### Geography Courses (GEOG)

#### Courses

**GEOG 1110 (970:040). World Geography — 3 hrs.**  
Reasons for and consequences of variations over surface of the earth of cultural, economic, physical, and other attributes of places. (Fall, Spring, Summer)

**GEOG 1120 (970:010). Human Geography — 3 hrs.**  
Interaction between peoples and their environments. Spatial patterns and processes of population distribution, characteristics, and movement, human environmental impact, and economic activity. (Fall, Spring, Summer)

**GEOG 1210 (970:026). Physical Geography — 3 hrs.**  
Explanation of patterns of solar energy receipt, atmospheric pressure, winds, and precipitation around the Earth. Emphasis on how solar energy, water, and crustal movements interact to determine characteristics of natural environments on Earth. Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics. (Fall, Spring, Summer)

**GEOG 1211. Physical Geography Laboratory — 1 hr.**  
Explanation of patterns of solar energy receipt, atmospheric pressure, winds, and precipitation around the Earth. Emphasis on how solar energy, water, and crustal movements interact to determine characteristics of natural environments on Earth. Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics. Prerequisite(s) or corequisite(s): GEOG 1210 (970:026). (Fall and Spring)

**GEOG 1310 (970:061). Digital Earth — 3 hrs.**  
Survey of maps and map communication principles with a focus on digital maps and dynamic mapping applications. Emphasis on reading, analysis, and interpretation of information on maps. (Fall)

**GEOG 2210 (970:028). Modern Climate Change: Evidence and Predictions — 3 hrs.**  
Brief overview of the climate system. Examination of the evidence for recent global and regional climate changes. Analysis of the importance of greenhouse gases, solar changes, aerosols, and cloud changes as contributors to climate changes. (Fall)

**GEOG 2320. Drones for Mapping and Communication — 3 hrs.**  
This course will provide an overview of aspects related to unmanned aerial systems (UAS) operations for both environmental mapping and communication purposes. Topics will include: Basic aviation knowledge, current UAS regulations, flight control systems, UAS platforms/sensors, basic aerial mapping techniques, and aerial photography/video for communications. Students will engage in classroom and field exercises and will gain hands-on experience with data collection using a variety of UAS. Field trips are required. (Fall)

**GEOG 3110 (970:101). Economic Geography — 3 hrs.**  
Analysis of changing spatial structure of the economy and inter-relationships between geography and economics within a global perspective. (Odd Springs)

**GEOG 3120 (970:104). North American Cities — 3 hrs.**  
Principles of urban geography, including urban growth and change, structure and dynamics, and analysis and planning in North American cities. (Fall)

**GEOG 3179 (970:179). Cooperative Education in Geography — 1-3 hrs.**  
Practical experience in business, industry, or a government agency. May be repeated for maximum of 3 hours. Offered on credit/no credit basis only. Prerequisite(s): 15 hours of geography at UNI; cumulative GPA of 2.50; junior standing; consent of department. (Fall, Spring, Summer)

**GEOG 3186 (970:186). Studies in (Variable Topics).**  
Studies in (Variable Topics) (Variable)

**GEOG 3210 (970:137). Natural Hazards and Disasters — 3 hrs.**  
Examination of causes, physical processes, and geographic distribution of natural hazards. Discussion of prediction methods and social impact of such disasters. (Spring)

**GEOG 3220 (970:100). Environmental Geography: Variable Topic — 3 hrs.**  
Study of geographic dimension of human-environmental interaction. Historical perspectives on Earth’s environmental problems, the place of humankind in ecological systems, and issues of sustainable development. May be repeated on different topics. Prerequisite(s): GEOG 1120 (970:010) or GEOG 1210 (970:026) or GEOG 2210 (970:028) or GEOG 1110 (970:040) or consent of instructor. (Variable)

**GEOG 3310 (970:164). Geographic Information Systems I — 3 hrs.**  
Fundamental concepts and operations of Geographic Information Systems with applications. Lectures are supplemented by computer-based projects. Lecture, 2 periods; lab 2 periods. (Fall and Spring)

**GEOG 3580 (970:189). Readings in Geography — 1-3 hrs.**  
Maximum of 3 hours can be applied toward Geography major. Prerequisite(s): consent of department head. (Fall, Spring, Summer)

**GEOG 3598 (970:193). Research Experience in Geography — 1-3 hrs.**  
Conducting of supervised research or scholarly project. May be repeated for maximum of 6 hours. Prerequisite(s): 15 hours of geography; consent of instructor. (Fall, Spring, Summer)

