

GEOGRAPHY

Geography

College of Social & Behavioral Sciences

Department of Geography

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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 Remote Sensing, and GPS), which provides students with skills highly prized in the work force. 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.

POLICIES/INFORMATION

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.

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

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 436 Rural Geography (3)

GEOG 437 Political Geography (3)

GEOG 438 Social Geography (3)

Physical (choose 3 credits)

GEOG 217 Weather (4)

GEOG 313 Natural Disasters (3)

GEOG 315 Geomorphology (3)

GEOG 410 Climatic Environments (3)

GEOG 414 Biogeography (3)

GEOG 420 Conservation of Natural Resources (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 1-8 credits)

Total credits in major must equal or exceed 32. Take number of credits needed to reach 32.

GEOG 200 - GEOG 499

Other Graduation Requirements

Required for Bachelor of Arts (BA) degree ONLY: Language (8 credits)

Required Minor. Yes. Any.

PROFESSIONAL BA

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 436 Rural Geography (3)

GEOG 437 Political Geography (3)

GEOG 438 Social Geography (3)

Physical (choose 3 credits)

Students taking GEOG 217 are encouraged to take GEOG 218

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)

GEOG 420 Conservation of Natural Resources (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)

GEOGRAPHY CONTINUED

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.

GEOG 200-499

Other Graduation Requirements

Required for Bachelor of Arts (BA) degree ONLY: Language (8 credits)

Required Minor. None.

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 436 Rural Geography (3)
- GEOG 437 Political Geography (3)
- GEOG 438 Social Geography (3)

Physical (choose 3 credits)

- GEOG 217 Weather (4)
- GEOG 313 Natural Disasters (3)
- GEOG 315 Geomorphology (3)
- GEOG 410 Climatic Environments (3)
- GEOG 414 Biogeography (3)
- GEOG 420 Conservation of Natural Resources (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 1-8 credits)

Total credits in major must equal or exceed 32. Take number of credits needed to reach 32.

GEOG 200 - GEOG 499

PROFESSIONAL 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 436 Rural Geography (3)
- GEOG 437 Political Geography (3)
- GEOG 438 Social Geography (3)

Physical (choose 3 credits)

Students taking GEOG 217 are encouraged to take GEOG 218

- 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)
- GEOG 420 Conservation of Natural Resources (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.

GEOG 200- GEOG 499

GEOMORPHOLOGY AND EARTH SURFACE PROCESSES CERTIFICATE

Geomorphology is the study of the form and character of the Earth's surface. Earth Surface Processes shape and transform our planet's landscape. Students will develop a broad theoretical understanding and learn to apply specific analytical skill to the field of Geomorphology through a multi-disciplinary curriculum in Geography, Geology and Anthropology.

Major Common Core

Take either GEOG 315 or GEOG 415 and GEOG 410

- GEOG 315 Geomorphology (3)
- GEOG 410 Climatic Environments (3)
- GEOG 415 Earth Surface Processes (4)

Major Restricted Electives (choose one from the following)

- GEOG 411 Soils Geomorphology (3)
- GEOG 416 Fluvial Geomorphology and Hydrology (4)

Major Unrestricted Electives

At least six credits must be taken. Choose courses from two of the three listed departments. GEOG 411 and GEOG 416 can be taken as an unrestricted elective if they were not taken as a restricted elective.

- ANTH 331 Environmental Anthropology (3)
- GEOG 411 Soils Geomorphology (3)
- GEOG 416 Fluvial Geomorphology and Hydrology (4)
- GEOG 440 Field Studies (1-4)
- GEOL 201 Elements of Mineralogy (4)
- GEOL 320W Sedimentology and Stratigraphy (4)

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.

GEOGRAPHY CONTINUED

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

Required for Minor

- 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 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

Diverse Cultures - Purple

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 352 (3) GIS for Crime Analysis

This is a hands-on, exercise-based GIS for Law Enforcement course analyzing the contemporary realities of the spatial and geographic aspects of crime. Students acquire practical tools necessary to conduct effective mapping and spatial analyses of crime using GIS software. Lab activities are designed to benefit those working with public safety and emergency response systems.

Fall (Odd Years)

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

GEOGRAPHY CONTINUED

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 411 (3) Soils Geomorphology

This course examines soils and their role in interpreting the history of landform development. Soils chronicle the environment in which they have formed, and reflect the environment they currently support. Understanding their formation and subsequent distribution is essential to good management practices. Applications include the analysis of soil data bases and assimilation of field derived soil profile data.

Fall, Spring (On-Demand), Summer (On-Demand)

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 415 (4) Earth Surface Processes

This course examines the natural processes that operate on our planet and shape the landscape presently. This will be done through a focus on applied exercises, measurements and direct/indirect observations. Through applied projects students will have an understanding of how these processes interact within a variety of Earth Systems.

Fall (On-Demand), Spring (On-Demand), Summer

GEOG 416 (4) Fluvial Geomorphology and Hydrology

An in-depth investigation into fluvial systems including sediment transport, sediment budget analysis, channel geometry/morphology, drainage basin analysis, geomorphic evolution of fluvial landscapes, hydrology (i.e., runoff generation and channel formation, storm hydrograph and flood analysis, discharge measurements) of fluvial systems, and effects of anthropogenic modification and use of fluvial systems.

Fall, Spring (On-Demand)

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

Concepts and theories concerning global and national social problems and the significance of geographic analytic methods for social research. Study of factors related to variations in regional standards of living.

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

GEOGRAPHY CONTINUED

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