

GEOGRAPHY (GEOG)

GEOG 1022 Climate Change and Humanity (N)

Description: Focus on the development of scientific inquiry and critical thinking skills needed to evaluate complex relationships among climate, energy production, and the environment. Students will explore causes and consequences of climate change and consider climate change science from alternative perspectives. Same course as GEOL 1022.

Credit hours: 2

Contact hours: Lecture: 2 Contact: 2

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Natural Sciences

GEOG 1113 Introduction to Cultural Geography (IS)

Description: Surveys the principles of human geography by exploring the world's diverse patterns of culture and associated cultural landscapes. Examination of global patterns of population; language; religion; ethnic, national, and sexual identities; the development of regions, cities, and industry; food production and environmental change, especially as they are affected by globalization.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 1114 Introduction to Physical Geography (LN)

Description: Study of the atmosphere, hydrosphere, lithosphere, and biosphere—the major realms that interact to create Earth's environmental patterns. Human-environmental interactions are emphasized as the environment affecting people and people affecting the environment. The lab rounds out knowledge in course themes through hands on study of maps, GPS, and environmental processes.

Credit hours: 4

Contact hours: Lecture: 3 Lab: 2 Contact: 5

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

General Education and other Course Attributes: Scientific Investigation, Natural Sciences

Additional Fees: Geography Field Trip fee of \$43 applies.

GEOG 1713 Regions & Nations in Global Context (IS)

Description: A regional approach to the study of human societies and the makeup of nations around the world, with an emphasis on contemporary issues such as climate change, sustainability and other environmental impacts; population and immigration; cultural, religion and language; and economic characteristics such as wealth disparities, poverty and education. This course covers many distinct world regions in each region such as Europe, Latin America, the Middle East and Southeast Asia. Previously offered as GEOG 2253. Same course as GLST 1713.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 2002 Global Sustainability (N)

Description: This course examines questions of sustainability and sustainable development in a global context from environmental, social, and economic perspectives. Emphasis is placed on how different dimensions of sustainability interact, and how those interactions are shaped by regional context in a globalized world. Through discussion of policy and current environmental issues around the world, students will learn to analyze relationships and tradeoffs between humans and their environment. Same course as GLST 2002.

Credit hours: 2

Contact hours: Lecture: 2 Contact: 2

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Natural Sciences

GEOG 2103 Global Perspectives (IS)

Description: Introduces students to the cultural, economic, and political aspects of globalization and global issues. Emphasizes the relationship between tradition and change, the interconnectedness of people, places, and institutions, aspects of social and economic development, and the evolving role of technology in creating and sustaining a globalized world. Also introduces students to possible career options. Same course as GLST 2103.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 2344 Digital Tools for Environmental Problem-Solving (LN)

Description: This course provides an introduction to some cool tools for environmental problem-solving. These tools mainly include the Global Positioning System (GPS), geographic information systems (GIS), and remote sensing, also referred to as geospatial technologies. With a combination of lectures and hands-on exercises, students will become familiar with the fundamentals of these cool tools, and their applications in the environment such as in public health, climate change, water resource, food security, disaster assessment and recovery, deforestation.

Credit hours: 4

Contact hours: Lecture: 3 Lab: 2 Contact: 5

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

General Education and other Course Attributes: Scientific Investigation, Natural Sciences

GEOG 2890 Honors Experience in Geography

Prerequisites: Honors Program participation and concurrent enrollment in a designated GEOG course.

Description: A supplemental Honors experience in Geography to partner concurrently with designated Geography courses (GEOG 1113, 1114, and 1713). This course adds a different intellectual dimension to the designated courses. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

Credit hours: 1

Contact hours: Lecture: 1 Contact: 1

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Honors Credit

GEOG 3023 Climatology (N)

Description: A non-quantitative introduction to characteristics and distributions of long-term patterns in the atmosphere. Patterns and associations of temperature, precipitation, pressure and winds. Physical processes, regional climates of Earth, climate change, and applications of climate to agriculture, industry, and other human activities.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Natural Sciences

GEOG 3033 Meteorology (N)

Description: A non-quantitative introduction to weather. Physical elements that cause and influence the atmosphere over the short term. Energy, moisture, and storms. Interpretation of weather maps and satellite imagery.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Natural Sciences

GEOG 3053 Introduction to Central Asia Studies

Description: A comprehensive view of newly-emerged Central Asian states, examining the history, politics, economics, geography, and culture of Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan as reflected in their thoughts, religion, literature, and architecture in the past, and the strategic importance of their natural wealth for the present and future. Same course as GLST 3053, HIST 3053, POLS 3053 & RUSS 3053.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Social & Behavioral Sciences

GEOG 3063 Economic Meteorology

Description: Economic impact of weather ranging from consumer spending to agriculture and energy commodity markets. Specific weather events, and their associated economic impact, weather and climate forecasting and methods for eliminating weather risk.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 3093 Historical Geography of North America to 1800 (H)

Description: This course is an examination of the cultural geography of colonial North America from the earliest European contact with Native Americans to the end of the 18th Century. The course examines regional patterns of indigenous American Indian settlement, European exploration, trade, colonization. Immigration, impacts upon indigenous societies, and the development of preindustrial economic regions. Students will gain an appreciation of the interactions of various indigenous, European, and African peoples in different environments in the colonial era. Same course as HIST 3093.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Humanities

GEOG 3113 Global Water Resources: Sustainability & Justice

Description: Water resources are key to the success of societies in all of their various forms. This course introduces students to fundamental concepts of water resources, including the natural processes of the hydrological cycle, management of water resources, and societal threats to sustaining water quantity and quality. Students in this course will develop an awareness and appreciation of the multiple perspectives about water as a precious resource, commodity, and point of justice. Same course as GLST 3113.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 3123 Urban Geography (S)

Description: This course seeks to explain the evolving pattern of North American cities and their antecedents in terms of the distribution and movement of people and resources as well as the effects of changes in transportation and communication technology. In addition, a careful analysis of the development and internal spatial structure of North American cities will be carried out. Much class time will be spent on discussion of contemporary urban problems such as segregation, unequal investment, and control of urban public space as well as attempts at their solution.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Social & Behavioral Sciences

