Geography

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Faculty

Professor J. J. Hobbs*
Associate Professor M. W. Foulkes*, S. C. Larsen*, T. Matisziw*, M. Palmer, M. A. Urban
Assistant Professor G. Elliott*
Assistant Teaching Professor C. Blodgett, D. Hurt*
Instructor T. L. Hallcoat*, J. D. Harlan, T. Vought
Professor Emeritus C. L. Salter*
Associate Professor Emeritus G. S. Ludwig*, W. A. Noble, W. A. Schroeder*
Adjunct Professor C. H. Davis, W. R. Elliot, R. B. Jacobson*

* Graduate Faculty Member - membership is required to teach graduate-level courses, chair master’s thesis committees, and serve on doctoral examination and dissertation committees.
** Doctoral Faculty Member - membership is required to chair doctoral examination or dissertation committees. Graduate faculty membership is a prerequisite for Doctoral faculty membership.

Undergraduate

• BA in Geography (http://catalog.missouri.edu/undergraduategraduate/collegeofartsandscience/geography/ba-geography)
  • with emphasis in General Geography (http://catalog.missouri.edu/undergraduategraduate/collegeofartsandscience/geography/ba-geography-emphasis-general-geography)
  • with emphasis in Geographic Information Sciences (http://catalog.missouri.edu/undergraduategraduate/collegeofartsandscience/geography/ba-geography-emphasis-geographic-information-sciences)
  • with emphasis in Physical/Environmental (http://catalog.missouri.edu/undergraduategraduate/collegeofartsandscience/geography/ba-geography-emphasis-physical-environmental)
  • with emphasis in Regional/Cultural (http://catalog.missouri.edu/undergraduategraduate/collegeofartsandscience/geography/ba-geography-emphasis-regional-cultural)
• Minor in Geography (http://catalog.missouri.edu/undergraduategraduate/collegeofartsandscience/geography/minor-geography)
• Certificate in Geographical Information Science - Interdisciplinary (http://catalog.missouri.edu/undergraduategraduate/collegeofartsandscience/geography/certificate-geographical-information-systems)

The Department of Geography has established the following goals for the Bachelor of Arts with a major in Geography:
• Teach students to think spatially and develop problem solving skills
  • Provide an intellectual focus for students seeking a broadly based liberal arts education
  • Acquaint students with past and present patterns of landscape development and instill concern for intelligent management of earth’s biophysical resources
  • Expose students to contemporary issues of geopolitical and international significance and their role in such problems
  • Provide the skills and expertise necessary to master the application of geographic information technologies and analysis of spatial data
  • Prepare motivated students for career development and graduate study

Four different emphasis areas allow students to further focus the undergraduate degree program on their own personal interests in geography.

1. Human-Regional-cultural geography helps students develop a fuller sense of geographic analysis and better understanding of the human and physical characteristics of major regions and settlement patterns of the world.
2. Physical-environmental systems emphasize the complex interactions between biophysical systems and human behavior in the areas of geomorphology and biogeography, as well as our role in managing applied environmental problems.
3. Geographic information sciences addresses the variety of technologies revolutionizing geographic analysis such as GIS, GPS, remote sensing, computer assisted cartography and spatial statistics.
4. General geography is designed for the student with broad interests in geography that overlap with other emphasis areas.

For students planning to end their formal education with the bachelor’s degree, a geography major provides marketable skills and the broad perspectives on environment, society and international affairs that enable graduates to move beyond entry-level positions. Geography also provides a sound foundation for students who plan to enter graduate work in a variety of fields, from geography to business, land use planning, law and medicine. Although positions are not often designated with the title of geographer, geography graduates’ employment has grown substantially in private enterprise and in all levels of government in recent years.

The Department offers BA and MA degrees with majors in geography as well as undergraduate and graduate certificates in Geographic Information Science and Geospatial Intelligence. Two minors are also available.

Departmental Honors

The geography honors program requires independent research during the senior year, usually under GEOG 4996H or GEOG 4997H. Consult the geography honors director for further information.

Graduate

• MA in Geography (http://catalog.missouri.edu/undergraduategraduate/collegeofartsandscience/geography/ma-geography)
• Graduate Certificate in Geographical Information Science - Interdisciplinary (http://catalog.missouri.edu/undergraduategraduate/collegeofartsandscience/geography/grad-certif-geographical-information-systems)

College of Arts and Sciences
**Geography**

**Facilities and Resources**

An exceptional departmental collection of reference materials, including maps, journals and books, is available to graduate students in the department’s Wheeler Library and Seminar Room. The holdings of Ellis Library in geography and related fields are extensive and MU’s computer facilities are readily available. In addition, the department is home to the Geographic Resources Center (GRC), the Missouri Spatial Data Information Service and the Spatial Analysis and Modeling teaching laboratory. These facilities serve as an interdisciplinary center for GIS, remote sensing, cartography, computer science and history meets the special interests of many graduate students.

**Financial Aid from the Program**

Some programs require an extra form or statement from those who wish to be considered for internal assistantships, fellowships or other funding packages. Check the program website or ask the program contact for details. In Geography, a total of approximately 6 graduate teaching and research assistantships are awarded on a competitive basis annually. Applicants desiring consideration for one of these positions should indicate this in their application to the department.

