Chemistry and Nanoscale Physics.

Required Core Courses	Semester Hours
Bio 04-140 Microbiology	4
Bio 04-310 Cell Biology	4
Bio 04-350 Genetics	3
Bio 04-440 Molecular Biology	4
Math 17-114 General Statistics I	3
Math 17-121 Calculus II	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
Phys 25-230/231 Classical Physics II and Laboratory	5

Nano 48-314 Nanoscale Science I	4
Nano 48-315 Nanoscale Science II	4
Total Core Requirements	**56**
Nanoscale Chemistry Emphasis Required Courses	
Chem 24-344/345 Organic Chemistry II and Laboratory OR Chem 24-322/323 Quantitative Analysis 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	
Bio 04-112/113 General Botany and Laboratory	4
Math 17-120 Calculus I	4
Phys 25-120/121 Classical Physics I and Laboratory	5
Phil 39-274 Introduction to Ethics	3

Nanoscale Biology Emphasis – see the Biological Sciences Department

Major in Nanoscience, 72 hours: B.S.–No Minor Required

The offering of this major is contingent upon State approval. First planned offering of this major is Fall 2006.

Nanoscale Physics Emphasis

This is an interdisciplinary major in conjunction with the Departments of Biological Sciences, Chemistry and Physics, and Mathematics and Statistics. Three emphasis areas are available for this major: Nanoscale Biology, Nanoscale Chemistry and Nanoscale Physics.

Required Core Courses	**Semester Hours**
Bio 04-140 Microbiology	4
Bio 04-310 Cell Biology	4
Bio 04-350 Genetics	3
Bio 04-440 Molecular Biology	4
Math 17-114 General Statistics I	3
Math 17-121 Calculus II	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
Phys 25-230/231 Classical Physics II and Laboratory	5
Nano 48-314 Nanoscale Science I	4
Nano 48-315 Nanoscale Science II	4
Total Core Requirements	**56**
Nanoscale Physics Emphasis Required Courses	
CSIS 44-141 Computer Programming I	3
Phys 25-350/351 Introduction to Modern Physics I and Laboratory	4
Phys 25-353 Modern Physics II	3

Phys 25-332/333 Electronics and Laboratory OR	
Phys 25-450/451 Computational Physics and Laboratory	4
Phys 25-479 Undergraduate Research	2
Total Emphasis Hours	**16**

Directed General Education Courses

Bio 04-112/113 General Botany and Laboratory	4
Math 17-120 Calculus I	4
Phys 25-120/121 Classical Physics I and Laboratory	5
Phil 39-274 Introduction to Ethics	3

Nanoscale Biology Emphasis – see the Biological Sciences Department

Science Education / 28

DEGREE PROGRAMS AND SCIENCE TEACHING CERTIFICATION

The major objectives of the science education programs are (a) to provide courses related to the teaching of science to meet the special needs of prospective elementary and secondary school teachers; (b) to provide programs for special science teachers for elementary schools and for science teachers for middle schools and junior high schools; and (c) to provide a graduate program leading to the M.S.Ed. in Science Education for science teachers and science supervisors. (See *Graduate Catalog* for more details about Northwest's master's programs.)

MINOR

Minor in Middle School Science, 25 hours: B.S.Ed. degree, Major in Middle School (Certifies Grades 5-9). Additional concentration area is required.

Required Courses	**Semester Hours**
*Bio 04-112/113 General Botany and Laboratory OR	
*Bio 04-114/115 General Zoology and Laboratory	4
Geol 27-114/115 General Earth Science and Laboratory	4
Phy Sci 40-122/123 Descriptive Astronomy and Laboratory	4
Phy Sci 40-102/103 The Physical Sciences 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
Sci Ed 28-550 History of Science and Technology	3
Directed General Education Course	
Bio 04-102/103 General Biology and Laboratory	4
Professional Education Requirement	
Sci Ed 28-582 Methods in Middle School Science is included in Middle School major.	

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

PRE-ENGINEERING PROGRAM

Students wishing to prepare for entrance to engineering schools should follow a pre-engineering program. The program for each student will be planned with an advisor to meet the requirements of the particular engineering program. Cooperative programs have been established between Northwest and the University of Missouri at both Columbia and Rolla.

PRE-ARCHITECTURE (NON-ENGINEERING)

Students desiring to major in architecture may complete one or two years of their curriculum on the Northwest campus. Each student must work closely with the pre-architecture advisor.

Course Descriptions

Chemistry / 24

112 General Chemistry (3 hours)
Beginning course for those who have had no 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 involves a study of basic molecular structure, periodic relationships and a thermodynamic approach to reaction systems. 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. 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' knowledge of institutional, state and federal regulations and an 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)

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. 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 Quantitative Analysis (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 Quantitative Analysis 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. (F, S)

400 Special Offerings (1-4 hours)

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 will be expected.

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. Prerequisite: Permission of department chairperson. (F, S, SS)

500 Special Offerings (1-4 hours)

510 Fundamentals of Alternative Energy (4 hours)
Provides an overview of the field of alternative energy. The course starts with current world usage and supplies of conventional fuels. Emphasis is then placed on currently used alternative fuels and fuel conversion technologies, as well as the future of alternative energy. Prerequisites: One year of college chemistry and one year of calculus-based physics. (F)

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)

530 Fundamentals of Industrial Biotechnology (3 hours)
Covers the main aspects of industrial biotechnology including the production of bioplastics, biofuels, neutricueuticals, and pharmaceuticals. Prerequisites: Chem 24-510 and Bio 04-520. (S)

531 Fundamentals of Industrial Biotechnology Laboratory (1 hour)
Hands-on experience with the use of industrial biotechnology to produce industrially-important chemicals including bioplastics, biofuels, neutriceuticals, and pharmaceuticals. One credit hour laboratory. Some pre-lab assignments are due online during semester. Prerequisites: Chem 24-530 and Bio 04-520. (S)

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, computational chemistry and statistical mechanics. 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 24-116/117 with a minimum grade of "C", Phys 25-120 and Math 17-121. (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 less familiar oxidation states, coordination chemistry, magnetic properties of elements and compounds, non-aqueous solvents and non-stoichiometric 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 24-532 with minimum grade of "C" or concurrently. (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. (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. Prerequisites: Chem 24-342 and 532 or permission.

592 Chemistry Seminar (1 hour)
Students will prepare written and oral reports on a literature search of a chemistry topic. Prerequisite: Chem 24-532. (F, S)

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, general education course in the physical sciences for students with very little background in science. The topics covered are selected from the fields of chemistry and physics, and their relationships to other sciences, technology and society. Students who have had good science background in high school should not take this course. Also, students who already have college credit in physics or chemistry are not eligible to enroll in this course. Three hours of lecture and discussion per week. Must be taken concurrently with Phys Sci 40-103. (F, S, SS)

103 Physical Science Laboratory (1 hour)
A laboratory course which must be taken concurrently with Phys Sci 40-102. Two hours per week. (F, 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 Phys Sci 40-123. (F, S)

123 Descriptive Astronomy Laboratory (1 hour)
This laboratory meets two hours each week and must be taken concurrently with Phys Sci 40-122. (F, S)

200 Special Offerings (1-4 hours)

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. Prerequisites: Introductory course in physical science and permission of instructor. (F, S)

300 Special Offerings (1-4 hours)

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. Prerequisite: Permission of instructor. (F, S)

500 Special Offerings (1-4 hours)

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 17-121 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)

130 Science and Technology of Musical Sound (3 hours)
Course examines underlying physics concepts such as waves, vibration and resonance, as well as musical applications including voice, strings, pipes, percussion and computer applications. (F)

200 Special Offerings (1-4 hours)

211 Special Topics in Physics (1-3 hours)
An in-depth study of special physics 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. (S, odd years)

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. (S, odd years)

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. (S)

330 Electricity and Magnetism I (3 hours)
Classical electricity and magnetism including Coulomb's law, Gauss' law, Poison'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, Math 17-321. (F, even years)

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 . (S, even years)

400 Special Offerings (1-4 hours)
This is a special, one-time offering. Topics include areas of physics not covered in regular courses.

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. (F, even years)

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 simulations 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. 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. All physics majors are required to earn at least one semester hour credit in the practicum. Permission of instructor necessary. Physics majors/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. Permission of instructor necessary. (F, S)

500 Special Offerings (1-4 hours)

540 Energy Conversions with Alternative Energy (3 hours)
Covers the physics behind the different ways that energy can be transformed from one form to another. Emphasis is placed on technologies used in the field of alternative energy. Co-firing biomass with coal is also discussed. Prerequisites: Chem 24-510. (F)

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. Permission of instructor required. (F, S, SS)

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, Bio 04-112/113, 04-350, Phys 25-120/121, 25-230/231, and junior standing. (S, even years)

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: Bio 04-102/103, and Phy Sci 40-102/103 or Phys 25-110/111 or 25-112/113. (F, S)

400 Special Offerings (1-4 hours)

500 Special Offerings (1-4 hours)

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 major (15 hours in 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 major or minor admitted to the Teacher Education Program, Sec. Ed 65-570, 15 hours of science. (F)

Department of Communication / 29, Theatre / 43 and Languages / 14

Chairperson: Theo Ross

Faculty: Kent Andel, Marie-Ginnette Baillargeon, Lori Durbin, John Fisher, Melody Hubbard, Patrick Immel, Nissa Ingraham, Patrick Johnson, Joe Kreizinger, Francisco Martinez, Bayo Oludaja, Amanda Petefish-Schrag, Marcy Roush, Matt Walker, Margaret Whedon

Statement of Mission

Supporting Northwest's institution-wide vision and mission, the Department of Communication, Theatre, and Languages has a threefold mission: (1) to serve the educational needs of the students of Northwest by providing programs of study that integrate theory and practice in the subject fields of communication, theatre, and languages; (2) to provide quality cultural, communicative and linguistic 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 mission by: (a) attracting students who have the potential to become competent professionals in these various fields, (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 in these fields that are 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 Department of Communication, Theatre, and Languages are provided with both a solid theoretical understanding of the field and numerous opportunities for hands-on competence in the discipline. Student organizations within the department provide additional experiential learning opportunities. Whether majoring in a communication field (Public Relations, Speech Communication or Organizational Communication), a theatre field (Performance, Technical/Design or Comprehensive), a language field (Spanish), 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.

In serving the educational needs of non-major students, the department offers general education courses that sharpen oral presentation and listening skills, develop interpersonal and team skills, increase multicultural awareness and understanding of and respect for diversity, enhance understanding of the cultural and humanistic values of these disciplines and provide service for the College of Education and Human Services and the Booth College of Business and Professional Studies. Further, 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. Providing and supporting multicultural and international events and experiences in the University community is also an aspect of this department. Further, the department makes its expertise available to individuals and organizations through consulting, workshops and training sessions.

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.

The Languages program advocates foreign study in order to broaden the student's multicultural perspective and to allow participation in diverse cultural and linguistic experiences. International study opportunities for students are available in Mexico and through the International Student Exchange Program (ISEP) and other exchanges, organized by the Intercultural and International Center. These study abroad opportunities enhance the strategic mission of providing diversity, competence and relevance to the student's total educational experience at Northwest Missouri State University.

DEGREE PROGRAMS

Communication, Theatre and Languages offers 14 majors, six minors and one area of endorsement.

The comprehensive Bachelor of Arts in Public Relations (54 hours) and Bachelor of Science in Public Relations (60 hours) combine communication courses with appropriate coursework in management, marketing and mass communication to provide a broad preparation for various careers within the public relations field. No minor is required for these programs.

The comprehensive Bachelor of Arts in Speech Communication-Organizational Communication (54 hours) and the Bachelor of Science in Speech Communication-Organizational Communication (60 hours) augment the studies of communication theory and performance with courses in management, psychology and writing designed to prepare students for the myriad of careers within organizational communication. No minor is required for these programs.

The Bachelor of Arts in Speech Communication (30 hours) and the Bachelor of Science in Speech Communication (36 hours), which require minors in another area, allow students to pursue more traditional liberal arts degrees appropriate as broad foundations for professional pursuits or graduate study.

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 (60 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 (40 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.

Bachelor of Arts and Bachelor of Science degrees are available in Spanish. These require 33 hours of study in the discipline.

The Bachelor of Science in Education degree in Spanish (31 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.

A Minor in Speech Communication (24 hours) is available for students majoring in other areas who wish to enhance their majors with an introductory preparation in speech communication.

A Minor in Public Relations (24 hours) is available for students majoring in other areas who wish to expand their preparation in the public relations area.

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.

A minor in Spanish is required to complete 21 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.

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.

Test-Out Policy

Test-out is available for Com 29-102, Fundamentals of Oral Communication. For further information, contact the director of the Com 29-102 program.

Test-out is also available for Lang 14-131, 14-132, 14-141 or 14-142. 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 20-22 for the specific policy.

All Communication, Theatre, and Languages test-out must be scheduled to be taken during the first four calendar days of the trimester.

Language Requirement

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.

Portfolio Requirement

Successful completion of all degrees require 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. Th 43-373 Directing must be successfully completed prior to attempting this requirement.

Advanced Standing Requirement

Students majoring in the programs of communication and 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 communication, theatre, or languages may appeal by submitting a written petition to the dean of the College of Arts and Sciences through the chair of the department.

Communication Majors

Students seeking a major or a minor in public relations, organizational communication or speech communication are expected to demonstrate a capacity to integrate principles of spoken and written communication and sufficient commitment to expand their knowledge in order to successfully pursue advanced study.

