

# Geography (GEOG)

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**GEOG 1000. Introduction to Physical Geography. (3 Credits)**

Explores the world through each of the major components of physical geography: climatology, hydrology, geomorphology, and biogeography, focusing on how they are interrelated. Emphasizes the dynamic interactions among climate, vegetation, soils, and landforms. Can be taken in conjunction with laboratory exercises in GEOG 1005.

**GEOG 1005. Introduction to Physical Geography Lab. (1 Credit)**

Pre- or Corequisite(s): GEOG 1000

Designed to be taken in conjunction with GEOG 1000. Explores the world from a broad perspective, examining each of the major components of physical geography: climatology, hydrology, geomorphology, and biogeography. Investigates physical processes of and interactions among climate, vegetation, soils, and landforms.

**GEOG 1300G. Survey of World Geography. (3 Credits)**

Explores the world in which we live. Studies major countries of the world with special emphasis on location, physical environment, culture, resources, and current events.

May be delivered online.

**GEOG 1400G. Introduction to Human Geography. (3 Credits)**

Examines the theoretical, spatial, and relational aspects of human activity across the Earth's surface. Discusses the analytical frameworks for understanding the interactions of social, cultural, economic and political systems. Includes topics of population dynamics, culture, language, religion, international development, human conflicts, and urbanization.

**GEOG 1800. Mapping the World with Geospatial Technology. (3 Credits)**

Introduces how the Earth's natural and social features, processes, and systems are mapped and visualized. Is designed for non-science and science majors alike. Provides an overview of satellite and land-based technologies, such as Global Navigation Satellite Systems (e.g., GPS) and uncrewed aerial systems (drones), for determining locations, monitoring change, and imaging the Earth over years and in real-time. Familiarizes students with cartography (map-making and reading), mapping and map visualization software, acquisition and use of location data with handheld devices, interpretation of aerial and satellite imagery, and spatial reasoning and communication skills. Incorporates modern cutting-edge technology and applications to environmental, social, and business issues.

**GEOG 2000. Sustainability and Environment. (3 Credits)**

Explores relationships of human and natural systems, how cultural groups experience nature, and global sustainability. Examines different ways of perceiving nature, resources, the environment, and society. Critically analyzes links between social, economic, political, historical, cultural, and environmental processes. Discusses environmental problems and ways to build more sustainable futures. Includes participation in locally sustainability issues.

**GEOG 2100. Geography of the United States. (3 Credits)**

Surveys primarily the regional geography of the United States. Explores each of the subregions of the United States in terms of human geographies and also their relationship to the environment. Emphasizes contemporary issues such as sustainability, social geographies, political issues, and their interrelationships. Includes topics such as culture, environment, economy, urbanization, transportation systems, territory and political borders.

**GEOG 2200. Geography of Europe. (3 Credits)**

Provides a regional survey of Europe including topics such as economic development, environment, politics, society and culture. Explores the place of Europe in geopolitical and global economic systems. Discusses internal relationships within the European Union, Eastern Europe and Russia.

**GEOG 2500. Geography of Latin America and the Caribbean. (3 Credits)**

Surveys the Americas south of the United States. Explores each subregion of Latin America and the Caribbean in detail. Includes topics such as development, environment, indigenous peoples, history, and national political and financial crises.

**GEOG 3000. Climate Change in Science and Society. (3 Credits)**

Prerequisite(s): University Advanced Standing

Offers a fundamental understanding of the science behind contemporary climate change and what to expect in a warming world. Examines observational and other scientific data of different aspects of climate science and the predicted impacts on natural systems around the world. Explores societal and human responses to impacts of climate change. Investigates possible solutions and the politics of climate negotiations.

**GEOG 3010. Economic Geography. (3 Credits)**

Prerequisite(s): University Advanced Standing

A course encompassing the study of humankind's economic activities on the earth, including hunting, gathering, agriculture, mining, manufacturing, forestry, fishing, high technology, and world trade. Studies population, environmental issues, urban patterns, and travel and tourism. Uses lectures, oral response, field trips, and audiovisual aids.

**GEOG 3100. Cartography. (3 Credits)**

Prerequisite(s): (MAT 1030, MAT 1035, STAT 1040, STAT 1045, MATH 1050, MATH 1055, or higher) and (GEO 1010 or GEOG 1000 or GEOG 1300 or equivalent); and University Advanced Standing

Introduces fundamental principles of cartography including perception, visualization, topographic and thematic map interpretation, field mapping techniques (including GPS), and creating computer-based maps. Includes concepts of direction, scale, grids, projections, spatial transformations, spatial data analysis, data manipulation decisions, color theory and application, and principles of cartographic design and critical evaluation.

