Geography (GEOG)

Courses

GEOG 141. The Natural Environment. 4 Credits.
The earth's physical landscapes, vegetation patterns, weather, and climate; emphasis on the dynamic interactions among climate, landforms, vegetation, and soils.
Additional Information:
Science Area

GEOG 142. The Human Planet. 4 Credits.
The spatial organization of humans and their activities on Earth's surface. Cultural, political, and economic influences shaping places and their interconnections.
Additional Information:
Social Science Area
Cultural Literacy: Global Perspectives

GEOG 181. Our Digital Earth. 4 Credits.
Explores the emergence and use of the geospatial technologies that are shaping contemporary society and are pervasive in our everyday lives.
Additional Information:
Social Science Area

GEOG 196. Field Studies: [Topic]. 1-2 Credits.
A series of practical experiences on or off campus to understand principles or develop skills in performing selected tasks.
Repeatable 99 times

GEOG 199. Special Studies: [Topic]. 1-5 Credits.
Experimental course - topic varies.
Repeatable 99 times

GEOG 201. World Regional Geography. 4 Credits.
Introduction to the world's cultural regions. Study of the cultural and environmental factors that make different parts of the world distinct.
Additional Information:
Social Science Area
Cultural Literacy: Global Perspectives

GEOG 202. Geography of Europe. 4 Credits.
Physical and cultural processes that have shaped the rural and urban landscapes of Europe.
Additional Information:
Social Science Area
Cultural Literacy: Global Perspectives

GEOG 208. Geography of the United States and Canada. 4 Credits.
Historical and geographical analysis of the physical and human geography of the U.S. and Canada. Topics include physical regions, settlement patterns, economic development, and urbanization. Offered alternate years.
Additional Information:
Social Science Area
Cultural Literacy: US: Difference, Inequality, Agency

GEOG 209. Geography of the Middle East and North Africa. 4 Credits.
Physical and cultural processes that have shaped the rural and urban landscapes of the Middle East and North Africa.
Additional Information:
Social Science Area
Cultural Literacy: Global Perspectives

GEOG 250. Geographies of Outdoor Adventure. 4 Credits.
Introduces cultural geography by tracing the emergence and contemporary significance of outdoor adventure sports. Their global development since the late 1800s coincides with changing ideas about nature, wilderness, and the utility of play, and reflects modern social disparities and environmental challenges.
Additional Information:
Social Science Area

GEOG 281. The World and Big Data. 4 Credits.
Explores technical foundations and social and economic applications of big data along the "5V" dimensions of volume, variety, velocity, veracity, and visualization.

GEOG 321. Climatology. 4 Credits.
Energy and moisture in the atmosphere, atmospheric circulation, controls of regional and microclimates, applied climatology, climatic variations, past and future climates.
Requisites: Prereq: GEOG 141.
Additional Information:
Science Area

GEOG 322. Geomorphology. 4 Credits.
Landforming processes with emphasis on mass movements, rivers, eolian, glacial, and coastal processes. Special fee.
Requisites: Prereq: one from GEOG 141, ERTH 102, ERTH 202.
Additional Information:
Science Area

GEOG 323. Biogeography. 4 Credits.
The spatial patterns of biological diversity, and its causes, both in the present and in the past, and its relevance during a time of increasing human impact and climate change.
Requisites: Prereq: one from GEOG 141, ERTH 103, ERTH 203, BI 370.
Additional Information:
Science Area

GEOG 341. Population and Environment. 4 Credits.
Patterns of population growth over history and place, current policies and programs, and impacts and trends in United States and international contexts. Includes method and theory.
Additional Information:
Social Science Area
Cultural Literacy: Global Perspectives

GEOG 342. Geography of Globalization. 4 Credits.
Historical and geographical dimensions of globalization; emphasizes economic and social factors. Topics include multinationals, trade agreements, sustainability, global inequalities, and racial and gender divisions of labor.
Additional Information:
Social Science Area
Cultural Literacy: Global Perspectives