To achieve communication advanced standing a student must: 1) have no grade lower than "C" in any English composition course, 2) have completed at least six hours in communication at the 100 or 200 level (excluding 29-102), 3) have no grade lower than "C" in any departmental communication course and 4) must request a member of the communication, theatre, and languages faculty as his/her advisor.

Students beginning the second trimester of their sophomore year and/or having successfully met the University requirements must apply for communication advanced standing. Transfer communication majors seeking to enroll in advanced communication courses must meet the same requirements as native students and must apply for communication advanced standing at the time of registration. Upon approval of advanced standing the department chair will assign the student a faculty advisor who is knowledgeable of the student's program.

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.

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.

Communication / 29

MAJORS

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

Public Relations Core	Semester Hours
Com 29-260 Public Relations Techniques	3
Com 29-360 Principles of Public Relations	3

Com 29-460 Public Relations Case Problems	3
Com 29-432 Organizational Communication	3
Com 29-465 Advanced Public Relations Techniques	3
Com 29-469 Internship in Public Relations	3
Com 29-499 Senior Seminar	1
Required Courses	
Com 29-230 Public Speaking	3
Com 29-232 Small Group Communication	3
Com 29-329 Propaganda	3
Com 29-331 Persuasive Communication	3
MC 20-130 Writing for Media Professionals	3
MC 20-353 Principles of Print Advertising	3
Acct 51-201 Accounting I	3
Mgmt 54-313 Principles of Management	3
Mkt 55-330 Principles of Marketing	3
Mkt 55-332 Promotion	3
Mkt 55-333 Consumer Behavior OR	
Mkt 55-432 Marketing Research	3
Two hours selected from the following:	2
MC 20-150 Journalism Practicum (Yearbook) (1)	
MC 20-151 Journalism Practicum (Newspaper) (1)	
MC 20-215 Practicum in Radio (1)	
MC 20-216 Practicum in Television (1)	
MC 20-322 Advanced Practicum in Radio (1)	
MC 20-326 Advanced Practicum in Television (1)	
MC 20-350 Advanced Practicum (Yearbook) (1)	
MC 20-351 Advanced Journalism Practicum (Newspaper) (1)	
MC 20-354 Online Magazine Practicum (1)	
Com 29-152 Public Relations Practicum (1)	
Com 29-352 Advanced Public Relations Practicum (1)	
Approved electives as needed to total 54 hours in the major	
Students are advised to take General Economics I and Introduction to Ethics as General Education requirements.	

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

Public Relations Core	**Semester Hours**
Com 29-260 Public Relations Techniques	3
Com 29-360 Principles of Public Relations	3
Com 29-432 Organizational Communication	3
Com 29-460 Public Relations Case Problems	3
Com 29-465 Advanced Public Relations Techniques	3
Com 29-469 Internship in Public Relations	3
Com 29-499 Senior Seminar	1
Required Courses	
Com 29-230 Public Speaking	3
Com 29-232 Small Group Communication	3
Com 29-329 Propaganda	3
Com 29-331 Persuasive Communication	3

MC 20-130 Writing for Media Professionals	3
MC 20-313 Principles of Broadcast Advertising	3
MC 20-353 Principles of Print Advertising	3
Acct 51-201 Accounting I	3
Mgmt 54-313 Principles of Management	3
Mkt 55-330 Principles of Marketing	3
Mkt 55-332 Promotion	3
Mkt 55-333 Consumer Behavior OR	
Mkt 55-432 Marketing Research	3
MC 20-243 Media Design I	3
Two hours selected from the following:	2
MC 20-150 Journalism Practicum (Yearbook) (1)	
MC 20-151 Journalism Practicum (Newspaper) (1)	
MC 20-215 Practicum in Radio (1)	
MC 20-216 Practicum in Television (1)	
MC 20-322 Advanced Practicum in Radio (1)	
MC 20-326 Advanced Practicum in Television (1)	
MC 20-350 Advanced Practicum (Yearbook) (1)	
MC 20-351 Advanced Journalism Practicum (Newspaper) (1)	
MC 20-354 Online Magazine Practicum (1)	
Com 29-152 Public Relations Practicum (1)	
Com 29-352 Advanced Public Relations Practicum (1)	
Approved electives as needed to total 60 hours in the major	
Students are advised to take General Economics I and Introduction to Ethics as General Education requirements.	

Comprehensive Major in Speech Communication-Organizational Communication, 54 hours: B.A.–No Minor Required

Required Courses	**Semester Hours**
Com 29-226 Principles of Interviewing	3
Com 29-230 Public Speaking	3
Com 29-232 Small Group Communication	3
Com 29-240 Principles of Leadership	3
Com 29-325 Listening Behavior and Skills	3
Com 29-331 Persuasive Communication	3
Com 29-335 Interpersonal Communication	3
Com 29-432 Organizational Communication	3
Com 29-499 Senior Seminar	1
Five hours to be chosen from the following:	5
Com 29-329 Propaganda (3)	
Com 29-336 Nonverbal Communication (3)	
Com 29-341 Argumentation and Debate (3)	
Com 29-401 Special Topics (1-3)	
Com 29-467 Internship in Organizational Communication (1-3)	
Cognate Courses:	
Mgmt 54-313 Principles of Management	3
Mgmt 54-314 Human Resource Management	3
Eng 10-311 Advanced Composition	3
Eng 10-315 Technical Writing	3

Psych 08-313 Industrial and Organizational Psychology	3
CSIS 44-317 Management Information Systems	3
Six hours from the following:	6
Psych 08-373 Learning and Motivation (3)	
Psych 08-453 Contemporary Issues in Industrial and Personnel Work (3)	
Soc 35-365 Social Psychology (3)	
Mgmt 54-417 Organizational Policy and Decision-Making (3)	
Approved electives as needed to total 54 hours in the major	

Comprehensive Major in Speech Communication-Organizational Communication, 60 hours: B.S.–No Minor Required

Required Courses	**Semester Hours**
Com 29-226 Principles of Interviewing	3
Com 29-230 Public Speaking	3
Com 29-232 Small Group Communication	3
Com 29-240 Principles of Leadership	3
Com 29-325 Listening Behavior and Skills	3
Com 29-331 Persuasive Communication	3
Com 29-335 Interpersonal Communication	3
Com 29-360 Principles of Public Relations	3
Com 29-432 Organizational Communication	3
Com 29-499 Senior Seminar	1
Eight hours to be chosen from the following:	8
Com 29-329 Propaganda (3)	
Com 29-336 Nonverbal Communication (3)	
Com 29-341 Argumentation and Debate (3)	
Com 29-401 Special Topics (1-3)	
Com 29-467 Internship in Organizational Communication (1-3)	
Cognate courses:	
Mgmt 54-313 Principles of Management	3
Mgmt 54-314 Human Resource Management	3
Eng 10-311 Advanced Composition	3
Eng 10-315 Technical Writing	3
Psych 08-313 Industrial and Organizational Psychology	3
CSIS 44-317 Management Information Systems	3
Six hours from the following:	6
Psych 08-373 Learning and Motivation (3)	
Psych 08-453 Contemporary Issues in Industrial and Personnel Work (3)	
Soc 35-365 Social Psychology (3)	
Mgmt 54-417 Organizational Policy and Decision-Making (3)	
Approved electives in communication as needed to total 60 hours in the major	

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

Required Courses	**Semester Hours**
Com 29-230 Public Speaking	3
Com 29-232 Small Group Communication	3
Com 29-325 Listening	3
Com 29-331 Persuasive Communication	3
Com 29-335 Interpersonal Communication	3

Com 29-341 Argumentation and Debate	3
Com 29-343 Rhetoric of American Issues	3
Com 29-499 Senior Seminar	1
Approved electives in communication as needed to total 30 hours in the major	

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

Required Courses	Semester Hours
Com 29-230 Public Speaking	3
Com 29-232 Small Group Communication	3
Com 29-250 Voice and Diction	3
Com 29-325 Listening Behavior and Skills	3
Com 29-329 Propaganda	3
Com 29-331 Persuasive Communication	3
Com 29-335 Interpersonal Communication	3
Com 29-341 Argumentation and Debate	3
Com 29-343 Rhetoric of American Issues	3
Com 29-499 Senior Seminar	1
Approved electives in communication as needed to total 36 hours in the major	

MINORS

Minor in Public Relations, 24 hours

Required Courses	Semester Hours
Com 29-230 Public Speaking	3
Com 29-232 Small Group Communication	3
Com 29-260 Public Relations Techniques	3
Com 29-360 Principles of Public Relations	3
Com 29-432 Organizational Communication	3
Com 29-465 Advanced Public Relations Techniques	3
Com 29-460 Public Relations Case Problems	3
Three hours to be chosen from:	3
Com 29-329 Propaganda (3)	
Com 29-331 Persuasive Communication (3)	
Com 29-335 Interpersonal Communication (3)	
Com 29-341 Argumentation and Debate (3)	
Com 29-469 Internship in Public Relations (1-3)	

Minor in Speech Communication, 24 hours

Required Courses	Semester Hours
Com 29-230 Public Speaking	3
Com 29-232 Small Group Communication	3
Com 29-325 Listening Behavior and Skills	3
Com 29-335 Interpersonal Communication	3
Com 29-341 Argumentation and Debate	3
Com 29-343 Rhetoric of American Issues	3
Approved electives in communication as needed to total 24 hours in the minor	

Theatre / 43

Core Requirements for Majors and Minors in Theatre	**Semester Hours**
Th 43-105 Directed Practicum in Theatre (1)–enroll 3 trimesters	3
Th 43-120 Fundamentals of Theatre Production	3
Th 43-150 Stagecraft	3
Th 43-225 Oral Interpretation	3
Th 43-230 Acting	3
Total Hours	**15**

MAJORS

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

Required Courses	**Semester Hours**
Theatre Core Requirements	15
Th 43-373 Directing	3
Th 43-395 Scene Design	3
Th 43-498 Senior Seminar	2
Th 43-499 Senior Project/Recital	1
Two of the following courses:	6
Th 43-308 Theatre History I (3)	
Th 43-310 Theatre History II (3)	
Th 43-312 Theatre History III (3)	

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

Required Courses	**Semester Hours**
Theatre Core Requirements	15
Th 43-308 Theatre History I	3
Th 43-310 Theatre History II	3
Th 43-312 Theatre History III	3
Th 43-373 Directing	3
Th 43-498 Senior Seminar	2
Th 43-499 Senior Project/Recital	1
Specialization option (see list below)	21-24
Approved Theatre electives as needed to total 60 hours	6-9

Performance Option (21-24 hours)

Th 43-258 Stage Makeup (3)
Th 43-330 Advanced Acting (3)
Th 43-335 Acting Period Styles and Techniques (3)
Th 43-426 Interpreter's Theatre (3)
Th 43-305 Independent Practicum in Theatre (1)–enroll 3 trimesters
Courses outside of theatre in performance-related areas, approved by advisor (Selected from PE 22-165, 208, 209, 213, 214, 262*, Com 29-250, Mus 19-201*, Applied Voice, Applied Piano, and various music performance groups or other related courses approved by the department) (6-9)

Technical Theatre and Design Option (21-24 hours)

Th 43-240 Drafting for the Stage (3)
Th 43-354 Stage Lighting (3)

Th 43-391 Costuming (3)
Th 43-395 Scene Design (3)
Th 43-305 Independent Practicum in Theatre (1)–enroll 3 trimesters
Courses outside of theatre in technical and design-related areas, approved by advisor (selected from Art 13-120, 191, 201, 343; FCS 15-160, 260 or other related courses approved by the department) (6-9)

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

MINOR

Minor in Theatre, 24 hours

Required Courses	Semester Hours
Theatre Core Requirements	15
Th 43-373 Directing	3
Two of the following courses:	6
Th 43-308 Theatre History I (3)	
Th 43-310 Theatre History II (3)	
Th 43-312 Theatre History III (3)	

SPEECH/THEATRE EDUCATION MAJORS

Comprehensive Major in Speech/Theatre Education, 60 hours: B.S.Ed.–No Minor Required (Certifies Grades 9-12)

Required Courses	Semester Hours
Com 29-133 Practicum in Debate and Forensics AND/OR Com 29-338 Advanced Practicum in Debate and Forensics	2
Com 29-230 Public Speaking	3
Com 29-232 Small Group Communication	3
Com 29-335 Interpersonal Communication	3
Com 29-341 Argumentation and Debate	3
Th 43-120 Fundamentals of Theatre Production	3
Th 43-225 Oral Interpretation	3
Th 43-230 Acting	3
Th 43-373 Directing	3
Two hours of theatre practicum:	2
Th 43-105 Directed Practicum in Theatre (1)	
Th 43-305 Independent Practicum in Theatre (1)	
Three hours of theatre history from:	3
Th 43-308 Theatre History I (3)	
Th 43-310 Theatre History II (3)	
Th 43-312 Theatre History III (3)	
Three hours of theatre design from:	3
Th 43-354 Stage Lighting (3)	
Th 43-395 Scene Design (3)	
Th 43-391 Costuming (3)	
Twelve to fifteen hours of speech communication electives from:	12-15
Com 29-133 Practicum in Debate and Forensics (1)	
Com 29-150 Introduction to Communication Disorders (3)	
Com 29-250 Voice and Diction (3)	

Com 29-325 Listening Behaviors and Skills (3)
Com 29-329 Propaganda (3)
Com 29-331 Persuasive Communication (3)
Com 29-338 Advanced Practicum in Debate and Forensics (1)

Nine to fifteen hours of approved theatre electives 9-15

Approved speech, theatre and mass communication electives as needed to total 60 hours in the major.