GEOG 3133 Political Geography (IS)

Description: Political structures, relationships and geopolitical implications of location, boundaries, culture and the natural environment of nations and states. Global patterns of political behavior, political history, international law and geostrategy.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 3153 Conservation of Natural Resources (S)

Description: A focus on the stewardship and sustainable management of our natural resources. Problems and corrective methods in the conservation of land, water, forests, wildlife, and mineral resources. Key themes include the relationships between human and environmental systems, degraded landscape restoration, environmental policy and compliance, and economic implications of natural resource management.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Social & Behavioral Sciences

GEOG 3163 Economic Geography (S)

Description: Processes significant to the spatial structure of economic systems. Production, consumption and exchange activities examined in regard to location, distribution, aerial differentiation and spatial interaction patterns. Attention given to processes of change as well as to steady states.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Social & Behavioral Sciences

GEOG 3173 Cultural Geography (S)

Description: Geographic impact of human cultures. Emphasis on the concepts of social space, density, crowding, territoriality, diffusion, migration, environmental perception and cultural landscape.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Social & Behavioral Sciences

GEOG 3183 Transportation Geography

Description: Basic concepts and theories of transportation geography, selected transportation models and analysis methods related to spatial interactions, network analysis, allocation, and urban transportation planning.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 3203 Contemporary Issues in Geotechnology

Description: A look at critical issues currently facing the geography and geotech communities. Topics will include data sources, privacy, surveillance, internet censorship, big data, and the spaces and politics of code to discuss the impacts of technology on society.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 3213 Digital Worlds: Culture, Identity, and Community (H)

Description: An introduction to the geographies of communication and media in the context of recent technological changes. Students will learn how online and offline spaces are created and interact as a result of social media and telecommunications technology. Topics include: geographies of the internet, the digital divide, media culture, video game spaces, and online politics.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Humanities

GEOG 3243 Legal Geography of Native America, Sovereign Tribal Nations, and Indian Country (DS)

Description: Geographical perspective on the evolution of U.S. federal Indian law and policy through an examination of case and statute law. Examination of tribal sovereignty and jurisdiction over lands in aboriginal title and federal trust, and how land defines indigenous identities and affects tribal-state relations.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Diversity, Social & Behavioral Sciences

GEOG 3333 Spatial Analysis (A)

Prerequisites: STAT 2013 or STAT 2023 or STAT 2053 or STAT 4013 or STAT 4053.

Description: An introductory course in the application of basic statistical methods to spatial problems, including descriptive statistics, probability distributions, point and interval estimation, hypothesis testing, correlation, and simple linear regression. Emphasizes the challenges of working with spatial datasets and choosing appropriate methods of analysis, as well as explicitly spatial methods such as spatial sampling, point and area pattern analysis, and spatial autocorrelation. Provides a foundation for further study in geospatial technologies.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Analytical & Quant Thought

GEOG 3373 Health and Maps

Description: How does where people live affect their health? How does the infectious disease spread across places? Health geography provides unique and powerful insights for understanding connections between wellness and place. This course will introduce basic concepts and tools of maps, Geographic Information Systems (GIS), and map analysis. It will also demonstrate their application in the context of public health, including infectious disease, environmental health, urban health, health resource accessibility, and more.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

GEOG 3703 Geography Of Oklahoma (S)

Description: Introduction to geography's regional approach through an examination of the cultural and environmental patterns of the State of Oklahoma. Systematic examination of physical regions, natural vegetation, wildlife and resource bases. Exploration of diverse Native American communities as well as European ethnic and African American settlement. Focus on evolving agricultural regions and the mineral industries and population dynamics in both rural and urban areas. Emphasis on cultural landscapes and representation of Oklahoma in popular culture.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Social & Behavioral Sciences

GEOG 3713 Exploring North America and Diversity (DS)

Description: This course presents a regional analysis of the United States and Canada, including physical and cultural landscapes, population and migration trends, regional development, natural resources, and U.S.-Canada relations as well as global relations. In addition, it emphasizes diversity in both countries, with special attention to those geographies of under-represented and minority groups in the U.S. May not be used for degree credit with GLST 3713.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Diversity, Social & Behavioral Sciences

GEOG 3723 Europe (IS)

Description: This course examines the cultural, economic, and natural diversity of Europe in relation to globalization, climate change, and popular culture. Basic geographic concepts such as migration, region, and culture will be linked to European current events. Students will learn to properly utilize online sources to understand current European issues and their relationship to other countries and regions around the world. May not be used for degree credit with GLST 3723.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 3733 Russia and Its Neighbors (IS)

Description: A regional survey course of Eurasia extending from Central Europe to Western Siberia. Central and Southwest Asia will not be considered in this course. Thematic contemporary issues in the region will be covered, including topics on culture, politics, social issues, economic development, and others. May not be used for degree credit with GLST 3733.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 3743 Latin America (IS)

Description: A regional analysis of physical, cultural and economic features of historic and contemporary Latin America. Key themes include people and environment, development and change, government and conflict, and globalization and social change. Same course as GLST 3743.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 3753 Asia (IS)

Description: A regional survey course of Asia from Pakistan in the west to the Asian littoral in the east, including Japan, Taiwan, and the Philippines. Central and Southwest Asia will not be considered in this course. Regionally, Asia will be approached through examination of two great cultural focal points: India and China. Thematic contemporary issues in Asia will be covered, including topics on culture, politics, social issues, economic development, and others. Same course as GLST 3753.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 3763 Africa (IS)

Description: An exploration of the patterns and impact of population, cultural heritage, and natural resources to build an understanding and experience with Africa. Historic and contemporary relationships between Africa and Western civilization. Key themes include traditions and lifeways, development and change, government and conflict, and people and environment. Same course as GLST 3763.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 3783 The Middle East (IS)

Description: A regional analysis of the Arab, Persian and Turkic lands that builds an understanding and experience with the Middle East. Historic and contemporary patterns highlight both tradition and modernity. Key themes include lifeways and social change, development and globalization, international relations and conflict, and natural resources and environment. Same course as GLST 3783.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 3793 Australia and the Pacific Realm (IS)

Description: Study of Australia, New Zealand, and the island regions of Micronesia, Melanesia, and Polynesia. Course examines the cultural and natural diversity of these regions in relation to globalization, climate change, and popular culture. Course covers enduring cultural traditions, legacies of external involvement, changing livelihoods and landscapes, and the region's role in global affairs. Same course as GLST 3793.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension, Social & Behavioral Sciences

GEOG 3910 Applied Geographical Topics

Description: Specialized physical, human, regional, or technical issues and trends in geography. Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.