**GEOG 1050: Introductory Meteorology**

(same as ATM.SC 1050). Physical processes of atmosphere in relation to day-to-day changes in weather.

**Credit Hours:** 3

**GEOG 1100: Regions and Nations of the World I**

Introductory analysis for general education. Regional character, spatial relationships, major problems of Europe, North America (United States and Canada) and Latin America. Organized around basic concepts in field of geography.

**Credit Hours:** 3

**GEOG 1100H: Regions and Nations of the World I - Honors**

Introductory analysis for general education. Regional character, spatial relationships, major problems of Europe, North America (United States and Canada) and Latin America. Organized around basic concepts in field of geography.

**Credit Hours:** 3

**Prerequisites:** Honors eligibility required

**GEOG 1200: Regions and Nations of the World II**

Introductory analysis for general education. Regional character, spatial relationships, problems of environment and development of the former Soviet Union, Pacific World, South and East Asia, Africa and Middle East. Organized around basic concepts in the field of geography. May be taken independently of GEOG 1100.

**Credit Hours:** 3

**GEOG 1205H: Regions and Nations General Honors**

**Credit Hours:** 3

**Prerequisites:** Honors eligibility required

**GEOG 1550: Introduction to the Humanized Earth**

Examines human culture as a geographical element; the power of culture and human institutions in human-environmental interaction and the creation of agriculture, folk culture, popular culture, cities, and a broad range of cultural landscapes.

**Credit Hours:** 3

**GEOG 1600: Climate Change: Science and Public Policy**

This course will explore the role of physical science, environmental politics and public policy in shaping contemporary debate concerning climate change, mitigation, and adaptation strategies. We will examine the scientific rationale and statistical basis underwriting the concept of climate change, why aspects of the science remain controversial, the prospects of institutional action and the difficulties inherent in developing public policies targeting mitigation and adaptation. Course includes a role-laying simulation where students will play roles based on 2009 climate negotiations in Copenhagen, Denmark. Graded on A-F basis only.

**Credit Hours:** 3

**Prerequisites:** Freshman and sophomores only

**GEOG 1800: Digital Earth: Introduction to the Geospatial Technologies**

Introduction to technologies used to map a changing world, with an emphasis on digital mapping explorations of human and environmental interactions on Earth. Course includes lab and fieldwork to introduce geographic information data collection and analysis techniques. Graded on A/F basis only. May be repeated for credit.
GEOG 1100: Geography of Missouri
Survey of Missouri; geography applied to current state issues. Physical, human, economic, and political geography of Missouri; regions of the state; geography applied to current state issues.

**Credit Hours:** 3
**Prerequisites:** GEOG 1100

GEOG 2120: United States and Canada
Intensive examination of selected areas and distributions. Regional systems, problems and planning.

**Credit Hours:** 3
**Prerequisites:** sophomore standing

GEOG 2130: Geography of Missouri
Survey of Missouri; geography applied to current state issues. Physical, human, economic, and political geography of Missouri; regions of the state; geography applied to current state issues.

**Credit Hours:** 3
**Prerequisites:** GEOG 1100

GEOG 2140: Geography of the United States
Survey of United States; geography applied to current national issues. Physical, human, economic, and political geography of the United States; regions of the nation; geography applied to current national issues.

**Credit Hours:** 3
**Prerequisites:** GEOG 1100

GEOG 2150: Geography of Canada
Survey of Canada; geography applied to current national issues. Physical, human, economic, and political geography of Canada; regions of the nation; geography applied to current national issues.

**Credit Hours:** 3
**Prerequisites:** GEOG 1100

GEOG 2160: Geography of South America
Survey of South America; geography applied to current regional issues. Physical, human, economic, and political geography of South America; regions of the continent; geography applied to current regional issues.

**Credit Hours:** 3
**Prerequisites:** GEOG 1100

GEOG 2170: Geography of Africa South of the Sahara
Survey of Africa South of the Sahara; geography applied to current regional issues. Physical, human, economic, and political geography of Africa South of the Sahara; regions of the continent; geography applied to current regional issues.

**Credit Hours:** 3
**Prerequisites:** GEOG 1100

GEOG 2180: Geography of Europe
Survey of Europe's lands and peoples; emphasis on historical areal relationships as reflected in Europe's changing economic and political organization.

**Credit Hours:** 3
**Prerequisites:** sophomore standing

GEOG 2190: Our Dynamic Planet in Film
This course focuses on using documentary films (e.g., Planet Earth) as a medium for studying how global environmental change is impacting all spheres of our dynamic planet. To ensure a more complete understanding of course material, films are supplemented with active lectures and discussions of assigned readings from both periodicals and peer-reviewed literature that emphasize key points illustrated in the films. In doing so, this course synthesizes material from numerous fields of study that fall under the burgeoning umbrella field of global change ecology. This synthetic approach is used to highlight the formidable linkages on Earth between the non-living and living, thus permitting students to gain an appreciation and holistic understanding of how global environmental change is impacting Earth processes responsible for creating both our current landscapes and the remarkable diversity of life that inhabit them.