This major, when completed under the B.S.Ed. degree, 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 40 hours: B.S.Ed.– Minor Required (Certifies Grades 9-12)

Required Courses	Semester Hours
Com 29-133 Practicum in Debate and Forensics AND Com 29-338 Advanced Practicum in Debate and Forensics	2
Com 29-230 Public Speaking	3
Com 29-232 Small Group Communication	3
Com 29-335 Interpersonal Communication	3
Com 29-341 Argumentation and Debate	3
Th 43-120 Fundamentals of Theatre Production	3
Th 43-225 Oral Interpretation	3
Th 43-230 Acting	3
Th 43-373 Directing	3
Theatre Practicum (select 1 hour of Th 43-105 AND 1 hour of Th 43-305)	2
Theatre History (select from Th 43-308, 310, 312)	3
Theatre Design (select from Th 43-354, 391, 395)	3
Six hours of speech communication electives from:	6
Com 29-250 Voice and Diction (3)	
Com 29-325 Listening Behavior and Skills (3)	
Com 29-329 Propaganda (3)	

This major, when completed under the B.S.Ed. degree, 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 when completed on a secondary education degree. See Professional Education Requirements.

Required Courses	Semester Hours
Com 29-133 Practicum in Debate and Forensics OR Com 29-338 Advanced Practicum in Debate and Forensics	1

Com 29-230 Public Speaking	3
Com 29-232 Small Group Communication	3
Com 29-335 Interpersonal Communication	3
Com 29-341 Argumentation and Debate	3
Th 43-105 Directed Practicum in Theatre	1
Th 43-120 Fundamentals of Theatre Production	3
Th 43-225 Oral Interpretation	3
Th 43-230 Acting	3
Th 43-373 Directing	3
Theatre History (select from Th 43-308, 310, 312)	3
Theatre Design (select from Th 43-354, 391, 395)	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 Drama/Speech for the Middle School, 24 hours

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

Required Courses	Semester Hours
Th 43-120 Fundamentals of Theatre Production	3
Th 43-225 Oral Interpretation OR Th 43-230 Acting	3
Th 43-373 Directing	3
Theatre History (select from Th 43-308, 310, 312)	3
Com 29-230 Public Communication	3
Com 29-232 Small Group Communication OR Com 29-325 Listening Behaviors and Skills	3
Com 29-335 Interpersonal Communication	3
Com 29-341 Argumentation and Debate	3

The completion of the above requirements meets the Drama/Speech 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 Curriculum and Instruction in the College of Education and Human Services. See that section of this catalog.

Languages / 14

MAJOR

Major in Spanish, 31 hours: B.A., B.S., B.S.Ed., (Certifies Grades K-12)—Minor Required

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 Conversation in Spanish (May be taken concurrently with Lang 14-242 or 243.)	3

Lang 14-485 Senior Seminar 1

Advanced Electives 21

(Minimum of 21 hours from the following; at least 15 hours are to be taken on the Northwest campus or from Northwest faculty. Courses may be taken concurrently.)

Lang 14-342 Advanced Spanish I (3)
Lang 14-343 Advanced Spanish II (3)
Lang 14-348 Spanish History and Culture (3)
Lang 14-349 Contemporary Mexico (3)
Lang 14-443 Spain in the 19th and 20th Centuries (3)
Lang 14-444 Spanish-American Literature (3)
Lang 14-445 Medieval and Golden Age Literature of Spain (3)
Lang 14-446 Practicum in Spanish Studies (1-3)

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.**

MINORS

Minor in Deaf Studies, 23 hours

Required Courses	**Semester Hours**
Lang 14-151 Intro to Conversational American Sign Language and Deaf Culture	3
Lang 14-251 Sign Language I	3
Lang 14-252 Sign Language II	3
Lang 14-351 Sign Language III	3
Lang 14-451 Sign Language IV	3
Com 29-336 Nonverbal Communication	3
Com 29-553 Language, Speech and Hearing of the Exceptional Child and Adult	3
Read/Sp 66-371 Introduction to Special Education	2

Minor in Spanish, 21 hours

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 Conversation in Spanish (May be taken concurrently with Lang 14-242 or 243.)	3
Advanced Electives	12

(Minimum of 12 hours from the following, of which at least 6 hours are to be taken on the Northwest campus or from Northwest faculty. These courses may be taken concurrently.)

Lang 14-342 Advanced Spanish I (3)
Lang 14-343 Advanced Spanish II (3)
Lang 14-348 Spanish History and Culture (3)

Lang 14-349 Contemporary Mexico (3)
Lang 14-443 Spain in the 19th and 20th Centuries (3)
Lang 14-444 Spanish-American Literature (3)
Lang 14-445 Medieval and Golden Age Literature of Spain (3)
Lang 14-446 Practicum in Spanish Studies (1-3)

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.**

Course Descriptions

Speech Communication / 29

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

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

401 Special Topics (1-3 hours)
Provides concentrated study in special areas within Speech Communication. Topics vary trimester to trimester.

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

APPLIED COMMUNICATION

152 Public Relations Practicum (1 hour)
Practice in the principles of public relations. The student will participate in a student team to work in cooperation with an organization to plan and promote an event to a targeted public. (F, S)

240 Principles of Leadership (3 hours)
An examination of the concept of leadership and its application in different aspects of modern society. The focus will be on techniques of leadership in decision-making and policy formulation and implementation. There will also be a discussion of leadership qualities necessary for the future. (S)

260 Public Relations Techniques (3 hours)
Introduction to the communication techniques of public relations including internal and external interpersonal communication networks and mediated communication. (F, S)

352 Advanced Public Relations Practicum (1 hour)
Practice in the principles of public relations. The student will work in cooperation with an organization to plan and promote an event to a targeted public. (F, S)

360 Principles of Public Relations (3 hours)
An overview of public relations as practiced historically and in contemporary America. It provides a comprehensive foundation of theoretical and applied knowledge necessary to become a public relations practitioner. (S)

432 Organizational Communication (3 hours)
A study of the spoken communication process in business and organizational settings and the major concepts which influence organizational communication. Attention is directed toward the organizational elements, the communication system and improving organizational communication. (F)

460 Public Relations Problems: Cases, Concepts and Campaigns (3 hours)
A study of the rationale underlying public relations campaigns, achieving specific public relations goals and solving a wide variety of public relations problems. Prerequisite: Com 29-360. (F)

465 Advanced Public Relations Techniques (3 hours)
A study of the legal aspects involved in public relations law, including history and rationale of the First Amendment, defamation, privacy, copyright, advertising, contract, warranties, corporations and business regulations. Special attention is paid in the discussion of each area to the ethical issues inherent in the area, and there is a separate course section on the "Code of Professional Standards for the Practice of Public Relations." (S)

467 Internship in Organizational Communication (1-3 hours)
Allows students to gain practical experience by participating in on-site work with various types of organizational communication departments or organizations under the on-site supervision of an experienced business person. Consent of instructor required.

468 Internship in Speech Communication (1-3 hours)
Allows students to gain practical experience by participating in on-site work with various types of communication organizations under the on-site supervision of an experienced communication professional. Consent of instructor required.

469 Internship in Public Relations (1-3 hours)
Professional experience in public relations. The particular interests of the student are addressed through practical application with public relations practitioners. Prerequisites: Senior standing in public relations and consent of instructor. (F, S, SS)

480 Methods of Teaching Speech/ Theatre in the Secondary School (3 hours)
A preparation for meeting the special problems of teaching speech and theatre in the secondary school. This course includes a formal presentation of the student's Professional Portfolio. Prerequisite: Senior standing. (F)

499 Senior Seminar (1 hour)
Designed to prepare the speech communication student to enter the post-college world of advanced study of the communication field, this course summarizes communication trends, research techniques, discipline-oriented writing skills and presentation skills. This course includes a formal presentation of the student's Professional Portfolio. Prerequisite: Must achieve at or above the 50th percentile and score a level 1 or higher in two of the three proficiency areas on the academic profile exam, and have the permission of the department chair in order to enroll. (F, S)

537 Independent Study in Speech (1-2 hours)

538 Independent Study in Speech Education (1-2 hours)

COMMUNICATION PERFORMANCE

101 Oral Communication for International Students (3 hours)
Designed to meet the needs of international students desiring to improve their oral communication skills. Will include conversational and formal presentation activities. Meets five times per week. Does not fulfill Com 29-102 requirement.

102 Fundamentals of Oral Communication (3 hours)
An overview of the theory and guided practice of the skills utilized in intrapersonal, interpersonal, group and public communication. The student will perform an interview, small group discussion, informative speech and persuasive speech. (F, S, SS)

133 Practicum in Debate and Forensics (1-4 hours)
Participation in intercollegiate debate and forensic activities. May be repeated for up to four hours. (F, S)

226 Principles of Interviewing (3 hours)
The study of interviewing principles for people-management skills. Provides the student with the opportunity to practice techniques appropriate for the following types of interviews: employment, orientation, goal-setting, problem-solving, appraisal and persuasion or selling. (F, alt. years)

230 Public Speaking (3 hours)
A study of the theory and principles of effective public speaking. The student will develop and present various types of public speeches with and without presentational aids. (F, S)

232 Small Group Communication (3 hours)
A study of group processes in the problem-solving setting. The focus is on problem solving, leadership, role development, cohesiveness and effective group participation. Group participation outside the classroom will be expected. (F, S)

338 Advanced Practicum in Debate and Forensics (1-4 hours)
Participation in intercollegiate debate and forensics activities. Prerequisite: Junior or senior standing. May be repeated for up to four hours. (F, S)

341 Argumentation and Debate (3 hours)
A study of the theory of argumentation, logical argument construction, argument refutation and cross examination. The course involves the application of reflective thinking to problem solving. Students are given an opportunity to apply argumentation theory to law, scholarship, politics and business. (F)

COMMUNICATION THEORY

225 Intercultural Communication (3 hours)
An analysis of how culture interacts with communication and an examination of issues and problems encountered when communicating across cultures. (F, S)

235 Introduction to Classical Rhetoric (3 hours)
An introduction to the development and theories of rhetoric. The focus is on the ancient Greeks and Aristotle's Rhetoric as well as the Romans including Cicero and Quintillian. (S, alt. years)

325 Listening Behavior and Skills (3 hours)
An examination of listening behavior and its place in the communication process. The major interactive and perceptual processes involved in the reception of aural data are studied. Tests and exercises are presented to enable students to understand and improve their own listening skills. Prerequisite: Com 29-102. (S)

331 Persuasive Communication (3 hours)
A study of the pervasiveness of persuasive communication in today's world. Theories of persuasion are introduced and used to evaluate contemporary persuasive messages as well as to create persuasive messages. Special emphasis is placed on audience analysis and media techniques. (S)

335 Interpersonal Communication (3 hours)
A study of the theories of interpersonal communication. Experiences in the development of communication, anxiety awareness, verbal confrontation, reinforcement and interpersonal trust are included. (F)

336 Nonverbal Communication (3 hours)
An analysis of the fundamental forms of nonverbal communication. Attention is given to the use of the body in conscious and unconscious gestures, proxemics, kinesics and axis, and the effect of these on the environment and culture of the individual. (S)

343 Rhetoric of American Issues (3 hours)
A survey of famous American orators and issues. The rhetorical and historical contexts of selected speeches and issues are emphasized. (S, alt. years)

539 Independent Study in Speech Media (1-2 hours)

567 Special Topics in Contemporary Issues (1-4 hours)

568 Special Topics in Rhetoric (1-4 hours)

SPEECH SCIENCE

250 Voice and Diction (3 hours)
A study of the sound system of American English. Emphasis is placed on taxonomy of sounds using the International Phonetic Alphabet and on understanding the mechanisms of articulation, phonation and prosody as applied to broadcasting, theatre and speech pathology. Basic acoustics is introduced. (F, alt. years)

329 Propaganda (3 hours)
Theory and practice of the symbolic means of manipulation. Analysis of verbal and visual propaganda campaigns, emphasizing hate speech. (F)

351 Normal Language Development (2 hours)
A study of the normal processes of developmental progression by which the child acquires the syntax, semantics, morphology and phonology of language. (SS)

553 Language, Speech, and Hearing of the Exceptional Child and Adult (3 hours)
A study for the special education teacher in the identification and referral of exceptional individuals with communication disorders. Topics include

the development, characteristics and disorders of language, speech and hearing in the exceptional individual. Focus is on establishing interactions that are supportive of communicatively handicapped individuals in special education programs. (F, SS)

566 Special Topics in Speech Science (1-4 hours)

Theatre / 43

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.

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.

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

498 Senior 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: Must achieve at or above the 50th percentile and score a level 1 or higher in two of the three proficiency areas on the academic profile exam and permission of department chairperson. (F)

499 Senior Project/Recital (1 hour)
A public performance or exhibition of materials comprising the student's area of emphasis in theatre. Prerequisites: Th 43-498 or concurrent enrollment 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.

HISTORY, THEORY AND DRAMATURGY

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)

308 Theatre History I (3 hours)
Examines the evolution of the theatre from its origins through the Renaissance as a reflection or an influence on man. (F, alt. years)

310 Theatre History II (3 hours)
Studies the development of the theatre from the Restoration to the 20th century with emphasis on social, economic and political influences upon theatrical production styles. (S, alt. years)

312 Theatre History III (3 hours)
A survey of modern trends in Western theatre and drama including an examination of the relationships among playwright, actor, audience, designer and director. (F, alt. years)

460 Creative Dramatics (3 hours)
Introduces the methods and techniques of teaching dramatic improvisations to be used by children. (S, alt. years)

574 Independent Study in Dramaturgy (1-2 hours)

PERFORMANCE AND INTERPRETATION

225 Oral Interpretation (3 hours)
Studies the principles of oral interpretation through the literary analysis and performance of poetry, prose and drama. (S)

230 Acting (3 hours)
Provides training in fundamental principles and techniques of acting including the proper use of voice and body. (F)

330 Advanced Acting (3 hours)
Concentrated study in character analysis and acting methods. Prerequisite: Th 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: Th 43-230 or permission of instructor. (S, 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: Th 43-120 and 230 or permission of instructor. (F)

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)

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.

