

GEOGRAPHY (GEOG)

GEOG 109 Water in Society

Crosslisted with: SCIL 109, AECN 109, NRES 109, ENVR 109

Description: Introduction to the scientific, social, and economic dimensions of historical and contemporary water systems. Students will develop an understanding of hydrologic systems and analyze and engage in decision-making about complex challenges associated with water resource use.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Offered: FALL

ACE: ACE 4 Science ACE 8 Civic/Ethics/Stewardship

GEOG 140 Introductory Human Geography

Notes: Students who have previously taken GEOG 100 may not receive credit for GEOG 140.

Description: Human populations, cultures, and landscapes, with particular attention to human-environment relations and global interconnections.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

ACE: ACE 9 Global/Diversity

GEOG 155 Elements of Physical Geography

Notes: Students who earn credit toward the degree in GEOG 155 may not earn credit toward the degree in GEOG 150 or in the combination of GEOG 150 and 152.

Description: Investigation of the basic elements of the physical environment of the earth and its atmosphere. Includes atmospheric processes, temperature distributions, weather systems, severe weather, climates, water balance, vegetation and soil distributions, landforms and their processes, and natural hazards. Modifying influences that humans have on the physical environment and atmosphere examined.

Credit Hours: 4

Max credits per semester: 4

Max credits per degree: 4

Grading Option: Graded with Option

Prerequisite for: GEOG 308, GEOL 308, NRES 308

ACE: ACE 4 Science

Course and Laboratory Fee: \$15

GEOG 170 Introduction to Great Plains Studies

Crosslisted with: ANTH 170, GPSP 170, NRES 170, SOCI 170

Description: Interdisciplinary study of the natural environment, social environment, human heritage, arts and humanities of the Great Plains.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

GEOG 181 Global Environmental Issues

Description: Exploration of urgent global environmental issues and their relationships with physical, social, biological, and economic process. Investigation between human activity, wellbeing, and environmental change. Topics include landscape transformation, climate change, environmental health and disease, and water quality.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Offered: FALL/SPR

ACE: ACE 6 Social Science ACE 9 Global/Diversity

GEOG 189H University Honors Seminar

Prerequisites: Good standing in University Honors Program or by invitation.

Description: Topic varies.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded

ACE: ACE 6 Social Science

GEOG 191 Special Topics in Geography

Description: Examine current problems in geography.

Credit Hours: 1-6

Min credits per semester: 1

Max credits per semester: 6

Max credits per degree: 6

Grading Option: Graded with Option

GEOG 200 Landscape and Environmental Appreciation

Crosslisted with: PLAS 200, LARC 200

Description: Values and processes in human landscapes and natural environments. Concepts and tools to understand the context of local and global environments and significant historical landscapes. Landscape as an indicator of aesthetic quality, design principles and processes as integrators of humans and nature, and the garden as a model for creating sustainable landscapes.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

ACE: ACE 7 Arts ACE 9 Global/Diversity

GEOG 217 Principles of GIS

Description: Introduction to theories and methods of Geographic Information Science (GIScience) and Geographic Information Systems (GISystems). Focuses on spatial thinking, analysis skills, and the fundamental knowledge needed to use GIS effectively, accurately, and ethically. Topics include: geodesy, cartography and geovisualization, map projections, geospatial data collection, GPS, spatial data models, spatial databases, and spatial analysis.

Credit Hours: 4

Max credits per semester: 4

Max credits per degree: 4

Grading Option: Graded with Option

Offered: FALL

Prerequisite for: GEOG 432, GEOG 832, NRES 432

Course and Laboratory Fee: \$50

GEOG 250 Global Economies: Globalization and Economic Development

Notes: GEOG 140 recommended.

Description: Basic factors influencing the location of economic activity. Influence of space and location on the evolution and development of economic systems. World and regional patterns of economic activities.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

GEOG 271 Exploring North America and its Cultural Diversity

Description: Introduction to the regional geography of North America. Attention to the significance of location, advantages and limitations of the natural environment, population distribution, and economic development considered regionally.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

ACE: ACE 9 Global/Diversity

Groups: CAS Diversity in the US

GEOG 272 Geography of World Regions

Description: Appraisal of the interaction between the physical environment, the human resources, and economic activities for the major regions of the world. Application of fundamental geographical concepts to regional analysis.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

ACE: ACE 9 Global/Diversity

GEOG 281 Introduction to Water Science

Crosslisted with: NRES 281

Prerequisites: High school chemistry or one semester college chemistry; one course in geology or physical geography or soil.