GEOG 343. Society, Culture, and Place. 4 Credits.
Examines ways in which geographical context reflects and shapes cultural and social processes. Importance of place and territory in human affairs.
Additional Information:
Social Science Area
Cultural Literacy: Global Perspectives

GEOG 360. Watershed Science and Policy. 4 Credits.
Physical and biological processes of watersheds; problems of land use, water quality, riparian zones, aquatic ecology; scientific basis of watershed management and policy. Special fee.
Requisites: Prereq: one from GEOG 141, ERTH 102, ERTH 202, BI 130, BI 223Z.
Additional Information:
Science Area

GEOG 361. Global Environmental Change. 4 Credits.
Natural and human-induced changes in the Earth System and their impact on different environmental systems. Not available to those who have taken GEOG 143.
Requisites: Prereq: GEOG 141.
Additional Information:
Science Area

GEOG 391. Social Science Inquiry and Research. 4 Credits.
Understanding scientific inquiry, the scientific method and learning to critique social science research. Readings and discussion focus on the questions, methods, conclusions and outcomes of research.
Additional Information:
Social Science Area

GEOG 393. Data Driven Cartography. 4 Credits.
Introduction to concepts of cartography through representing, organizing, analyzing, and visually presenting geospatial information and data on maps. In this course we will explore different types of map design, how to represent different data types on maps, and how data impacts visual display. Sequence with GEOG 481, GEOG 492, GEOG 493.
Requisites: Prereq: GEOG 181 or GEOG 481.

GEOG 399. Special Studies: [Topic]. 1-5 Credits.
Experimental course - topic varies.
Repeatable 99 times

GEOG 399L. Special Studies: [Topic]. 4 Credits.
Experimental course - topic varies.
Repeatable 99 times

GEOG 400M. Temporary Multilisted Course. 4 Credits.
A single course that is listed under more than one subject code, which may be offered once without formal approval.
Repeatable 99 times

GEOG 401. Research: [Topic]. 1-21 Credits.
Disciplined inquiry of a topic with varying techniques and assignments suited to the nature and conditions of the problem being investigated. Often pursued in relation to a dissertation or thesis.
Repeatable 99 times

GEOG 403. Thesis. 1-12 Credits.
A written document resulting from study or research and submitted as a major requirement for a degree.
Repeatable 99 times

GEOG 405. Reading and Conference: [Topic]. 1-21 Credits.
A particular selection of material read by a student and discussed in conference with a faculty member.
Repeatable 99 times

GEOG 406. Practicum: [Topic]. 1-12 Credits.
A series of clinical experiences under academic supervision designed to integrate theory and principles with practice.
Repeatable 99 times

GEOG 407. Seminar: [Topic]. 1-5 Credits.
A small group of students studying a subject with a faculty member. Although practices vary, students may do original research and exchange results through informal lectures, reports, and discussions.
Repeatable 99 times

GEOG 408. Workshop: [Topic]. 1-16 Credits.
An intensive experience, limited in scope and time, in which a group of students focus on skills development rather than content mastery.
Repeatable 99 times

GEOG 409. Terminal Project. 1-12 Credits.
A presentation incorporating the knowledge and skills acquired from course work completed for a degree.
Repeatable 99 times

GEOG 410. Experimental Course: [Topic]. 1-4 Credits.
Topics are listed in the class schedule each term.
Repeatable 99 times

GEOG 410L. Experimental Course:[Topic]. 1-4 Credits.
Experimental course - topic varies.
Repeatable 99 times

GEOG 421. Advanced Climatology: [Topic]. 4 Credits.
Topics in climatology, including physical climatology, dynamic and synoptic climatology, and paleoclimatology.
Requisites: Prereq: GEOG 321.
Repeatable 99 times when topic changes

GEOG 423. Advanced Biogeography: [Topic]. 4 Credits.
Selected topics in biogeography including relation of plants and animals to their environment, historical changes in plant distribution, and palynological analysis. Special fee.
Requisites: Prereq: GEOG 323.
Repeatable 99 times when topic changes

GEOG 425. Hydrology and Water Resources. 4 Credits.
Emphasis on surface water including precipitation, evapotranspiration, surface runoff, and stream flow. Understanding and analysis of processes. Management for water supply and quality. Special fee.
Requisites: Prereq: GEOG 321 or GEOG 322; MATH 111Z.

