## Geography

*College of Social & Behavioral Sciences*

**Department of Geography**

206 Morris Hall • 507-389-2617

Chair: Donald A. Friend

Ginger Schmid, Woo Jang, Phillip Larson, Jose Javier Lopez, Cynthia A. Miller, Martin D. Mitchell, Rama Mohapatra, Forrest Wilkerson, Fei Yuan

Both a social and natural science seeking to understand the interactions between people and their environment, Geography examines the distribution of physical and cultural phenomena across the Earth. Divided into two main parts, cultural and physical geography, cultural geography explores the characteristics of societies including demographics, religion, economy, and government and how these traits diffuse or contract across space and time. Physical geography examines landforms, climate, flora and fauna along with natural resources and the processes governing their distributions and use. Explored together in regional geography, the cultural and physical traditions are supplemented by cutting edge geospatial technologies (GIS and GPS), which provides students with skills highly prized in the workforce. The Department of Geography offers a full suite of courses covering the cultural, physical, and regional and geospatial branches of geography at the undergraduate and graduate levels.

The majors, minor and Geographic Information Science Certificate offered by the Department provide background and training that enable students to enter careers in the public or private sectors as well as prepare them for graduate study.

### Admission to Major

Students enrolling in 300–400 level courses must be admitted to the program. Admission to major is granted by the department. Minimum university admission requirements are:

- a minimum of 32 earned semester credit hours.
- a minimum cumulative GPA of 2.00 (“C”).

Contact the department for application procedures.

### Combined BS Geography and MA Urban Planning Leading to Accelerated Completion of Master’s Degree

Geography and Urban Studies share an arrangement for an accelerated Bachelor’s/Master’s degree program. Undergraduate students in Geography with a GPA of at least 3.0 can apply to the accelerated program in their junior year. If accepted, in their senior year they petition to take three Geography courses at the graduate level, and those courses are then included in both their undergraduate program and in the Master’s of Urban Planning program. Contact either department for specific information.

### Policies/Information

**GPA Policy.** A GPA of 2.0 or higher in a major or minor in geography is required for graduation.

Refer to the College regarding required advising for students on academic probation.

**Pass/No Credit Policy.** P/N grading will be accepted in the major only for GEOG 401 and GEOG 497 and GEOG 409 at instructor discretion. All other courses must be taken for letter grades. All courses for the minor must be taken for letter grades.

### Geography BA

Degree completion = 120 credits

#### Major Common Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>GEOG 101</td>
<td>Introductory Physical Geography</td>
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</tr>
<tr>
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</tr>
<tr>
<td>GEOG 340</td>
<td>United States</td>
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</tr>
<tr>
<td>GEOG 370</td>
<td>Cartographic Techniques</td>
<td>4</td>
</tr>
<tr>
<td>GEOG 401</td>
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**Major Restricted Electives**

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<tr>
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<td>GEOG 456</td>
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<td>GEOG 458</td>
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**Capstone Experience**

<table>
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<tr>
<td>Senior Paper</td>
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<tr>
<td>Internship</td>
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### Required for Bachelor of Arts (BA) degree ONLY: Language (8 credits)

### Required Minor. Yes. Any.

#### Professional BA

Degree completion = 120 credits

#### Major Common Core

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### GEOGRAPHY BS

Degree completion = 120 credits

**Major Common Core**
- GEOG 101 Introductory Physical Geography (3)
- GEOG 103 Introductory Cultural Geography (3)
- GEOG 340 United States (3)
- GEOG 370 Cartographic Techniques (4)
- GEOG 401 Colloquium (1)