Credit hours: 1-3

Contact hours: Lecture: 1-3 Contact: 1-3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 3990 Geography Teaching Practicum

Prerequisites: Consent of instructor.

Description: For outstanding students. Students will work with a faculty instructor and assist in many aspects of teaching including guest lecturing, offering study sessions, office hours, among other duties as determined by instructor. May involve meetings and written papers. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

Credit hours: 1-6

Contact hours: Contact: 1-6 Other: 1-6

Levels: Undergraduate

Schedule types: Independent Study

Department/School: Geography

GEOG 4003 Natural Hazards and Society

Description: Explores natural hazards and how humans respond and contribute to these hazards and how humans respond and contribute to these hazards and disasters such as earthquakes, extreme weather events and volcanic eruptions. The course will also examine how hazards impact society, how society deals with disasters, and how we can mitigate the effects of such events.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4023 Geography of Arid Lands (N)

Description: The course explores the world of deserts and semideserts, which together cover almost a half of the Earth's land surface, and almost a third of North America's. The course focuses on the nature of dryland environments (geology, landform processes, climate, water resources, and ecosystems) and the challenges faced by human communities living in such environments. The course also explores the concepts of drought and the process of desertification around the world. Same course as GEOG 5023.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Natural Sciences

GEOG 4053 Biogeography

Description: Biogeography is the study of spatial patterns of biological diversity and its causes. Biogeographers synthesize information from a very broad range of fields, including geology, ecology, paleontology, and climatology. This course reviews topics such as the dynamics of biological distributions, speciation, extinction, and dispersals, island biogeography, and applications to species and biodiversity mapping, and the design and management of reserves and other protected natural territories. May not be used for degree credit with GEOG 5053.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4063 Geoarchaeology and Environmental History

Description: Theoretical and methodological aspects of geoarchaeology, a discipline that aims at recovering field data for reconstructing environment-society relationships of the past. Key themes include climate change and human-induced land transformation as demonstrated through interdisciplinary research in different geomorphic contexts and cultural groups (hunter gatherers, agriculturalists, and urbanites) from around the world. Meets with GEOG 5063. No credit for students with credit in GEOG 5063.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4073 Climate Change: Past, Present, and Future

Description: Aims at understanding and discussing the mechanisms of global climate change and how they have functioned in our past, in the recent decades and how scientists predict possible changes in the near and distant future. Meets with GEOG 5073. No credit for students with credit in GEOG 5073.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4083 Geography of Grass-Dominated Ecosystems

Description: This course is an analysis of the nature and distribution of grass-dominated ecosystems (grasslands, savannas, and grassy tundras) around the world with emphasis on 1) co-evolutionary development with climate, herbivore, fire, and humans, 2) the grass-dominated ecosystems around the world, and 3) the challenges faced by these ecosystems in the context of modern global climate change and human development. Meets with GEOG 5083. No credit for students with credit in GEOG 5083.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4103 Historical Geography of North America since 1800 (H)

Description: Examination of North American development over the 19th Century, with emphasis on the transformation of environments, landscapes and culture regions. Investigation of settlement frontiers, indigenous dispossession, transport integration, resource exploitation, economic specialization, sectional divergence, industrialization, immigration, and urbanization. Same course as HIST 4103.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Humanities

GEOG 4113 Environment and Development

Description: Focuses on the relationship between people and poverty, environment, and development under different international contexts. The course covers competing theories of environment-development drawing from neoclassical economics and modernization agendas, to criticisms from postcolonial theory and beyond. Special emphasis is placed on diverse voices from the Global South, sustainable development, gender, race and nature, and new social movements. May not be used for degree credit with GEOG 5133.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4123 Geographical Aspects of Urban Planning

Description: Spatial aspects of urban planning: development of planning theory, various planning tools, and specific problem areas such as urban renewal and urban transportation. May not be used for degree credit with GEOG 5213.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4143 Geography of Travel and Tourism

Description: A systematic and comprehensive analysis of the geographical dimensions of tourism, illustrating the relevance of a spatial perspective to tourism planning, development, and management. Economic, social, and environmental impact of both domestic and international tourism considered. May not be used for degree credit with GEOG 5143.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4153 Geography of Outdoor Recreation

Description: Analysis of patterns of outdoor recreation with an emphasis on land-use planning in park and wildland areas. Demand forecasting methods, the analysis of the socioeconomic and spatial impacts of recreation facilities provision and visitor management practices. May not be used for degree credit with GEOG 5153.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4163 Resource Management in the National Parks

Description: Contemporary resource management issues in U.S. National Park units. The role of human and natural processes in the management of water, air, biotic and cultural resources. No credit for students with credit in GEOG 5163.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4203 Fundamentals of Geographic Information Systems

Description: Geographic Information Systems (GIS) are pivotal in the analysis and management of geographic data. They are used to link environmental, social, and economic data to locations on earth and explore the relationships, trends, and patterns that emerge. This course introduces the concepts, principles, and theories behind GIS, with emphasis on the nature of geographic information, methods for data collection, data models for storing geographic information, techniques for data input and manipulation, and basic spatial analysis. Previously offered as GEOG 2343. May not be used for degree credit with GEOG 5103.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

GEOG 4213 Sport, Place and Society (S)

Description: Spatial analysis of sport; its origin and diffusion, geographical organization and regional variation. Geographical movements and interaction associated with sport. Application of geographical solutions for reorganization and reform. Focus on both U.S. and international scene.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Social & Behavioral Sciences

GEOG 4223 Geography of Music (H)

Description: Geographical and historical analysis of music as a cultural trait. The cultural significance of music and how it varies from place to place as well as how it helps shape the character of a place.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Humanities

GEOG 4233 Human Dimensions of Global Environmental Change

Description: Discusses the current global environmental science research agendas called for by the international community, explores the arguments set forth regarding global environmental change, and looks at the current explanations and theories explaining the human dimensions of land-use/cover-change (lucc). Special emphasis is on alternative, competing visions, and needs of developing countries within the context of economic development and global environmental change. Meets with GEOG 5233. No credit for students with credit in GEOG 5233.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4263 Geospatial Applications for Unmanned Aerial Systems

Prerequisites: Consent of instructor.