GEOG 427. Fluvial Geomorphology. 4 Credits.
Hydraulics and hydrology of stream channels; channel morphology and processes; drainage network development; fluvial deposits and landforms; field and analytical methods. Required field trips. Special fee.
Requisites: Prereq: MATH 112Z; one from GEOG 322, GEOG 425, ERTH 334.

GEOG 430. Long-Term Environmental Change. 4 Credits.
Evolution of the physical landscape during the Quaternary period. Elements of paleoclimatology, paleoecology, and geomorphology. Required field trips. Special fee.
Requisites: Prereq: one from GEOG 321, GEOG 322, GEOG 323.

GEOG 433. Fire and Natural Disturbances. 4 Credits.
Wildfire and other landscape disturbance processes, historical and current patterns of fire, use and management of fire. Offered alternate years.
Requisites: Prereq: one from BI 307, GEOG 323, BI 370.

GEOG 441. Political Geography. 4 Credits.
Spatial perspectives on global political patterns and processes. Relationship of political territories to resources, ethnic patterns, and ideological communities. Impact of political arrangements on identity, conflict, and peace.
Additional Information:
Cultural Literacy: Global Perspectives

GEOG 442. Urban Geography. 4 Credits.
Urbanization throughout the world, the structure of urban settlements; cities as regional centers, physical places, and homes for people; geographic problems in major urban environments.

GEOG 444. Cultural Geography. 4 Credits.
Patterns of culture as a force in human affairs. Dynamics of identity, place, and power. The creation of culture at different scales.
Additional Information:
Cultural Literacy: Global Perspectives

GEOG 445. Culture, Ethnicity, and Nationalism. 4 Credits.
Relationship of ethnic groups and nationality to landscapes, perception, and cultural geographic phenomena. Distribution of ethnic and national groups. Junior standing required.
Additional Information:
Cultural Literacy: Global Perspectives

GEOG 448. Tourism and Development. 4 Credits.
Tourism-related concepts and practices associated with tourism planning, development, marketing, and impacts in different geographic contexts.

GEOG 465. Environment and Development. 4 Credits.
Critical analysis of development concepts. Economic activity and environmental impacts. Sustainable development. Development projects and landscapes in the industrializing world.
Additional Information:
Cultural Literacy: Global Perspectives

GEOG 468. Contemporary Food Systems. 4 Credits.
Explores contemporary food systems at local, national, and global scales. Emphasis on the political economy and sociocultural dynamics linking agriculture, food industries, and consumption.

GEOG 481. GIScience I. 4 Credits.
Introduction to geographic information science, geographic information systems (GIS), the current population survey (CPS), remote sensing, and cartography. Sequence with GEOG 482, GEOG 491.

GEOG 482. GIScience II. 4 Credits.
Spatial data collection, spatial data models, database design, data editing, geographic information system (GIS) project management, and advanced topics in geographic information science. Sequence with GEOG 481, GEOG 491, GEOG 493.
Requisites: Prereq: GEOG 481.

GEOG 485. Remote Sensing I. 4 Credits.
Introduction to remote sensing science including its physical basis, instruments, platforms, data, processing methods, and applications. Sequence with GEOG 486.
Requisites: Prereq: GEOG 481.

GEOG 486. Remote Sensing II. 4 Credits.
The use of digital electromagnetic data for classification, mapping, and monitoring biologic, hydrologic, atmospheric, geologic, and human processes and environmental change. Sequence with GEOG 485.
Requisites: Prereq: GEOG 485.