Description: Survey of the water science from the perspective of both natural and social sciences. Water budget, precipitation, evapotranspiration, runoff and stream flow, groundwater, water quality parameters, economics of water, water policy, water law and water politics.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Prerequisite for: NRES 319; PLAS 361, GEOL 361, NRES 361, SOIL 361

GEOG 289 People and the Land: Human Environmental Interactions on the Great Plains

Crosslisted with: NRES 289

Description: Explore human environmental interaction on the Great Plains. Samples a variety of Great Plains cultures and time periods to explore past use of the Great Plains environment. Evaluation of attributes and related data critical to the operation of past social-ecological systems with reference to changing climatic/ecological dynamics, human environmental impacts, and the sustainability of various indigenous and western modes of land use on the Great Plains. Investigate knowledge of these processes and how they can be of relevance to contemporary issues of Great Plains land management and resource utilization.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

ACE: ACE 5 Humanities ACE 6 Social Science

GEOG 298 Undergraduate Research

Prerequisites: Permission.

Description: Research experience.

Credit Hours: 1-6

Min credits per semester: 1

Max credits per semester: 6

Max credits per degree: 6

Grading Option: Graded with Option

GEOG 308 Biogeography

Crosslisted with: GEOL 308, NRES 308

Prerequisites: GEOG 155 or BIOS 101 and 101L or GEOL 101.

Notes: Biogeography is a highly interdisciplinary science, relying heavily on ecology, geological science, and climatology. It is global in scope and offers the latest knowledge in understanding organism distributions, and the factors that determine those distributions.

Description: Introduction to the basic concepts of biogeography, the study of distributions of plants and animals, both past and present.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

GEOG 317 Cartography I: Introduction to Cartography

Prerequisites: 6 hrs geography.

Description: Introduction to maps and mapping with emphasis on applied and theoretical considerations in map design and construction. Students create computer maps from specifications of instructor. Opportunity to actively participate in the technical processes of data collection, cartographic design, and construction normally associated with the actual production of maps.

Credit Hours: 4

Max credits per semester: 4

Max credits per degree: 4

Grading Option: Graded with Option

GEOG 334 Historical Geography of the Great Plains

Description: Traces the sequence of the human occupancy of the Great Plains from prehistoric times to the present. Focus on the changing perception and utilization of the Great Plains environment, leading to the emergence of a distinctive contemporary region.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

ACE: ACE 5 Humanities

GEOG 361 Urban Geography

Description: Geography of cities and metropolitan areas of the past, present, and future. Spatial structures of urban settlements in North America and elsewhere examined both theoretically and descriptively.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

ACE: ACE 6 Social Science

GEOG 362 Rural Landscapes and Livelihoods in a Global World

Description: Examine the intersection of social, economic, and environmental sustainability in the context of rural landscapes in an increasingly urban and globalized world. Topics include the evolution of the rural landscape, associated major social transformations, the history of agricultural consolidation, the growth of rural industrialization, policy implications, and the resilience of rural people.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded

ACE: ACE 6 Social Science

GEOG 370 Geography of Nebraska

Description: Survey of the physical and cultural features of the geography of Nebraska as related to the changing patterns in the human occupancy of the geographic regions of the state.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

GEOG 372 European Landscapes and Cultures

Description: The physical and human geographies of Europe. Population migrations, landscape change, and diversity of culture in Europe and selected sub-regions of Europe.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

GEOG 377 Women of the Great Plains

Crosslisted with: GPSP 377, WMNS 377

Description: The intersection of gender, identity, power, and representation throughout time and space in the Great Plains of the United States and Canada.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded

ACE: ACE 5 Humanities ACE 9 Global/Diversity

GEOG 380 Geography of Africa

Crosslisted with: ETHN 380, NRES 380

Description: Overview of the major physical and human landscapes in Africa. Prominent past and current events will be placed into a spatial context in an attempt to develop insight into the interrelationships that exist among people, cultures, countries, economies, and the environment, not only within Africa, but between Africa and the rest of the world.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

ACE: ACE 9 Global/Diversity

GEOG 391 Special Topics in Geography

Description: Topics vary.