**GEOG 3110. Urban Geography. (3 Credits)**

Prerequisite(s): University Advanced Standing; GEOG 1300 preferred

Focuses on the origins, growth, structure and function of cities. Examines social and political dimensions of urban life and the emergence of new urban spaces around the world. Includes case studies in the decline of urban industrial America and the rise of Sunbelt and Edge Cities.

**GEOG 3200. Geography of Utah. (3 Credits)**

Prerequisite(s): University Advanced Standing

Applies principles and methods of physical, cultural, and human-environment geography to the study of Utah's people, places, and environments; considers problems of adjustment, including natural hazards, environmental concerns, and human problems.

**GEOG 3250. Cultural Geography. (3 Credits)**

Prerequisite(s): (ENGL 2010 or instructor approval) and University Advanced Standing

Explores the cultural landscape of the world's peoples. Describes the geographic complex of cultural forms including language, religion, music, art, architecture, folklore, food, clothing and land use. Topics include cultural conflicts, globalization, and the international entertainment industry.

**GEOG 3300. Biogeography. (4 Credits)**

Prerequisite(s): (BIOL1010, or BIOL1620, or GEOG1000) and University Advanced Standing

Examines the geography of nature. Expands on the subjects of ecology, biology, and history to examine nature over time and space. Examines nature at different scales: from the molecule to the global biome. Explores the foundations, major concepts, and trends in biogeography, as well as related analytical and data visualization techniques.

**GEOG 3350. Geography of Africa. (3 Credits)**

Prerequisite(s): University Advanced Standing

Examines the historical and contemporary human geographies of Africa. Focuses on the impact of colonialism on societies, economies, politics, and environments across the continent and the historical context of contemporary challenges. Analyzes human-environment relationships across both rural and urban areas. Problematises the concept of development and outlines key challenges facing the continent in the future.

**GEOG 3400. Environmental Remote Sensing. (3 Credits)**

Prerequisite(s): GEOG 3600; STAT 2040; an upper division course in natural science recommended; and University Advanced Standing

Introduces the history, theory, and operation of remote sensing software. Includes an introduction to the electromagnetic spectrum and signals, sensors, image processing, and classification techniques. Provides a survey of the concepts and techniques of remote sensing and image analysis for mapping and monitoring natural resources, environment and land use, and an array of geoscientific applications at different scales.

Software fee of \$18 applies.

Lab access fee of \$35 applies.

**GEOG 3430. Political Geography. (3 Credits)**

Prerequisite(s): University Advanced Standing

Surveys the geographic dimensions of political action and theory at local, national and global scales. Covers topics such as geopolitics, nationalism, territoriality, and political conflicts. Examines subjects such as American electoral patterns, Cold War geographies, and 21st century global security.

**GEOG 3440. Geospatial Data Science. (3 Credits)**

Prerequisite(s): GEOG 3600, STAT 2040, and University Advanced Standing

Introduces computational workflows for organizing, analyzing and visualizing datasets related to the various sub-disciplines in Earth science. Connects geographic concepts and geospatial methods with data science workflows. Explores various statistical methods and modeling techniques to test hypotheses, visualize information and solve new and common problems in Earth science.

**GEOG 3500. Geomorphology. (3 Credits)**

Cross-listed with: GEO 3500

Prerequisite(s): GEO 1010 or GEO 1030 or GEO 1040 or GEO 1050 or GEOG 1000; University Advanced Standing

Corequisite(s): GEO 3505

Examines the geologic processes operating at the Earth's surface to understand the origin of our planet's varied landscapes. Explores how landforms respond to climate change, tectonic forcing, and changes in land use. Addresses common geomorphic processes including weathering and soils, hillslope processes, fluvial processes, aeolian transport, glacial and periglacial environments, coastal processes, and the interactions between climate and tectonics. Course lab fee of \$21 applies.

**GEOG 3505. Geomorphology Lab. (1 Credit)**

Cross-listed with: GEOG 3500

Prerequisite(s): GEO 1010 or GEOG 1000 or GEO 1030 or GEO 1040 or GEO 1050; University Advanced Standing

Corequisite(s): GEO 3500

Investigates Earth surface processes through field observation and geospatial analyses to map and measure properties of landforms due to erosion and deposition. Addresses rock weathering, the formation of soils, major geomorphic processes including hillslope, river, wind, glacial, and coastal processes, as well as the underlying drivers (climate and tectonics) of geomorphic change.