**Credit Hours:** 3

GEOG 2200: Exploring Geography
We are all explorers. As children, we grew up testing the boundaries of our known worlds and trying to understand what was beyond. Geography gives us the means to formalize this impulse to explore the world around us, both local and distant. It allows us to make sense of the ways in which space and relationships between objects drives much of human, social, and environmental interaction. In this course, we will illustrate some of the principle ways in which Geographers investigate, explain, and map meaning, pushing the boundaries of what we know as individuals and society. Using a combination of discussion and field exercises, students will be asked to engage with a number of critical societal issues that have geographical elements at their core. Examples include the Geography of crime, imagining place, the city of the future, environmental change, terrorism, human trafficking, drones, and sustainability.

**Credit Hours:** 1

GEOG 2210: Geography of Europe
Survey of Europe's lands and peoples; emphasis on historical areal relationships as reflected in Europe's changing economic and political organization.

**Credit Hours:** 3
**Prerequisites:** sophomore standing

GEOG 2220: Geography of Asia
Survey of Asia from India through Southeast Asia to China and Japan, emphasizing factors contributing to cultural similarities and variations, conflicts of interest, and current development.

**Credit Hours:** 3

GEOG 2230: Geography of Africa South of the Sahara
Survey of Africa South of the Sahara; geography applied to current regional issues. Physical, human, economic, and political geography of Africa South of the Sahara; regions of the continent; geography applied to current regional issues.

**Credit Hours:** 3

GEOG 2240: Themes in the Geography of Africa South of the Sahara
Major concepts of African geography in current and historical perspective. Case studies of major African countries.

**Credit Hours:** 3

GEOG 2250: Themes in the Geography of Africa South of the Sahara
Major concepts of African geography in current and historical perspective. Case studies of major African countries.

**Credit Hours:** 3

GEOG 2260: Geography of East Asia
Cultural, physical and economic geography of China, Japan, and Korea, with emphasis on China. Landscape analysis, determination of regional identities, and study of political forces evident in the development of the contemporary scene are stressed.

**Credit Hours:** 3

GEOG 2270: Geography of Asia
(same as S_A_ST 2270). An introductory survey of the geography of Asia from India through Southeast Asia to China and Japan, emphasizing factors contributing to cultural similarities and variations, conflicts of interest, and current development.

**Credit Hours:** 3

GEOG 2280: Race, Democracy, and Violence in Cuba and Haiti
(same as PEA_ST 2280, SOCIOL 2280). A sociological approach to understand race/ethnicity, identity, citizenship, human rights, violence, and political and economic systems in the Caribbean. Comparisons of the culture, politics, and historical trajectories of Cuba and Haiti using Post-Colonial and Feminist theories. Graded on A-F basis only.

**Credit Hours:** 3

GEOG 2280W: Race, Democracy, and Violence in Cuba and Haiti - Writing Intensive
(same as PEA_ST 2280W, SOCIOL 2280W). A sociological approach to understand race/ethnicity, identity, citizenship, human rights, violence, and political and economic systems in the Caribbean. Comparisons of the culture, politics, and historical trajectories of Cuba and Haiti using Post-Colonial and Feminist theories. Graded on A-F basis only.

**Credit Hours:** 3

GEOG 2290: Themes in the Geography of Africa South of the Sahara
Major concepts of African geography in current and historical perspective. Case studies of major African countries.

**Credit Hours:** 3

GEOG 2300: South America
Physical environment and culture in the regional development of South America.

**Credit Hours:** 3

GEOG 2340: South America
Physical environment and culture in the regional development of South America.

**Credit Hours:** 3

GEOG 2370: Themes in the Geography of Africa South of the Sahara
Major concepts of African geography in current and historical perspective. Case studies of major African countries.

**Credit Hours:** 3

GEOG 2380: Themes in the Geography of Africa South of the Sahara
Major concepts of African geography in current and historical perspective. Case studies of major African countries.

**Credit Hours:** 3

GEOG 2500: Themes in the Geography of Africa South of the Sahara
Major concepts of African geography in current and historical perspective. Case studies of major African countries.

**Credit Hours:** 3

GEOG 2580: Geography of Cemeteries
Cemeteries have a discernible spatial and temporal pattern providing a foundation for geographical study. Migration, demographics, spatial
analysis and basic mapping skills will be used to investigate cemeteries and their pattern.

Credit Hours: 3  
Prerequisites: freshman and sophomores only

GEOG 2610: Climate, Landforms and Vegetation: Introduction to Physical Geography  
Examination of the interacting natural systems that comprise the Earth's physical environment, including the atmosphere, biosphere, and landforms. Focus on relating fundamental physical, chemical and ecological processes to the global geographic patterns they produce.

Credit Hours: 3

GEOG 2660: Environmental Geography  
Historical perspectives on the human agency in transforming the earth, with emphasis on international environmental problems. Topics include basic biogeography; environmental impacts of population growth, underdevelopment and overdevelopment; and new approaches to management of global resources.

Credit Hours: 3

GEOG 2710: Economic Geography  
Geographical location and organization of world's major economic activities. Emphasizes agricultural and industrial patterns, commodity flows, transport networks, geographical principles of market and industrial location, internal spatial organization of cities, land-use models, geographic aspects of economics growth.

Credit Hours: 3  
Prerequisites: GEOG 1100 or GEOG 1200 or sophomore standing

GEOG 2720: The City  
Study of cities: origin, development, distribution; social, economic, and demographic significance. Consideration of theories of structure, urban hierarchies, and land use planning.

