

GEOGRAPHY (GEOG)

GEOG 1300. People, Places, and the Environment. 3 Hours. [TCCN: GEOG 1302]

Students are introduced to the discipline of geography, or the study of the world from a spatial perspective. This includes an examination of both the cultural and physical environments and the social, economic, political, and environmental factors that influence human activities and societies across the globe. Students will also be introduced to geospatial technologies (e.g., GPS and Google Satellite Imagery) currently utilized to investigate geographical issues. The course may involve field trips that incorporate course material. Course Equivalents: GEOG 1321 .

GEOG 1401. Weather and Climate. 4 Hours. [TCCN: GEOL 1447]

The basic concepts of meteorology and climatology are introduced. Atmospheric temperature, pressure, winds, moisture, and air masses and storms are systematically covered, followed by an overview of the major climates and ecosystems of the earth. Environmental problems related to weather, climate, and ecosystems are considered throughout. The lab portion of weather and climate is an activity-related treatment of the basic components of meteorology and climatology. Specific topics covered are similar to the lecture. Course Equivalents: GEOG 1301 .

GEOG 2341. Physical Geography. 3 Hours. [TCCN: GEOG 1301]

Students examine the basic physical and biological systems of planet Earth, including the atmosphere, oceans, landforms, soils, and ecosystems. Emphasis is placed on understanding the distribution, scale, and dynamic inter-relationships and processes, which shape the physical and biological landscape as well as the ways in which humans alter the environment and are, in turn, affected by the environment.

GEOG 2355. World Regional Geography: Europe, Asia, and Australia. 3 Hours. [TCCN: GEOG 1303]

Students are provided a general overview of the land and people. Topics discussed may include the physical environment, cultural characteristics and the various ways people live and make their living. Attention is focused upon the relationships which exist between location, the physical environment and human activity. Examples of countries covered are Russia, Germany, France, China, Japan, and United Kingdom.

GEOG 2356. World Regional Geography: Latin America, Africa, South Asia. 3 Hours. [TCCN: GEOG 1303]

Students are provided a general overview of the land and people. Topics discussed may include the physical environment, cultural characteristics and the various ways people live and make their living. Attention is focused upon the relationships which exist between location, the physical environment and human activity. Examples of countries covered are Mexico, Brazil, Argentina, Egypt, Republic of South Africa, Israel, Iran, and India.

GEOG 2364. Geo-Spatial Technology. 3 Hours.

Students are introduced to technologies, such as geographic information systems (GIS) and global positioning systems (GPS), that are used to map and study the Earth. The emphasis is placed on the application of these technologies in areas of environmental and natural resources management, business and marketing, and law enforcement and national security. Course Equivalents: GEOG 3364 .

GEOG 2464. Introduction to Geographic Information Systems (GIS). 4 Hours.

Students are introduced to the basics of geographic information systems (GIS) with an emphasis on environmental and resource management applications. Students design and develop a digital spatial database, perform spatial analyses, create hardcopy maps, and generate reports. Students are introduced to several GIS software packages. This course does incorporate a laboratory component. Course Equivalents: GEOG 4464 .

GEOG 3301. Environmental Geography. 3 Hours.

Environmental Geography is a study of the spatial dimensions of the interaction between humans and their physical environment. Key principles of how the earth and the earth's ecosystems work, how they are interconnected, and how humans use and impact these natural resource systems will be introduced. Course Equivalents: GEOG 2301 .

GEOG 3310. Sustainable Development. 3 Hours.

Sustainable development is both a fundamental concept used to understand the modern world and a tool to address global issues. Students examine this concept using the framework of geography and a global perspective. Students focus on the intersections of environment and society, including environmental, economic, and social barriers to development, environmental and social impacts of development, and the role of environmental sustainability in achieving global development goals.

Prerequisite: 60 credit hours and 3hrs of GEOG.

GEOG 3320. Sustainability & Environment. 3 Hours.