Description: Provides theoretical foundation for use of unmanned aerial systems (UAS) to collect geospatial data for analysis. Examines principles of remote sensing, photogrammetry, and GIS relevant to UAS. Enabling technologies (sensors, GPS), data collection procedures, data processing (structure from Motion algorithms), data products (point clouds, orthophotos), and appropriate analysis techniques are investigated. Geospatial application areas include terrain modeling, resource management, agriculture, forestry/vegetation, natural disasters, and geomorphology. May not be used for degree credit with GEOG 5263.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4273 Land Use Science

Description: Basic understanding of human land use history and changes. Evaluation of land use impacts on environment, climate, and public health. Introduction to land use monitoring and modeling using geospatial technologies. Meet with GEOG 5273. No credit for students with credit in GEOG 5273.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4303 Applications of the Global Positioning System in Field Research

Description: Theory and applications of the Global Positioning System (GPS), focusing on accuracy issues in field data collection and integration with geographic information systems (GIS). Use of both recreation and mapping grade receivers. May not be used for degree credit with GEOG 5503.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4313 Field Techniques and Geodata Collection

Prerequisites: Senior standing in GEOG or consent of instructor.

Description: Application of the concepts, methods, and field techniques for geographical analysis and research, including data acquisition, manipulation, analysis, and the presentation of results. Capstone course. Field trips.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4323 Mapping in Modern Society

Description: Thematic mapping and geovisualization of socioeconomic, cultural, and natural resource information. Discussion and application of various map design and layout techniques. Topics include the history of maps their types and usages, the various elements of a map layout, and how maps enable us to communicate spatial information in our modern world.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

GEOG 4333 Remote Sensing

Description: Introductory course in remote sensing focusing on digital image processing. Topics include data collection via satellites and unmanned aerial systems (a.k.a. drones), principles of electromagnetic radiation, multispectral, thermal, and light detection and ranging (LIDAR), and field data collection. Discussions focus on environmental applications including: agriculture, natural resource management, climate, geography, and wildlife management. Hands-on exposure to current image processing software. Meets with GEOG 5333. May not be used for degree credit with GEOG 5333.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

GEOG 4343 Geographic Information Systems: Resource Management Applications

Prerequisites: GEOG 4203.

Description: Provides a theoretical and practical understanding of geographic information systems and its applications in natural resource management. Introduces industry popular GIS software for spatial and aspatial data analysis. Explores specific conditions, requirements, and processing considerations that allow geospatial data to be manipulated for problem solving. Meets with GEOG 5323. No degree credit for students with credit in GEOG 5323.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

GEOG 4353 Geographic Information Systems: Socioeconomic Applications

Prerequisites: GEOG 4203.

Description: Theory and principles of geographic information systems (GIS) applied to socioeconomic problems, including location-allocation, market area determination, network analysis and analysis of demographic characteristics. May not be used for degree credit with GEOG 5253.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4373 Geographic Information Systems in Public Health

Prerequisites: GEOG 4203.

Description: Qualitative and quantitative analysis of public health issues from two geographic perspectives: human environment and spatial. Topics include medical geography, disease mapping, spatial data for public health, and basics and applications of spatial statistics, geographic information system and remote sensing. Lectures are combined with case studies and lab illustrations throughout the course.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4383 Introduction to GIS Programming

Prerequisites: GEOG 4203.

Description: Designed to provide students with an introduction to basic programming concepts and how such concepts specifically apply to GIS and other geographically oriented applications. The course will cover some basic concepts, discuss Python and Model Builder for ArcGIS, KML/KMZ for Google Earth/Maps, and introduce some basic concepts of mobile mapping development in Android. May not be used for degree credit with GEOG 5383.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4443 Sustainable Tourism and Geography

Prerequisites: Junior or senior standing or consent of instructor.

Description: This course examines sustainable tourism from a cultural and environmental perspective. It discusses concepts and theories of sustainability and tourism, including human rights, environmental justice, and ethics, emphasizing the global environmental and social effects and possibilities of tourism. The course addresses management concepts, sectoral approaches, transport and mobility themes, and emerging issues in the context of sustainability. May not be used for degree credit with GEOG 5443. Same course as GLST 4443 and HRAD 4183.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

GEOG 4453 Black Geographies & Memorialization in the Landscape (DH)

Prerequisites: Junior or senior standing or consent of instructor.

Description: How and why have African American people sought to memorialize their history in public places? How have Black counterpublics shaped discourse on memorials to African American history? What has this discourse done to the field of landscape and memory studies? To explore these questions, this course is organized around memory in the landscape as it relates to black geographies, including, for example, slavery, the Civil War, civil rights, and the Tulsa Race Massacre in the United States. Approaches may be comparative or transnational. Same course as AMST 4453 and AFAM 4453. May not be used for degree credit with GEOG 5453.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: Diversity, Humanities

GEOG 4510 Senior Project

Prerequisites: Senior standing and consent of instructor.

Description: Individually designed projects involving laboratory work, field work, library research or a combination of these. Offered for variable credit, 1-3 credit hours, maximum of 3 credit hours.

Credit hours: 1-3

Contact hours: Contact: 1-3 Other: 1-3

Levels: Undergraduate

Schedule types: Independent Study

Department/School: Geography

GEOG 4600 Geography Study Abroad (I)

Description: Participation in an international experience sponsored by the Department of Geography. Study Abroad courses typically involve the study of a country or region to provide an integrated understanding, through research and personal experience, of relevant cultural, historical, political, economic and environmental issues. Offered for variable credit, 1-3 credit hours, maximum of 12 credit hours.