572 Independent Study in Acting (1-2 hours)

573 Independent Study in Directing (1-2 hours)

DESIGN AND PRODUCTION

105 Directed Practicum in Theatre (1 hour)
Involves participation in various practical aspects of play production. May be repeated for a total of four semester hours. (F, S)

120 Fundamentals of Theatre Production (3 hours)
Provides a knowledge of the basic skills and crafts related to all areas of technical theatre. (F)

150 Stagecraft (3 hours)
Studies the theory and practice in planning, construction, painting, assembly and shifting of scenery and properties for the stage and television. Prerequisite: Th 43-120 or permission of instructor. (S)

220 Techniques of Computer Aided Drafting (3 hours)
Provides the student with a basic understanding of the skills, software and applications of Computer Aided Drafting programs including methods of basic two-dimensional drawing, tools, editing, file management, dimensioning, model space and short cuts (within the program). Appropriate for a variety of majors. (S, alt. years)

240 Drafting for the Stage (3 hours)
Introduces the student to basic drafting techniques used in the specific areas of theatre production. Prerequisite: Th 43-150 or concurrent enrollment. (S, alt. years)

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

305 Independent Practicum in Theatre (1 hour)
Involves advanced participation in various practical aspects of play production. Prerequisite: Th 43-105. May be repeated for a total of four semester hours. (F, S)

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: Th 43-120 or permission of instructor. (F, alt. years)

391 Costuming (3 hours)
Examines the use of clothing and stage costumes by major periods through style and design. Prerequisite: Th 43-120 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: Th 43-120, 150, 240, or permission of instructor. (S, 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. (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. (SS)

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.

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. (SS)

575 Independent Study in Technical Theatre (1-2 hours)

Languages / 14

191 Modern Language Communication and Cultures I (3 hours)
Initiates awareness of non-English speaking cultures along with the ability to understand simple conversation and to communicate basic needs and describe activities. Designed for study of language other than French or Spanish. Intended for students with no previous study of the language. Does not count toward a Modern Language major or minor.

192 Modern Language Communication and Cultures II (3 hours)
Develops comprehension and communication skills, including the ability to discuss opinions and past events, and introduces students to non-English speaking life and culture. Designed for study of languages other than French or Spanish. Does not count toward a Modern Language major or minor.

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.

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.

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

480 Methods in Teaching Modern Languages (2 hours)
A presentation of materials and methods used in teaching foreign languages. (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 achieve at or above the 50th percentile and score a level 1 or higher in two of the three proficiency areas on the academic profile exam, have the permission of the department chair 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.

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 modern language faculty. May be repeated for a maximum of six semester hours. (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 Conversation in Spanish (3 hours)
Intensive 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 I (3 hours)
Practice in correct idiomatic and effective written communication, from the business letter to the essay. Prerequisite: Lang 14-243 or equivalent. (F)

343 Advanced Spanish II (3 hours)
A continuation of Lang 14-342. May include a short research paper. Prerequisite: Lang 14-243 or equivalent. (S)

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)

349 Contemporary Mexico (3 hours)
Study of Mexican history and culture from 1900 as seen by writers since 1950. Prerequisite: Lang 14-243. (SS)

443 Spain in the 19th and 20th Centuries (3 hours)
Acquaintance with Spanish culture through reading and discussion of representative literary works by authors such as Bécquer, Galdós, Unamuno, Baroja, Benavente, Lorca, Guillén, Sender, Aleixandre and others. Prerequisite: Lang 14-243 or equivalent. (S, alt. years)

444 Spanish-American Literature (3 hours)
A survey of the most important works of Spanish-American literature from the conquest to the present, including selections from Cortés, Sor Juana, Palma, Martí, Silva, Dario, Neruda, Borges, Sábato, Garcia Márquez and others. Prerequisite: Lang 14-243. (S, alt. years)

445 Medieval and Golden Age Literature of Spain (3 hours)
A survey of the most important works of Spanish literature from the 12th through the 17th centuries, including selections from such monuments of Spanish cultures as the Poema del Cid, the Libro de Buen Amor, La Celestina, and Don Quijote, works by Lope de Vega, Calderón and others. Prerequisite: Lang 14-243. (F, alt. years)

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. (F, S)

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

SIGN LANGUAGE

151 Introduction to Conversational American Sign Language and Deaf Culture (3 hours)
An introduction to the basic skills in production and comprehension of American Sign Language. The course initiates awareness of deaf culture along with the ability to understand simple conversation and ASL grammar. (F, S, SS)

251 Sign Language I (3 hours)
Continues the development of ASL by building upon the vocabulary and grammatical rules of American Sign Language. Students will develop rudimentary competency in expressive and receptive skills in ASL, as well as developing a greater understanding of deaf culture. Prerequisites: Lang 14-151 or permission of instructor. (F, S, SS)

252 Sign Language II (3 hours)
Integrates and refines expressive and receptive skills in ASL, including the use of complex sentence structure. Course is primarily taught in American Sign Language. Prerequisites: Lang 14-251 or permission of instructor. (F, S)

351 Sign Language III (3 hours)
Provides the opportunity to develop a competence in performing, interpreting, and transliterating skills through exercises that enhance and apply American Sign Language. Course taught entirely in American Sign Language with no voice. Prerequisites: Lang 14-252 or permission of instructor. (S)

451 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 ability to make formal presentations in ASL. Prerequisites: Lang 14-351 or permission of instructor. (F)

Department of English / 10

Interim Chairperson: Michael Hobbs

Faculty: Rebecca Aronson, Wayne Chandler, John Gallaher, Robin Gallaher, Terri Johnston, Paul Jones, Bruce Litte, Jeffrey Loomis, Nancy Mayer, Beth Richards, Brenda Ryan, Steven Shively, William Waters

Statement of Mission

The Department of English prepares students for personal growth and development by enhancing their imaginative, critical thinking and communication skills.

English majors, minors and graduate students examine literature, literary criticism, writing techniques and language from a wide range of perspectives. They explore the nature of culturally diverse ideas, powerful emotions and human expression. General Education courses in writing and literature prepare all undergraduates for more effective thinking, learning, analysis and communication.

Advanced elective courses help students from all disciplines become more insightful and imaginative readers and writers and more effective creators, diagnosticians and problem solvers.

DEGREE PROGRAMS

The Department of English offers three majors, two undergraduate degree programs and three 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, research, publishing, editing, advertising, journalism, technical writing and free-lance writing, and for management and other leadership positions requiring interpretive, diagnostic and analytic problem-solving abilities.

The 37-hour Bachelor of Science in Education in English and the 55-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. degree, Secondary Program, meets Missouri secondary school English teaching certification standards.

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 31-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.

Test-Out Policy

Students may challenge their placement in Eng 10-110 Developmental English by passing a writing test. Students should contact the department for additional details. Credit may be granted for AP, CLEP or IB exams, please see pages 20-22 for the specific policy.

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

MAJORS

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

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

Major in English, 37 hours: B.S.Ed.–Minor Required (Certifies Grades 9-12)

Required Courses	**Semester Hours**
English Core Requirements	18
Eng 10-380 Practicum in Teaching Writing Skills	1
Eng 10-403 English Grammars	3
Eng 10-505 History of the English Language	3
Eng 10-590 Young Adult Literature	3
Approved literature courses numbered 300 or above	6
One course from:	3
Eng 10-311 Advanced Composition	
Eng 10-312 Creative Writing: Creative Nonfiction	
Eng 10-313 Creative Writing: Fiction	
Eng 10-314 Creative Writing: Poetry	
Eng 10-315 Technical Writing	

Eng 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.

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

Required Courses	Semester Hours
English Core Requirements	18
Eng 10-224 Multiethnic Literature of the United States	3
Eng 10-290 Introduction to the Teaching of Writing	3
Eng 10-380 Practicum in Teaching Writing Skills	1
Eng 10-403 English Grammars	3
Eng 10-505 History of the English Language	3
Eng 10-590 Young Adult Literature	3
Approved writing course number 300 or above	3
Approved literature courses numbered 300 or above	6
Approved English electives to total 55 hours	12

Eng 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.

MINORS

Minor in English, 24 hours

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

Writing Minor in English, 24 hours

Required Courses	Semester Hours
Eng 10-311 Advanced Composition	3
Eng 10-315 Technical Writing	3
Eng 10-403 English Grammars	3
One course from:	3
Eng 10-304 Rhetorical Writing	
Eng 10-312 Creative Writing: Creative Nonfiction	

Eng 10-313 Creative Writing: Fiction
Eng 10-314 Creative Writing: Poetry

Approved electives from the following: 12

Any two English Department literature courses
Eng 10-304 Rhetorical Writing
Eng 10-312 Creative Writing: Creative Nonfiction
Eng 10-313 Creating Writing: Fiction
Eng 10-314 Creative Writing: Poetry
Eng 10-510 Writing Theory and Practice
Eng 10-513 Advanced Creative Writing: Fiction
Eng 10-514 Advanced Creative Writing: Poetry
Eng 10-558 Writing and Publishing
MC 20-227 Reporting I
MC 20-327 Reporting II
MC 20-358 Feature Writing

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

Required Courses	**Semester Hours**
Eng 10-290 Introduction to the Teaching of Writing	3
Eng 10-403 English Grammars	3
Eng 10-590 Young Adult Literature	3
Com 29-325 Listening Behaviors and Skills	3
Th 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, 31 hours: Certifiable–See Professional Education Requirements

Required Courses	**Semester Hours**
Eng 10-233 American Literature: Beginnings to 1865	3
Eng 10-234 American Literature: 1865 to the Present	3
Eng 10-245 English Literature: *Beowulf* through the 18th Century	3
Eng 10-246 English Literature: Romantics to the Present	3
Eng 10-403 English Grammars	3
Eng 10-505 History of English Language	3
Eng 10-590 Young Adult Literature	3
Eng 10-380 Practicum in Teaching Writing Skills	1
Two courses from:	6

Eng 10-311 Advanced Composition
Eng 10-312 Creative Writing: Creative Nonfiction
Eng 10-313 Creative Writing: Fiction
Eng 10-314 Creative Writing: Poetry
Eng 10-315 Technical Writing

Approved electives to total 31 hours

Eng 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. degree, Secondary or Elementary/Secondary Programs, meets Missouri teacher certification standards for grades 9-12.

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. 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. 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. Credit and prerequisites as announced.

500 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. Credit and prerequisites as announced.

GRAMMAR AND LINGUISTICS

403 English Grammars (3 hours)
Detailed studies of the basic traditional model that has long been a part of American school tradition and the newer models of structural, transformational and post-transformational grammars. Special emphasis on syntax, morphology and the classifications of sentences. Some attention to conventions of contemporary written English. (F, S)

409 Directed Reading in Linguistics (1-3 hours)
Tutorial for individual student projects. Instructor's permission required. (F, S)

503 Grammars in the English Classroom (1 hour)
A survey of the traditional model of English grammar that has long been part of the American school tradition, as well as the newer models of structural and transformational grammars. Covers the classification of sentences and parts of speech, syntax, morphology and usage. Investigates conventions of contemporary written English and applications of increased language awareness to teaching issues and problems of social discourse. (Alt. years)

505 History of the English Language (3 hours)
Historic background of the language, tracing changes in the sound system, inflectional system, syntax and word meanings. (F)

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. (F, 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. (F and/or S, depending on availability)

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)

362 The British Novel (3 hours)
The development of the British novel from the 18th century to the present. (F, alt. years)

363 The American Novel (3 hours)
The development of the American novel from the early 19th century to the present. (S, alt. years)

371 Survey of World Drama (3 hours)
European, African, Asian and American dramatic masterworks with emphasis on the relevance of ancient Greek drama to the analysis of later work by Moliere, Goethe, Chekhov, Ibsen, Williams, Brecht and Fugard. (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. (F, S)

471 Modern and Contemporary World Drama (3 hours)
American, British and international plays since Ibsen, including works by Shaw, O'Neill, Williams, Beckett, Fugard and other key dramatists. (F, alt. years)

525 Special Studies (3 hours)
An intensive study of a literary theme, a genre or an approach to writing or language. The subject matter or emphasis will change each trimester. (F and/or S)

532 Hawthorne and Melville (3 hours)
A study of the more important works of Hawthorne and Melville. Readings may include *Moby Dick, Typee, Billy Budd, The Scarlet Letter* and *The Marble Faun.* (Alt. years)

543 English Literature of the 16th Century (3 hours)
A study of poetry, drama and prose by authors including More, Spenser, Marlow and others such as Wyatt, Mary Sidney, Philip Sidney and Ralegh. Exclusive of Shakespeare. (Alt. years)

544 English Literature of the 17th Century (3 hours)
A study of poetry, drama and prose by authors including Jonson, Donne, Milton and others such as Herbert, Wroth, Lanyer and Webster. Exclusive of Shakespeare. (Alt. years)

545 English Literature of the 18th Century (3 hours)
A survey of the literature of England from 1700 to the publication of Lyrical Ballads. Representative selections included from Pope, Johnson, Boswell, Fielding and Blake. (Alt. years)

547 Victorian Literature (3 hours)
English prose, poetry and drama from 1830 to the end of the 19th century. Readings selected

from Browning, Tennyson, Dickens, Hardy, Eliot and others. (Alt. years)

