677 (1-4) Individual Study
Special topics in language education. May be repeated for credit.

694 (1-2) Alternate Plan Paper
Research and writing for the alternate plan paper.

697 (4-6) Internship: Community College Teaching
Classroom experience in post-secondary teaching.

FRENCH (FREN)

502 (3-4) French Civilization
A survey of the historical, philosophical, literary and artistic development of France from the beginning to the present.
Pre: undergraduate French major

504 (2-4) French Syntax
Systematic review of French grammar.
Pre: undergraduate French major

505 (2-4) Business French I
Study of current vocabulary, terminology and practices used in the business world. Study of developments affecting the French business, industrial and agricultural communities.
Pre: undergraduate French major

506 (2-4) Business French II
Study of France's position in the European Economic Community and of the development of French business law with an emphasis on the obligations and rights of business people, the classification and organization of the various types of companies, the emission of contracts and other documents.
Pre: undergraduate French major

515 (1-3) Composition
Practice in descriptive, narrative and expository writing. Acquisition of vocabulary and advanced grammatical structures.
Pre: undergraduate French major

516 (1-4) Conversation
Practice in advanced conversational skills.
Pre: undergraduate French major

517 (1-3) Modern France
In-depth study of different aspects of contemporary French civilization.
Pre: undergraduate French major

520 (1-4) French Seminar
In-depth study of an author, genre, movement, theme or period.
Pre: undergraduate French major

532 (1-4) French Literature I
Study of the major authors, works and movements of two successive centuries of French literature.
Pre: undergraduate French major

542 (1-4) French Literature II
Study of the major authors, works and movements of two successive centuries of French literature.
Pre: undergraduate French major

552 (1-4) French Literature III
Study of the major authors, works and movements of two successive centuries of French literature.
Pre: undergraduate French major

594 (1-6) Supervised Study in French-Speaking Countries
Topics will vary. Study for credit must be approved by the department prior to departure.
Pre: undergraduate French major

597 (1-6) Internship
Pre: undergraduate French major

614 (1-3) Paris et L'ILE de France
Visits to the major churches, cathedrals, castles, monuments, museums and neighborhoods in and around Paris.
Pre: Undergraduate degree in French

660 (2) Research Methods: French
Methods and tools of literary research.
Pre: Undergraduate degree in French

677 (1-4) Individual Study
Topics will vary.
Pre: Undergraduate degree in French

680 (1-3) Topics in French Literature
Topics will vary. May be repeated.
Pre: Undergraduate degree in French

681 (1-3) Topics in French Culture and Civilization
Topics will vary. May be repeated.
Pre: Undergraduate degree in French

682 (1-3) Topics in French Language Study
Topics will vary. May be repeated.
Pre: Undergraduate degree in French

693 (1-6) Supervised Study in a French-Speaking Country
Topics will vary. Study for credit must be approved by the department prior to departure.
Pre: Undergraduate degree in French

694 (1) Alternate Plan Paper
Pre: Undergraduate degree in French

699 (3-6) Thesis
Pre: Undergraduate degree in French

GEOGRAPHY MS

GEOGRAPHY EDUCATION MS
(DISCIPLINED-BASED)

College of Social & Behavioral Sciences
Geography Department
7 Armstrong Hall • 507-389-2617

Chair: Martin Mitchell, Ph.D.

Branko Culakovic, Ph.D., Donald Friend, Ph.D., Cecil

Keen, Ph.D., Jiyeong Lee, Ph.D., Jose Javier Lopez, Ph.D., Cynthia Miller, Ph.D., Martin Mitchell, Ph.D., Amy Richert, Ph.D.

Geography, as taught at Minnesota State University, deals with phenomena in earth space and their areal extent, intensity and variation. Graduate programs in geography are designed to help students develop advanced skills in research design and analysis, as well as competence in using specific tools of geographic inquiry. In addition, the department provides necessary continuing education for a variety of elementary, high school and post-secondary teachers and other professionals, such as planners.

Geography graduate study emphasizes knowledge and understanding of environments and processes derived from the basic structure of Earth, as well as the cultural attributes and diversity of its peoples. Geography also examines links among economies, cultures and intellectual models that attempt to explain perceptions of Earth, along with the geographer's concepts and strategies for analyzing these interconnections.