Credit hours: 1-3

Contact hours: Lecture: 1-3 Contact: 1-3

Levels: Undergraduate

Schedule types: Lecture

Department/School: Geography

General Education and other Course Attributes: International Dimension

GEOG 4663 Web GIS: Trends, Principles, and Applications

Prerequisites: GEOG 4203.

Description: Web GIS has immense applicability to business, health, economics, transportation, and more. This course is designed to increase students' knowledge of Web GIS and cutting-edge GIS skills. It introduces basic Web GIS concepts, principles, techniques, including web mapping applications. In addition, this course offers essential web programming skills to build customized online maps. May not be used for degree credit with GEOG 5663.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Undergraduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

GEOG 4910 Topics In Geography

Prerequisites: Consent of instructor.

Description: Specialized physical, social and methodological topics in geography. Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.

Credit hours: 1-3

Contact hours: Contact: 1-3 Other: 1-3

Levels: Undergraduate

Schedule types: Independent Study

Department/School: Geography

GEOG 4930 Readings in Geography

Prerequisites: Consent of instructor.

Description: Directed readings on selected topics, regions or methods in geography. Offered for variable credit, 1-3 credit hours, maximum of 3 credit hours.

Credit hours: 1-3

Contact hours: Contact: 1-3 Other: 1-3

Levels: Undergraduate

Schedule types: Independent Study

Department/School: Geography

GEOG 4940 Undergraduate Cooperative Education Internship

Prerequisites: Consent of departmental internship coordinator and undergraduate committee.

Description: Practical experience in applying geographical concepts and tools to business or governmental problems. Emphasis on educational aspects of applying discipline-related tools to real-world problems. Credit not available for regular employment positions; must have fixed start/end dates. Offered for variable credit, 1-3 credit hours, maximum of 3 credit hours.

Credit hours: 1-3

Contact hours: Contact: 1-3 Other: 1-3

Levels: Undergraduate

Schedule types: Independent Study

Department/School: Geography

GEOG 4943 Geospatial Information Science Internship/Research Capstone

Description: Provides an opportunity to apply knowledge accumulated throughout previous geospatial coursework with a structured off-campus internship or on-campus research capstone. Practical, applied geospatial experience is gained by working with an internship supervisor at a public or private entity in consultation with an affiliated geography faculty member. Alternatively, research-oriented experience is gained through direct collaboration with an affiliated geography faculty member. For both options, student duties may include field-based data collection, data processing, computer programming, spatial analysis/modeling, map and graphics production, oral presentation, and/or writing.

Credit hours: 3

Contact hours: Contact: 3 Other: 3

Levels: Undergraduate

Schedule types: Independent Study

Department/School: Geography

GEOG 4993 Senior Honors Thesis

Prerequisites: Departmental invitation, senior standing, Honors Program participation.

Description: A guided reading and research program ending with an honors thesis under the direction of a senior faculty member, with second faculty reader, both of whom will be present at an oral defense of the thesis. Required for graduation with honors in geography.

Credit hours: 3

Contact hours: Contact: 3 Other: 3

Levels: Undergraduate

Schedule types: Independent Study

Department/School: Geography

General Education and other Course Attributes: Honors Credit

GEOG 5000 Thesis

Prerequisites: Consent of adviser or major professor.

Description: Open only to students working on the master's degree in geography. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

Credit hours: 1-6

Contact hours: Contact: 1-6 Other: 1-6

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 5001 Professional Development in Geography

Description: Introduction and orientation to the graduate program in the Department of Geography.

Credit hours: 1

Contact hours: Lecture: 1 Contact: 1

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5023 Geography of Arid Lands

Description: The course explores the world of deserts and semi-deserts, which together cover almost a half of the Earth's land surface, and almost a third of North America's. The course focuses on the nature of dryland environments (geology, landform processes, climate, water resources, and ecosystems) and the challenges faced by human communities living in such environments. The course also explores the concepts of drought and the process of desertification around the world. Same course as GEOG 4023.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5053 Biogeography

Description: Biogeography is the study of spatial patterns of biological diversity and its causes. Biogeographers synthesize information from a very broad range of fields, including geology, ecology, paleontology, and climatology. This course reviews topics such as the dynamics of biological distributions, speciation, extinction, and dispersals, island biogeography, and applications to species and biodiversity mapping, and the design and management of reserves and other protected natural territories. May not be used for degree credit with GEOG 4053.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5063 Geoarchaeology and Environmental History

Description: Theoretical and methodological aspects of geoarchaeology, a discipline that aims at recovering field data for reconstructing environment-society relationships of the past. Key themes include climate change and human-induced land transformation as demonstrated through interdisciplinary research in different geomorphic contexts and cultural groups (hunter gatherers, agriculturalists, and urbanites) from around the world. Meets with GEOG 4063. No credit for students with credit in GEOG 4063.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5073 Climate Change: Past, Present and Future

Description: Aims at understanding and discussing the mechanisms of global climate change and how they have functioned in our past, in the recent decades and how scientists predict possible changes in the near and distant future. Meets with GEOG 4073. No credit for students with credit in GEOG 4073.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5083 Geography of Grass-Dominated Ecosystems

Description: This course is an analysis of the nature and distribution of grass-dominated ecosystems (grasslands, savannas, and grassy tundras) around the world with emphasis on 1) co-evolutionary development with climate, herbivore, fire, and humans, 2) the grass-dominated ecosystems around the world, and 3) the challenges faced by these ecosystems in the context of modern global climate change and human development. Meets with GEOG 4083. No credit for students with credit in GEOG 4083.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5103 Fundamentals of Geographic Information Systems

Description: Geographic Information Systems (GIS) are pivotal in the analysis and management of geographic data. They are used to link environmental, social, and economic data to locations on earth and explore the relationships, trends, and patterns that emerge. This course introduces the concepts, principles, and theories behind GIS, with emphasis on the nature of geographic information, methods for data collection, data models for storing geographic information, techniques for data input and manipulation, and basic spatial analysis. May not be used for degree credit with GEOG 4203.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Graduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

GEOG 5113 Landscape Ecology

Prerequisites: Graduate standing and BIOL 3034 or consent of instructor.