556 British Fiction of the 20th Century (3 hours)
A study of 20th century fiction written in the British Isles. Authors will include Conrad, Joyce, Woolf, Lawrence, Forster and Lessing. (Alt. years)

561 Modern Short Fiction (3 hours)
A critical study of short fiction from the late nineteenth century to the present, with some emphasis upon the development of form and technique within the genre. Readings may include works by Maupassant, James, Hemingway, O'Connor, Joyce, Lessing, Borges and Marquez. (Alt. years)

573 Shakespearean Drama (3 hours)
A study of Shakespeare's more complex and/or problematic plays, including *King Lear, The Winter's Tale* and others such as *Richard II, All's Well That Ends Well, Henry V, Coriolanus* and *Antony and Cleopatra*. (S, alt. years)

581 Poetry of the Romantic Movement (3 hours)
A study of the poetry and poetic theories of English Romantic writers. Readings will include works by Wordsworth, Coleridge, Keats, Byron and Shelley. (Alt. years)

582 Contemporary Poetry (3 hours)
Themes and techniques of British and American poetry and study of poetic theory from 1920 to the present. Authors include Yeats, Eliot, Pound, Frost, Stevens, Ransom, Warren, Auden, Wilbur, Brooks, Hughes, Nemerov, Larkin and Plath. (Alt. years)

585 Chaucer (3 hours)
A reading of the *Canterbury Tales* and selections from Chaucer's other poems, including their language and backgrounds. (Alt. years)

PEDAGOGY

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

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 Eng 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 (3 hours)
Extensive practice in narrative, descriptive and expository writing, using supplementary readings to model form and to generate subject matter for composition. Prerequisite: A grade of "C" or better in Eng 10-110, an ACT English score of 19-26 or successful placement challenge. (F, S)

112 Composition (3 hours)
Further practice in expository writing. Includes study of techniques of research and documentation and requires preparation of a documented research paper. Prerequisite: Eng 10-111. (F, S)

115 Accelerated Composition (3 hours)
A one semester intensive writing course equivalent to Eng 10-111 and 10-112 for high performing students. Includes study of rhetorical forms and such writing strategies as organizing, prewriting, drafting, editing and rewriting. Uses supplementary readings as rhetorical models and as sources to generate subject matter. Includes study of techniques of research and documentation and requires preparation of a documented research paper. Satisfactory completion of this course fulfills all six hours of the

University's General Education requirements for Written Communication. Prerequisite: ACT English score of 27 or above. (F, S)

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: Eng 10-112 or 115. (F, S)

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: Eng 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: Eng 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: Eng 10-112 or 115. (S)

315 Technical Writing (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: Eng 10-112 or 10-115 or permission of instructor. (F, S)

405 Senior Seminar (1 hour)
A capstone course. Besides preparing a professional resume 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)

419 Directed Writing (1-4 hours)
Independent work in creative or expository writing. Instructor's permission required. (F, S)

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. Prerequisites: Junior standing and three hours of writing courses at the 300 level or above.

510 Writing Theory and Practice (3 hours)
The study of writing theories and advanced composition practices, examining stylistic, personal, cognitive, social and political dimensions of writing. Prerequisite: Bachelor's degree in English or satisfactory completion of any of the following courses: Eng 10-304, 311, 315 or equivalent courses in advanced prose writing. (Alt. years)

513 Advanced Creative Writing: Fiction (3 hours)
An advanced course in writing original fiction. Prerequisite: Eng 10-313 or permission of instructor. (S)

514 Advanced Creative Writing: Poetry (3 hours)
An advanced course in writing original poems. Prerequisite: Eng 10-314 or permission of instructor. (F)

558 Writing and Publishing (3 hours)
Study of literary and freelance markets, for writers and those interested in gaining professional knowledge of publication and editing practices. Prerequisite Eng 10-112 or 115 or permission of instructor.

Department of Geology / 27 and Geography / 32

Chairperson: Gregory Haddock

Faculty: Jeffrey Bradley, Mark Corson, Patricia Drews, Richard Felton, Theodore Goudge, James Hickey, Ming-Chih Hung, Yanfen Le, Leah Manos, John Pope, Renee Rohs, Yi-Hwa Wu

Statement of Mission

The mission of the Department of Geology and Geography is to provide students a diverse, quality undergraduate geoscience curricula focused on preparation in both the natural and social sciences. The programs offered by the department focus on combining a core of instruction in applied geography or geology with a set of topical specializations. Courses in physical and environmental geology issues provide a background in the analysis of the physical environment and the interaction of humans with natural systems. Courses in urban and social analysis focus on helping the student understand patterns of land use and human activity in both urban and rural settings. Regional courses increase students' understanding of how economic, cultural and physical environments interact in a global community. Finally, courses such as remote sensing, cartography and geographic information systems focus on techniques of gathering, storing and analyzing data to solve problems. The department constantly attempts to provide internships for its students, raise standards and adjust its programs to ensure that students are provided the requisite knowledge and skills to prepare them for a wide variety of careers.

DEGREE PROGRAMS

The Department of Geology and Geography offers programs leading to the Bachelor of Arts and Bachelor of Science degrees. A program may also be selected for a Bachelor of Science in Education, Secondary Program, in earth science. The department provides students the opportunity to prepare themselves academically to pursue entry-level positions as professional geologists and geographers, and graduate study in either geology or geography through the Bachelor of Science degree, or to pursue teaching careers at the junior or senior high school level with the Bachelor of Science in Education degree. The Bachelor of Arts degree is more flexibly structured for those students who desire a liberal education with the study of geology or geography to serve as a basis for this education.

The geoscience program focuses on developing broad backgrounds in the respective majors in geology and geography. A systems approach, both global and local, as well as the place specific factors influencing the direction and rate of change is the unifying theme of both teaching and research in the department. Specific themes include environmental studies, spatial analysis techniques, climatic change, resource management, earth materials, regional studies and interpretation of earth history. The geoscience programs are designed to train students in applied methodologies emphasizing real-world applications.

Test-Out Policy
The Department of Geology and Geography does not offer test-out for any of its courses.

Internship and Independent Study
Students may apply 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.

Geology / 27

Advanced Standing Requirement
All geology courses which are prerequisites to other geology courses must be passed with a "C" or higher grade before the advanced course may be taken.

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	3
Geol 27-420 Petrology	4
Geol 27-498 Senior Seminar	1
Total Hours	**16**

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

Geology Major Core Requirements	**16**
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, 53-58 hours (depending on area of concentration): B.S.–No Minor Required

Areas of Concentration	**Semester Hours**
General Geology	**54-58**
Environmental Geology	**53**

General Geology Concentration 54-58 hours

Required Courses	**Semester Hours**
Geology Major Core Requirements	**16**
Geol 27-450 Structural Geology	4

Geol 27-440 Stratigraphy OR	
Geol 27-530 Sedimentology	3
Geol 27-540 Paleontology	5
Geology Summer Field Camp (approved through institution)	6
Required Geology Electives (one course from each group)	
Group I	3
Geol 27-423 Economic Geology (3)	
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
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)	
Geog 32-361 Climatology (3)	
Geog 32-363 Remote Sensing (3)	
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 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
Bio 04-102/103 General Biology and Laboratory OR	
Bio 04-112/113 General Botany and Laboratory OR	
Bio 04-114/115 General Zoology and Laboratory OR	
Bio 04-312 Invertebrate Zoology	4

Environmental Geology Concentration, 53 hours: B.S.–No Minor Required

Required Courses	**Semester Hours**
Geology Major Core Requirements	**16**
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 12 hours)	12
Geol 27-326 National Parks (3)	
Geol 27-335 Physical Oceanography (3)	

Geol 27-423 Economic Geology (3)
Geol 27-424 Geochemistry (3)
Geol 27-440 Stratigraphy (3)
Geol 27-450 Structural Geology (4)
Geol 27-510 Geomorphology (3)
Geol 27-530 Sedimentology (3)
Geol 27-540 Paleontology (5)
Geol 27-555 X-Ray Analysis (3)
Geol 27-560 Optical Mineralogy (3)

Required Collateral Courses (choose a combination to total 15 hours) 15

Bio 04-420 Environmental Issues (4)
Ag 03-334 Soils (4)
Chem 24-242/243 Organic Chemistry and Laboratory (4)
Geol 27-515 Environmental Regulations (2)
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)
Math 17-114 General Statistics I (3)

Unified Science Major in Earth Science, 58 hours: B.S.Ed., Secondary Program—No Minor Required (Certifies Grades 9-12, Endorsement Area: Earth Science)

Required Courses in Endorsement Area: Earth Science	**Semester Hours**
Geol 27-114/115 General Earth Science and Laboratory	4
Geol 27-212 Historical Geology	4
Geol 27-220 Mineralogy	3
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	5
Geog 32-360 Dynamic and Synoptic Meteorology	3
Required Collateral Courses for the Unified Science Major	
Sci Ed 28-550 History of Science and Technology	3
Bio 04-112/113 General Botany and Laboratory	4
Chem 24-116/117 General Chemistry II and Laboratory	5
Phys 25-110/111 General Physics I and Laboratory	4
Phys 25-112/113 General Physics II and Laboratory	4
Phys Sci 40-122/123 Descriptive Astronomy and Laboratory	4

Math 17-119 Trigonometry	2
Total Hours in Major	**58**
Directed General Education Courses	
Math 17-118 College Algebra	3
Bio 04-114/115 General Zoology and Laboratory	4
Chem 24-114/115 General Chemistry I and Laboratory	4
Professional Education Requirements	**30**
Including Sci Ed 28-580 Methods in Secondary School Science (3)	

MINORS

Minor in Geology, 24 hours

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

Required Courses	**Semester Hours**
*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
Geog 32-360 Dynamic and Synoptic Meteorology	3
Geol 27-360 Environmental Geology (4) OR	
Geog 32-501 Conservation of Natural Resources (3)	3-4
Phys Sci 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 Sci Ed 28-550 History of Science and Technology.

Interdisciplinary Minor in Environmental Science, 26 hours

Required Courses	**Semester Hours**
Chem 24-114/115 General Chemistry I and Laboratory	4
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-376 Basic Ecology	4
Geol 27-360 Environmental Geology OR	
Bio 04-420 Environmental Issues	4

Geol 27-340 Hydrogeology	3
Geog 32-501 Conservation of Natural Resources	3
Advisor-Approved Electives (choose 4 hours):	4
Ag 03-334 Soils (4)	
Bio 04-140 General Microbiology (4)	
Bio 04-307 Environmental Internship (1-3)	
Bio 04-474 Wildlife Management & Conservation (2)	
Bio 04-575 Methods in Plant Ecology (2)	
Bio 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	
Bio 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 major in the Department of Biological Sciences. 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.

Geography / 32

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 32-410 Geographic Thought and Research Methods	3
Geog 32-499 Senior Seminar	1
Total Hours	**13**

MAJORS

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

Required Courses	Semester Hours
Geography Major Core Requirements:	**13**
Electives in Regional Geography: (Choose two)	6
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)	
Geog 32-511 Special Topics in Geography (regional)	

Electives in Systematic Geography: 11

- 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 32-362 Cartography (3)
- Geog 32-363 Remote Sensing (3)
- Geog 32-365 Geographic Information Systems (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 32-521 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)

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

Required Courses	Semester Hours
Geography Major Core Requirements	**13**
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 32-444 Geography of Africa (3)
- Geog 32-445 Geography of Latin America (3)

Electives in Systematic Geography: 18-21

- 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 32-362 Cartography (3)
- Geog 32-363 Remote Sensing (3)
- Geog 32-365 Geographic Information Systems (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 32-521 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)

Comprehensive Major in Geographic Information Systems, 53 hours: B.S.–No Minor Required

The offering of this major is contingent upon State approval. First planned offering of this major is Fall 2006.

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 Introduction to Programming Using Visual Basic	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 32-444 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 Web Services Technology (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 32-521 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 32-501 Conservation of Natural Resources (3)
- Bio 04-420 Environmental Issues (4)
- Bio 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)
- Eng 10-315 Technical Writing (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

MINORS

Minor in Geography, 24 hours

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)	12
(Electives must include at least 3 hours from each of the two groupings: Regional and Systematic)	

Minor in Geographic Information Systems, 28 hours

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

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 Introduction to Programming Using Visual Basic	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 44-331 Integrated Software Applications (3)	
CSIS 44-540 Visual Application Development (3)	
CSIS 44-590 Current Topics in Computer Science (1-3)	

NOTE: CSIS 44-130 Computers and Information Technology is a prerequisite for the computer science courses as required by course descriptions.

Minor in Earth Science Education, 22-23 hours

Required Courses	Semester Hours
*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
Geog 32-360 Dynamic and Synoptic Meteorology	3
Geol 27-360 Environmental Geology (4) OR	
Geog 32-501 Conservation of Natural Resources (3)	3-4
Phys Sci 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 Sci Ed 28-550 History of Science and Technology.

Interdisciplinary Minor in Environmental Science, 26 hours

Required Courses	Semester Hours
Chem 24-114/115 General Chemistry I and Laboratory	4
Bio 04-114/115 General Zoology and Laboratory	4
Bio 04-376 Basic Ecology	4
Geol 27-360 Environmental Geology OR	
Bio 04-420 Environmental Issues	4
Geol 27-340 Hydrogeology	3
Geog 32-501 Conservation of Natural Resources	3
Advisor-Approved Electives (choose 4 hours):	4
Ag 03-334 Soils (4)	
Bio 04-140 General Microbiology (4)	
Bio 04-307 Environmental Internship (1-3)	
Bio 04-474 Wildlife Management & Conservation (2)	
Bio 04-575 Methods in Plant Ecology (2)	
Bio 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	
Bio 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 major in the Department of Biological Sciences. 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.