**Major Restricted Electives**
- Cultural-Systematic (choose 3 credits)
  - GEOG 425 Economic Geography (3)
  - GEOG 435 Urban Geography (3)
  - GEOG 437 Political Geography (3)
  - GEOG 438 Social Geography (3)
- Physical (choose 3 credits)
  - GEOG 217 Weather (4)
  - GEOG 218 Weather Laboratory (1)
  - GEOG 313 Natural Disasters (3)
  - GEOG 315 Geomorphology (3)
  - GEOG 410 Climatic Environments (3)
  - GEOG 414 Biogeography (3)
- Foreign Regional (choose 3 credits)
  - GEOG 445 Latin America (3)
  - GEOG 446 Canada (3)
  - GEOG 450 Europe (3)
  - GEOG 454 Russian Realm (3)
  - GEOG 456 Africa (3)
  - GEOG 458 Geography of East Asia (3)
- Capstone Experience (choose 1-4 credits)
  - GEOG 440 Field Studies (1-4)
  - GEOG 480 Seminar (1-4)
  - GEOG 491 Senior Paper (1-4)
  - GEOG 497 Internship (1-10)

**Major Unrestricted Electives**
- Additional Electives (choose 15-24 credits)

Total credits in major must equal or exceed 48. Up to 6 elective credits may be taken outside Geography with departmental permission.

**Other Graduation Requirements**

- Required for Bachelor of Arts (BA) degree ONLY: Language (8 credits)
- Required Minor: None.

### GEOGRAPHIC INFORMATION SCIENCE (GISc) CERTIFICATE

(18-20 credits)

Students will receive a fundamental knowledge and understanding of Geographic Information Systems (GIS) and Remote Sensing technologies with the option to focus more intensively on advanced GIS, Remote Sensing or Global Positioning Systems (GPS) principles and applications.

**Major Common Core**
- GEOG 373 Introduction to Geographic Information Systems (4)
- GEOG 473 Intermediate GIS (4)
- GEOG 474 Introduction to Remote Sensing (4)

**Major Restricted Electives** (choose 6-8 credits)
- GEOG 480 must be the "Seminar: Environmental Hazards"
- GEOG 439 Transportation Modeling & GIS (4)
- GEOG 471 Digital Field Mapping with GPS (4)
- GEOG 475 Applied Remote Sensing & GIS (4)
- GEOG 476 Spatial Statistics (3)
- GEOG 478 Spatial Analysis with GIS (3)
- GEOG 479 GIS Practicum (1-4)
- GEOG 480 Seminar (1-4)
GEOGRAPHY MINOR (18 credits)

Required for Minor (Core, 9 credits)
GEOG 101 Introductory Physical Geography (3)
GEOG 103 Introductory Cultural Geography (3)
GEOG 340 United States (3)

Minor Electives
Choose 9 credits from GEOG 200 - GEOG 499

COURSE DESCRIPTIONS

GEOG 100 (3) Elements of Geography
An introduction to Geography and its themes of study. The course will familiarize students with where places are located in the world together with their cultural and physical features. Students will be tasked to think critically and diversely about various cultures and features of the modern world.
Fall, Spring
GE-8, GE-10
Diverse Cultures - Purple

GEOG 101 (3) Introductory Physical Geography
Survey of the processes and features of the earth’s physical environment, earth-sun relationships, weather, climate, natural vegetation, soil, and landforms. Examines their interrelations and spatial distribution using North America and world-wide examples. Some coverage of human-environmental relations.
Fall, Spring
GE-3, GE-10

GEOG 103 (3) Introductory Cultural Geography
Cultural aspects of interactions between people and their environment focusing on spatial patterns of population, agriculture, politics, language, religion, industrialization, and urbanization. Emphasis is placed on the processes that create the cultural landscape and on management of land and natural resources.
Fall, Spring
GE-5, GE-8
Diverse Cultures - Purple

GEOG 210W (3) Landscapes and Places
Introduction to the concepts of landscape and place in a variety of geographical writings. Emphasizes works with strong regional overtones. The interaction between the physical and cultural environments is paramount. Field observation and integrating imagery into original student writing documents is also addressed.
WI, GE-10

GEOG 217 (4) Weather
An examination of the processes involved in weather formation. Students will be introduced to weather map analysis, simple forecasting and observational techniques, and weather instruments.
Fall, Spring

