GEOGRAPHY (GEOG)

GEOG 806 Spatial and Environmental Influences in Social Systems
Crosslisted with: GEOG 406
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: Grade Pass/No Pass Option
Groups: Human-Economic Geography

GEOG 808 Microclimate: The Biological Environment
Crosslisted with: AGRO 408, GEOG 408, HORT 408, METR 408, NRES 408, WATS 408, AGRO 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: Grade Pass/No Pass Option
Groups: Physical Geography

GEOG 812 Introduction to Geographic Information Systems
Crosslisted with: GEOG 412, NRES 412, NRES 812
Description: Introduction to conceptual foundations and applications of computer-based geographic information systems (GIS). GIS database development, spatial data analysis, spatial modeling, GIS implementation and administration.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Grading Option: Grade Pass/No Pass Option
Prerequisite for: GEOG 422, GEOG 822; GEOG 922
Groups: Techniques

GEOG 814 Spatial Analysis and Modeling
Crosslisted with: GEOG 414
Prerequisites: GEOG 412 and STAT 218 or STAT 380
Description: Advanced spatial analysis techniques, algorithms, and methods used in solving geographic problems. Topics include: cluster analysis, spatial autocorrelation, spatial regression, spatial sampling, and gravity models.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Offered: SPRING
Groups: Techniques

GEOG 815 Introduction to Computer Mapping
Crosslisted with: GEOG 415
Prerequisites: GEOG 317.
Description: Introduction to the tools, techniques, and analytical uses of computer mapping. Programming necessary for producing own computer mapping programs.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Prerequisite for: GEOG 915
Groups: Techniques

GEOG 817 Web GIS
Crosslisted with: GEOG 417
Prerequisites: GEOG 317 or GEOG 412
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: Grade Pass/No Pass Option
Offered: SPRING
Prerequisite for: GEOG 483, GEOG 883, GEOG 915
Groups: Techniques

GEOG 818 Introduction to Remote Sensing
Crosslisted with: GEOG 418, NRES 418, NRES 818
Prerequisites: 9 hours of GEOL, NRES or GEOG.
Notes: Advanced standing in geography, natural resources, environmental sciences, engineering or agronomy recommended.
Description: Introduction to remote sensing of the earth from aerial and satellite platforms. Aerial photography, multispectral scanning, thermal imaging and microwave remote sensing techniques. Physical foundations of remote sensing using electromagnetic energy, energy-matter interactions, techniques employed in data acquisition and methods of image analysis. Weekly laboratory provides practical experience in visual and digital interpretation of aerial photography, satellite imagery, thermal and radar imagery. Applications in geographic, agricultural, environmental and natural resources analyses.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Grading Option: Grade Pass/No Pass Option
Prerequisite for: GEOG 420, GEOG 820; GEOG 421, GEOG 821, NRES 421, NRES 821
Groups: Techniques

GEOG 819 Applications of Remote Sensing in Agriculture and Natural Resources
Crosslisted with: AGRO 419, GEOG 419, GEOL 419, NRES 420, AGRO 819, GEOL 819, NRES 820
Notes: GEOG 418/NRES 418 recommended
Description: Introduction to the practical uses of remote electromagnetic sensing in dealing with agricultural and water-resources issues.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Grading Option: Grade Pass/No Pass Option
Groups: Techniques
**GEOG 820 Digital Image Analysis of Remote Sensing Data**

**Crosslisted with:** GEOG 420  
**Prerequisites:** GEOG 418/818 or 419/819.

**Description:** Principles and methods of digital image processing of remotely sensed data. The biophysical basis of remote sensing and the various sensor systems typically used for monitoring terrestrial and aquatic environments. Algorithms for the preprocessing, enhancement, classification and mapping of digital data for agricultural, urban, geological, environmental, and natural resource management problems.

**Credit Hours:** 4  
**Max credits per semester:** 4  
**Max credits per degree:** 4  
**Grading Option:** Grade Pass/No Pass Option  
**Groups:** Techniques

**GEOG 821 Field Techniques in Remote Sensing**

**Crosslisted with:** GEOG 421, NRES 421, NRES 821  
**Prerequisites:** GEOG 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:** Grade Pass/No Pass Option  
**Groups:** Techniques

**GEOG 822 Advanced Techniques in Geographic Information Systems**

**Crosslisted with:** GEOG 422  
**Prerequisites:** GEOG 412/812.

**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:** Grade Pass/No Pass Option  
**Prerequisite for:** GEOG 922, NRES 922  
**Groups:** Techniques

**GEOG 825 Scientific Visualization in Cartography**

**Crosslisted with:** GEOG 425  
**Prerequisites:** GEOG 317 and either GEOG 415 or GEOG 417.

**Description:** Explores 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:** 4  
**Max credits per semester:** 4  
**Max credits per degree:** 4  
**Grading Option:** Grade Pass/No Pass Option  
**Groups:** Techniques