Credit Hours: 3

GEOG 2904: Topics in Geography-Social Science  
Organized study of selected topics. Subjects and earnable credit may vary from semester to semester.

Credit Hour: 1-3  
Prerequisites: sophomore standing, departmental consent for repetition

GEOG 2904W: Topics in Geography-Social Science - Writing Intensive  
Organized study of selected topics. Subjects and earnable credit may vary from semester to semester.

Credit Hour: 1-3  
Prerequisites: sophomore standing, departmental consent for repetition

GEOG 3040: Introduction to Geographic Information Systems GIS  
(same as CV_ENG 3050). Introduces theory, concepts and techniques related to the creation, manipulation, processing, and basic analysis of spatial data using GIS. Data management, current data models, GIS applications and course topics are reinforced through hands-on computer laboratory exercises.

Credit Hours: 3  
Prerequisites: sophomore standing or instructor's consent

GEOG 3140: Mexico, Central America, and the Caribbean  
Physical environment and culture in the regional development of Mexico, Central America, and the Caribbean.

Credit Hours: 3

GEOG 3260: Southeast Asia  
(same as S_A_ST 3260). Physical, cultural, historical and regional geography of Southeast Asia, with an introduction to East Asian geography. Emphasizes the problems of tradition and development.

Credit Hours: 3

GEOG 3270: Geography of the Middle East  
Cultural, physical and historical geography of Middle East, with emphasis on cultural adaptations to environments and conflicts over the resources.

Credit Hours: 3

GEOG 3280: Geography of South Asia  
(same as S_A_ST 3280). Topical and regional analysis of India, Pakistan, Sri Lanka. Historical development of distinctive cultural regions. Relations with neighboring areas. Impact of Westernization on economic activities, settlements, population.

Credit Hours: 3

GEOG 3290: Geography of Russia and the Newly Independent States of Eurasia  
Geographic analysis of social, economic and political issues confronting Russia and the NIS, including environmental problems, economic interdependence and prospects for regional economic development, population change and migration, inter-ethnic relations and ethno-territorial conflict.

Credit Hours: 3

GEOG 3385: Special Problems in Geography  
Independent investigation leading to a paper or project. May be repeated to a maximum of 6 hours.

Credit Hour: 1-3  
Prerequisites: instructor's consent

GEOG 3450: Geography of Africa  
Major concepts of African geography in current and historical perspective.

Credit Hours: 3

GEOG 3496: Digital Indigenous Studies  
(same as PEA_ST 3496). This course introduces students to Indigenous studies in a digital world. The course begins with study of Indigenous sovereignty and representation, and moves quickly to critical and theoretical readings in new media, tracing both the historical impact of digital technologies (such as GIS) on Native communities, and the ways that both urban and rural Native communities have engaged in
innovative digital projects that expand the way we understand information and storytelling in digital environments. The course materials will cover a wide range of platforms and audio-visual genres, from documentary, community video, and animation productions, to GIS, video games, and social media sites. Students will engage with both scholars and artists working with new media through a program of public lectures, classroom visits, and Skype interviews. All interview will be archived as podcasts from the course website. Students will write weekly short response papers and produce independent audio-visual projects over the course of the semester, with opportunities to revise their work leading up to substantial final projects. The course will also integrate community outreach into the curriculum through online participation of students from the Kiowa Kids, an Indigenous language immersion and storytelling program.

Credit Hours: 3

GEOG 3496H: Digital Indigenous Studies - Honors
(same as PEA_ST 3496H). This course introduces students to Indigenous studies in a digital world. The course begins with study of Indigenous sovereignty and representation, and moves quickly to critical and theoretical readings in new media, tracing both the historical impact of digital technologies (such as GIS) on Native communities, and the ways that both urban and rural Native communities have engaged in innovative digital projects that expand the way we understand information and storytelling in digital environments. The course materials will cover a wide range of platforms and audio-visual genres, from documentary, community video, and animation productions, to GIS, video games, and social media sites. Students will engage with both scholars and artists working with new media through a program of public lectures, classroom visits, and Skype interviews. All interview will be archived as podcasts from the course website. Students will write weekly short response papers and produce independent audio-visual projects over the course of the semester, with opportunities to revise their work leading up to substantial final projects. The course will also integrate community outreach into the curriculum through online participation of students from the Kiowa Kids, an Indigenous language immersion and storytelling program.

Credit Hours: 3

Prerequisites: Honors eligibility required

GEOG 3496W: Digital Indigenous Studies - Writing Intensive
(same as PEA_ST 3496W). This course introduces students to Indigenous studies in a digital world. The course begins with study of Indigenous sovereignty and representation, and moves quickly to critical and theoretical readings in new media, tracing both the historical impact of digital technologies (such as GIS) on Native communities, and the ways that both urban and rural Native communities have engaged in innovative digital projects that expand the way we understand information and storytelling in digital environments. The course materials will cover a wide range of platforms and audio-visual genres, from documentary, community video, and animation productions, to GIS, video games, and social media sites. Students will engage with both scholars and artists working with new media through a program of public lectures, classroom visits, and Skype interviews. All interview will be archived as podcasts from the course website. Students will write weekly short response papers and produce independent audio-visual projects over the course of the semester, with opportunities to revise their work leading up to substantial final projects. The course will also integrate community outreach into the curriculum through online participation of students from the Kiowa Kids, an Indigenous language immersion and storytelling program.

