

GE - GEOGRAPHY (GE)

GE 502. Geopolitics. (3 Credits)

Geopolitics examines the intersection of geography, international relations, and politics and explores the geographic factors that explain foreign relations, state behavior, and transnational and global issues such as military conflict, terrorism, international crime, food and water security, energy security, and environmental degradation. Students are trained in negotiation and policy-making skills and participate in a multi-day simulation exercise. (Fall, even-numbered years).

GE 503. Nature and Society Interactions. (3 Credits)

This course involves a global analysis of human-environment issues including human's impact on the environment and the environment's impact on humans. Topics addressed may include, but are not limited to global warming, overpopulation, environmental degradation, environmental hazards and disasters, and effective natural resource use. One field trip required. (Spring)

GE 504. Environmental Hazards. (3 Credits)

Natural and technological events continue to impact people and places across the globe. This course draws upon hazard and disaster experiences to address the nature, impact, and social responses to environmental hazards. Course focus is on the relationship between nature, society, and technology and analyzes how people and places experience, cope with, and recover from environmental hazards. (Fall)

GE 510. Integration of Geography and History. (3 Credits)

The integration of the spatial concepts of geography with the chronological concepts of history. Also listed as HI 510 but creditable only in the field for which registered. (Offered on sufficient demand)

GE 515. Quantitative Methods in Geography. (3 Credits)

Course provides an introduction to quantitative methods used by geographers to analyze and interpret geographic data and solve geographic problems. Topics include descriptive statistics, hypothesis formulation and testing, sampling strategies, correlation, regression, and spatial pattern analysis. Examples will be drawn from temporal and spatial relationships in physical and human geography. (Fall)

GE 520. Principles of Urban and Regional Planning. (3 Credits)

This course introduces planning both as a profession and also as an important element of city, county, and regional government. Focusing on American planning experience, GE 520 covers the fundamentals of spatial decision-making at various levels of government. Substantive areas covered in the course include: the legal basis of planning, organizational structure of planning agencies in the US, comprehensive planning, social issues in planning, tools of land use regulation, growth management techniques, smart growth, transportation planning, environmental planning and urban design. (Fall)

GE 530. Biogeography. (3 Credits)

Science of documenting and understanding spatial patterns of biological diversity. This course will introduce students to concepts used in understanding historical, ecological, and geological processes that contribute to past and present biological distributions including the historical development of biogeographic concepts, plate tectonics, evolution, phylogeography, the fossil record, niche theory, and patterns of disjunction. Applications of biogeography to contemporary issues will also be discussed including global climate change, conservation, invasive species, and human population growth. A field trip is required. Prerequisites: GE 112 or BI 112. Course fee: \$30.00 (Offered upon sufficient demand)

Course Fees: \$30

GE 535. Regional Geomorphology. (3 Credits)

Field-based exploration of landforms and features. Focus is on the examination and understanding of various landforms and the processes that shape these features. Course requires travel. By permission of Instructor. Course fee: \$30.00. Other travel expenses required. (Offered on sufficient demand).

Course Fees: \$30

GE 550. Fundamentals of Sustainability. (3 Credits)

This course provides the foundational principles undergirding the concept of sustainability from a geographical perspective. Course activities involve tracing the history and development of sustainability and the role of the environment, economy and social issues in sustainability. Participants are exposed to a variety of applications of sustainability at the local, national and international levels, preparing them to be advocates for wise use of resources. (Fall)

GE 554. Remote Sensing. (4 Credits)

This course expands upon concepts and methods of remote sensing through the digital interpretation of satellite imagery. The interpreted information (data and findings) will support the understanding of the processes involved in land use and land cover analysis, change detection, and the map update process. The course includes lecture and discussion related to remote sensing and image processing theory with associated, practical laboratory exercises and applications of satellite image analysis and digital image processing. Three class periods; one 2-hour laboratory period per week. Prerequisites: GE 184 and GE 323. Course fee: \$30.00 (Spring)

Course Fees: \$30

GE 560. Advanced Cultural Geography. (3 Credits)

