GEOGRAPHY (GEOG)

Courses

GEOG 105 Introduction to the Elements of Geography Credits: 3
A survey of major elements of physical and human geography, with a concise overview of the world's regions. Emphasis on global relationships and distributions, both environmental and cultural. Climates, natural vegetation, land forms, cultural origins and diffusions, economic patterns.

GEOG 150 Introduction to Physical Geography Credits: 3
This course is an introduction to the study of the natural environmental systems of earth--the atmosphere, the hydrosphere, the biosphere, and the lithosphere. The primary objective of the course is to provide a broad overview of these systems at a global scale. This overview will entail descriptions of natural systems and the variations they exhibit both from place to place and through time. It will also entail explaining how natural systems operate and interact with each other, thereby providing a necessary foundation for understanding the tremendously diverse physical geography of earth. Applies to natural science requirement.

GEOG 200 World Geography I Credits: 3
A survey of the physical and human geography of the regions and nations of Europe and the Americas, with Australia and New Zealand. The approach is strongly historical, emphasizing interconnections, shared colonial backgrounds and broader global contexts in the modern world. The course is aimed at non-specialists.

GEOG 202 World Geography II Credits: 3
A survey of the physical and human geography of the regions and nations of Russia and the other former Soviet republics, the Middle East, Africa, South Asia, East Asia Southeast Asia and the Pacific Realm. The approach is strongly historical emphasizing interconnections shared colonial backgrounds, and broader global contexts in the modern world. The course is aimed at non-specialists.

GEOG 203 Introduction to Geographic Information Systems Credits: 4
An introductory course covering the basic principles of geographic information systems focusing on such software programs as ARC-INFO and ARC-VIEW.

GEOG 215 Weather and Climate Credits: 4
Overview of weather processes and the main components of the climate system. Emphasis is on the physical basis of daily weather patterns, seasonal climate variability, and longer-term climate change at local, regional, and global scales. The theme throughout the course will be the importance of weather and climate as major drivers of environmental change.

GEOG 309 Urban Geography Credits: 3
Historical development, morphology and functions of urban places, including intercity relationships and the relationship between cities and their hinterlands; emphasis on American cities.

GEOG 314 Principles of Geomorphology Credits: 4
Explores the processes that shape the earth's surface. Focuses on the development and description of fluvial, glacial, eolian, and coastal landforms. Studies the influence of tectonic and climatic factors. Field trip.
Prerequisites: ENV-SCI 110R (or GEOLOGY 220).

GEOG 360 Principles of Biogeography Credits: 4
This course is an introduction to biogeography that explores the patterns of plant and animal distributions from both ecological and historical perspectives. We examine past geologic and climatic conditions, as well as interactions between organisms and their environment to explain modern distributions of flora and fauna. Human interactions with plants and animals have increasingly profound consequences on distributions of flora and fauna from destruction to management. We explore the increasing importance of issues and strategies in conservation. The laboratory portion of the course builds on core ecological concepts and provides experiences of field observation, data collecting and data analysis.
Prerequisites: ENV-SCI 110R.

GEOG 398 Field Trip Credit: 1
Three-day field trip in March or April (at student's expense) for department majors. An opportunity to observe and study physical and cultural features and collect materials. Brief descriptive report of trip required. Recommended preparation: 6-9 hours of upper-level geography.

GEOG 401 Advanced Geographic Information Science Credits: 4
This course is designed for the students knowledgeable in the fundamentals of geographic information systems, who wish to gain expertise in advanced topics and applications in geographic information systems, remote sensing, and related environmental informatics. Classes are organized to encourage active learning. Students are encouraged and guided to develop their research projects by integrating related techniques of geographic information science.
Prerequisites: GEOG 203 or GEOG 450.

GEOG 402 Environmental Remote Sensing and Digital Image Analysis Credits: 4
This course will provide students with innovative techniques for landscape-level environmental analysis, geographic and geological studies, earth science research, and environmental resources management using remotely sensed data including satellite images. Students will be taught basic remote sensing concepts and technical skills, including energy radiative transfer processes in remote sensing, sensors and resolutions, computer-based image processing and classification, and remote sensing/GIS integration.
Prerequisites: GEOG 203 or GEOG 450.

GEOG 403WI History and Philosophy of Geoscience Credits: 3
A survey of geoscientific thought since antiquity. The substance of geography, geology, and environmental studies will be sought primarily in scholarly treatise and formal analytical systems including cartography, but the course also addresses geoscientific principles emerging from the history of environment, government, law, economy, religion, literature, and material culture. Readings, lectures, discussions, research, writing.
Prerequisites: ENGLISH 225.

GEOG 406 Global Environmental Change Credits: 3
This course will examine the current rates of global environmental change and potential causes in the context of Earth's natural climate variability. The course will follow a seminar format. Students will read and discuss published articles on current and emerging theories of forcing mechanisms in the Earth's systems.

GEOG 417 Special Topics Credits: 1-3
Individual research and study of a selected topic in geography, meteorology or earth science.

GEOG 426 Paleoecology: Microfossils and Climate Change Credits: 3
Paleoecology will focus on questions addressing past environments and past climates based on the ecology of microfossils. Micro-organisms are very sensitive to a wide variety of environmental conditions including temperature, precipitation, hydrology, water chemistry, salinity, habitat, and pollution. The fossil remains of these organisms are used as proxy indicators for reconstructing past environmental conditions, climate change, vegetation dynamics, and human impacts. Students will have the opportunity to process microfossils and make interpretations based on analysis data.

GEOG 444 Spatial Data Analysis Credits: 4
Quantitative techniques and applications of spatial data analysis. The course will cover basic geospatial analysis techniques including hypothesis testing, kriging, variagram analysis, multivariate analysis and reliability analysis. Emphasis is on practical applications rather than theories. Intended for Geology, Geography, Environmental Studies, and relevant fields. Three hours lecture and one hour computer lab per week.

GEOG 448 Satellite Climatology Credits: 4
Use of satellite observations to study the climate system. Discussions consider the development of satellite climatology, sensors, platforms and methodologies used to estimate climate variables from radiance measurements. Aspects of climate that are emphasized include could climatologies, cloud systems, atmospheric moisture, radiation budget, and land-surface conditions. Three hours lecture and one hour lab per week.
Prerequisites: GEOG 215.

GEOG 450 Gis Fundamentals for Research Applications Credits: 4
This course will address the needs of upper level undergraduate and graduate students who desire to learn and apply fundamental Geographic Information Systems concepts and techniques for their research projects. This course will draw on the content of the Introductory GIS course offered by the department but will also be flexible such that the individual needs or interest of students can be met through guided reading and/or tailored laboratory sessions. The Department of Geosciences GIS computer laboratory, with a variety of GIS and Remote Sensing software, will be available for this course. Only for upper-level undergraduate and graduate students.

GEOG 496 Geography Internship Credits: 1-6
Students obtain directed practical experience working with non-profits, governments, or private enterprises. Duties will vary based on contractual agreement between the student, host organization, and the professor.
Prerequisites: Junior standing or higher.