Credit Hours: 3

GEOG 3510: Historical Geography of North America
Analysis of selected geographical patterns and themes in the continent's past. Focus is explicitly geographical, stressing extensive use of maps and recent scholarly work by historical geographers.

Credit Hours: 3

Prerequisites: Sophomore standing required

GEOG 3540: Geographies of Sexualities
(Same as WGST 3540) This class will explore the relationship of sexuality and space. The class will focus on the ways that sexuality creates particular spaces, and the ways that sexuality and space shape one another in the midst of nation, gender, religion, race, class, and generation.

Credit Hours: 3

Prerequisites: Junior standing, or instructor's consent

GEOG 3560: Native American Geographies
A survey of the Native American geographies in the United States. Historical and contemporary topics are covered employing cross-cultural perspectives including some philosophical views of the Earth and society, sense of place, memory, sacred land, colonialism and GIS representations, and natural resources.

Credit Hours: 3

GEOG 3560W: Native American Geographies - Writing Intensive
A survey of the Native American geographies in the United States. Historical and contemporary topics are covered employing cross-cultural perspectives including some philosophical views of the Earth and society, sense of place, memory, sacred land, colonialism and GIS representations, and natural resources.

Credit Hours: 3

GEOG 3600: Climates of the World
(same as ATM_SC 3600). A study of the world distribution of climates based on "cause and effect" relationships. Special attention is given to the impacts of climate on humanity.

Credit Hours: 3

Prerequisites: GEOG 1050 or equivalent or graduate standing

GEOG 3610: Physical Geography of the United States
Study of natural regions of the United States by integrating topics from landforms, geology, climate, soils, vegetation, resources, and land use.

Credit Hours: 3

Prerequisites: GEOG 2610

GEOG 3630: Earth Surface Systems
Systematic study of landforms geomorphic processes governing them. Provides a foundation for the theoretical, technical, and practical understanding of environmental systems.
Credit Hours: 3

**GEOG 3740: Geography and Planning**
Emphasis on geographic techniques for gathering and generating environmental information for planners. Principles of land use planning will be applied to selected regions.

**Credit Hours: 1-3**

**GEOG 3760: Geography of the World's Religions**
(same as REL_ST 3760). Explores the significance of place in the origin, diffusion, distribution and practice of religions, emphasizing imprints of religion on the cultural landscape and connections between culture, politics, economics, and religion.

**Credit Hours: 3**

**GEOG 3760W: Geography of the World's Religions - Writing Intensive**
(same as REL_ST 3760). Explores the significance of place in the origin, diffusion, distribution and practice of religions, emphasizing imprints of religion on the cultural landscape and connections between culture, politics, economics, and religion.

**Credit Hours: 3**

**GEOG 3780: World Political Geography: Patterns and Processes**
(same as PEA_ST 3780). Geographic factors in the development of political boundaries traditions, and societal perspectives. Spatial patterns and geopolitical processes are explored in selected regions of the world.

**Credit Hours: 3**

**GEOG 3800: Geography of Travel and Tourism**
This course examines the fundamentals of the geography of tourism and travel in both foreign and domestic contexts. During the past few decades, tourism has been a fast growing industry around the world, although tourism can easily be negatively influenced by terrorism, natural disasters, and economic downturns. During the semester we'll look at several common types of tourism and focus on the positive and negative impacts of tourism upon local cultures, the environment, and economic development. Graded on A-F basis only.

**Credit Hours: 3**

Recommended: GEOG 1100 or GEOG 1200 or sophomore standing

**GEOG 3830: Remote Sensing**
Introduction to the principles of remote sensing of the environment. Digital imagery from spacecraft, conventional and high-altitude aerial photography, thermal imaging, and microwave remote sensing.

**Credit Hours: 3**

Recommended: GEOG 2840

**GEOG 3840: Cartography**
Principles of computer-assisted cartography. Automated cartographic display. "Hands on" experience with computer-mapping software and hardware systems. Role of computers in map design. Digital encoding of geographic data.

**Credit Hours: 3**

Recommended: GEOG 2840

**GEOG 3904: Topics in Geography - Social Science**
Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. May be repeated up to 6 hours credit with departmental consent.

**Credit Hours: 1-12**

Prerequisites: sophomore standing

**GEOG 4130: The Geospatial Sciences in National Security**
(Same as CV_ENG 4175). This course explores the critical contribution of the geospatial sciences in the collection, processing, visualization and analysis of geospatial information related to national security. May be repeated for credit.

**Credit Hours: 3**

Prerequisites: junior standing or above required

**GEOG 4390: Special Readings in Geography**
Independent readings selected in consultation with supervisory faculty member. May be repeated to a maximum of 6 hours.

**Credit Hours: 1-3**

Prerequisites: instructor's consent and independent study contract

**GEOG 4520: Environmental Biophysics**
(Same as ATM_SC 4520). Students will learn techniques and principles used to describe the microenvironment of living organisms and use quantitative expressions to estimate missing values, and mass transfer laws to estimate flux of energy, water and gas.