Course Descriptions

Geography / 32

101 Introduction to Geography (3 hours)

Survey course introducing students to the geographical study of the relationship of humans to the environment and the spatial patterns of human activities. (F, S, SS)

102 People and Cultures of the World (3 hours)

A regional perspective on the distribution of languages, religions, laws and customs around the globe. (F, S, SS)

201 Maps and Map Interpretation (3 hours)

Designed to teach students how to analyze and interpret map information based on a knowledge of map projections, map distortion, coordinate systems and map measurement techniques. The basics of air photo interpretation are also covered. (F, S)

207 GPS Fundamentals (3 hours)

An introductory course to the Global Positioning System and the integration with other spatial data-related technologies, such as GIS and remote sensing, for field or in-office work. (F)

211 Special Topics in Geography (1-4 hours)
A course designed to employ geographic tools and methods in the analysis of pertinent topics relating to the human spatial organization of the earth. Topics include: natural disasters, disease and health care, scribing, etc. (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 agricultural regions of the world, industry, mining and forestry will be considered. (F, S)

302 Cadastral Mapping (2 hours)
A course designed to employ geographic tools and methods in the analysis of pertinent topics relating to the human spatial organization of the earth. Prerequisite: Geog 32-201 or permission of instructor. (F, S)

340 Geography of North America (3 hours)
An advanced course examining regional variations in the United States and Canada with numerous case studies. (F, S)

360 Dynamic and Synoptic Meteorology (3 hours)
A study of the physical characteristics of the atmosphere and the variables that control both day-to-day weather and severe weather. 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)
Map compilation, design and construction. Prerequisite: Geog 32-201 or permission of instructor. (F, S)

363 Remote Sensing (3 hours)
Use of aerial photography and satellite imagery in geological and geographic research. Prerequisite: Geog 32-201 or permission of instructor. (F, 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)

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.

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, S)

415 Internship in Geography (1-6 hours)
As internships (paid and unpaid) become available, they will be offered. They require permission of the instructor, department chairperson and a written proposal at the time of registration (F, S, SS)

441 Geography of Europe (3 hours)
An advanced course in geography dealing with the continent of Europe. The major regions and nations of Europe are studied in detail. (S, odd years)

442 Geography of Asia (3 hours)
An advanced course in the geography of Asia with a regional approach. Special emphasis is placed on the Chinese Realm, Southeast Asia, the Indian subcontinent, Japan and Korea. (F)

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)
Provides the student with sufficient information about the physical and cultural aspects of Latin America to allow the application of general concepts of regional geography of this particular area. (F)

465 Introduction to Customized GIS (3 hours)
An introduction to GIS customization for personalized graphic user interface and specialized functions. The GIS function library provided by the current GIS software will be used to facilitate such customization. (S)

499 Senior Seminar (1 hour)
A capstone course in geography. 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.

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. May be repeated once to earn no more than six credits total. 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. (F, S, SS)

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. (S, even years)

522 Urban Geography (3 hours)
An advanced course offering an in-depth study of the physical characteristics of cities and some of the problems man is faced with in a world where urbanism is a rapidly increasing phenomenon. Prerequisite: Junior standing or permission of instructor. (S)

543 Applications of Remotely Sensed Data (3 hours)
Covers the use of remotely-sensed information in a geographic information system environment. Emphasis is placed on understanding different data sources, tools and techniques used in remote sensing. (online, alt. trimesters, alt. years)

545 Principles of GIS (3 hours)
A rigorous study of fundamental GIS principles, including the nature of spatial data, vector and raster data models, and key GIS analysis operations. (online, alt. trimesters, alt. years)

562 Digital Cartography and GeoVisualization (3 hours)
An advanced cartography course utilizing computer assisted cartography and advanced techniques of map construction. Prerequisites: Geog 32-362. (S)

563 Digital Image Processing (3 hours)
Further explores the techniques and concepts learned in Remote Sensing (Geog 32-363). Explores advanced techniques in image analysis and processing not covered in Remote Sensing. 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. (S)

572 Issues in Cartographic Design (3 hours)
An extension of basic GIS/desktop mapping encompassing the theoretical and applied aspects of cartographic problem solving pertaining to the collection, storage, retrieval, analysis and display of spatial data. An emphasis on map/graphics design issues pertaining to delivering the output in evolving media formats such as web dissemination. Prerequisites: Successful completion of an undergraduate Cartography course or equivalent work experience and Geog 32-545. (online, alt. trimesters, alt. years)

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)

Geology / 27

110 General Geology (3 hours)
A study of the minerals, surface features, geologic processes and history of the earth. Three lectures and one two-hour laboratory. Recommended to fulfill General Education requirement. Geol 27-110/111 must be taken concurrently. (F, S, SS)

111 General Geology Laboratory (1 hour)
(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. Student must co-register for Geol 27-115. (F, S, SS)

115 General Earth Science Laboratory (1 hour)
(F, S, SS)

212 Historical Geology (4 hours)
A study of the geological history of the earth including the geological time scale, rock units and fossil records. Three lectures and one 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 (3 hours)
A survey of physical mineralogy, identification of minerals, types of formation, and deposits of metallic ores, gemstones, industrial minerals and other economically useful minerals and rocks. Two lectures and one two-hour laboratory. 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 (2 hours)
Field trip to selected localities of geologic interest. Prerequisite: Geol 27-110/111 or 114/115 or permission of the instructor. (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)
An introduction to the occurrence, movement, quality, contamination and management of groundwater. Prerequisites: Geol 27-110/111 or 114/115 and Math 17-118. (S)

360 Environmental Geology (4 hours)
The relation of geology to man and his environment, including the study of population, earth resources and natural phenomena. Three lectures and one two-hour laboratory. Prerequisite: Geol 27-110/111 or 114/115. (F)

415 Internship in Geology (1-6 hours)
As internships (paid and unpaid) become available, they will be offered. They require permission of the instructor, department chairperson and a written proposal at the time of registration. Student enrolls in the appropriate number of credit hours for the work load of the internship. As a guideline, 160 work hours are worth 3 credit hours. (F, S, SS)

420 Petrology (4 hours)
Hand specimen 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 (3 hours)
A survey of metallic and nonmetallic (petroleum, coal) mineral deposits. Prerequisite: Geol 27-220. (F, alt. years)

424 Geochemistry (3 hours)
Basic principles governing the origin, distribution and migration of elements in the earth. Prerequi-

sites: Geol 27-110/111 or 114/115 and Geol 27-220 and Chem 24-112/113. (S, alt. years)

440 Stratigraphy (3 hours)
A study of the principles and concepts used to study the stratigraphic sequence of rocks, including sedimentary environments, biostratigraphy and time-stratigraphic correlation. 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. Three lectures and one two-hour laboratory 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 format will be stressed. Prerequisite: Geology major or minor with 20 hours in geology. (SS)

498 Senior Seminar (1 hour)
A capstone course in Geology. A student will examine current geologic research results and techniques, write a research paper, present the paper orally to a forum in the department or elsewhere, 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.

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.

510 Geomorphology (3 hours)
A study of landforms, their description, recognition and classification. The origin and nature of geomorphological processes which form and continually modify landforms. The influence of rock type, climate and other factors. Two lectures and one two-hour laboratory. 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. Prerequisites: Geol 27-360 or Bio 04-420 or Geog 32-501 or permission of instructor. (S, alt. years)

520 Geology Field Trip (Advanced Level) (2 hours)
Field trip to selected localities of geologic interest. Prerequisites: Geol 27-212. (F)

530 Sedimentology (3 hours)
A study of the production, transportation, deposition and lithification of sediments. To include comparison of classifications, techniques of using sediments in environmental interpretations and laboratory techniques in sediment study. Two lectures and one two-hour laboratory. Prerequisite: Geol 27-212. (F, alt. years)

540 Paleontology (5 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 fossil groups. Emphasis is on invertebrate animals, with a general review also of microfossils, plants and vertebrates. Three lectures and two two-hour laboratories. 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, American Society Testing Materials data file, 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 immer-

sion 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. (F, S)

Department of History / 33, Humanities / 26, Philosophy / 39 and Political Science / 34

Chairperson: Richard Frucht

Faculty: Joel Benson, Robert Dewhirst, Janice Brandon-Falcone, James Eiswert, Ronald Ferris, Richard Field, Richard Fulton, Brian Hesse, Matthew Johnson, David McLaughlin, Daniel Smith, Thomas Spencer, Michael Steiner

Statement of Mission

The Department of History, Humanities, Philosophy and Political Science includes the disciplinary areas of history, humanities, philosophy, political science and social science, thus serving a kaleidoscope of constituencies on campus. Throughout the department, the primary emphasis is that of providing a broad, general, liberal education; encouraging students to be inquisitive, creative and imaginative as well as functional; and striving to prepare students to be adaptable and flexible in their occupational and professional pursuits but ever cognizant of and responsible to the human condition. The disciplines represented by the department, in the broad sense of the term, should be the 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 History, Humanities, Philosophy and Political Science offers eight majors, nine minors and certification in middle and secondary school social sciences.

The Bachelor of Arts (30 hours) and Bachelor of Science (33 hours) in History 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 Humanities (31-32 hours) is intended for students seeking broad preparation for professional careers. The interdisciplinary nature of this major builds on the foundation of the General Education program culminating in a classical, liberal arts education. This major is designed to be open, broad, flexible and preparatory for a wide range of career and educational interests.

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 (52 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.

Minors are available in the areas of history, humanities, philosophy, public history, criminal justice, political science, public administration, economic development and international relations. 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, business and graduate studies.

Test-Out Policy

Credit by examination through the Department of History, Humanities, Philosophy and Political Science 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.

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: 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)	
Total Hours	**15**

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

MAJORS

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

Required Courses	**Semester Hours**
Core Requirements	15
Advanced history electives to include a minimum of 3 hours in American and non-American history to total 30 hours.	

Major in History, 33 hours: B.S.–Minor Required

Required Courses	**Semester Hours**
Core Requirements	15
Advanced history electives to include a minimum of 3 hours in American and non-American history to total 33 hours.	

MINORS

Minor in History, 21 hours

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)	
Advanced history electives to include a minimum of 3 hours each from American and non-American history	12

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

Minor in Public History, 23 hours

Required Courses	**Semester Hours**
Hist 33-501 Introduction to Public History	3
Hist 33-344 American Folklife	3
Hist 33-590 Historical Resource Internship	3
Hist 33-590 Historical Resource 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 State and Local History (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

Humanities / 26

Advanced Standing Requirement

To be granted advanced standing, all humanities majors must have 1) been assigned an advisor in their major; and 2) complete, with a grade of "C" or better, at least one course in each of the areas of history, government, social science, natural science and humanities from the General Education Requirements.

MAJOR

Major in Humanities 31-32 hours: B.A.–Minor Required

Required Courses	Semester Hours
*Hum 26-102 Western Civilization I: Ancient World to 1500	3
*Hum 26-103 Western Civilization II: 1500 to the Present	3
*Phil 39-171 Introduction to Philosophy	3
*Hum 26-104 Humanities: Eastern World OR Hist 33-225 Ethnicity in America	3
Hist 33-403 The Middle Ages OR Hist 33-506 Renaissance and Reformation	3
Phil 39-377 History of Modern and Contemporary Philosophy OR Hist 33-542 American Ideas	3
Hum 26-401 Senior Seminar	1

Approved Electives: At least one course (3-4 hours) from each of the following groups:

Mathematics, Science and Philosophy

Math 17-118 College Algebra (3)
Math 17-215 Discrete Mathematics (4)
Sci Ed 28-550 History of Science and Technology (3)
Phil 39-273 Introduction to Logic (3)
*Phil 39-274 Introduction to Ethics (3)
Phil 39-374 Philosophy of Religion (3)
Phil 39-376 History of Ancient and Medieval Philosophy (3)
Phil 39-473 Philosophy of Mind (3)
Phil 39-474 Philosophy of the Sciences (3)
Phil 39-475 Aesthetics (3)

Literature

*Eng 10-224 Multiethnic Literature of the United States (3)
Eng 10-233 American Literature-Beginnings to 1865 (3)
Eng 10-234 American Literature from 1865 to the Present (3)
Eng 10-245 English Literature: *Beowulf* through Milton (3)

Eng 10-246 English Literature: Dryden through the Victorian Period (3)
Eng 10-343 Survey of Women's Literature (3)
Eng 10-362 The British Novel (3)
Eng 10-363 The American Novel (3)
Eng 10-372 Introduction to Shakespeare (3)

Fine Arts:

Art 13-311 Ancient and Medieval Art (3)
Art 13-313 Renaissance and Baroque Art (3)
Art 13-315 Nineteenth and Early Twentieth Century Art (3)
Mus 19-385 Music Literature: Antiquity through Renaissance (3)
Mus 19-386 Music Literature: Baroque through Classical (3)
Mus 19-387 Music Literature: Romantic through the 20th Century (3)
Th 43-308 Theatre History to 1660 (3)
Th 43-310 Theatre History: 1660-1900 (3)
Th 43-312 Theatre History of the 20th Century (3)

History and Humanities:

Hum 26-341 Greek Civilization (3)
Hum 26-342 Roman Civilization (3)
Hist 33-310 France Since Louis XIV (3)
Hist 33-312 History of Russia to 1914 (3)
Hist 33-315 English History to 1715 (3)
Hist 33-344 History of American Folklife (3)
Hist 33-360 The American Woman (3)
Hist 33-370 History of the Near and Middle East (3)
Hist 33-375 History of Latin America (3)

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

MINOR

Minor in Humanities, 18 hours

	Semester Hours
Hum 26-341 Greek Civilization	3
Hum 26-342 Roman Civilization	3
Hist 33-403 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 13-110 Survey of Art (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 Major and Minor in Humanities. It cannot be used as a major requirement.