GEOG 218 (1) Weather Laboratory
Covers applied aspects of weather, including understanding weather codes, analysis and interpretation of weather maps, basic techniques of forecasting, and familiarity with weather instruments.
Fall, Spring

GEOG 299 (1-3) Individual Study
An assignment that is tailored to individual needs of a student. The instructor and the student arrange the type of project for the student, such as a term paper, readings, mapping, field investigation, or computer cartography.
Pre: Consent
Fall, Spring

GEOG 309 (1) Colloquium
Overview of geographic work, interests, and research by guest speakers.
Fall

GEOG 313 (3) Natural Disasters
An examination of the underlying causes of natural disasters occurring over the globe. Focus will be primarily upon weather and climate related disasters. Students will also be exposed to concepts of plate tectonics and how these affect the distribution of earthquakes and volcanism over the planet.
Variable

GEOG 315 (3) Geomorphology
Covers elements of the structure of the earth and the variety of landforms found on the earth’s surface, with emphasis upon the processes, both past and present, that act upon the surface to create the landforms now visible. Local field trips.
Fall

GEOG 340 (3) United States
Students will develop a knowledge of the similarities and contrasts in regional landscapes and cultures of the United States.
Fall, Spring

GEOG 341 (3) World Regional Geography
Differences and similarities in the cultural and natural environments by the world’s major regions. Useful survey of world geography for educators and international relations students.
Fall, Spring

GEOG 342 (3) Geography of Minnesota
The course involves the natural and human environments of Minnesota. The physical resources, population history, and current issues are emphasized.
Spring

GEOG 343 (3) United States Geography
Students will develop a knowledge of the similarities and contrasts in regional landscapes and cultures of the United States.
Fall, Spring

GEOG 344 (3) World Regional Geography
Differences and similarities in the cultural and natural environments by the world’s major regions. Useful survey of world geography for educators and international relations students.
Fall, Spring

GEOG 345 (3) Geography of Minnesota
The course involves the natural and human environments of Minnesota. The physical resources, population history, and current issues are emphasized.
Spring

GEOG 370 (4) Cartographic Techniques
The lecture material addresses map projections, technology changes in production, basic analysis and depiction of quantitative point, line and areal data. Also, the evaluation of maps and the history of cartography from a European, Oriental, and American Indian perspective is discussed. All maps are drawn using computer assistance.
Fall, Spring

GEOG 373 (4) Introduction to Geographic Information Systems
The course will be an introduction to the analysis of spatial data using the concept of a geographic information system (GIS). Content of the course will be, to a great extent, based on the NCGIA core curriculum with assignments tailored to the data and software available within the department such as ArcGIS.
Fall, Spring

GEOG 401 (1) Colloquium
Overview of geographic work, interests, and research by guest speakers.
Fall

GEOG 409 (1-4) 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.
Fall, Spring

GEOG 410 (3) Climatic Environments
The characteristics of particular climates and understanding the factors that control their spatial distribution.
Pre: GEOG 101, or consent
Fall

GEOG 412 (4) 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 217
ALT-Fall
GEOG 414 (3) Biogeography
Analyzes the distribution and concentration of plants and animals throughout the world. Emphasis is placed on the role of evolution, tectonics, and physical barriers to the distribution and migration of species. Special emphasis is placed on the role of humans in the modern redistribution of species.
Fall

GEOG 420 (3) Conservation of Natural Resources
Survey of natural resources emphasizing energy, minerals, soils, fisheries, and water resources. Also addresses timber, wetlands, and wildlife on public and private lands.
Spring

GEOG 425 (3) Economic Geography
Examines national and international economic geographical order and trade activities. Topics include economic development, competition, international trade, and impacts on the environment and people.