**GEOG 827 Introduction to the Global Positioning System (GPS)**

**Crosslisted with:** GEOG 427, 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:** Grade Pass/No Pass Option  
**Groups:** Human-Economic Geography

**GEOG 831 Cultural Geography**

**Crosslisted with:** GEOG 431

**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:** Grade Pass/No Pass Option  
**Groups:** Human-Economic Geography

**GEOG 832 Programming, Scripting, and Automation for GIS**

**Crosslisted with:** GEOG 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:** Grade Pass/No Pass Option  
**Offered:** SPRING

**GEOG 835 Cultural Survival: Indigenous People's Rights**

**Crosslisted with:** GEOG 435

**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:** Grade Pass/No Pass Option  
**Groups:** Human-Economic Geography
GEOG 841 Geographies of Health
Crosslisted with: GEOG 441
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: Grade Pass/No Pass Option

GEOG 844 Geo-demographic and Geographic Information Systems (GIS)
Crosslisted with: GEOG 444
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: Grade Pass/No Pass Option
Groups: Human-Economic Geography

GEOG 847 Political Geography
Crosslisted with: GEOG 447
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: Grade Pass/No Pass Option
Groups: Human-Economic Geography

GEOG 848 Pro-seminar in International Relations I
Crosslisted with: ECON 466, POLS 466, POLS 866, AECN 467, ANTH 479, ANTH 879, ECON 866, GEOG 448, HIST 479, HIST 879, SOCI 466, SOCI 866
Prerequisites: Senior standing and permission.
Notes: Open to students with an interest in international relations.
Description: Topic varies.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Groups: Human-Economic Geography

GEOG 850 Climate and Society
Crosslisted with: AGRO 450, GEOG 450, METR 450, NRES 452, AGRO 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: Grade Pass/No Pass Option
Offered: SPRING
Groups: Physical Geography

GEOG 861 Geospatial Approaches in Digital Humanities and Social Sciences
Crosslisted with: ANTH 461, ANTH 861, CLAS 461, CLAS 861, GEOG 461, 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: Grade Pass/No Pass Option
Groups: Techniques

GEOG 867 Great Plains Field Pedology
Crosslisted with: AGRO 477, GEOG 467, NRES 477, SOIL 477, NRES 877
Prerequisites: AGRO/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: Grade Pass/No Pass Option

GEOG 869 Bio-Atmospheric Instrumentation
Crosslisted with: AGRO 469, GEOG 469, HORT 407, METR 469, MSYM 469, NRES 469, AGRO 869, HORT 807, METR 869, MSYM 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: Grade Pass/No Pass Option
Groups: Physical Geography
GEOG 878 Pro-seminar in Latin American Studies
Crosslisted with: ANTH 478, GEOG 478, HIST 478, LAMS 478, POLS 478, SOCI 478, MODL 478, EDPS 478, ANTH 878, HIST 878, POLS 878, SOCI 878, MODL 878, EDPS 878
Prerequisites: Junior standing and permission.
Notes: Topical seminar required for all Latin American Studies majors.
Description: An interdisciplinary analysis of topical issues in Latin American Studies.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 6
Grading Option: Grade Pass/No Pass Option
Groups: International Relations & Compar Lat Am, Asian, MID East, Afr Hist Regional Geography Integrative Courses, Research

GEOG 883 Cognitive Processes in Map Comprehension and Use
Crosslisted with: GEOG 483
Prerequisites: GEOG 317 and 417/817.
Description: How cognitive processes help individuals to comprehend the spatial circumstances or arenas they confront when carrying out their daily activities. Awareness of space, spatial knowing, formation of cognitive maps, importance of spatial images in negotiation of surroundings, and the relationship of cognitive maps to orientation and wayfinding.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Groups: Techniques

GEOG 884 Water Resources Seminar
Crosslisted with: AGRO 484, GEOG 484, GEOL 484, NRES 484, WATS 484, NRES 884, AGRO 884, GEOL 884, WATS 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: Grade Pass/No Pass Option

GEOG 891 Geography Field Tour
Crosslisted with: GEOG 491, NRES 491
Description: Group educational tours to specific sites that illustrate aspects of physical and cultural geography. Off-campus travel required.
Credit Hours: 2-3
Min credits per semester: 2
Max credits per semester: 3
Max credits per degree: 6
Grading Option: Graded
Groups: Physical Geography

GEOG 897 Internship in Geography
Crosslisted with: GEOG 497
Prerequisites: Permission.
Description: Applying geographic training with on-the-job learning.
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 6
Grading Option: Grade Pass/No Pass Option

