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## GEOLOGY

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### **GEOG 558 (3) West Pacific Rim**

Examines the ecological and human environments of eastern and southeastern Asia, mainly China, Japan, and off-shore nations. The course will be supported with field information.

### **GEOG 560 (3) Geography Teaching Methods**

The course will cover resource materials and current techniques in classroom teaching.

### **GEOG 564 (4) Teaching Earth Science**

An applied course tailored to meet practical needs of a teacher, related to curriculum development and earth science lab equipment and supplies.

### **GEOG 571 (4) Field Mapping with GPS**

This course will cover basic strategies for conducting field surveys and gathering from the real world data appropriate to mapping the earth's surface. Emphasis will be upon simple but reliable techniques, ranging from compass-and-pacing to global positioning systems (GPS).

Prerequisite: GEOG 101, or 470/570

### **GEOG 573 (4) Geographic Information Systems**

Comprehensive examination of computer-assisted systems for manipulation and analysis of spatially-referenced data, including data structure and organization, input and output problems, data management, and strategies for analytical work.

Prerequisite: GEOG 373

### **GEOG 576 (3) Spatial Statistics**

Descriptive statistics, probability, hypothesis testing, introduction to non-parametric statistics, correlation, introduction to regression analysis, spatial statistics and principles of data representation in graphs, tables and statistical results.

### **GEOG 577 (1-3) Topics in Techniques**

This offering will include a variety of selected technical topics in geography, including (but not limited to) manual cartographic drafting and negative scribing, photomechanical techniques in production cartography, aerial photo interpretation, and advanced coverage of digital analysis of satellite-derived remote sensor data and global positioning systems.

Prerequisite: permission of instructor

### **GEOG 579 (1-3) GIS Practicum**

This offering will include supervised project work in raster-based and/or vector-based GIS, using problems and data drawn from local or regional agencies or other professional-level organizations with whom the Geography Department maintains a relationship. Students must have completed one of the prerequisite courses, or a course or professional-level experience.

Prerequisite: GEOG 373, or 473/573, or permission of instructor

### **GEOG 580 (1-3) Seminar**

Topics vary in physical, cultural, economic, political, and historical geography, as well as environmental conservation and geographic techniques.

### **GEOG 597 (1-10) Internship**

An applied work and learning experience. The student will provide a written internship report on professional practicum and the work supervisor will be consulted on how much the student has accomplished.

Prerequisite: permission required

### **GEOG 609 (1-3) Selected Topics**

The instructor will develop a specific course on a geographic topic (land forms, soils, waters, natural resources, cities, agriculture, or any other topic of a geographic nature).

### **GEOG 610 (1-4) Issues in Physical Geography**

Discussion and analysis of contemporary issues in the field of physical geography. Designed to allow in-depth focus on current problems/issues that geographers will encounter in their professional practice. Topics vary according to instructor.

### **GEOG 620 (1-4) Issues in Cultural Geography**

Discussion and analysis of contemporary issues in the field of cultural geography. Designed to allow in-depth focus on current problems/issues that geographers will encounter in their professional practice. Topics vary according to instructor.

### **GEOG 650 (1-4) Issues in Regional Geography**

Discussion and analysis of contemporary issues in the field of regional geography. Designed to allow in-depth focus on current problems/issues that geographers will encounter in their professional practice. Topics vary according to instructor.

### **GEOG 670 (1-4) Issues in Geographic Techniques**

Discussion and analysis of contemporary issues in the field of Geographic Techniques. Designed to allow in-depth focus on current problems/issues that geographers will encounter in their professional practice. Topics vary according to instructor.

### **GEOG 673 (3) GIS for Planners**

To introduce URSI and Park and Rec. graduate students to geographical analysis in urban and regional planning through the use of GIS technology, particularly Arc/Info. Students will be introduced to various urban planning projects taking place in various local agencies. \*This course is not for Geography students.

### **GEOG 677 (1-4) Individual Study**

A study assignment for a student to meet specific objectives for the student's needs. It could be a term paper, readings, reports, field report, or mapping project.