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	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

Required Courses	**Semester Hours**
Core Requirements	**19**
Two courses from each of the following groups:	
Group A:	6
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)	
Eng 10-525 Special Studies (if appropriate) (3)	
Com 29-235 Introduction to Classical Rhetoric (3)	
Com 29-330 Semantics and Linguistics (3)	
Group B:	6
Phil 39-473 Philosophy of Mind (3)	
Phil 39-474 Philosophy of the Sciences (3)	
Phil 39-590 Advanced Topics in Philosophy (if appropriate) (3)	
Psych 08-423 History and Systems of Psychology (3)	
Psych 08-473 Cognitive Psychology (3)	
PolS 34-440 Early Western Political Thought (3)	
PolS 34-441 Modern Western Political Thought (3)	
Sci Ed 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. Psych 08-423 and 473 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

Required Courses	**Semester Hours**
*Phil 39-274 Introduction to Ethics	3
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 34-438 Civil Liberties	3
Core B—Comparative Politics and International Relations	
PolS 34-310 Comparative Government	3
PolS 34-421 International Relations	3
PolS 34-510 Comparative Political Systems	3
PolS 34-525 Transnational Politics	3
Core C—Public Administration and Urban Affairs	
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
Core D—Normative and Empirical Theory	
PolS 34-436 Constitutional Law	3
PolS 34-440 Early Western Political Thought	3
PolS 34-441 Modern Western Political Thought	3

MAJORS

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

Required Courses	Semester Hours
Two courses from each of Core A, B, C, D	24
PolS 34-490 Senior Seminar	1
Political Science Electives	6

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

Required Courses	Semester Hours
Two courses from each of Core A, B, C, D	24
PolS 34-490 Senior Seminar	1
Political Science Electives	12

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

Required Courses	Semester Hours
PolS 34-203 State and Local Government	3
PolS 34-439 Federalism and Intergovernmental Relations	3
PolS 34-502 Public Policy	3
PolS 34-332 Principles of Public Administration	3
PolS 34-434 Modern Organizational Theory	3
PolS 34-490 Senior Seminar	1
PolS 34-495 Field Problem in Public Administration (Credit depending upon nature of problem undertaken)	3-8
Political Science Electives	9
Electives	4-9

MINORS

Minor in Political Science, 24 hours

Required Courses	Semester Hours
One course from each of Core A, B, C, D	12
Political Science Electives	12

Minor in Public Administration, 24 hours

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

Minor in Criminal Justice, 24 hours

Required Courses	Semester Hours
PolS 34-205 Introduction to Criminal Justice	3
PolS 34-315 Juvenile Justice System in America	3
PolS 34-438 Civil Liberties	3
Soc 35-320 Delinquency OR Soc 35-421 Criminology	3
PolS 34-325 American Legal System	3
Psych 08-223 Abnormal Psychology OR Psych 08-333 Developmental Psychology	3
Approved Electives	6

Minor in Economic Development, 24 hours

Required Courses	Semester Hours
PolS 34-203 State and Local Government	3
PolS 34-439 Federalism and Intergovernmental Relations	3
PolS 34-502 Public Policy	3
PolS 34-355 Economic Development	3
Econ 52-151 General Economics II	3
Geog 32-221 Economic Geography	3
Choose 6 hours of electives from the following:	6
Soc 35-316 Urban Sociology (3)	
Econ 52-351 Macroeconomic Theory (3)	
PolS 34-332 Principles of Public Administration (3)	
Mkt 55-330 Principles of Marketing (3)	
Geog 32-522 Urban Geography (3)	
Geog 27-515 Environmental Regulation (2)	
PolS 34-311 Practicum in Political Science (1)	

NOTE: Up to four Internship hours can be used as electives with advisor approval.

Minor in International Studies, 24 hours

Required Courses	Semester Hours
Modern Language	6
(Minimum of 3 hours must be 200-level or above; all 6 hours must be in the same language)	
**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 34-103 or Econ 52-103 Introduction to Political Economy	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 Relations (3)	
PolS 34-525 Transnational Politics (3)	
Econ 52-355 Economic Development (3)	
Econ 52-450 International Economics (3)	
Mkt 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
*Hum 26-103 Western Civilization II: 1500 to the Present	3
Hist 33-401 Senior Seminar	1
Hist 33-484 U.S. Economic System	3
Soc 35-101 General Sociology OR	
Soc 35-108 General Anthropology	3
Total Hours	**16**

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

MAJOR

Comprehensive Major in Social Science, 52 hours: B.S. Ed.– No Minor Required (Certifies Grades 9-12)

Required Courses	**Semester Hours**
Core Requirements	**16**
American History	**15**
Hist 33-524 Colony to Nation 1607-1828 (3)	
Choose two of the following:	
Hist 33-556 Roots of U.S. Reform (3)	
Hist 33-525 United States Since 1945 (3)	
Hist 33-534 The Civil War and Reconstruction (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 Russia to 1914 (3) OR	
Hist 33-375 Latin America (3) OR	
Hist 33-513 Soviet Russia (3)	
Electives in World History (3)	
Political Science (choose 2)	**6**
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)	
Behavioral Science Elective	
Choose one class from Anthropology, Sociology or Psychology	3

Directed General Education Requirement
Econ 52-150 General Economics 1 (3)

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

Soc Sci 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. degree, Secondary Program will meet Missouri teacher certification standards for Social Studies grades 9-12.

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

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
Hist 33-484 U.S. Economic System	3
Select one of the following:	3
Hist 33-524 Colony to Nation 1607-1828 (3)	
Hist 33-556 Roots of U. S. Reform (3)	
Hist 33-525 U. S. Since 1945 (3)	
Hist 33-534 Civil War and Reconstruction (3)	

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

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

Course Descriptions

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)

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

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)

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. (SS, alt. years)

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 indepth 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)

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)

403 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. (S, alt. years)

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.

499 Independent Study in History (1-2 hours)
Offered by special arrangement and petition approved by the student's advisor, the instructor involved and the department chairperson.

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.

501 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. (F)

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 Soviet 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, alt. years)

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. (S, 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, alt. years)

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. (F, 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. (F, 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. (S, 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.

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. (F)

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. (F, alt. years)

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.

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 towards 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.

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.

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)

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 (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. (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 Philosophy of Mind (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. (F, 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.

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. (F, alt. years)

579 Independent Study in Philosophy (1-2 hours)
Investigation into special problems in philosophy. Offered only by special arrangement. For majors and minors only.

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)

103 Introduction to Political Economy (3 hours)
An examination of the interaction of political and economic systems in the U.S. and other countries, how groups in societies are helped and harmed by this interaction and the decision-making processes used. (S)

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. (S, 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, alt. years)

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)

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. (F, S)

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, alt. years)

325 American Legal System (3 hours)
A critical analysis of the judicial process from pretrial through final appellate review, including the activities and motivations of the major participants in the legal system. Consideration is given to the judiciary's policymaking capabilities as well as the legal system's role in the greater political and social context. (F, S)

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

355 Economic Development (3 hours)
Examines the theories and strategies for state and community economic development. The focus is on strategies that guide decisions and policies toward the goal of creating and maintaining a sustainable community. Specific attention will be placed upon the creation and encouragement of economic health within the constraints of local values, government regulations and the potential for participation in the national and global economies. (F)

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, alt. years)

421 International Relations (3 hours)
This course presents a beginning study of the legal and political aspects of relations between the sovereign nations which make up the world community. Primary emphasis will be placed on the development of the system of legal relationships and on the elements of national power which underlie these relations. (F)

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)
A study of the constitutional structure of the U.S. government, with particular emphasis on the Supreme Court's role in interpreting the Constitution. Topics including Presidential, Congressional and Judicial power; federal-state relations; the development of equal protection; and the electoral system. (F)

438 Civil Liberties (3 hours)
A study of the U.S. Constitution's protection of fundamental rights, particularly those reflected in the Bill of Rights and the 14th Amendment, and the legal and political context of their exercise. Topics include freedom of speech and expression, religious freedom, rights of the accused, privacy and economic 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 ele-

ments 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. (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. (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)

510 Comparative Political Systems (3 hours)
A study of the politics of various regions with an emphasis on a comparative analysis. Topics may vary as events and interests dictate. (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 to earn no more than six credit hours in total, subject to the approval of the instructor.

525 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)

Social Science / 36

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)

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.

Department of Mathematics and Statistics / 17

Chairperson: Dennis Malm

Faculty: Christine Benson, Margaret Buerman, Russell Euler, Kurtis Fink, Scott Garten, Cheryl Gregerson Malm, Brian Haile, Christina Heintz, Lynda Hollingsworth, Terry King, Jawad Sadek, Mary Shepherd, David Vlieger, Jennifer Wall, Denise Weiss, Kichoon Yang

Statement of Mission

The mission of the Department of Mathematics and Statistics is to provide a program through which students learn to interpret, solve and explain mathematical problems. The department offers general education and service courses to the University that provide students with mathematical knowledge to assist them in their lifelong learning experiences.

The different courses and programs offered by the department share important common objectives: (a) to provide students, regardless of professional goals, with an awareness of the richness, beauty and power of the mathematical sciences; (b) to provide students with an appreciation of the vitality and extensive utility of the mathematical sciences; (c) to provide students with some insight into the relationship of the mathematical sciences to other areas of human achievement, past and present; and (d) to provide each major with an understanding of the basic structures and concepts in the mathematical sciences. The traditional classroom setting is complemented by the appropriate use of technology, enabling the student to explore those concepts through concrete examples and applications.

DEGREE PROGRAMS

The Department of Mathematics and Statistics offers programs leading to the Bachelor of Arts, Bachelor of Science and Bachelor of Science in Education degrees. The department's programs include undergraduate majors and minors in mathematics, mathematics education and statistics. Each program requires a balanced selection of coursework from both pure and applied areas in the mathematical sciences. Majors can thus prepare for immediate employment in the mathematical sciences or for additional study after graduation.

Test-Out Policy

Undergraduate students may test out of certain lower division courses in mathematics. Examinations are available each trimester during the first week of class. See the department chairperson for courses that are available for test-out.

Advanced Standing Requirement

In order to achieve advanced standing in the Department of Mathematics and Statistics, 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.

Core Requirements for Majors in Mathematics and Statistics

To achieve the common objectives, all majors in the Department of Mathematics and Statistics are required to complete a common core of 26 semester hours and participate in senior assessment. The department'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.**

****CSIS 44-130 Computers and Information Technology is a prerequisite course.**

MAJORS

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

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)

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.

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

The offering of this major is contingent upon State approval. First planned offering of this major is Fall 2006.

Applied Mathematical Statistics Emphasis

Required Courses	**Semester Hours**
Core Requirements	26
Math 17-239 Computationally Intensive Statistical Methods	1
Math 17-316 General Statistics II	3
Math 17-390 Logic of the Exact Sciences	3
Math 17-421 Intermediate Analysis	3
Math 17-492 Seminar in Readings in Mathematics Literature	1
Math 17-532 Nonparametric Statistics	2
Math 17-535 Probability Theory	3
Math 17-536 Statistical Inference	3
Math 17-539 Statistical Projects	1
Approved Electives	8
Total Major Requirements	**54**
Directed General Education	
Econ 52-150 General Economics I	3

Actuarial Science Emphasis

Required Courses	**Semester Hours**
Core Requirements	26
Math 17-239 Computationally Intensive Statistical Methods	1
Math 17-316 General Statistics II	3
Math 17-492 Seminar in Readings in Mathematics Literature	1
Math 17-531 Applied Time Series	2
Math 17-535 Probability Theory	3
Math 17-536 Statistical Inference	3
Math 17-539 Statistical Projects	1
Econ 52-151 General Economics II	3
Choose 11 hours electives from the following:	11
Math 17-361 Differential Equations (3)	
Math 17-421 Intermediate Analysis (3)	
Math 17-530 Sampling (2)	
Math 17-532 Nonparametric Statistics (2)	
Math 17-539 Design of Experiments (2)	
Math 17-511 Applied Linear Algebra (3)	
Math 17-521 Complex Analysis (3)	
Math 17-561 Applied Mathematics (3)	
Math 17-565 Numerical Analysis (3)	
Econ 52-351 Macroeconomic Theory (3)	
Econ 52-353 Microeconomic Theory (3)	

Econ 52-451 Econometrics (3)	
Fin 53-324 Fundamentals of Business Finance (3)	
Fin 53-325 Investment Principles (3)	
Fin 53-327 Intermediate Financial Management (3)	
Total Major Requirements	**54**
Directed General Education	
Econ 52-150 General Economics I	3

MINORS

Minor in Mathematical Sciences, 24 hours

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.**

****CSIS 44-130 Computers and Information Technology is a prerequisite course.**

Minor in Statistics, 24 hours

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
Math 17-532 Nonparametric Statistics	2
*CSIS 44-149 Scientific Computing	3
Electives from mathematics or statistics, with at least 2 semester hours in statistics, to total 24 hours	13

***CSIS 44-130 Computers and Information Technology is a prerequisite course.**

Minor in Mathematics Education, 23 hours: B.S.Ed.