GEOG 898 Advanced Special Problems
Crosslisted with: GEOG 498
Notes: Topic varies, see course description or registration guide.
Credit Hours: 1-24
Min credits per semester: 1
Max credits per semester: 24
Max credits per degree: 24
Grading Option: Grade Pass/No Pass Option

GEOG 899 Masters Thesis
Prerequisites: Admission to masters degree program and permission of major adviser
Credit Hours: 1-10
Min credits per semester: 1
Max credits per semester: 10
Max credits per degree: 99
Grading Option: Grade Pass/No Pass Option

GEOG 901 Pro-seminar in Research Methods and Professional Development
Description: Development of skills required for success in completing a graduate degree and forging a career as a geographer. Setting career goals, designing a graduate program, preparing research proposals, presenting research proposals, presenting research at professional conferences, reviewing professional literature and writing articles for publication.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Grading Option: Grade Pass/No Pass Option

GEOG 902 General Seminar
Credit Hours: 1-2
Min credits per semester: 1
Max credits per semester: 2
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

GEOG 903 History and Philosophy of Geography
Description: History of geographical thought concentrating on the period since 1800. Emphasis on both the traditional and modern ways of viewing the nature of geography and to the linkages between them.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

GEOG 904 Explanation in Geography
Description: Course directly complements GEOG 903. Methodology or methods of explanation employed in geographic research and their relationship to the goals of the discipline. Problems, hypotheses, laws, theories, and models of a spatial nature.
Credit Hours: 2-3
Min credits per semester: 2
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
GEOG 915 Seminar in Cartography
Prerequisites: GEOG 815, 817.
Description: Review and examination of cartographic research on map design. Primary emphasis on efficiency and accuracy of maps as devices for spatial understanding and analytical cartography.
Credit Hours: 3-6
Min credits per semester: 3
Max credits per semester: 6
Max credits per degree: 6
Grading Option: Grade Pass/No Pass Option

GEOG 922 Seminar in Geographic Information Systems (GIS)
Crosslisted with: NRES 922
Prerequisites: GEOG/NRES 812 and 822; or equivalent
Description: Study of current research and trends in geographic information systems (GIS), GIScience, and GeoComputation. Advanced spatial analytical techniques and geospatial modeling emphasizing GIS applications in natural resources assessment, environmental analyses, agriculture, and land management.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

GEOG 931 Comparative Studies of the Dispossession of Indigenous Peoples
Description: Dispossession of the indigenous peoples of Australia, Canada, New Zealand, and the United States from a historical, spatial and interdisciplinary approach. Emphasis on human rights, including topics such as the legal assumptions of colonization, reduction of land holdings, population loss, resistance, and land claims.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

GEOG 935 Seminar in Historical Geography
Crosslisted with: NRES 935
Description: Discussion of current literature and research on selected aspects of historical geography. Specific theme of course varies according to instructor.
Credit Hours: 1-3
Min credits per semester: 1
Max credits per semester: 3
Max credits per degree: 6
Grading Option: Grade Pass/No Pass Option

GEOG 940 Seminar in Human Geography
Description: Structure of settlement patterns and the factors influencing their development.
Credit Hours: 1-9
Min credits per semester: 1
Max credits per semester: 9
Max credits per degree: 9
Grading Option: Grade Pass/No Pass Option

GEOG 933 Seminar on Behavioral Processes in Person/Environment Relations
Prerequisites: Senior-level masters degree candidate or PhD-level in human geography or design or planning or any of the social and behavioral disciplines or permission
Description: Consists of a four, participant-led, research/discussion sessions. Environments as potentially significant components of behavioral episodes based on the premise that places, settings, or environments provide the contexts for and arenas within which people act, interact, and transact. Significance of the physical/sociocultural surrounds derived not solely from their physical presence, but from them, meaning attached to them, and their importance. Topics: common importance of person/environment relations to diverse interests concerned with individual and group behavior in everyday, natural settings; how people experience their environments or "environmental knowing" through perceptual/cognitive processes; environmental representations, images, schemas, and/or cognitive "maps"; and attributions of meaning and significance to environments.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

GEOG 994 Seminar in Anthropology and Geography
Crosslisted with: ANTH 994
Credit Hours: 1-3
Min credits per semester: 1
Max credits per semester: 3
Max credits per degree: 6
Grading Option: Grade Pass/No Pass Option

GEOG 996 Non-thesis Research
Prerequisites: 24 hrs geography and permission
Credit Hours: 1-4
Min credits per semester: 1
Max credits per semester: 4
Max credits per degree: 24
Grading Option: Grade Pass/No Pass Option

GEOG 999 Doctoral Dissertation
Prerequisites: Admission to doctoral degree program and permission of supervisory committee chair
Credit Hours: 1-24
Min credits per semester: 1
Max credits per semester: 24
Max credits per degree: 99
Grading Option: Grade Pass/No Pass Option