**GEOG 4110/5110 (970:111g). Cultural Geography — 3 hrs.**  
Examination of the nature and dynamics of culture relative to issues and landscapes that arise out of the interactions between people and their physical and human environments. Special emphasis on socio-economic development and the process of globalization. Prerequisite(s): junior standing. (Odd Springs)

**GEOG 4120/5120 (970:119g). Demography and Population Geography — 3 hrs.**  
Geographic perspectives on demography and migration in a changing world. Patterns, processes, and models of population structure, change, distribution, and movement. Relationships with complex spatial mosaic of socioeconomic and environmental systems. Elements of population analysis and geodemographics. Prerequisite(s): junior standing. (Even Springs)

**GEOG 4150/5150 (970:141g). Regional Geography: (Variable Topic) — 3 hrs.**  
Study of geography of selected region including evolution and dynamics of its cultural, social, economic, political, and environmental
dimensions. May be repeated on different regions. Prerequisite(s): junior standing. (Variable)

GEOG 4160/5160 (970:151g). Historical Geography: (Variable Topic) — 3 hrs.
Examination of geographic development of selected region or of significance of geographic factors in historical development of selected topic. May be repeated on different regions or topics. Prerequisite(s): junior standing. (Variable)

GEOG 4170/5170 (970:168g). Regional Analysis and Planning — 3 hrs.
Introduction to processes, methods, and techniques of regional analysis and planning. Planning seen as political and technical process. Prerequisite(s): junior standing. (Spring)

GEOG 4180/5180 (970:121g). Locational Analysis for Business — 3 hrs.
Practical and theoretical use of geographic models and concepts in business. Locational analysis, site selection, market area analysis, and real estate evaluation. Prerequisite(s): junior standing. (Spring)

GEOG 4190/5190 (970:117g). Transportation Planning and Policy — 3 hrs.
Transportation policy goals and objectives, transportation planning processes, characteristics and problems of transportation systems. Use of current methodologies and techniques to support decision making related to transportation policy, operations, and management. Prerequisite(s): junior standing. (Fall)

GEOG 4220/5220 (970:126g). Soils and Landscapes — 3 hrs.
Study of soils as result of inter-relationships among climates, ecosystems, and landscapes of the world. Soil formation, distribution, properties, and classification, and applications of soil geography to other disciplines. Lecture, 2 periods; lab/field trips, 2 periods. Prerequisite(s): EARTHSCI 1300 (870:031) or GEOG 1210 (970:026); junior standing. (Odd Falls)

GEOG 4230/5230 (970:129g). Rivers — 3 hrs.
Runoff processes, stream discharge, sediment transport, drainage basins, properties of alluvium, channel changes, floodplains, terraces, human adjustments to floods, human impacts on rivers, and river water quality. Prerequisite(s): junior standing. (Even Springs)

GEOG 4240/5240 (970:155g). The Ice Age — 3 hrs.
Study of earth systems, long-term environmental change, and methods used to detect such change. Evidence of environmental changes resulting from glacial-interglacial conditions and how large scale changes in Earth climate systems affect environmental systems. Prerequisite(s): GEOG 1210 (970:026); GEOG 2210 (970:028); EARTHSCI 1300 (870:031) or consent of instructor; junior standing. (Even Springs)

GEOG 4250/5250 (970:185g). Laboratory Methods in Environmental Geography — 3 hrs.
Intended to make students proficient in the common laboratory techniques used for analyzing soil and sediments for environmental geography. Prerequisite(s): EARTHSCI 1300 (870:031) or GEOG 1210 (970:026); junior standing. (Even Springs)

This course provides an overview of issues and training in the accepted approaches to contemporary environmental management and sustainability, both in general and in the context of the state of Iowa. The objective of this course is to provide the theoretical background for critical analysis of resource management issues and applied problems in both for-profit and non-profit contexts, including but not limited to, government agencies, public park areas, public and private conservancies, and corporate environmental management contexts. Prerequisite(s): GEOG 1210 (970:026) or EARTHSCI 1300 (870:031); BIOL 2051 (840:051); or consent of instructor. (Fall)

GEOG 4270/5270. Regional Landforms of North America — 3 hrs.
Description and explanation of various landforms of North America. Focus on structures and surface processes that form distinct physical regions of North America (e.g., Rocky Mountains), and kinds of landforms that make each region unique. Prerequisite(s): GEOG 1210 (970:026) or EARTHSCI 1300 (870:031); junior standing. (Odd Springs)

GEOG 4310/5310 (970:170g). GIS Applications: (Variable Topic) — 3 hrs.
GIS techniques to conduct spatial analysis of social and environmental topics. Focus on an individual research project and associated functional capabilities of GIS packages. Variable social/environmental focus. May be taken more than once for credit. Prerequisite(s): GEOG 3310 (970:164); junior standing. (Spring)