Students investigate and assess the impacts that human activity can have on the environment and will seek to identify innovative, cross-disciplinary solutions to many of the world's most pressing environmental challenges. Given that Sustainability Science involves making decisions and taking actions that are in the interest of protecting the natural world, course topics will include current sustainability issues related to population growth, agriculture, natural resources, energy usage, habitat degradation and ecological economics. This course is typically be offered every other fall semester. Also offered as BIOL 3320. Course Equivalents: BIOL 2320, BIOL 3320, GEOG 2320

Prerequisite: BIOL 1401 or (60 credit hours and 3 hours of GEOG).

GEOG 3340. Meteorology. 3 Hours.

Students explore weather phenomena and the atmospheric processes that generate them as well the methods used to measure the controlling factors. Topics may include atmospheric thermodynamics, black body radiation, weather instruments, weather forecasting, satellite imagery, Doppler radar, and numerical models.

Prerequisite: GEOG 1401; MATH 1314 or MATH 1410; or permission of instructor.

GEOG 3342. Climatology. 3 Hours.

Students explore the meaning of the term climate, processes that affect climate, how Earth's climate has changed, and effects of climate change on humans and the environment. Topics may include characteristics of Earth's atmosphere, climate teleconnections, climate interactions with other components of the Earth system, water cycle, climate classifications, potential causes of climate change, climate modeling, and climate policy.

Prerequisite: GEOG 1401; MATH 1314 or MATH 1410; or permission of instructor.

GEOG 3350. Cultural Geography. 3 Hours.

Students focus on the concept of culture from a spatial or geographical perspective, examining culture as it relates to the geographic landscape. Topics may include the spatial dynamics of language, religion, race, ethnicity, music, sport, folk and popular cultures, and the built environment. In addition, students are provided an examination of symbolic landscapes, contested spaces, subaltern geographies, representations of place in film and literature, gendered spaces, and place-situated identities.

GEOG 3352. Tourism Geography. 3 Hours.

Students are provided an introduction to the geography of tourism. Topics may include the historical development of travel and tourism, place promotion, location of tourism destinations, geographic resources of tourism, and the physical and social outcomes of tourism.

Prerequisite: GEOG 1321 or GEOG 2355 or GEOG 2356.

GEOG 3358. Historical Geography of the United States. 3 Hours.

Students survey the changing geography of the United States including initial exploration, European perception of North America, geographical expansion of the United States to the Pacific, and geographical factors underlying the urbanization and industrialization of the nation.

GEOG 3359. Regional Geography: the United States and Canada. 3 Hours.

Students are provided a general overview of the land and people of the United States and Canada. Topics covered may include the physical environment (weather patterns, landforms and water resources), cultural differences, and the various ways people live and make their living. Attention is focused upon the relationships which exist between location, the physical environment and human activity. This course is available on-line and via traditional classroom delivery.

GEOG 3362. Map Use & Map Interpretation. 3 Hours.

Students learn how to use and interpret topographic maps and helps them to develop an appreciation of their use as tools by geographers. Students are familiarized to map projections and their limitations, various coordinate systems, map measurements, GPS, and the basics of air photo interpretation.

GEOG 3363. Computer Cartography. 3 Hours.

Fundamentals of thematic mapping, including appropriate usage, projections, base-map compilation, data measurement and analysis, map design and construction, color principles, and other cartographic concepts are emphasized.

Prerequisite: GEOG 2464.

GEOG 3398. Gulf Seminar. 3 Hours.

Students learn about issues in the Gulf of Mexico region from multidisciplinary perspectives, including physical science, social science, humanities, and the arts. Students focus on systems thinking, including issues of scale from local to global, to assess environmental, societal, economic, policy, and community-related challenges in the Houston metro area, Southeast Texas, and the broader Gulf region. Readings, discussion, and undergraduate research methods are emphasized.

Prerequisite: Junior standing and approval of the instructor.

GEOG 3399. Gulf Field Studies. 3 Hours.

Students explore the complex issues facing the Houston metro area, Southeast Texas, and the larger Gulf region. Students visit sites across the area to discuss energy development, historically underserved neighborhoods, street art and architecture, urban and rural development, and communities impacted by natural disasters and environmental challenges. As part of site visits, students will build relationships with community leaders, government officials, private sector companies, and non-profits.