**GEOG 3600. Introduction to Geographic Information Systems. (4 Credits)**

Cross-listed with: ENVT 3630

Prerequisite(s): [Completion of a course that meets the PP (Physical Science) or SS (Social Science) general education requirement is recommended] and University Advanced Standing

Introduces the history, theory, and operation of Geographic Information Systems (GIS). Includes an introduction to GIS data sources, database design, data input, spatial analysis, and map production. Offers valuable preparation for careers in geology, geography, geographic information systems, geomatics, planning, surveying, marketing, environmental technology, biology, engineering, and other related fields.

Lab access fee of \$35 for computers applies.

Software fee of \$18 applies.

**GEOG 3650. Advanced Geographic Information Systems. (4 Credits)**

Prerequisite(s): GEOG 3600 and University Advanced Standing

Expands on GEOG 3600, Introduction to Geographic Information Systems (GIS), and reviews advanced GIS functions and applications to the sciences. Fundamental topics include spatial analysis, geostatistical analysis, 3-D modeling, and project development and implementation.

Lab access fee of \$35 applies.

Software fee of \$18 applies.

**GEOG 3700. Wetland Studies. (3 Credits)**

Prerequisite(s): GEOG 1000 OR GEO 1010 OR ENVT 1110 OR BIOL 1010 OR CHEM 1210 OR Instructor Approval; University Advanced Standing

Examines the structure and function of wetlands with emphasis on wetland biogeochemistry processes, soils, hydrology, flora and fauna, mitigation and restoration, policies and regulations. Explores research methods applied in wetland studies. Provides students with essential skills to critically evaluate wetland issues to make informed decisions. Prepares students to conduct research and communicate scientific information.

**GEOG 3705. Wetland Studies Laboratory. (1 Credit)**

Prerequisite(s): GEO 1010 OR ENVT 1110 OR BIOL 1010 OR CHEM 1210 OR Instructor Approval; and University Advanced Standing

Corequisite(s): GEOG 3700

Designed to be taken in conjunction with GEOG 3700. Applies techniques for sampling and mapping of wetland soils, plants, water, etc. and analyzes chemistry of wetland samples using modern instrumentation to address outstanding scientific questions related to wetlands. Addresses skills to interpret and present scientific data. Normally includes field trips.

**GEOG 3800. Environmental History of the United States. (3 Credits)**

Cross-listed with: HIST 3800

Prerequisite(s): HIST 3010 or instructor approval; University Advanced Standing

Examines human modification of the American landscape. Surveys the physical geography of the United States, landscape change during Native American to European transition, and causes of agricultural and industrial pollution. Topics include land ethics, processes of environmental degradation, technological remedies, history of federal laws and protection agencies. May include field experiences.

**GEOG 4100. Geospatial Field Methods. (3 Credits)**

Prerequisite(s): GEOG 3600 and MATH 1060; University Advanced Standing

Provides an introduction to measuring, recording, and finding geographic locations in the field using GPS and other methods widely used in industry and research. Applies GPS and other field techniques to scientific problems, and emphasizes hands-on experience with field equipment. Covers geographic reference frames, and integrates field data with desktop GIS software.

Software fee of \$18 applies.

Lab access fee of \$35 applies.

**GEOG 4820R. GIS Internship. (1-3 Credits)**

Prerequisite(s): (GEOG 3600 and GEOG 3650 or equivalent), department approval, declared major in any Earth Science program, and University Advanced Standing

Engages students in supervised GIS work in a professional setting. Includes maintaining a journal of student experiences and preparing a paper summarizing their experience. A maximum of 3 credit hours may be counted toward graduation. May be graded Credit/No Credit.

**GEOG 4890R. Student Research in Geography. (1-4 Credits)**

Prerequisite(s): Junior or Senior standing, instructor approval, and University Advanced Standing

Provides the opportunity to conduct research under the mentorship of an Earth Science department faculty member. Includes any combination of literature reviews, original research, and/or participation in ongoing departmental projects. Involves students in the methodology of original geographic research. Requires preparation and presentation of oral and/or written reports, typically presented in a public forum. May be repeated for a maximum of 4 credits toward graduation.

**GEOG 4900R. Special Topics in Geography. (1-4 Credits)**

Prerequisite(s): Instructor approval and University Advanced Standing

Explores or examines special topics in geography. Topics vary depending on student demand and current topics of significance in geography. May be repeated for a maximum of 4 credits toward graduation.