Credit Hours: 1-6

Min credits per semester: 1

Max credits per semester: 6

Max credits per degree: 6

Grading Option: Graded with Option

GEOG 396 Independent Study in Geography

Prerequisites: Permission.

Description: Independent reading or research under direction by a faculty member.

Credit Hours: 1-3

Min credits per semester: 1

Max credits per semester: 3

Max credits per degree: 6

Grading Option: Graded with Option

GEOG 402 Geography Capstone

Prerequisites: GEOG major or minor, junior or senior standing.

Description: The history and philosophy of geography. Contemporary issues in geography.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

ACE: ACE 10 Integrated Product

GEOG 403 Environmental Justice

Crosslisted with: GEOG 803

Description: Exploration of the concept of environmental justice, which describes how the impacts of the natural and built environment differ according to race, ethnicity, and economic status. Topics include the development of movement from its early concerns with the location of waste facilities, to disparities in health outcomes, access to affordable and healthy food, and climate change issues.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

ACE: ACE 8 Civic/Ethics/Stewardship

Groups: CAS Diversity in the US

GEOG 406 Spatial and Environmental Influences in Social Systems

Crosslisted with: GEOG 806

Description: How space, spatial structure, and spatially oriented behavior operate in social systems, emphasizing their influence on interpersonal communication and/or social exchange.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

GEOG 408 Microclimate: The Biological Environment

Crosslisted with: PLAS 408, METR 408, NRES 408, AGRO 808, GEOG 808, HORT 808, METR 808, NRES 808

Prerequisites: Junior standing, MATH 106 or equivalent, 5 hrs physics, major in any of the physical or biological sciences or engineering.

Description: Physical factors that create the biological environment. Radiation and energy balances of earth's surfaces, terrestrial and marine. Temperature, humidity, and wind regimes near the surface. Control of the physical environment through irrigation, windbreaks, frost protection, manipulation of light, and radiation. Applications to air pollution research. Instruments for measuring environmental conditions and remote sensing of the environment.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Prerequisite for: BSEN 954, NRES 954

GEOG 417 Web GIS

Crosslisted with: GEOG 817

Prerequisites: GEOG 217 or GEOG 317

Description: Introduction to Internet-based GIS and web cartography. Focus on programming concepts underlying the creation and implementation of quality web mapping applications.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Offered: SPRING

GEOG 418 Introduction to Remote Sensing

Crosslisted with: GEOG 818, NRES 418, NRES 818

Prerequisites: Junior Standing

Description: Remote sensing of the earth from aerial and satellite platforms. Aerial photography, multispectral scanning, thermal imaging, microwave remote sensing techniques. Data acquisition and image analysis. Physical foundations of remote sensing using electromagnetic energy and energy-matter interactions. Applications in geographic, agricultural, environmental and natural resources analyses.

Credit Hours: 4

Max credits per semester: 4

Max credits per degree: 4

Grading Option: Graded with Option

Offered: FALL

Prerequisite for: GEOG 421, GEOG 821, NRES 421, NRES 821

Course and Laboratory Fee: \$115

GEOG 419 Applications of Remote Sensing in Agriculture and Natural Resources

Crosslisted with: PLAS 419, GEOL 419, NRES 420, AGRO 819, GEOG 819, GEOL 819, NRES 820

Prerequisites: Junior standing

Description: Introduction to the basic methods and practical applications of remote sensing to map, monitor and assess agricultural and natural resources and other environmental changes