A conceptual approach to the study of human environment systems, cultural landscape, ecological perspectives, environmental perception and behavior, and environmental stress. Prerequisite: GE 102 or departmental approval. (Offered on sufficient demand)

GE 564. GIS Programming. (3 Credits)

Geographic Information systems (GIS) are powerful computational tools for solving spatial problems. GIS programming serves the purpose of customizing GIS applications and streamlining spatial analysis by assembling functions provided by the underlying GIS platforms. This course introduces students to Model Builder and Geoprocessing script programming with Python in ArcGIS. Topics included GIS programming environment, programming syntax and styles, interface customization and a variety of GIS routines and functions that can be assembled through programming. (Fall)

GE 568. Geography of Beer, Wine, and Spirits. (3 Credits)

Course examines geographic factors that account for the historical development and regional variation of beer, wine, and spirits. Students are introduced to the practices of viticulture, hop and grain cultivation, enology, brewing, and distilling. The major cultural, economic, political, and environmental aspects of beer, wine, and spirits in major world regions are analyzed. No class activities will involve alcohol consumptions and/or tasting. (Spring, odd-numbered years).

GE 572. Historical Geography of the United States. (3 Credits)

The role of geographic conditions in the exploration, settlement, and development of the United States. Also listed as HI 572 but creditable only in the field for which registered. (Offered on sufficient demand)

GE 584. Applied Geospatial Analysis. (3 Credits)

This course encompasses advanced reading and discussion of state-of-the-art projects and techniques in Geographic Information Systems, remote sensing, computer cartography, and image processing. Projects required for this class include but are not limited to urban, environmental, and human geography problems. Students will conduct a detailed database development project including database design, database population, data management, and the application of spatial modeling techniques. Course fee: \$30.00 (Spring)

Course Fees: \$30

GE 595. Geography Internship. (1-3 Credits)

Open to graduate students in the Department of Geography. A work-related experience with a public or private organization in which the graduate student gains experience in the professional geography field. (Fall, Spring, Summer)

GE 597. Special Topics. (1-4 Credits)

A study of one or more selected topics in applied or theoretical geography. Topics vary according to the needs of the students and the current professional environment. Maybe repeated for credit if the topic is different. (Fall, Spring, Summer)

GE 599. Independent Study-Practicum. (3 Credits)

Open to graduate students on approval of the department chair. Provides for independent study and research under departmental determination, supervision, and evaluation. (Fall, Spring, Summer)

GE 600. Geographic Thought. (3 Credits)

A study of the history and development of geographic thought, the evolution of the discipline of geography, and contemporary geographic philosophies, paradigms, and debates. Prerequisite: None. (Fall)

GE 601. Physical Geography for Teachers. (3 Credits)

Considers the spatial aspects of climate, vegetation, soils, and landforms with special emphasis given to map use and map interpretation skills. (Offered on sufficient demand)

GE 602. Cultural Geography for Teachers. (3 Credits)

Considers the spatial aspects of human culture including location, population, migration, economics, politics, and global interdependence with special emphasis on map and atlas interpretation skills. (Offered on sufficient demand)

GE 603. Regional Geography for Teachers. (3 Credits)

An examination of the spatial distribution of physical and cultural attributes which give uniqueness and diversity to world regional patterns on the earth's surface. (Offered on sufficient demand)

GE 604. Methods and Materials of Geographic Education. (3 Credits)

The examination and application of instructional procedures and materials focusing upon current geographic objectives, concepts, and methods of learning appropriate to the needs of teachers of geography. (Offered on sufficient demand)

GE 605. Field Experience in Geography. (3 Credits)

A field-oriented approach to the study of environmental concepts, including man-earth relationships. Designed to be offered as a Saturday course during the regular school year or as a short summer course to allow for an adequate block of time to engage in field work. (Offered on sufficient demand)

GE 609. Geographic Methods in Design. (3 Credits)

A study of the history and development of geographic thought, the evolution of the discipline of geography, and contemporary geographic philosophies, paradigms, and debates. Prerequisite: None. (Spring)