In addition to a diverse and experienced faculty, the department supports its own reference collection of books, periodicals and maps. The department maintains a fully equipped cartography laboratory, including computer-assisted cartography software and equipment. The department supports a geographical analysis laboratory in which students have access to GIS software and windows-based computers along with appropriate peripheral equipment. GPS software and equipment are also available. MSU's Weather Analysis Laboratory for Teaching and Educational Resources (WALTER) is an independent unit equipped with state-of-the-science weather observation and display equipment. Two satellite dishes feed multiple data streams to a console of computers using VISTA, Storm-Sentry and Storm-Pro (from DTN-Kovouras), Satellite imagery (from NVG), data analysis programs like LEADS (from IPS) and the EWB visualization program (from SSESCO). A time-lapse Sky-Cam and local observational instruments complete the total weather picture available. The facility provides one of the best teaching/learning environments in the Midwest and supports the suite of course offered in Atmospheric Sciences. The

University library holds many of the major U.S. geographical journals. The library's map and atlas holdings are formally organized in its Map Collection, which is a depository for maps produced by federal government agencies including (but not limited to) the U.S. Geological Survey, the Defense Mapping Agency, and the U.S. Department of Agriculture (including the Forest Service).

Admission. Applicants for admission to graduate programs in geography must have maintained a grade point average of 2.75/4.0 for the last two years of undergraduate work for a four-year degree. Applicants having grade point averages below the minimum who present convincing evidence of potential for success in graduate studies may be considered for provisional admission. Letters of recommendation from at least two individuals familiar with the applicant's undergraduate academic performance are required. Scores from the GRE are not required for admission unless the undergraduate grade point average in below 2.75 for the last two years of work for the baccalaureate degree.

Financial Assistance. Several graduate assistantships are available through the Geography Department. Most are funded directly from the College of Graduate Studies. Typically, assistantships carry an obligation of about ten hours per week. Further information about the availability of assistantships and about the status of applications for assistantships should be sought from the department chair.

GEOGRAPHY MS

(Thesis Plan - 30 cr)
(Alternate Plan Paper - 34 cr)

PROFESSIONAL TRACK OPTION

Required Core and Research (6 cr)

GEOG 678 Geographic Research & Writing (3)
GEOG 680 Philosophy of Geography (3)

Required Electives (24-26cr)

Choose any 500/600 level elective courses in consultation with an advisor. 15 credits must by taken in Geography.

Required Thesis or Alternate Plan Paper

GEOG 694 Alternate Plan Paper or Internship (1-2)
GEOG 699 Thesis (3-6)

COMMUNITY COLLEGE TRACK OPTION

Students interested in teaching at the Community College level should see their advisor about identifying methods courses to strengthen their teaching ability. Licensure is not required to teach at the Community College level, but courses in teaching skills are required.

Required Geography (14 cr)

Choose a minimum of 14 credits in Geography, including these:

GEOG 680 Philosophy of Geography (3)
GEOG 698 Internship in College Teaching (1-5)
GEOG 699 Thesis (3-6)

Required Professional Education (6 cr)

Choose any 500/600 level Educational Foundations courses in consultation with an advisor.

Required Education outside Geography and Educational Foundations (6 cr)

Choose any 500/600 level Education courses taken in disciplines outside Geography and Educational Foundations, in consultation with an advisor

Required Electives (4 cr)

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

Required Thesis or Alternate Plan Paper

GEOG 694 Alternate Plan Paper or Internship (1-2)
GEOG 699 Thesis (3-6)

GEOGRAPHY EDUCATION MS (DISCIPLINE-BASED)

(Thesis Plan - 30 cr)
(Alternate Plan Paper - 34 cr)

Teaching licensure is a prerequisite to pursuing this degree which is for teachers interested in enrichment in a teaching area. This degree does not lead to initial teaching licensure. Students who desire initial licensure should consult the Master of Arts in Teaching (MAT.) program. Please see the section concerning the MAT program that is listed in this bulletin.

Required Geography (3 cr)

GEOG 680 Philosophy of Geography (3)

Required Professional Education (6 cr)

EDFN 640 Assessment and Evaluation of Learning (3)
EDFN 641 Evaluative Procedures in Problem Solving Situations (3)

Required Education outside Geography and Professional Education (6 cr)

Choose any 500/600 level Education courses taken in disciplines outside Geography and Educational Foundations in consultation with an advisor

Required Geography Electives (9-11 cr)

Choose any 500/600 level Geography elective courses in consultation with an advisor. A minimum of 6 credits need to be taken in a specialized, geography area (e.g. physical geography)

Required Electives (4-7 cr)

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

Required Thesis or Alternate Plan Paper

GEOG 694 Alternate Plan Paper (0)
GEOG 699 Thesis (3-6)

COURSE DESCRIPTIONS

509 (1-3) Selected Topics
The instructor will develop a specific course on a geographic topic, such as soils, landforms, water resources, energy, housing, population geography, or some other topic for the class.