Description: Principles of landscape ecology, including structure and function of landscape elements such as patch, corridor, boundary, and matrix. Role of geographic processes, climate, biota, disturbance, and human influences in landscape structure and function. Interaction among landscape elements and role of landscape structure in ecosystem and landscape dynamics. Applications of landscape ecology to biodiversity conservation, wildlife management, and landscape planning. Survey of quantitative methods used in landscape ecology.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5123 International Resource Management**Prerequisites:** Graduate standing.**Description:** Spatial perspectives on the assessment and management of natural resources. The role of resources in world trade, security and international environmental concerns.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5133 Environment and Development****Description:** Focuses on the relationship between people and poverty, environment, and development under different international contexts. The course covers competing theories of environment-development drawing from neoclassical economics and modernization agendas, to criticisms from postcolonial theory and beyond. Special emphasis is placed on diverse voices from the Global South, sustainable development, gender, race and nature, and new social movements. May not be used for degree credit with GEOG 4113.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5140 Seminar in Cultural Geography****Prerequisites:** Graduate standing in geography or consent of the instructor.**Description:** A study of the methodological and theoretical development of cultural geography, one of geography's major subdisciplines. Course is structured around the social and political implications of ways of seeing, and what these have meant for encountering and understanding cultural difference. Emphasis on reading the cultural landscape and interrogating how the landscape reinforces certain ideologies, values, and aesthetics. Critical analysis of geographical representations found in place images, popular culture, and art in relation to social power, race, gender, and identity. Offered for variable credit, 1-3 credit hours, maximum of 9 credit hours.**Credit hours:** 1-3**Contact hours:** Contact: 1-3 Other: 1-3**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Geography**GEOG 5143 Geography of Travel and Tourism****Description:** A systematic and comprehensive analysis of the geographical dimensions of tourism, illustrating the relevance of a spatial perspective to tourism planning, development, and management. Economic, social, and environmental impact of both domestic and international tourism considered. May not be used for degree credit with GEOG 4143.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5150 Geography of Sport, Recreation and Leisure Seminar****Description:** This seminar is comprised of an advanced analysis of one or more topics in Sport Geography. The topics can include both cultural and economic issues in the spatial distribution of sport, or any other spatial aspect of the play, diffusion, or impact of sport. The seminar will also focus on student research activities on specific topics to sport geography. Offered for variable credit, 1-3 credit hours, maximum of 3 credit hours.**Credit hours:** 1-3**Contact hours:** Lecture: 1-3 Contact: 1-3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5153 Geography of Outdoor Recreation****Description:** Analysis of patterns of outdoor recreation with an emphasis on land-use planning in park and wildland areas. Demand forecasting methods, the analysis of the socioeconomic and spatial impacts of recreation facilities provision and visitor management practices. May not be used for degree credit with GEOG 4153.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5163 Resource Management in the National Parks****Description:** Contemporary resource management issues in U.S. National Park units. Focus on the role of human and natural processes in the management of water, air, biotic and cultural resources. No credit for students with credit in GEOG 4163.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5183 Topics in Transportation Geography****Description:** Examination of a selected set of advanced topics in transportation geography, including network analysis, facility location problems, intelligent transportation systems and geographic information systems and logistics.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5213 Geographical Aspects of Urban Planning****Description:** Spatial aspects of urban planning: development of planning theory, various planning tools, and specific problem areas such as urban renewal and urban transportation. May not be used for degree credit with GEOG 4123.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography

GEOG 5233 Human Dimensions of Global Environmental Change

Description: Discusses the current global environmental science research agendas called for by the international community, explores the arguments set forth regarding global environmental change, and looks at the current explanations and theories explaining the human dimensions of land-use/cover-change (LUCC). Special emphasis is on alternative, competing visions, and needs of developing countries within the context of economic development and global environmental change. Meets with GEOG 4233. No credit for students with credit in GEOG 4233.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5243 Geography of the World's Indigenous Peoples

Prerequisites: Graduate standing and consent of instructor.

Description: A regional survey of indigenous assertions of cultural, political and economic self-determination outside the United States. Native land claims, impact of regional development and environmental issues upon indigenous communities, and their efforts to establish geopolitical autonomy.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5253 Geographic Information Systems: Socioeconomic Applications

Prerequisites: GEOG 4203.

Description: Theory and principles of geographic information systems (GIS) applied to socioeconomic problems, including location-allocation, market area determination, network analysis and analysis of demographic characteristics. May not be used for degree credit with GEOG 4353.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5263 Geospatial Applications for Unmanned Aerial Systems

Prerequisites: Consent of instructor.

Description: Provides theoretical foundation for use of unmanned aerial systems (UAS) to collect geospatial data for analysis. Examines principles of remote sensing, photogrammetry, and GIS relevant to UAS. Enabling technologies (sensors, GPS), data collection procedures, data processing (Structure from Motion algorithms), data products (point clouds, orthophotos), and appropriate analysis techniques are investigated. Geospatial application areas include terrain modeling, resource management, agriculture, forestry/vegetation, natural disasters, and geomorphology. May not be used for degree credit with GEOG 4263.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5273 Land Use Science

Description: Basic understanding of human land use history and changes. Evaluation of land use impacts on environment, climate, and public health. Introduction to land use monitoring and modeling using geospatial technologies. Meets with GEOG 4273. No credit for students with credit in GEOG 4273.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5303 Geographic Analysis I

Prerequisites: One course in statistics.

Description: An intermediate course in the application of statistical methods to spatial problems. Focuses on multivariate methods (e.g. multiple regression, factor and cluster analysis) and their use in geographic settings and with spatial datasets. Includes introductory spatial regression, methods for detecting spatial clusters (spatial autocorrelation), and the importance of exploratory spatial data analysis (ESDA) in geographic research. Course previously offered as GEOG 5313.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5323 Geographic Information Systems: Resource Management Applications

Prerequisites: GEOG 4203 or instructor permission.