GE 610. Seminar in Geospatial Science. (3 Credits)

Geospatial science delves into determining the correct data and technology to address today's issues related to humans and their environment. An understanding of geospatial science provides a distinct perspective on the world, a unique lens through which to examine and interpret events, patterns, and processes that operate on or near the surface of Earth. The Seminar in Geospatial Science builds upon students' progression through a series of techniques courses in Geographic Information Science, remote sensing, and applications in urban, environment, and nature and society interaction. (Offered on sufficient demand)

GE 615. Advanced Quantitative Methods in Geography. (3 Credits)

Application of advanced statistical procedures including multivariate techniques for analysis of point and areal patterns and spatial data. Prerequisite: Undergraduate-level statistics. (Spring)

GE 620. Planning Theory and Process. (3 Credits)

This course is designed to provide an overview of the development of planning theory as it applies to the field of Urban and Regional Planning in the United States. The course will critically evaluate trends in planning theory with a focus on the evolution of main ideas and people who have influenced the field of planning in the US. To accomplish this goal, emphasis will be placed on normative, conceptual, methodological issues and various roles planners play, and also the ethical dilemmas they face in practice. (Offered on sufficient demand)

GE 624. Advanced Remote Sensing. (3 Credits)

This course provides students with advanced topics in remote sensing and image processing including, change detection, image fusion, principle components analysis, spectral signatures, fuzzy classification, and pattern recognition. This course includes classroom instruction, videos, laboratory exercises, fieldwork, and state-of-the-art digital image processing techniques, all to support the interpretation of satellite imagery for extraction of land use and land cover information. One field trip is required. Pre-requisite: GE523 or graduate image processing course. (Offered on sufficient demand)

Course Fees: \$50

GE 625. Cartographic Design and Visualization. (3 Credits)

This course is concerned with advanced map communication concepts; cartographic visualization; designing graphic solutions to geographic situations and needs; illustrating spatial patterns; and considering cartographic representations in terms of aesthetics. Prerequisite: Cartography or equivalent undergraduate cartography class. Course fee: \$50.00 (Offered on sufficient demand)

Course Fees: \$50

GE 684. Spatial Modeling and Analysis in Geographic Information Science. (3 Credits)

This course focuses on advanced problem solving in the spatial environment including GIS system planning, and design, error handling and quality control, decision support techniques, exploratory data analysis, and spatial statistics and geostatistical analysis. Course labs and projects will focus on current issues, events and opportunities in GIScience. Prerequisite: GE 554 and GE 584. Course fee: \$50.00 (Offered on sufficient demand)

Course Fees: \$50

GE 692. Research. (3 Credits)

Selection of a research topic, collection and analysis of primary and secondary sources, field work, and composition of research paper under faculty supervision. May be taken more than once. Prerequisite: Permission of supervising faculty and graduate director. (Fall, Spring, Summer)

GE 695. Thesis. (3-6 Credits)

Selection of a thesis topic, collection and analysis of primary and secondary sources, field work, and composition of thesis and thesis defense under faculty supervision. May be taken more than once. Prerequisite: Permission of supervising faculty and graduate director. (Fall, Spring, Summer)

GE 697. Advanced Topics. (3 Credits)

Selected topics in geospatial science offered by faculty. May be repeated for credit if the topic is different. Prerequisite: Permission of instructor required in order to enroll. (Fall, Spring, Summer)

GE 699. Thesis and Research and Defense. (0 Credits)

This course serves as an orientation to and administration of an oral examination for the MS in Geospatial Science program. A non-credit course required of all candidates for the thesis and non-thesis options. The course is to be taken during the last term in which the student is expected to complete all other program requirements. A grade of "S" indicating satisfactory performance or a grade of "U" for unsatisfactory performance will be recorded on the transcript. A grade of "S" is required for graduation; the course may be repeated once. Prerequisite: student must have completed all other program requirements or be enrolled in the last course for program completion. (Fall, Spring, Summer)