510 (3) Climatic Environments
A qualitative regional climatology of the world, including the Pleistocene Ice Ages and urban impacts upon climate. Emphasis is on the characteristics of particular climates and understanding the factors that control their spatial distribution.
Pre: GEOG 101, or CON

512 (3) Advanced Weather
Meteorological principles and theory are applied to the analysis and interpretation of weather data in order to better understand the structure and evolution of synoptic-scale weather systems. Basic knowledge of mathematics will be assumed.
Pre: GEOG 317

520 (3) Conservation of Natural Resources
Survey of natural resources emphasizing energy, metallic, fisheries, and water resources. Also addresses timber, wetlands, and wildlife on public and private lands.

525 (3) Economic Geography
Examines national and international economic geographical order and trade activities. Topics include economic development, competition, and impacts on the environment and people.

530 (3) Historical Geography of the United States
The evolving patterns of settlement, cultures, landscapes, and economies of the United States from the colonial period to 1990. An introduction to historical geography as a sub field of geography, including career opportunities in related professions.

535 (3) Urban Geography
Hypotheses and generalization related to urban functions, structure, land use, distribution, growth, and decline. Emphasis will be mostly on the United States' urban places.

537 (3) Political Geography
Spatial problems and structure of governments, focusing on countries of the world. Covers such topics as boundary problems, strategic locations, and geopolitical explanations of international relations and conflict.

540 (1-4) Field Studies
Various excursions to study physical and cultural landscapes inside and outside of Minnesota.

545 (3) Latin America
Regional geography covering the ecological and human environment of Central and South America and the Caribbean. Students can pick specific topics to study in detail. The geographic relations between the USA and Latin America are also covered.

556 (3) Canada
Students will develop a knowledge of the environmental, cultural, historical, and economic geographies of Canada. Readings of bestselling fiction and scholarly works written by Canadians will provide a Canadian perspective on the nation's past, present, and future.

550 (3) Europe
Cultural, environmental, and economic background of

Europe west of the former USSR Following a general geographic survey, the course will cover major regions and countries.

554 (3) Russian Realm
Survey of the area of the former Soviet Union. Examines regional patterns of the physical environment, natural resources, population distribution, cities, and economic activity. Relates people to the land.

556 (3) Africa
A survey of the physical and cultural resources and economic development of the continent with emphasis on current problems. Topics discussed will focus on Africa South of the Sahara.
Pre: Jr. or Sr. status

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.

560 (3) Geographic Teaching Methods
The course will cover resource materials and current techniques in classroom teaching.

564 (3) 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.

571 (3) Field Mapping
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).
Pre: GEOG 101, or 470/570

573 (3) 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.
Pre: GEOG 373

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.

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.
Pre: permission of instructor

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.
Pre: GEOG 373, or 473/573, or permission of instructor

580 (3) Seminar
Topics vary in physical, cultural, economic, political, and historical geography, as well as environmental conservation and geographic techniques.

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.
Pre: permission required

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.

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.

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.

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.

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.

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.

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.
Pre: permission of instructor

678 (3) Geographic Research and 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 paper s and to provide students experience in professional oral presentation.

680 (3) Philosophy of Geography
The history and development of geographic thought from ancient times to the late 20th century.

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.

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.

694 (1-2) Alternate Plan Paper
Student culminating experience in lieu of a thesis.

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.

699 (3-6) Thesis
A culminating project related to basic or applied research.

GEOLOGY

College of Science, Engineering & Technology
Chemistry and Geology Department
N242 Trafton • 507-389-1963

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 multidisiplinary studies program.

COURSE DESCRIPTIONS

501 (1-3) Field Studies
Students will learn the basis and methods of geological field studies and then participate in a field trip to an area of significant geological importance. Vehicles for transportation to and from the field site are required. A special student field trip is anticipated to offset vehicle and equipment costs. Students will be responsible for lodging and food.

550 (3) Hydrogeology
This course introduces physical and chemical studies of hydrogeology. The main area of discussion will included the physical and chemical attributes of aquifiers, 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.

590 (2) Workshop

591 (1-6) In-Service
A course designed to upgrade the qualfications of a person on the job. Content is variable. The course can be repeated for credit.

677 (1-4) Independent Study

GERONTOLOGY MS

College of Social & Behavioral Sciences
Gerontology Program
111 Armstrong Hall • 507-389-6307

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