Description: Provides a theoretical and practical understanding of geographic information systems and its applications in natural resource management. Introduces industry popular GIS software for spatial and aspatial data analysis. Explores specific conditions, requirements, and processing considerations that allow geospatial data to be manipulated for problem solving. Meets with GEOG 4343. No degree credit for students with credit in GEOG 4343.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Graduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

GEOG 5333 Remote Sensing

Description: Introductory course in remote sensing focusing on digital image processing. Topics include data collection via satellites and unmanned aerial systems (a.k.a. drones), principles of electromagnetic radiation, multispectral, thermal, and light detection and ranging (LIDAR), and field data collection. Discussions focus on environmental applications including: agriculture, natural resource management, climate, geography, and wildlife management. Hands-on exposure to current image processing software. Meets with GEOG 4333. May not be used for degree credit with GEOG 4333.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Graduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

GEOG 5343 Advanced Geographic Information Systems: Resource Management Applications**Prerequisites:** GEOG 4343 or GEOG 5323.**Description:** Advanced theory and applications of geographic information systems (GIS) applied to resource management problems using both raster and vector data structures. Individual projects, presentations and group discussion sessions.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5353 Advanced Geographic Information Systems: Socioeconomic Applications****Prerequisites:** GEOG 4353 or GEOG 5253.**Description:** Advanced theory and applications of geographic information systems (GIS) applied to socioeconomic problems including location allocation, market area determination, network analysis, and analysis of demographic characteristics. Individual projects, presentations and group discussion sessions.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5363 Enterprise Geographic Information Systems****Prerequisites:** GEOG 4353 or equivalent.**Description:** Basic setup and creation of online geodatabases and Internet mapping services as would be used in a large scale GIS operation or enterprise. Geodatabase design and Internet mapservice Web site development.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5373 Geographic Information Systems in Public Health****Prerequisites:** GEOG 4203 or instructor permission.**Description:** This course introduces the applications of GIS and spatial analysis in exploring and analyzing geospatial health datasets. The course focuses on preparing, organizing, and mapping health datasets, detecting disease clusters, measuring and optimizing health services, and applying spatial statistical models to various public health applications, such as infectious disease, environmental health, health service access, and health disparities. Students will learn how to acquire spatial data, visualize geographic trends, and formulate hypotheses for health applications. May not be used for degree credit with GEOG 4373.**Credit hours:** 3**Contact hours:** Lecture: 2 Lab: 2 Contact: 4**Levels:** Graduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Geography**GEOG 5383 Introduction to GIS Programming****Prerequisites:** GEOG 4203 or GEOG 5103.**Description:** Designed to provide students with an introduction to basic programming concepts and how such concepts specifically apply to GIS and other geographically oriented applications. The course will cover some basic concepts, discuss Python and Model Builder for ArcGIS, KML/KMZ for Google Earth/Maps, and introduce some basic concepts of mobile mapping development in Android. May not be used for degree credit with GEOG 4383.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5393 Remote Sensing of Water Resources****Prerequisites:** GEOG 2323 or GEOG 4333.**Description:** Advanced theories and techniques of remote sensing applied to various issues in water resources management. Sensor characteristics, theoretical algorithms, digital image processing, and field methods to extract information of multiple aspects valuable for both hydrological modeling and decision-making. Advantages and limitations of remote sensing compared to traditional methods will be explored.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5403 Current Geographic Research****Prerequisites:** Graduate standing in geography or consent of instructor.**Description:** Representative survey of current research across the discipline of modern Geography so as to broaden perspectives and appreciation of Geography's breadth and impact. Emphasis on the discipline's major affinity groups, their notable institutions and individuals, and their impact toward the greater good. Exercises familiarize students with the process of developing a thesis or dissertation proposal, from determining an area of emphasis, identifying a research problem, conducting a literature review, and developing and defending a thesis or dissertation proposal.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography**GEOG 5413 History and Philosophy of Geography****Prerequisites:** Graduate standing in geography or consent of the instructor.**Description:** Study of the making of geography as an academic discipline, and the evolution of geographic thought and practice. A critical inquiry into the production of geographic knowledge as it has changed over time and in relation to developments in science and society. Discussions examine significant theoretical and methodological "turns" and explore the influences of key individuals, institutions, and major debates.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Geography

GEOG 5423 Geographic Renderings in Qualitative Methods

Prerequisites: SCFD 5913 or SCFD 6123 or SOC 5273 or consent of instructor.

Description: Seminar engages with geographic facets in qualitative research and provides students with experience in collecting and working with qualitative data. Students explore avenues of qualitative inquiry in cross-cultural, community participation, and storytelling/testimonial/oral history/life history, and ethnographic research with special consideration to space, place, scale, context, body, and senses. Course addresses issues involved with analysis, interpretation, and "writing-up" research.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5443 Sustainable Tourism and Geography

Prerequisites: Junior or senior standing or consent of instructor.

Description: This course examines sustainable tourism from a cultural and environmental perspective. It discusses concepts and theories of sustainability and tourism, including human rights, environmental justice, and ethics, emphasizing the global environmental and social effects and possibilities of tourism. The course addresses management concepts, sectoral approaches, transport and mobility themes, and emerging issues in the context of sustainability. May not be used for degree credit with GEOG 4443.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5450 Seminar in Geography

Prerequisites: Graduate standing in geography or consent of instructor.

Description: Specialized topics in Geography. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

Credit hours: 1-6

Contact hours: Contact: 1-6 Other: 1-6

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 5453 Black Geographies & Memorialization in the Landscape

Description: How and why have African American people sought to memorialize their history in public places? How have Black counterpublics shaped discourse on memorials to African American history? What has this discourse done to the field of landscape and memory studies? To explore these questions, this course is organized around memory in the landscape as it relates to black geographies, including, for example, slavery, the Civil War, civil rights, and the Tulsa Race Massacre in the United States. Approaches may be comparative or transnational. May not be used for degree credit with AFAM 4453, AMST 4453, or GEOG 4453.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5503 Applications of the Global Positioning System in Field Research

Description: Theory and applications of the Global Positioning System (GPS), focusing on accuracy issues in field data collection and integration with geographic information systems (GIS). Use of both recreation and mapping grade receivers. May not be used for degree credit with GEOG 4303.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5510 Research Problems in Geography

Prerequisites: Consent of instructor.

Description: Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.

Credit hours: 1-3

Contact hours: Contact: 1-3 Other: 1-3

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 5663 Web GIS: Trends, Principles, and Applications

Prerequisites: GEOG 4203 or instructor permission.