Prerequisite: permission of instructor

### **GEOG 678 (3) Geographic Research & Writing**

Required of MS professional degree candidates. To acquaint students with the geographer's perspective and methods of inquiry; to examine types of geographic research; to develop student's ability in producing research papers; to give students experience in writing research papers and to provide students experience in professional oral presentation.

### **GEOG 680 (3) Philosophy of Geography**

The history and development of geographic thought from ancient times to the late 20th century.

### **GEOG 681 (3) Environmental Issues**

This course surveys various environmental issues within the United States with an emphasis on state and federal legislation and policies. The forces prompting environmental legislation, its subsequent implementation and modification by the courts, and various perspectives about the problems, their possible solutions, and the assessment of current efforts are discussed.

### **GEOG 690 (1-4) Topics in Meteorology/Climatology**

The focus of this/these course(s) will be on Meteorology/Climatology. This course may be repeated up to three times.

### **GEOG 694 (1-2) Alternate Plan Paper**

Student culminating experience in lieu of a thesis.

### **GEOG 698 (1-6) Internship**

An applied work and learning practicum. The student will provide a written report on his/her own learning. The work supervisor will be consulted regarding students' accomplishments.

### **GEOG 699 (1-6) Thesis**

A culminating project related to basic or applied research

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## GEOLOGY

*College of Science, Engineering & Technology*

*Department of Chemistry and Geology*

242 Trafton Science Center N • 507-389-1963

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Geology is the science of the earth. It concerns itself with the materials that constitute the earth, their disposition and structure; the processes of work both on and within the earth; and both the physical and biological history of the earth.

The following graduate courses are offered and may be used to supplement existing graduate programs or may be part of a multidisciplinary studies program.

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### COURSE DESCRIPTIONS

#### **GEOL 501 (1-3) Field Studies**

This course is devoted to the study and practice of geological field investigations. Students will first learn basic field investigative methods. Students will then be appropriately versed in the geological history and importance of a region selected for in-depth study. Finally, students will participate in a field trip to a regional site of geological importance over an extended weekend (4-6 days). Potential study sites may include Minnesota's North Shore and Iron Range, the Badlands and Black Hills of South Dakota, the Ozarks, or the Rocky Mountains.

Prerequisite: GEOL 100 or 121 or 122 V

#### **GEOL 550 (3) Hydrogeology**

This course introduces physical and chemical studies of hydrogeology. The main area of discussion will include the physical and chemical attributes of aquifers, movement of groundwater and solute through soils and rocks, and reactions between earth materials and pollutants in groundwater systems. The class includes extensive use of MODFLOW and MT3D, the two most commonly used groundwater modeling programs currently available.

#### **GEOL 590 (1-4) Workshop**

**GEOL 591 (1-6) In-Service**

A course designed to upgrade the qualifications of a person on the job. Content is variable. The course can be repeated for credit.

**GEOL 677 (1-4) Individual Study****GERONTOLOGY MS**

*College of Social & Behavioral Sciences*

*Gerontology Program*

336 Trafton Science Center N • 507-389-6590

Director: Kathryn Elliott, Ph.D.

Graduate Coordinator: Kathryn Elliott, Ph.D.

Gerontology is the scientific study of the biological, psychological and social aspects of aging. The Gerontology program, in cooperation with the Center on Aging, coordinates the delivery of the curriculum in human aging and facilitates activities of education, research and service which create, disseminate and apply knowledge about aging. The primary purpose of the graduate curriculum in aging is to provide a knowledge base in gerontology which, when combined with professional knowledge and skills, prepares the student for practice in the aging network. The program offers both general and administrative tracks of study at the graduate level. In addition to the Master of Science in Gerontology, Minnesota State also offers a Graduate Certificate of Study in Gerontology and specialized coursework leading to original licensure as a nursing home administrator in Minnesota. The University is a member of the Association for Gerontology in Higher Education.

**Admission.** Applications for admission to the MS in Gerontology program may be submitted at any time. Although entrance in fall semester is preferred, permission may be granted for study to commence at other times during the academic year. Full admission requires a baccalaureate degree, a minimum 3.0 GPA, at least 16 credits of social and behavioral science and evidence of promise for successful graduate study and professional practice with older adults. The GRE is not required.