GEOG 489. Mapping with Drones. 4 Credits.
This course introduces students to the understanding and applying the technologies, theories, and skills needed to acquire drone photography and convert this into maps useful in many professions. Applications include such subjects as resource management, physical environments, topographic mapping, vegetation, and urban characterization.
Requisites: Prereq: GEOG 181, GEOG 485.

GEOG 490. GIScience: [Topic]. 4 Credits.
Advanced topics on geographic information systems science including spatial analysis and modeling, data visualization, cartography, volunteered geographic information, GIS programming.
Requisites: Prereq: GEOG 481.
Repeatable 5 times for a maximum of 24 credits

GEOG 491. Advanced Geographic Information Systems. 4 Credits.
Automated processing of geospatial data using Python scripting language. Programming for spatial analysis such as 3-D and network modeling; processing of big data (satellite imagery, climate data, demographic information). Sequence with GEOG 481, GEOG 482.
Requisites: Prereq: GEOG 482.

GEOG 492. Web Mapping. 4 Credits.
The web is full of maps, from providing context to local and international news to sharing research. We'll explore interactive web mapping, including theories and principles of web mapping, fundamentals of cartography, and user interaction. Students will gather spatial data, develop a story or theme from their data, and produce interactive maps using front-end development.
Requisites: Prereq: GEOG 481.

GEOG 493. Advanced Cartography and Geo-Visualization. 4 Credits.
This course explores advanced concepts in cartography, map design, geovisualization, and data visualization. Students will develop skills in GIS software and graphic design softwares to create a tailored final map design project with real-world data. Sequence with GEOG 393.
Requisites: Prereq: GEOG 393.

GEOG 494. Spatial Analysis. 4 Credits.
Introduction to a variety of spatial analysis techniques that can be used for understanding and modeling geographic phenomena.
Requisites: Prereq: GEOG 481.

GEOG 495. Geographic Data Analysis. 4 Credits.
Analysis and display of geographical data by traditional data-analytical methods and by scientific-visualization approaches.
Requisites: Prereq: GEOG 481.

GEOG 497. Qualitative Methods in Geography. 4 Credits.
Explores conceptual and practical dimensions of qualitative research. Includes linking theory and method; research question formulation; project design; ethics; data gathering, analysis, and presentation.
Requisites: Prereq: one from GEOG 341, GEOG 342, GEOG 343.

GEOG 503. Thesis. 1-16 Credits.
A written document resulting from study or research and submitted as a major requirement for a degree.
Repeatable 99 times

GEOG 507. Seminar: [Topic]. 1-5 Credits.
A small group of students studying a subject with a faculty member. Although practices vary, students may do original research and exchange results through informal lectures, reports, and discussions.
Repeatable 99 times

GEOG 508. Workshop: [Topic]. 1-16 Credits.
An intensive experience, limited in scope and time, in which a group of students focus on skills development rather than content mastery.
Repeatable 99 times

GEOG 510. Experimental Course: [Topic]. 1-4 Credits.
Topics are listed in the class schedule each term.
Repeatable 99 times

GEOG 510L. Experimental Course:[Topic]. 4 Credits.
Experimental course - topic varies.
Repeatable 99 times

GEOG 521. Advanced Climatology: [Topic]. 4 Credits.
Topics in climatology, including physical climatology, dynamic and synoptic climatology, and paleoclimatology.
Repeatable 99 times when topic changes

GEOG 523. Advanced Biogeography: [Topic]. 4 Credits.
Selected topics in biogeography including relation of plants and animals to their environment, historical changes in plant distribution, and palynological analysis. Special fee.
Repeatable 99 times when topic changes

GEOG 525. Hydrology and Water Resources. 4 Credits.
Emphasis on surface water including precipitation, evapotranspiration, surface runoff, and stream flow. Understanding and analysis of processes. Management for water supply and quality. Special fee.