Credit Hours: 4

Max credits per semester: 4

Max credits per degree: 4

Grading Option: Graded with Option

Course and Laboratory Fee: \$35

GEOG 421 Field Techniques in Remote Sensing

Crosslisted with: GEOG 821, NRES 421, NRES 821

Prerequisites: NRES 418/818

Description: Field techniques as they relate to remote-sensing campaigns. Research methods, systematic approaches to data collection, field spectroscopy, collecting ancillary information linked with spectroscopic data sets as well as aircraft or satellite missions and subsequent analyses of acquired data.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Course and Laboratory Fee: \$65

GEOG 422 Advanced Techniques in Geographic Information Systems

Crosslisted with: GEOG 822

Prerequisites: GEOG 217

Description: Vector and quadtree data structures, use of relational database management systems, topologically structured databases, query languages, digital terrain modeling, advanced data analysis methods and research issues in GIS. Extensive practical experience with the current GIS software.

Credit Hours: 4

Max credits per semester: 4

Max credits per degree: 4

Grading Option: Graded with Option

Prerequisite for: NRES 922

Course and Laboratory Fee: \$50

GEOG 425 Geovisualization

Crosslisted with: GEOG 825

Prerequisites: GEOG 217

Description: Geovisualization encompasses the techniques and concepts that underlie digital cartography and the broader field of spatial visualization, exploring cartographic applications of computer animation and multimedia for the dual purposes of assisting visual thinking in map-oriented research and data exploration, and in communicating geographic ideas to others.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Offered: FALL

GEOG 427 Introduction to the Global Positioning System (GPS)

Crosslisted with: GEOG 827, NRES 427, NRES 827

Prerequisites: Junior standing.

Notes: Familiarity with mapping and GIS recommended.

Description: Integrated lectures, lab exercises and field experience provide an understanding of GPS technology and applications. Students will learn to collect, correct and use GPS data in a geographic information system (GIS) environment.

Credit Hours: 2

Max credits per semester: 2

Max credits per degree: 2

Grading Option: Graded with Option

Course and Laboratory Fee: \$65

GEOG 431 Cultural Geography

Crosslisted with: GEOG 831

Description: The history of cultural geography from von Humboldt through Carl Sauer to the 'new' cultural geographies of Don Mitchell, Gillian Rose and Noel Castree. The current theoretical debates of feminism, post-structuralism, post-colonialism and environmentalism, and the influences of literary and cultural studies in the development of cultural geography and the various methodologies involved.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

GEOG 432 Programming, Scripting, and Automation for GIS

Crosslisted with: GEOG 832, NRES 432

Prerequisites: GEOG 217

Notes: Practical experience or other formal preparation in GIS may be substituted for prerequisite by permission.

Description: GIS-focused programming, scripting, and spatial analysis using the Python and R programming languages. Topics include: the ArcPy library, algorithm development, open source geospatial libraries, and the manipulation and analysis of geospatial data.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Offered: SPRING

Course and Laboratory Fee: \$50

GEOG 435 Cultural Survival: Indigenous People's Rights

Crosslisted with: GEOG 835

Description: Threats against indigenous peoples' lands, resources and cultural patrimony, languages and knowledge systems more than 500 years after Columbus instigated European colonialism, creating the first global world order. The responses of Indigenous peoples to the imposition of Western dominated economic and political systems. Land rights, economic development, and women's rights from the perspective of different Indigenous communities around the world.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

GEOG 441 Geographies of Health

Crosslisted with: GEOG 841

Description: Exploration of political economies of health care, the geographic distribution of services, the impacts of location in both care utilization and access, emphasizing the importance of "place" in health outcomes.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

GEOG 444 Geo-demographic and Geographic Information Systems (GIS)

Crosslisted with: GEOG 844

Description: Geo-demographic and geographic information system (GIS) analysis, interpretation and mapping of geographical patterns of population size, population composition, and composition change. Theoretical and applied investigation of geo-demographic issues involving marketing research, public facilities planning, public health provision, and small-area population change forecasting. GIS use of TIGER and small-area census data.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Course and Laboratory Fee: \$45

GEOG 447 Political Geography

Crosslisted with: GEOG 847

Description: Importance of factors of a physical, economic, and human character in political development at local to global scales; international geopolitical aspects of environment, territoriality, core areas, capitals, and boundaries; national geographical patterns of voting, representation, public administration and public policy.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

GEOG 450 Climate and Society

Crosslisted with: PLAS 450, METR 450, NRES 452, AGRO 850, GEOG 850, METR 850, NRES 852

Prerequisites: Junior standing or above.