**Credit Hours: 3**

Prerequisites: College Physics and Calculus I

**GEOG 4550: Selected Themes in Cultural Geography**
Case studies in the patterns and processes of human-environmental interactions. Study of the cultural forces responsible for the continual transformation of the earth's cultural landscapes.

**Credit Hours: 3**

**GEOG 4560: Resources and Indigenous Peoples**
This is a survey of indigenous peoples' struggle to control and use natural resources, to have a say in determining the path of economic development, and to restrain the destructive tendencies of colonialism and capitalism, challenging traditional state-to-state relations.

**Credit Hours: 3**

Prerequisites: Junior standing required

**GEOG 4620: Biogeography: Global Patterns of Life**
Analysis of the patterns and processes of plant distribution in the contemporary landscape, stressing environmental influences and vegetation dynamics, particularly as they relate to North American vegetation.

**Credit Hours: 3**

Recommended: GEOG 2610
GEOG 4630: River and Stream Dynamics
Systematic study of river mechanics, stream-channel form, river management and restoration. Provides a theoretical and practical understanding of stream systems.

Credit Hours: 3
Prerequisites: GEOG 2610 and GEOG 3630, or instructor’s consent

GEOG 4710: Spatial Analysis in Geography
Application of statistical methods to geographic research. Prepares students to utilize advanced methodologies and models in spatial analysis. Includes computer analysis of geographical data. Math Reasoning Proficiency Course

Credit Hours: 3
Prerequisites: MATH 1100 or MATH 1120

GEOG 4720: Seminar in Geography Education
Study and research on fundamental themes in geography. Integration of these themes into regional and systematic approaches to the teaching of geography. Enrollment is restricted to students pursuing or considering careers in teaching.

Credit Hours: 3
Prerequisites: junior standing and instructor's consent

GEOG 4740: Location Analysis and Site Selection
(same as CV_ENG 4185). An overview of location analysis in regional planning and spatial decision support, this course focuses on the use of Geographic Information Science (GIS) and location analysis methods in addressing regional service needs. May be repeated for credit.

Credit Hours: 3

GEOG 4770: Migration and Immigration
Explores demographic, economic, and social issues surrounding immigration and migration. The course focuses on the global labor migration system, immigration to the United States, and internal migration within the US, as well as the linkages between these systems.

Credit Hours: 3

GEOG 4780: Selected Themes in Political Geography
Study of basic writing, dominant geographers, case studies, bibliographies and development of research methods.

Credit Hours: 3

GEOG 4790: Geographic Information Systems for the Social Sciences
Designed for social science students interested in learning about the tools available in GIS for linking to and analyzing spatial qualitative data. Uses multiple data sources (qualitative and quantitative), applied within a social context, using spatial investigation procedures to detect geographical trends in data sets. Primary focus is on how GIS can enhance social science research.

Credit Hours: 3
Prerequisites: juniors and seniors only

GEOG 4810: Landscape Ecology and GIS Analysis I
(same as NAT_R 4385). Examination of the landscape-scale approach to biodiversity, ecosystem dynamics, and habitat management. Particular emphasis on the use of Geographic Information Systems to analyze the spatial dimension of ecological patterns and processes.

Credit Hours: 3
Prerequisites: GEOG 3040, or instructor's consent

GEOG 4850: Transportation Geography
(same as CV_ENG 4155). Introduction to fundamental concepts and modes of analysis in transportation geography. Focus on descriptive, explanatory, as well as normative approaches. Topics reviewed include spatial organization, transportation economics, spatial interaction, network analysis, location/allocation, and urban transportation planning.

Credit Hours: 3

GEOG 4860: Advanced Remote Sensing
Advanced remote sensing to provide digital image processing techniques for satellite and airborne imagery; emphasis on spatial/spectral analysis, image classification and land use/land cover change detection. Class project heavily involved.

Credit Hours: 3
Prerequisites: GEOG 3830

GEOG 4904: Topics in Geography-Social Science
Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Must get departmental Consent for repetition.

Credit Hour: 1-12
Prerequisites: GEOG 3830 or instructor's consent

GEOG 4904W: Topics in Geography-Social Science - Writing Intensive
Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. Must get departmental Consent for repetition.

Credit Hour: 1-12
Prerequisites: GEOG 3830 or instructor's consent

GEOG 4940: Advanced Geographic Information Systems (GIS II)
(cross-leveled with GEOG 7940). Advanced study of geographic and spatial analysis and modeling utilizing Geographic Information Systems technology. Focus on project management, research applications, and geostatistical analysis through independent research projects.

Credit Hours: 3
Prerequisites: GEOG 3040 or instructor’s permission

GEOG 4945: Internship in Applied Geography and Cartography
Regularized individual work experience with local, regional, state or national agencies, with guidance and readings supplied by faculty coordinator. May repeat to maximum of 6 hours.