GEOG 527. Fluvial Geomorphology. 4 Credits.
Hydraulics and hydrology of stream channels; channel morphology and processes; drainage network development; fluvial deposits and landforms; field and analytical methods. Required field trips. Special fee.

GEOG 530. Long-Term Environmental Change. 4 Credits.
Evolution of the physical landscape during the Quaternary period. Elements of paleoclimatology, paleoecology, and geomorphology. Required field trips. Special fee.

GEOG 533. Fire and Natural Disturbances. 4 Credits.
Wildfire and other landscape disturbance processes, historical and current patterns of fire, use and management of fire. Offered alternate years.

GEOG 541. Political Geography. 4 Credits.
Spatial perspectives on global political patterns and processes. Relationship of political territories to resources, ethnic patterns, and ideological communities. Impact of political arrangements on landscapes.

GEOG 542. Urban Geography. 4 Credits.
Urbanization throughout the world, the structure of urban settlements; cities as regional centers, physical places, and homes for people; geographic problems in major urban environments.

GEOG 544. Cultural Geography. 4 Credits.
Patterns of culture as a force in human affairs. Dynamics of identity, place, and power. The creation of culture at different scales.

GEOG 545. Culture, Ethnicity, and Nationalism. 4 Credits.
Relationship of ethnic groups and nationality to landscapes, perception, and cultural geographic phenomena. Distribution of ethnic and national groups.

GEOG 548. Tourism and Development. 4 Credits.
Tourism-related concepts and practices associated with tourism planning, development, marketing, and impacts in different geographic contexts.

GEOG 565. Environment and Development. 4 Credits.
Critical analysis of development concepts. Economic activity and environmental impacts. Sustainable development. Development projects and landscapes in the industrializing world.

GEOG 568. Contemporary Food Systems. 4 Credits.
Explores contemporary food systems at local, national, and global scales. Emphasis on the political economy and sociocultural dynamics linking agriculture, food industries, and consumption.

GEOG 581. GIScience I. 4 Credits.
Introduction to geographic information science, geographic information systems (GIS), the current population survey (CPS), remote sensing, and cartography. Sequence with GEOG 582, GEOG 591.

GEOG 582. GIScience II. 4 Credits.
Spatial data collection, spatial data models, database design, data editing, geographic information system (GIS) project management, and advanced topics in geographic information science. Sequence with GEOG 581, GEOG 591, GEOG 593.
Requisites: Prereq: GEOG 581.

GEOG 585. Remote Sensing I. 4 Credits.
Introduction to remote sensing science including its physical basis, instruments, platforms, data, processing methods, and applications. Sequence with GEOG 586.
Requisites: Prereq: GEOG 581.

GEOG 586. Remote Sensing II. 4 Credits.
The use of digital electromagnetic data for classification, mapping, and monitoring biologic, hydrologic, atmospheric, geologic, and human processes and environmental change. Sequence with GEOG 585.
Requisites: Prereq: GEOG 585.

GEOG 589. Mapping with Drones. 4 Credits.
This course introduces students to the understanding and applying the technologies, theories, and skills needed to acquire drone photography and convert this into maps useful in many professions. Applications include such subjects as resource management, physical environments, topographic mapping, vegetation, and urban characterization.
Requisites: Prereq: GEOG 585.

GEOG 590. GIScience: [Topic]. 4 Credits.
Advanced topics on geographic information systems science including spatial analysis and modeling, data visualization, cartography, volunteered geographic information, GIS programming.
Requisites: Prereq: GEOG 581.
Repeatable 5 times for a maximum of 24 credits

GEOG 591. Advanced Geographic Information Systems. 4 Credits.
Socioeconomic analysis with geographic information systems (GIS) and the U.S. census, network modeling, 3-D models of natural and urban landscapes, web-based GIS and programming. Sequence with GEOG 581, GEOG 582.
Requisites: Prereq: GEOG 582.

GEOG 592. Web Mapping. 4 Credits.
The web is full of maps, from providing context to local and international news to sharing research. We'll explore interactive web mapping, including theories and principles of web mapping, fundamentals of cartography, and user interaction. Students will gather spatial data, develop a story or theme from their data, and produce interactive maps using front-end development.