Description: Web GIS has immense applicability to business, health, economics, transportation, and more. This course is designed to increase students' knowledge of Web GIS and cutting-edge GIS skills. It introduces basic Web GIS concepts, principles, techniques, including web mapping applications. In addition, this course offers essential web programming skills to build customized online maps. May not be used for degree credit with GEOG 4663.

Credit hours: 3

Contact hours: Lecture: 2 Lab: 2 Contact: 4

Levels: Graduate

Schedule types: Lab, Lecture, Combined lecture and lab

Department/School: Geography

GEOG 5700 Geography Study Abroad

Description: Participation in an international experience sponsored by the Department of Geography. Study Abroad courses typically involve the study of a country or region to provide an integrated understanding, through research and personal experience, of relevant cultural, historical, political, economic, and environmental issues. Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.

Credit hours: 1-3

Contact hours: Lecture: 1-3 Contact: 1-3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 5930 Readings in Geography

Prerequisites: Consent of instructor.

Description: Directed readings on selected topics, regions or methods in geography. Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.

Credit hours: 1-3

Contact hours: Contact: 1-3 Other: 1-3

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 5940 Graduate Cooperative Education Internship

Prerequisites: Consent of departmental internship coordinator and graduate committee.

Description: Practical experience in applying geographical concepts and tools to business or governmental problems. Emphasis on educational aspects of applying discipline-related tools to real-world problems. Credit not available for regular employment positions; must have fixed start/end dates. Offered for variable credit, 1-3 credit hours, maximum of 3 credit hours.

Credit hours: 1-3

Contact hours: Contact: 1-3 Other: 1-3

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 6000 Doctoral Dissertation Research

Prerequisites: Admission to candidacy and consent of major professor.

Description: Offered for variable credit, 1-12 credit hours, maximum of 30 credit hours.

Credit hours: 1-12

Contact hours: Contact: 1-12 Other: 1-12

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 6013 Seminar in Quaternary Paleoecology

Prerequisites: Graduate standing in geography or consent of instructor.

Description: Analysis and discussion of various aspects of research on the Quaternary period, emphasizing the roles played by climate, geomorphic processes, vegetation, soil and fauna.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 6110 Seminar in Cultural and Political Ecology

Prerequisites: Graduate standing in geography or consent of instructor.

Description: Study of the relationship between culture and environment and competing theories of human-environment interactions. Traces the roots of cultural ecology starting with classic ecological systems and adaptation theory, to criticisms leading to the development of "political" and "hybrid" ecologies. Course focuses on Marxist influences, inequalities of third world development, gender and resource management, social and environmental movements, indigenous knowledge, natural disasters and environmental vulnerability. Offered for fixed credit, 3 credit hours.

Credit hours: 3

Contact hours: Contact: 3 Other: 3

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 6120 Seminar in Urban Geography

Prerequisites: Graduate standing in geography or consent of instructor.

Description: Analysis of research on urban systems, internal morphology, urban problems and urban spatial behavior. Review and analysis of student research efforts. Offered for fixed credit, 3 credit hours, maximum of 6 credit hours.

Credit hours: 3

Contact hours: Contact: 3 Other: 3

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 6130 Seminar in Political Geography

Prerequisites: Graduate standing in geography or consent of instructor.

Description: Theoretical foundations of political geography from MacKinder and Hartshorne to recent writings by Smith, Anderson and other modern theorists. Nationalism, national identity, state formation and cohesion considered in a spatial context. Offered for fixed credit, 3 credit hours.

Credit hours: 3

Contact hours: Contact: 3 Other: 3

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 6180 Seminar in Transportation Geography

Prerequisites: Graduate standing.

Description: Examination of transportation systems, emphasizing their effects on trade, land use, location issues, and development. Review of trends, problems, and methods related to transport issues. Offered for fixed credit, 3 credit hours.

Credit hours: 3

Contact hours: Contact: 3 Other: 3

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 6210 Seminar in Historical Geography

Prerequisites: Graduate standing.

Description: This seminar explores historical geographic research concerning places and environments, the dynamics of place, space, and landscape as well as how the past shapes the geographies of the present and the future. It considers methodological practices and theoretical understandings associated with historical geographic scholarship. Offered for fixed credit, 3 credit hours.

Credit hours: 3

Contact hours: Contact: 3 Other: 3

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 6303 Geographic Analysis II

Prerequisites: GEOG 5303.

Description: An advanced course in the application of statistical methods to spatial problems. Focuses on univariate and bivariate spatial autocorrelation, geographically weighted regression (GWR), spatial weighting, and visualization of geostatistical data. Heavy emphasis on current research in geospatial techniques and student research.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 6313 Mixed Methods in Field Research

Prerequisites: Graduate standing in geography or consent of instructor.

Description: This course will expose students to a variety of qualitative and quantitative techniques useful in successfully designing and completing field research. Special focus will include research and survey design, interviewing, ethnography, and visual techniques such as the use of imagery, photography, sketch mapping, and Global Positioning Systems (GPS) for the collection and analysis of geospatial data. Required field trips.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 6333 Advanced Remote Sensing

Prerequisites: GEOG 4333 or GEOG 5333.

Description: Provides in-depth theoretical exploration of advanced remote sensing and image analysis techniques. Special topics include advanced classifications, hyperspectral imagery, and LiDAR. Specific issues surrounding data capture, image processing, and analysis will be discussed to prepare students for semester-long research projects.

Credit hours: 3

Contact hours: Lecture: 3 Contact: 3

Levels: Graduate

Schedule types: Lecture

Department/School: Geography

GEOG 6910 Topics in Geography

Prerequisites: Consent of instructor.

Description: Specialized physical, social and methodological topics in geography. Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.

Credit hours: 1-3

Contact hours: Contact: 1-3 Other: 1-3

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography

GEOG 6930 Readings in Geography

Prerequisites: Consent of instructor.

Description: Directed readings on selected topics, regions or methods in geography. Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.

Credit hours: 1-3

Contact hours: Contact: 1-3 Other: 1-3

Levels: Graduate

Schedule types: Independent Study

Department/School: Geography