GEOG 4320/5320 (970:174g). Geographic Information Systems II — 3 hrs.
Technical issues in GIS and ways of implementing GIS as a decision support system for solving problems of a spatial nature in selected fields. Lecture, 2 periods; lab, 2 periods. Prerequisite(s): GEOG 3310 (970:164) or consent of instructor; junior standing. (Spring)

GEOG 4335/5335. Web Mapping and GIS — 3 hrs.
An applied course examining state of the art web mapping and Geographic Information Systems server technologies. Students will gain hands on experience utilizing a variety of cloud-based technologies and simple scripting techniques to build web mapping applications and visualizations. Prior programming experience is not required. Prerequisite(s): GEOG 3310 (970:164). (Odd Falls)

GEOG 4340/5340 (970:160g). Spatial Data Analysis — 3 hrs.
Analysis and interpretation of spatial point processes, area, geostatistical and spatial interaction data. Applications to geographic data in real estate, biology, environmental and agricultural sciences using S-Plus software. Prerequisite(s): STAT 1774 (800:064) or STAT 1772 (800:072) or SOC 2020 (980:080); junior standing. (Same as STAT 3778/5778 (800:171g)) (Odd Springs)

GEOG 4350/5350 (970:175g). Global Positioning System Field Survey Methods — 3 hrs.
Utilization of global positioning system (GPS) to collect, process, and analyze geographic data. GPS theory and techniques including field survey experiences. Applications within an integrated geographic information system (GIS) framework. Prerequisite(s): junior standing. (Fall)

GEOG 4360/5360 (970:165g). Thematic Cartography — 3 hrs.
Application of cartographic principles and techniques in compiling thematic maps. Emphasis on cartographic production; essentials of computer mapping and map reproduction. Lecture, 2 periods; lab, 2 periods. Prerequisite(s): junior standing. (Spring)

Examination of physical basis of Remote Sensing and various sensing systems available for monitoring, mapping, measuring, and identifying phenomena on the earth's surface. Emphasis on non-photographic systems operating within the electromagnetic continuum. Various
modes of multispectral scanning. Lecture, 2 periods; lab, 2 periods.
Prerequisite(s): junior standing. (Fall)

**GEOG 4380/5380. Satellite Image Processing — 3 hrs.**
Scientific and computational foundation of digital image processing techniques for extraction of earth resources information from remotely sensed satellite data. Prerequisite(s): GEOG 4370/5370 (970:173g); junior standing. (Even Springs)

**GEOG 4385/5385. Advanced Unmanned Aerial Systems Mapping — 3 hrs.**
This class will provide an in-depth training on the uses of unmanned aerial systems (UAS) for environmental mapping. Topics will include: photogrammetry, advanced remote sensing, geospatial data accuracy, aerial photography survey design, and geospatial data processing/post-processing. Students will engage in classroom and field exercises and will gain hands-on experience with data collection using a variety of UAS. Field trips are required. Prerequisite(s): GEOG 4370/5370 (970:173g) or consent of instructor; junior standing. (Spring)

**GEOG 4390/5390. GIS Programming — 3 hrs.**
An applied course in Python programming for ArcGIS automation and customization. Students will gain hands-on experience with ArcGIS Geoprocessing framework, basic programming concepts, Python fundamentals, and writing Python scripts for geoprocessing and map automation. Prior programming experience is not required. Prerequisite(s): GEOG 3310 (970:164) and 4310 or 4320 or consent of instructor. (Even Falls)

**GEOG 4530. Geography for Social Science Education — 3 hrs.**
This course is intended for secondary social science teaching majors to focus on geography. It will cover the geographic approach, foundational knowledge in geography (human, physical, and geospatial), the use of online GIS, and the application of this material in the K-12 education setting. Prerequisite(s): GEOG 1110 (970:040) or GEOG 1120 (970:010); GEOG 1210 (970:026). (Spring)

**GEOG 4550 (970:180). Seminar — 3 hrs.**
Topics listed in Schedule of Classes. May be repeated on different topics. (Variable)

**GEOG 6010 (970:294). Geographic Research Methods — 3 hrs.**
The purpose of this course is to develop an appreciation for the process of research as practiced by contemporary professional geographers. Topics covered include formulating research problems, reviewing and critiquing published literature, developing and executing a research design, institutional review boards, funding programs, proposal writing and application, and completing a research project. (Spring)

**GEOG 6285 (970:285). Readings in Geography — 1-3 hrs.**
May be repeated. Prerequisite(s): consent of department head. (Fall, Spring, Summer)