Credit Hour: 1-3
Prerequisites: Departmental consent required
GEOG 4990: Senior Seminar in Geography
A seminar in selected themes in Geography. Class will focus on research, writing, presenting, and discussing themes in contemporary geography. Required of all majors prior to graduation.
Credit Hours: 3
Prerequisites: 5 courses in geography or instructor's consent

GEOG 4996H: Honors in Geography
Special work for Honors candidates in geography. Prerequisites: Honors eligibility required
Credit Hours: 3

GEOG 4996HW: Honors in Geography - Honors/Writing Intensive
Special work for Honors candidates in geography. Prerequisites: Honors eligibility required
Credit Hours: 3

GEOG 4997H: Honors in Geography
Special work for Honors candidates in geography.
Credit Hours: 3
Prerequisites: Honors eligibility required

GEOG 7130: The Geospatial Sciences in National Security
(Same as CV_ENG 7175). This course explores the critical contribution of the geospatial sciences in the collection, processing, visualization and analysis of geospatial information related to national security. May be repeated for credit.
Credit Hours: 3
Prerequisites: junior standing or above required; instructor's consent

GEOG 7520: Meteorology of the Biosphere
(same as ATM_SC 7520). Energy balance and mass transfer microenvironment of plants and animals. Effects of weather events on plants and animal production discussed.
Credit Hours: 3
Prerequisites: graduate standing and MATH 1400 or equivalent; one year of college physics; or instructor's consent

GEOG 7550: Selected Themes in Cultural Geography
Case studies in the patterns and processes of human-environmental interactions. Study of the cultural forces responsible for the continual transformation of the earth's cultural landscapes.
Credit Hours: 3

GEOG 7560: Resources and Indigenous Peoples
This is a survey of indigenous peoples' struggle to control and use natural resources, to have a say in determining the path of economic development, and to restrain the destructive tendencies of colonialism and capitalism, challenging traditional state-to-state relations.
Credit Hours: 3

GEOG 7620: Biogeography: Global Patterns of Life
Analysis of the patterns and processes of plant distribution in the contemporary landscape, stressing environmental influences and vegetation dynamics, particularly as they relate to North American vegetation.
Credit Hours: 3
Prerequisites: GEOG 2610 or instructor's consent

GEOG 7630: River and Stream Dynamics
Systematic study of river mechanics, stream-channel form, river management and restoration. Provides a theoretical and practical understanding of stream systems.
Credit Hours: 3
Prerequisites: GEOG 2610 and GEOG 3630, or instructor's consent

GEOG 7710: Spatial Analysis in Geography
Study and research on fundamental themes in geography. Integration of these themes into regional and systematic approaches to the teaching of geography. Enrollment is restricted to students pursuing or considering careers in teaching.
Credit Hours: 3
Prerequisites: instructor's consent

GEOG 7720: Seminar in Geography Education
Study and research on fundamental themes in geography. Integration of these themes into regional and systematic approaches to the teaching of geography. Enrollment is restricted to students pursuing or considering careers in teaching.
Credit Hours: 3
Prerequisites: instructor's consent

GEOG 7740: Location Analysis and Site Selection
(Same as CV_ENG 7185). An overview of location analysis in regional planning and spatial decision support, this course focuses on the use of Geographic Information Science (GIS) and location analysis methods in addressing regional service needs. May be repeated for credit.
Credit Hours: 3

GEOG 7770: Migration and Immigration
As fertility and mortality decline to record low levels, immigration and migration have become the primary components of population change. Changes brought on by immigration to a country and the internal redistribution of population via migration pose challenges to governments, economic development, social and cultural relations, and environmental sustainability. This course explores issues surrounding immigration and migration. Beginning with the demographic overview of immigration, it focuses on the challenges faced by immigrant, sending, and receiving nations in the global migration system. The second part of the course focuses on the array of issues surrounding immigration and migration. The third part of the course focuses on the array of issues surrounding immigration to the United States, including the socio-economic adaptation of immigrants, the economic and cultural impacts of immigration, and illegal immigration. The third part of the course focuses on internal migration within migration within the US, discussing topics such as migration to the Sunbelt, Great Plains depopulation, poverty migration, migration to the suburbs, and migration's impact on community. Linkages between domestic migration and immigration will also be explored.
Credit Hours: 3
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>GEOG 7780</td>
<td>Selected Themes in Political Geography</td>
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<tr>
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<td>Study of basic writing, dominant geographers, case studies, bibliographies</td>
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<td>and development of research methods.</td>
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<td>Credit Hours</td>
<td>3</td>
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| GEOG 7790    | Geographic Information Systems for the Social Sciences                      |
|              | Designed for social science students interested in learning about the      |
|              | tools available in GIS for linking to an analyzing spatial qualitative     |
|              | data. Uses multiple data sources (qualitative and quantitative), applied    |
|              | within a social context, using spatial investigation procedures to detect  |
|              | geographical trends in data sets. Primary focus is on how GIS can          |
|              | enhance social science research.                                           |
| Credit Hours | 3                                                                           |

| GEOG 7810    | Landscape Ecology and GIS Analysis I                                       |
| (same as NAT_R 7385) | Examination of the landscape-scale approach to biodiversity, ecosystem  |
|              | dynamics, and habitat management. Particular emphasis on the use of        |
|              | Geographic Information Systems to analyze the spatial dimension of ecological patterns and processes. |
| Credit Hours | 3                                                                           |
| Prerequisites| instructor's consent                                                        |