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 a course in the minor area.**

Minor in Mathematics Education, 30 hours: B.S.Ed., Secondary Program (Certifies Grades 9-12)

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.**

****CSIS 44-130 Computers and 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.

Course Descriptions

Mathematics and Statistics / 17

MATHEMATICS

092 Mathematics Skills I (3 hours)
A basic developmental course. Topics include fundamentals of arithmetic, algebra and numerical geometry. This course does not satisfy the General Education requirement in mathematics or any graduation requirement. (F)

093 Mathematics Skills II (3 hours)
An intermediate-level developmental course to prepare students for Math 17-110, 114, 115, 118, 119 and 171. Topics include graphs, systems of equations and intermediate algebra. This course does not satisfy the General Education requirement in mathematics or any graduation requirement. Prerequisite: Math 17-092 or equivalent, or consent of instructor. (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: Math 17-093 or equivalent.

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: Math 17-093 or equivalent. (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: 17-093 or equivalent 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: Math 17-093 or equivalent. (F, S, SS)

119 Trigonometry (2 hours)
Trigonometric functions and analytic trigonometry. Proficiency examination is available. Prerequisites: One unit of high school geometry and Math 17-093 or equivalent. (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. (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: Math 17-093 or equivalent. (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 Math 17-093 or equivalent. (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.

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. Prerequisite: 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.

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: Math 17-093 or equivalent. (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)

239 Computationally Intense Statistical Methods (1 hour)
This course will develop some statistical procedures that are difficult to implement without the help of the computer software. Prerequisites: CSIS 44-149 and Math 17-114 or 230. (alt. years)

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)

530 Sampling (2 hours)
This course contains discussion and applications of the methods of good sampling. Comparisons of techniques are made when more than one method of sampling is possible. Prerequisite: Math 17-114 or 230, or consent of instructor. (Alt. years)

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)

532 Nonparametric Statistics (2 hours)
This course emphasizes methods for dealing with populations of unknown distribution and methods to use for ranked data or categorical data. 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 (2 hours)
A course covering many of the statistical designs and techniques widely used in research and applications. Prerequisite: Math 17-316. (Alt. years)

538 Introduction to Operations Research (2 hours)
An introduction to some of the basic models and analytical techniques of operations research. Prerequisites: Math 17-114 or 230, Math 17-120, or consent of instructor. (Alt. years)

539 Statistical Projects (1 hour)
Formulation and execution of statistical projects with faculty supervision. Prerequisite: Math 17-316.

MATHEMATICS EDUCATION

280 Methods in Teaching with Technology (3 hours)
Introduces technological tools and appropriate methods for using them to teach mathematics and science. Topics include dynamic software packages, web explorations, programming of graphing calculators, data collection with probes and analysis, and appropriate methods for teaching with these technologies. Prerequisite: CSIS 44-130 or equivalent. (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 from 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.

580 Methods in Secondary School Mathematics (3 hours)
A study of teaching procedures and current literature useful in teaching secondary school mathematics. Includes a two-week practicum experience. (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)

Department of Military Science / 42

Chairperson: Lieutenant Colonel Robert L. Gardner

Faculty: Major Brian Stackhouse, Master Sergeant Kenneth Jiles

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-level 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)
   Eng 10-112 Composition (3)
   Eng 10-115 Honors Composition (3)
   Eng 10-311 Advanced Composition (3)
   Eng 10-315 Technical Writing (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 $900 annually paid in two increments of $450. 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, 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 six-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 credits)

MilS 42-100 Introduction to Military Leadership (1)
MilS 42-102 Leadership Practicum (2)
MilS 42-105 Rappelling and Military Rifle Marksmanship (1)
MilS 42-112 Leadership Practicum (2)
MilS 42-202 Leadership Practicum (2)
MilS 42-210 Introduction to Survival and Cross-Country Orienteering (2)
MilS 42-212 Leadership Practicum (2)
MilS 42-220 Advanced Survival Skills (2)

Minor in Military Science, 23 hours

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
Psych 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 Management Process and Behavior (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 Relations (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, all basic course instruction is presented on campus. Various field trips are conducted to further enrich students' leadership skills for advanced-course students.

Course Descriptions

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100 Introduction to Military Leadership (1 hours)
Topics include: leadership tips for life success, decision making, the role of the total Army (to include the citizen-soldier concept), team building, great leaders, customs and traditions of the service. Emphasis on defining and applying leadership through problem-solving and reaction course scenarios.

102 Leadership Practice (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.

105 Rappelling and Military Rifle Marksmanship (1 hour)
Teaches techniques and methods of rappelling, rope management, knot tying, small bore rifle marksmanship and range safety.

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.

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.

210 Introduction to Survival and Cross-Country Orienteering (2 hours)
Introduction to survival techniques, how to read a map and use a compass to negotiate a land navigation course. Provides basic tips about how to survive in the outdoors. Prerequisites: MilS 42-100 and MilS 42-105, or consent of department chairperson.

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.

220 Advanced Survival Skills (2 hours)
Provides the student with knowledge and practical experience in field expedient first aid and selected survival subjects. Emphasis on first aid, land navigation, shelters, traps and snares, and water procurement.

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.

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.

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.

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.

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.

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.

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.

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.

450 Independent Study in Military Science (1-5 hours)
Investigates selected leadership problems or topics on an individual or conference basis. Prerequisite: Consent of department chairperson.

Department of Music / 19

Chairperson: Ernest Woodruff

Faculty: Vincent Bates, Rebecca Dunnell, Christopher Gibson, Carl Kling, Ernest Kramer, Brian Lanier, Anthony Olson, Sheila Phillips, William Richardson, Pamela Shannon, Stephen Town

Accreditation

Since 1969, Northwest Missouri State University has been a member of the National Association of Schools of Music. Both the B.S.Ed. 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 Mission

The Department 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.

The programs of the Department of Music provide majors with the skills needed to become highly successful in their chosen professions. The department 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 Music 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

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 Science in Education, Elementary/Secondary Program, with a comprehensive major in either Instrumental Music Education (57 hours) or Vocal Music Education (55 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

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

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

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.S.Ed. program are required to satisfactorily participate in Marching Band, Symphonic Band, Wind Symphony, University Chorale or Orchestra according to their major (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 each fall or spring trimester of full-time enrollment.

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 insure that each student possesses a significant level of competence in music before entering the theory sequence.

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.S.Ed. 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. Continued enrollment in keyboard study for credit or successful audit (i.e. minimum of 65% attendance) and continued attempts to complete the examination requirement are required until the examination has been passed. 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 Ed 61-490 (Directed Teaching in Elementary and Secondary School).

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 Music and online at www.nwmissouri.edu/**finearts/music**.

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 examina-tion 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 Ed 61-490 (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.

Music Core Requirements

The Department of Music 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 Classic (1600-1827)	3
Mus 19-387 Music Literature: Romantic through 20th Century (1827-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	1
Mus 19-299 Music Recital Attendance (activity credit) 8 hours (B.A.)	7 hours (B.S.Ed.)
Total Hours	**28**

*** Required for Vocal Music Education**

**** Required for Instrumental Music Education**

Applied Music:

Included in the requirements for the **B.S.Ed.** 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, 57 hours: B.S.Ed., Elementary/Secondary Program—No Minor Required (Certifies Grades K-12)

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; Wind or Percussion, 5 hours.	13
Mus 19-220 Brass Methods	2
Mus 19-221 Percussion Methods	2
Mus 19-240 String Methods	2
Mus 19-260 Woodwind Methods	2
Mus 19-391 Elements of Conducting	2
Mus 19-481 Methods in Elementary School Music	2
Mus 19-421 Instrumental Conducting	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, 19-119, 19-209 or 210 (each fall and spring trimester of fulltime enrollment, 7 trimesters minimum)	(7)
Mus 19-482 Methods in Secondary School Instrumental Music is to be included in the education-psychology requirements.	

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

Comprehensive Major in Vocal Music Education, 55 hours: B.S.Ed., Elementary/Secondary Program—No Minor Required (Certifies Grades K-12)

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 19-250 Vocal Methods	2
Mus 19-270 Instrumental Methods for Non-Instrumental Majors	2
Mus 19-391 Elements of Conducting	2
Mus 19-481 Methods in Elementary School Music	2
Mus 19-420 Choral Conducting	2
Mus 19-592 Junior High School Music Methods	2
Mus 19-593 Choral Literature for the Secondary School	2
Vocal ensembles taken for either academic or activity credit: Mus 19-112, or 113 University Chorale (each fall and spring trimester of fulltime enrollment, 7 trimesters minimum)	(7)
Approved music electives as needed to total 55 hours	
Mus 19-484 Methods in Secondary School Vocal Music is to be included in the education-psychology requirements.	

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

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

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, 19-119, 19-209 or 210, 19-112 or 113. (each fall and spring trimester of fulltime 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

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, 19-119, 19-209 or 210, 19-112 or 113. (7 trimesters minimum)	(7)

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

Course Descriptions

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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.

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)

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.

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.S.Ed. 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.

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.

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.

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)
131, 132, 231, 232. Class Piano 1-4

Voice Class (1 hour each)
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. Courses may be repeated for additional credit.

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

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

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

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

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

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

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

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

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 ensembles as courses may be repeated for additional credit as per the limitations in individual course descriptions.

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 Classic (1600-1827) (3 hours)
A survey of the development of Western music from the Baroque era through Beethoven, 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 20th Century (1827-present)
(3 hours)
A survey of the development of Western music from Schubert 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 (2 hours)
Development of the basic skills and techniques of playing and teaching brass instruments. (F, odd years)

221 Percussion Methods (2 hours)
Development of basic skills and techniques of playing and teaching percussion instruments. (S, even years)

240 String Methods (2 hours)
Development of the basic skills and techniques of playing and teaching orchestral string instruments. (F, even 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 (2 hours)
Development of the basic skills and techniques of playing and teaching woodwind instruments. (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 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 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. (S)

482 Methods in Secondary School Instrumental Music (3 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.

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. (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. (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 Middle School/Junior High Music Methods (2 hours)
A study of the materials and methods employed in the junior high and middle 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 Problems 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 Problems 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)

The Honors Program

Dean of the College of Arts and Sciences: Charles A. McAdams

In its continuing effort to expand educational opportunities while maintaining academic excellence for undergraduates, Northwest Missouri State University introduced the Honors Program beginning Fall 2005. The Honors Program was created in recognition of the academic needs of high achieving students. The program creates an academic environment that not only challenges the most highly motivated undergraduate students, but benefits the entire Northwest community.

The Honors Program contributes to Northwest's vision of an institution that is "... a student-centered community of scholars with high expectations." Consequently, the program operates in the following environment:

- The Honors Program is an intellectual sanctuary designed to enhance the educational experience of highly talented and exceptionally motivated undergraduate students.
- Students are expected to realize their full potential by being active learners in a stimulating academic environment that nurtures and enriches their talents.
- The Honors environment represents academic excellence where an ethical commitment to learning is integrated with a passionate spirit of inquiry and a critical understanding of the responsibilities of global citizenship. By bringing together the ideas from diverse traditions of knowledge for analysis and understanding, the Honors Program promotes independent thinking and helps prepare creative and innovative leaders to meet emerging challenges in our global community.

Honors Program Policies, Expectations and Requirements

The Honors Program is specifically targeted for motivated and high-ability students. During the first trimester, the Honors student typically enrolls in two Honors classes. These classes are sections of existing courses that are enhanced for the Honors students, not separate free-standing courses. Class size limits for Honors sections provide ample opportunity for students to express themselves and interact more closely with professors and classmates in an intellectually enriching environment. Honors sections will typically involve the following:

- more extensive reading and/or more ambitious laboratory work
- more intellectual territory and in-depth conversation
- exploring connections within and among disciplines
- relating of course material to a diverse global society
- challenging educational experience beyond the classroom
- more 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 competitively selected from eligible applicants.

Program Continuation Requirements

- Honors students must maintain a 3.50 cumulative GPA each trimester. If a student falls below 3.50 GPA, the student has one trimester of probation to regain a 3.50 cumulative GPA or be removed from the program for at least one trimester and must reapply for admission to the program.

Graduation Requirements

To graduate with Honors, a student must:

- complete at least 21 hours in Honors sections of the required General Education courses
- maintain a 3.50 cumulative GPA
- present an acceptable Honors Senior Portfolio (reviewed by the Honors Program Committee)
- Take only Northwest Missouri State University's Honors Program courses

Co-Curricular Activities

- Special colloquia, field trips, etc. are available for enrichment and limited to Honors students only.
- Honors students have the privilege of an early preregistration for classes.
- 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 Honors faculty.
- At graduation, a special convocation is held for Honors students and their families in addition to the regular commencement ceremonies.
- Students receive an Honors cord for graduation (transcript and diploma will carry the Honors designation).

Honors Section Enhancement

In the current design of the Honors Program, the term 'Honors courses' refers to sections of existing courses, not separate free-standing courses. Enhancements to existing courses offered as part of the general education program at Northwest are tailored to the content of the specific course.

The Honors Program / H

Director of the Honors Program: Cleopas T. Samudzi

Statement of Mission

The Honors Program provides highly motivated and talented students with an academically enriched educational experience. Through limited class size and close interaction between students and faculty, the program provides talented students with a deeper understanding of content and a deeper learning experience, and an opportunity to develop critical thinking and discussion skills that prepare them for a dynamic world. The Honors Program integrates an ethical commitment to learning with a passionate spirit of inquiry and a critical understanding of the responsibilities of global citizenship. By bringing together the ideas from diverse traditions of knowledge for analysis and understanding, the Honors Program promotes independent thinking and 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 69-72. The Honors Program requires a minimum of 21 credit hours from this general education program. Honors sections will be designated with an "H" in the course title as listed in the *Course Offerings* and on the student transcript.