Prerequisite: GEOG 3398 OR POLS 3398; Junior standing and approval of the instructor.

GEOG 4075. Readings in Geography. 1-3 Hours.

A course designed specifically for advanced students of geography who are capable of independent study. Registration is permitted only upon approval of the program coordinator. This course may be taken for Academic Distinction credit. See Academic Distinction Program in this catalog. Variable Credit (1-3). Course Equivalents: GEOG 4375 .

GEOG 4076. Special Topics. 1-3 Hours.

This course of faculty-led study is designed to explore geographical topics and concepts in a course setting. Students engage in either an in-depth, interdisciplinary study of a particular geographic region in the world, or a systematic study of a geographic topic. The course is repeatable for different regions or different topics. Variable Credit (1 to 3).

Prerequisite: GEOG 1321, or GEOG 2355, or GEOG 2356, or permission of instructor.

GEOG 4100. Earth and Environment Seminar. 1 Hour.

Students majoring in Environmental Science, Geography, or Geology discuss environmental problems and career opportunities with professionals in the field.

Prerequisite: Senior Standing.

GEOG 4311. GIS in Law Enforcement. 3 Hours.

Students learn applications of geospatial technologies in law enforcement. Topics include methodologies and characteristics of GIS, intelligence, and crime incident data, GPS, imagery, heat mapping, and change detection related to law enforcement.

Prerequisite: GEOG 2464.

GEOG 4330. Hydrology and Water Resources. 3 Hours.

Students examine the hydrologic cycle with an emphasis on surface water processes. Specific topics may include precipitation, infiltration, evapotranspiration, fluvial processes, and sediment transport. Using the physical concepts and equations related to these topics, students analyze water-related hazards, including flooding and drought, as well as water management and policy. While Texas-specific issues are emphasized, students explore both U.S. and international geographies of hydrology, water resources, and water management. Course Equivalents: GEOG 4430

Prerequisite: (GEOL 1403 or GEOG 2341 or GEOL 1405 or GEOG 4432) and (MATH 1314 or MATH 1342 or MATH 1420); or permission of instructor.

GEOG 4331. Conservation of Natural Resources. 3 Hours.

Students explore the impact of human activities on the natural world, environmental protection, and the wise use of the earth's resources. Topics may include: environmental history, economics, law and ethics, ecology, population issues, agriculture and grazing, soil conservation, forestry, endangered and exotic species, water availability and water pollution, hazardous and solid waste management, air pollution (including global warming), energy resources (fossil, nuclear, and renewable), and the impact of technology on the future health of the planet.

GEOG 4333. Field Studies. 3 Hours.

Use of geospatial technologies such as Global Positioning Systems (GPS), laser surveying, digital aerial photography and computerized mapping (GIS) are stressed. Applications of these technologies will include surveying, water resources, forestry, soil science, wetlands delineation, urban and transportation planning, automobile accident reconstruction and crime scene evidence recovery. Half of the class meetings take place at a variety of outdoor locations.

GEOG 4351. Economic Geography. 3 Hours.

Students examine of the importance of location to human activity. The locational characteristics of primary, secondary, and tertiary economic activities are examined, with an emphasis on land use and urban form, its theory, and descriptive analysis as well as an explanation of market forces and their consequences. Writing enhanced. Course Equivalents: GEOG 3351 .

GEOG 4356. Urban Geography. 3 Hours.

Students are introduced to the scope and nature of urban areas from a geographical or spatial perspective. Students focus on the spatial structure of urban areas and examine the geography of cities using an urban systems approach. Emphasis is placed on the North American city and its problems: land use, transportation, political fragmentation, physical environment, demographic and social change, economic dynamics, residential patterns, urban culture, poverty, etc. Trends in urbanization in both developed and developing worlds are discussed. Writing enhanced. **Prerequisite:** GEOG 1321 or GEOG 2355 or GEOG 2356.

GEOG 4357. Population Geography. 3 Hours.

Students examine spatial patterns and processes influencing the distribution, density, composition, and growth in human populations. Students focus on migration, and to a lesser extent, on fertility and mortality together with socio-economic, political, and environmental causes and consequences of population dynamics that vary between regions and over time. Writing enhanced.