**Financial Assistance.** One or more graduate assistantships in Gerontology are normally available each year on a competitive basis. Other financial assistance may become available from time to time, e.g., research assistance or special project work. Contact the program director for current information.

**GERONTOLOGY MS**

(Thesis Plan - 30 credits)

(Alternate Plan Paper - 34 credits)

One-half of the total credits for the degree must be 600 level credits (excluding the thesis or alternate plan paper credits). A minimum of 24 credits of Gerontology is required under either plan. Within these 24 credits, a maximum of three credits of internship and either four credits of thesis or two credits of alternate paper research may be included.

**Required Core (15 credits)**

Select a minimum of **one** course from each of the **three** core areas. Other core courses can be used as electives.

**Social-psychological**

ANTH 536 Anthropology of Aging (3)

PSYC 566 Psychology of Aging (3)

SOC 504 Sociology of Aging (3)

WOST 545 Women and Aging (3)

**Bio Medical**

BIOL 517 Biology of Aging (3)

HLTH 555 Health and Aging (3)

**Policy/Applied Theory**

GERO 585 Topics in Gerontology (1-3)

GERO 601 Seminar in Gerontology (1-3)

POL 564 Aging: Policy Issues (3)

SOWK 519 Social Work and Aging (3)

**Required Research (9 credits)**

GERO 600 Theories and Practice (3)

----- 6--- One 600 level research methods course (3)

GERO 697 Internship (3)

**Required Gerontology Electives (8-14 credits)**

Choose any 500/600 level Gerontology elective courses in consultation with an

advisor.

**Required Thesis or Alternate Plan Paper**

GERO 694 Alternate Plan Paper (2)

GERO 699 Thesis (4)

**Other electives available in Gerontology**

FCS 574 Residential Management for Families and Special Needs People (3)

GERO 580 Nursing Home Administration (3)

GERO 677 Individual Study (1-4)

HLTH 541 Death Education (3)

RPLS 582 Leisure Needs of the Aging (3)

SOC 505 Sociology of Death (3)

SOWK 519 Social Work and Aging (3)

Additional credits needed to meet degree requirements and to meet the specific educational objectives of the student are to be chosen from the Gerontology list and/or from the offerings of other departments with emphasis on course work at the 600 level. For example, one might include course work in program planning, administration and evaluation and/or graduate-level course work which is required for nursing home administration licensure. Early consultation with the Gerontology Program Director is required to assure careful program planning and maximum utilization of program options.

**Certificate of Study in Gerontology**

The Certificate of Study in Gerontology is granted on completion of 18 credits of approved course work in Gerontology. The program is intended for persons who wish to acquire a core of knowledge and skill in Gerontology but who may not wish to pursue a degree program with a Gerontology component. The certificate signifies completion of an approved multidisciplinary course of study in Gerontology. As such, it may have value to prospective employers who seek evidence of specialized study relevant to working with and on behalf of the elderly. Admission to the certificate program requires formal application to the Gerontology program. Upon admission, a program of study must be developed with and approved by the program director. Academic advising for the certificate program is provided by the director of the Gerontology program.

**COURSE DESCRIPTIONS****GERO 580 (3) Nursing Home Administration**

Issues and trends, programs and services, funding mechanisms and regulations. Meets state educational requirements for specific content areas.

**GERO 585 (1-3) Topics in Gerontology**

Topics vary as announced in class schedule. May be retaken for credit if topic is different.

**GERO 600 (3) Gerontology Theory and Practice****GERO 601 (3) Seminar in Gerontology**

Topic varies with offering. May be taken more than once.

**GERO 677 (1-4) Individual Study**

Prerequisite: consent

**GERO 694 (1-2) Alternate Plan Paper**

Prerequisite: consent

**GERO 697 (1-6) Internship**

Prerequisite: by application and consent

**GERO 698 (1-6) Practicum: Nursing Home Administration**

For students following the program of study for nursing home administration

Prerequisite: by application and consent

**GERO 699 (3-6) Thesis**

Prerequisite: consent