GEOG 435 (3) Urban Geography
Hypotheses and generalization related to urban functions, structure, land use, distribution, growth, and sometimes decline. Emphasis will be mostly on the United States’ urban places.
Fall

GEOG 436 (3) Rural Geography
Introduction to theoretical frameworks for analyzing processes of economic, environmental, and social change in rural regions. Includes basic and advanced geographical principles and techniques for studying non-urban areas. Designed to equip students with the knowledge and skills necessary for carrying out research projects on rural environments.
Spring

GEOG 437 (3) Political Geography
Spatial problems and structure of governments, focusing on countries of the world and their geographic internal order. Covers such topics as boundary problems, strategic locations, and geopolitical explanations of international and internal relations and conflicts.
Spring

GEOG 438 (3) Social Geography
Fall

GEOG 439 (4) Transportation Modeling & GIS
Four major sets of ideas will be covered: Introduction to Spatial Organization, Network Analysis, Allocation Methods, and Urban Transportation. The emphasis is on these approaches to understanding the geography of transport by description, explanation, and normative or optimal methods.
Fall

GEOG 440 (1-4) Field Studies
Various excursions to study physical and cultural landscapes inside and outside of Minnesota.
Variable

GEOG 445 (3) Latin America
Regional geography covering the ecological and human environment of Middle and South America, including the Caribbean. Students can pick specific topics to study in detail. The geographic relations between the USA and Latin America are also covered.
Fall

GEOG 446 (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.
ALT-Fall

GEOG 450 (3) Europe
Cultural, environmental, and economic background of Europe west of Russia and Ukraine. Following a general geographic survey, the course will cover major regions and countries.
Spring

GEOG 454 (3) Russian Realm
Survey of the area of Russia and her neighbors. Examines regional patterns of the physical environment, natural resources, population distribution, cities, and economic activity. Relates people to the land.
Variable

GEOG 456 (3) Africa
A survey of the physical and cultural resources and economic development of the continent with emphasis on current issues. Topics discussed will focus on Africa south of the Sahara.
Variable

GEOG 458 (3) Geography of East Asia
Examines the physical and human environments of eastern Asia, mainly China, Korea and Japan. The class will be assisted by visual sources and hands-on use of primary documents.
Variable

GEOG 464 (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.
Variable

GEOG 471 (4) Digital Field Mapping with GPS
This course covers the basic strategies for field mapping using data acquired from global positioning systems (GPS).
Pre: GEOG 373 or equivalent
Fall

GEOG 473 (4) Intermediate GIS
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
Spring

GEOG 474 (4) Introduction to Remote Sensing
This is an introductory course on theories and techniques of remote sensing. Focus will be placed on providing students with a general overview of the application of remote sensing to practical problems, and hands-on experience for image processing and analysis.
Fall

GEOG 475 (4) Applied Remote Sensing & GIS
This course provides students the opportunity to develop further knowledge of remote sensing. Emphasis will be placed on introducing advanced theories and techniques for digital image processing and helping students obtain independent research skills using remote sensing data.
Pre: GEOG 373, GEOG 474
Spring

GEOG 476 (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 and tables.
Spring
GEOG 477 (1-3) Topics in Techniques
This offering will include a variety of selected technical topics in geography, including but not necessarily 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: Consent
Variable

GEOG 478 (3) Spatial Analysis with GIS
Introduction to theoretical frameworks for spatial analysis and geographic quantitative methods. Includes basic and advanced geographic principles and techniques for studying spatial patterns. Designed to equip students with the skills necessary to carry out research projects that demand advanced statistics.

GEOG 479 (1-4) 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 professional-level experience.
Pre: GEOG 373 or GEOG 473, or consent
Variable

GEOG 480 (1-4) Seminar
Topics vary in physical, cultural, economic, political, and historical geography, as well as environmental conservation and geographic techniques.
Pre: GEOG 373
Variable

GEOG 491 (1-4) Senior Paper
Fall, Spring

GEOG 497 (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: Consent
On Demand

GEOG 499 (1-3) Individual Study
An assignment that is tailored to individual needs of a student. An arrangement is made that the student works on a project (term paper, readings, mapping, field investigation, GIS, or related topics).
Pre: Consent
On Demand