GEOG 593. Advanced Cartography and Geo-Visualization. 4 Credits.
This course explores advanced concepts in cartography, map design, geovisualization, and data visualization. Students will develop skills in GIS software and graphic design softwares to create a tailored final map design project with real-world data.

GEOG 594. Spatial Analysis. 4 Credits.
Introduction to a variety of spatial analysis techniques that can be used for understanding and modeling geographic phenomena.
Requisites: Prereq: GEOG 581.

GEOG 595. Geographic Data Analysis. 4 Credits.
Analysis and display of geographical data by traditional data-analytical methods and by scientific-visualization approaches.
Requisites: Prereq: GEOG 581.

GEOG 597. Qualitative Methods in Geography. 4 Credits.
Explores conceptual and practical dimensions of qualitative research. Includes linking theory and method; research question formulation; project design; ethics; data gathering, analysis, and presentation.

GEOG 601. Research: [Topic]. 1-16 Credits.
Disciplined inquiry of a topic with varying techniques and assignments suited to the nature and conditions of the problem being investigated. Often pursued in relation to a dissertation or thesis.
Repeatable 99 times

GEOG 603. Dissertation. 1-16 Credits.
A written document resulting from study or research and submitted as a major requirement for a degree.
Repeatable 99 times

GEOG 605. Reading and Conference: [Topic]. 1-16 Credits.
A particular selection of material read by a student and discussed in conference with a faculty member.
Repeatable 99 times

GEOG 606. Practicum: [Topic]. 1-16 Credits.
A series of clinical experiences under academic supervision designed to integrate theory and principles with practice.
Repeatable 99 times

GEOG 607. Seminar: [Topic]. 1-5 Credits.
A small group of students studying a subject with a faculty member. Although practices vary, students may do original research and exchange results through informal lectures, reports, and discussions.
Repeatable 99 times

GEOG 608. Workshop: [Topic]. 1-16 Credits.
An intensive experience, limited in scope and time, in which a group of students focus on skills development rather than content mastery.
Repeatable 99 times

GEOG 609. Terminal Project. 1-12 Credits.
A presentation incorporating the knowledge and skills acquired from course work completed for a degree.
Repeatable 99 times

GEOG 610. Experimental Course: [Topic]. 1-5 Credits.
Experimental course - topic varies.
Repeatable 99 times

GEOG 611. Theory and Practice of Geography I. 4 Credits.
Introduction to professional practice in geography and the development of geographic concepts and theories from Ancient times through the mid-twentieth century. Sequence with GEOG 612, GEOG 613.

GEOG 612. Theory and Practice of Geography II. 4 Credits.
The development of geographic concepts and theories from the mid-20th century to the present. Students learn to refine effective geographic research questions. Sequence with GEOG 611 and GEOG 613.
Requisites: Prereq: GEOG 611.

GEOG 613. Research Design. 4 Credits.
Examines main components of research design, including research questions, methodological approach, institutional review boards, funding programs, proposal writing, and application. Sequence with GEOG 611 and GEOG 612.
Requisites: Prereq: GEOG 612.

GEOG 631. Progress in Physical Geography. 1 Credit.
Recent developments in climatology, geomorphology, hydrology, and biogeography. Lectures, readings, and presentation of faculty and student works in progress.
Repeatable 11 times for a maximum of 12 credits

GEOG 632. Progress in Human Geography. 1 Credit.
Recent developments in cultural, economic, environmental and political geography. Lectures, readings, and presentation of faculty and student works in progress.
Repeatable 11 times for a maximum of 12 credits

GEOG 633. Progress in Geographic Information Science. 1 Credit.
Recent developments in cartography, GIS, remote sensing, data analysis, and visualization. Lectures, readings, and presentation of faculty and student works in progress.
Repeatable 11 times for a maximum of 12 credits