Prerequisite: GEOG 1321 or GEOG 2355 or GEOG 2356.

GEOG 4358. Geography of Texas. 3 Hours.

Students engage in a survey of the regional geography of Texas. Consideration is given to the significance of primary and secondary activity within the state, urbanization, and potential for development.

GEOG 4359. Transportation Geography. 3 Hours.

Students are introduced to the concepts, theories, and methods of transportation geography. Students cover transportation infrastructure, modes of terminals, transportation economics, urban transportation, logistics, and transportation planning. In addition, students course cover various analytical techniques applied in transportation analysis, such as network analysis, gravity models, location-allocation modeling, and geographic information systems in transportation studies.

Prerequisite: GEOG 1321 or GEOG 2355 or GEOG 2356 or permission of instructor.

GEOG 4360. Cultural Field Study. 3 Hours.

Students focus on a number of topics and concepts that fall within the sub-discipline of cultural geography. Students engage in place-based learning, with the primary emphasis being a field experience that directly exposes students to processes and concepts introduced and discussed in the classroom. These may include migration, urbanization, economic transformations, demographic change, social and technological change, racial segregation, civil rights, heritage tourism and other topics. Writing enhanced.

Prerequisite: 6 GEOG advanced hours or permission of Instructor.

GEOG 4361. Geographic Information Systems for Public Health. 3 Hours.

Students cover the theory and application of Geographic Information Systems (GIS) for public health. Topics include an overview of the principles of GIS in public health and practical experience in its use. In addition, students cover the application of GIS mapping and analyzing the geographic distribution of populations at risk and health outcomes. The practical component involves the use of desktop GIS software packages.

GEOG 4365. Applied Geographic Information Systems (GIS). 3 Hours.

Applied GIS is designed to meet the needs for a highly applied course with realistic practical training extending the fundamental principles learned in Introduction to Geographic Information Systems (GEOG 2464). The application of GIS technology to mapping, modeling and management of large data bases are emphasized.

Prerequisite: GEOG 2464.

GEOG 4367. GIS Programming. 3 Hours.

Students learn computer programming principles and their applications in a Geographic Information Systems (GIS) environment, as well as modern programming languages for working within a variety of GIS software platforms. Students master the use of programming scripts to manipulate basic mapping objects, complete geo-processing tasks, debug and error handling, and create custom geospatial tools.

Prerequisite: GEOG 2464 or approval of instructor.

GEOG 4374. Geostatistics. 3 Hours.

Students apply statistical concepts and geospatial computing tools to analyze data. Topics may include geospatial patterns and trends, spatial autocorrelation, spatial regression, interpolation techniques, and reliability of environmental and geoscience data. An emphasis is placed on applied techniques and current software tools.

Prerequisite: GEOG 2464 and one of MATH 1342 or MATH 3379.

GEOG 4399. Environmental and Geoscience Internship. 3 Hours.

Students apply environmental, geoscience, and/or GIS skills in a work environment. Students work with a faculty advisor and their employer to complete employer-assigned internship requirements.

Prerequisite: Junior Standing.

GEOG 4432. Geomorphology. 4 Hours.

Students focus on surficial processes and the resulting landforms. Specific topics may include landscape processes associated with streams, glaciers, wind, coasts, mass wasting, weathering and soil development, and geologic structure. Surface processes are also discussed in the context of human impacts and the environment. Labs emphasize landform analysis and applied problems through interpretation of topographic maps and aerial imagery and field trips. Two-hour laboratory.

Prerequisite: (GEOL 1403 or GEOL 1405 or GEOG 2341) and (MATH 1314 or MATH 1342 or MATH 1420 or MATH 3379); or permission of instructor.

GEOG 4468. Remote Sensing. 4 Hours.

Students are introduced to the methods used to analyze and interpret aerial photography and satellite imagery. Emphasis is placed on multispectral satellite imagery, digital image processing, and land use and land cover analysis using remotely sensed imagery. Lab included.

Prerequisite: GEOG 2464.