Notes: Offered spring semester of even-numbered calendar years.

Description: Impact of climate and extreme climatic events on society and societal responses to those events. Global in scope and interdisciplinary.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Offered: SPRING

GEOG 461 Geospatial Approaches in Digital Humanities and Social Sciences

Crosslisted with: ANTH 461, ANTH 861, CLAS 461, CLAS 861, GEOG 861, HIST 461, HIST 861

Description: Study of geographic concepts and critical analysis of applications of Geographic Information Systems (GIS) in humanities and social sciences and application of geospatial tools for humanities and social science research; learn how to collect, manage, analyze, and visualize spatial data for real-world projects

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded with Option

Course and Laboratory Fee: \$50

GEOG 467 Great Plains Field Pedology**Crosslisted with:** PLAS 477, NRES 477, SOIL 477, GEOG 867, NRES 877**Prerequisites:** PLAS/SOIL 153.

Description: Spatial relationship of soil properties on various parts of landscape typical of the Plains, causal factors, and predictions of such relationships on other landscapes. Grouping these properties into classes, naming the classes, and the taxonomy that results from this grouping. Application of a taxonomy to a real situation through making a field soil survey in a region representative of the Plains border, predicting land use response of various mapped units as it affects the ecosystem, and evaluating the effectiveness of the taxonomic system used in the region surveyed.

Credit Hours: 4**Max credits per semester:** 4**Max credits per degree:** 4**Grading Option:** Graded with Option**Course and Laboratory Fee:** \$80**GEOG 469 Bio-Atmospheric Instrumentation****Crosslisted with:** PLAS 407, METR 469, AGST 469, NRES 469, AGRO 869, GEOG 869, HORT 807, METR 869, AGST 869, NRES 869**Prerequisites:** Junior standing; MATH 106; 4 hrs physics; physical or biological science major.

Description: Discussion and practical application of principles and practices of measuring meteorological and related variables near the earth's surface including temperature, humidity, precipitation, pressure, radiation and wind. Performance characteristics of sensors and modern data collection methods are discussed and evaluated.

Credit Hours: 3**Max credits per semester:** 3**Max credits per degree:** 3**Grading Option:** Graded with Option**GEOG 484 Water Resources Seminar****Crosslisted with:** PLAS 484, GEOL 484, NRES 484, NRES 884, AGRO 884, GEOG 884, GEOL 884**Prerequisites:** Junior or above standing

Description: Seminar on current water resources research and issues in Nebraska and the region.

Credit Hours: 1**Max credits per semester:** 1**Max credits per degree:** 1**Grading Option:** Graded with Option**GEOG 491 Special Topics in Geography****Crosslisted with:** GEOG 891, NRES 491**Description:** Topics vary.**Credit Hours:** 1-6**Min credits per semester:** 1**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Graded with Option**GEOG 497 Geography Field Tour****Crosslisted with:** GEOG 897**Prerequisites:** Permission.**Description:** Applying geographic concepts with field training.**Credit Hours:** 1-6**Min credits per semester:** 1**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Graded with Option**Offered:** SUMMER**Experiential Learning:** Fieldwork**GEOG 498 Research****Crosslisted with:** GEOG 898**Prerequisites:** Permission.**Description:** Research experience.**Credit Hours:** 1-6**Min credits per semester:** 1**Max credits per semester:** 6**Max credits per degree:** 6**Grading Option:** Graded with Option**Course and Laboratory Fee:** \$20**GEOG 499 Undergraduate Thesis****Prerequisites:** Permission.**Description:** Independent research leading to a thesis.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 6**Grading Option:** Graded with Option**GEOG 499H Honors Undergraduate Thesis****Prerequisites:** Permission. Credit toward the degree cannot be earned in GEOG 499 and GEOG 499H.**Description:** Independent research leading to a thesis.**Credit Hours:** 1-3**Min credits per semester:** 1**Max credits per semester:** 3**Max credits per degree:** 6**Grading Option:** Graded with Option