| GEOG 7840    | Geographic Information Systems I                                           |
|              | Introductory study of theory, concepts and techniques related to basic     |
|              | analysis, creation and processing of geographic and spatial data using     |
|              | Geographic Information Systems (GIS). Independent learning and computer-   |
|              | based laboratory exercises supplement theoretical lectures and discussion.|
| Credit Hours | 3                                                                           |

| GEOG 7850    | Transportation Geography                                                   |
| (same as CV_ENG 7155) | Introduction to fundamental concepts and modes of analysis in transportation geography. Focus on descriptive, explanatory, as well as normative approaches. Topics reviewed include spatial organization, transportation economics, spatial interaction, network analysis, location/allocation, and urban transportation planning. |
| Credit Hours | 3                                                                           |

| GEOG 7860    | Advanced Remote Sensing                                                    |
|              | Advanced remote sensing to provide digital image processing techniques for |
|              | satellite and airborne imagery; emphasis on spatial/spectral analysis,      |
|              | image classification and land use/land cover change detection. Class       |
|              | project heavily involved.                                                  |
| Credit Hours | 3                                                                           |
| Prerequisites| GEOG 3830                                                                  |

| GEOG 7904    | Topics in Geography-Social Science                                         |
|              | Organized study of selected topics. Subjects and earnable credit may vary  |
|              | from semester to semester. May be repeated for credit with departmental    |
|              | consent.                                                                   |
| Credit Hours | 1-12                                                                       |
| Prerequisites| instructor's consent                                                       |

| GEOG 7940    | Advanced Geographic Information Systems (GIS II)                           |
| (cross-leveled with GEOG 4940) | Advanced study of geographic and spatial analysis and modeling utilizing Geographic Information Systems technology. Focus on project management, research applications, and geostatistical analysis through independent research projects. |
| Credit Hours | 3                                                                           |
| Prerequisites| GEOG 7840 or instructor's consent                                           |

| GEOG 8080    | Research in Geography                                                      |
|              | Research not leading to thesis. May be repeated to a maximum of 6 hours.   |
|              | Graded on S/U basis only.                                                  |
| Credit Hours | 1-6                                                                         |
| Prerequisites| instructor's consent                                                       |

| GEOG 8085    | Special Investigations in Geography                                        |
|              | Advanced studies to meet the needs of the individual student. May be       |
|              | repeated to a maximum of 6 hours.                                          |
| Credit Hours | 1-3                                                                         |
| Prerequisites| instructor's consent and independent study contract                        |

| GEOG 8100    | Seminar in World Regional Geography I                                     |
|              | Problems in the teaching of world regional geography on college level.     |
| Credit Hours | 1                                                                           |
| Prerequisites| instructor's consent                                                       |

| GEOG 8120    | Seminar in the Geography of Anglo-America                                  |
|              | Readings and research on problems in the geography of the United States     |
|              | and Canada.                                                                |
| Credit Hours | 1-3                                                                         |
| Prerequisites| restricted to graduate Geography majors or instructor's consent            |

| GEOG 8200    | Seminar in World Regional Geography II                                     |
|              | Continuation of course GEOG 8100.                                           |
| Credit Hours | 1                                                                           |
| Prerequisites| instructor's consent                                                       |

| GEOG 8270    | Seminar in the Geography of the Middle East                                |
|              | Advanced readings and analysis of topics in the geography of the Middle    |
|              | East.                                                                      |
| Credit Hours | 3                                                                           |
| Prerequisites| instructor's consent                                                       |

| GEOG 8220    | Seminar in World Regional Geography II                                     |
|              | Continuation of course GEOG 8100.                                           |
| Credit Hours | 1                                                                           |
| Prerequisites| instructor's consent                                                       |

| GEOG 8710    | Seminar                                                                   |
|              | May be repeated to a maximum of 6 hours.                                   |
| Credit Hours | 1-3                                                                         |
| Prerequisites| departmental consent                                                       |
GEOG 8750: Research Design

Credit Hours: 3
Prerequisites: restricted to graduate geography majors graduate or instructor's consent

GEOG 8760: Geographic Thought
Discussion of the historic roots of the discipline, especially the ideas, theories and underlying philosophies that have defined Geography in the past century and a half. Students will also explore the philosophical and theoretical ideas that shape the way geographers approach the study of the world.

Credit Hours: 3
Prerequisites: instructor's consent

GEOG 8815: Landscape Ecology and GIS Analysis II
(same as NAT_R 8395). Provide students with principles and applications of landscape ecology and firm understandings of spatial analysis techniques using GIS. Discuss metrics for spatial pattern and models for landscape-scale dynamics.

Credit Hours: 3
Prerequisites: NAT_R 4365 or NAT_R 7385 and FOREST 4302 or FOREST 7302 or equivalent and basic statistics course or instructor's consent
Recommended: GEOG 4810 or GEOG 7810

GEOG 8820: Field Geography
Techniques of geographical investigation in the field.

Credit Hours: 3
Prerequisites: restricted to graduate Geography majors or instructor's consent

Applied project in remote sensing. Data selection, image processing, land use and land cover change, and quantitative biophysical information extraction from remotely sensed data.

Credit Hours: 3
Prerequisites: GEOG 4830 or instructor's consent

GEOG 8902: Topics in Geography-Biological/Physical/Mathematical
Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. May be repeated for credit with departmental consent.

Credit Hour: 1-3
Prerequisites: instructor's consent