

**REQUIREMENTS FOR THE BACHELOR OF SCIENCE IN GEOGRAPHIC INFORMATION SCIENCE**  
**COLLEGE OF ATMOSPHERIC AND GEOGRAPHIC SCIENCES**  
 THE UNIVERSITY OF OKLAHOMA

For Students Entering the Oklahoma State System for Higher Education  
**Summer 2010 through Spring 2011**

GENERAL REQUIREMENTS	
Total Credit Hours . . . . .	<b>124*</b>
Total Upper-Division Credit Hours . . . . .	<b>48</b>
<b>Minimum Retention/Graduation Grade Point Averages:</b>	
Minimum in OU Coursework . . . . .	<b>2.00</b>
Minimum in Major Coursework- Combined and OU . . . . .	<b>2.00</b>
Overall - Combined and OU . . . . .	<b>2.00</b>

**Geographic Information Science**  
**B452**  
 Bachelor of Science in Geographic Information Science

**OU encourages students to complete at least 30 hours of applicable coursework each year to have the opportunity to graduate in four years.**

Year	FIRST SEMESTER	Hours	SECOND SEMESTER	Hours
<b>FRESHMAN</b>	<b>ENGL 1113</b> , Principles of English Composition (Core I)	3	<b>ENGL 1213</b> , Principles of English Composition (Core I), or	3
	<b>HIST 1483 or 1493</b> , U.S. (Core IV)	3	<b>EXPO 1213</b> , Expository Writing (Core I)	3
	<b>MATH 1823</b> , Calculus and Analytic Geometry I (Core I)	3	<b>MATH 2423</b> , Calculus and Analytic Geometry II	3
	<b>CHEM 1315</b> , General Chemistry (Core II)	5	<b>GEOG 2453</b> , Intro. to Computer Mapping and Analysis	3
	<sup>1</sup> Humanities Elective	3	<sup>1</sup> General Education Western Civ. & Culture (Core IV)	3
			<sup>1</sup> General Education Natural Science with lab (Core II)	4
	<b>TOTAL CREDIT HOURS</b>	<b>17</b>	<b>TOTAL CREDIT HOURS</b>	<b>16</b>
<b>SOPHOMORE</b>	<b>MATH 2433</b> , Calculus and Analytic Geometry III	3	<b>MATH 2443</b> , Calculus and Analytic Geometry IV	3
	<b>P SC 1113</b> , American Federal Government (Core III)	3	<b>PHYS 2524</b> , General Physics for Engr. & Science Majors	4
	<b>PHYS 2514</b> , General Physics for Engr. & Science Majors	4	<b>*C S 1313</b> , Programming for Non-Majors	3
	<b>GEOG 3001</b> , Dialogue on the Discipline of Geography	1	<b>GEOG 3023</b> , Principles of Physical Geography	3
	<sup>1</sup> General Education Social Science (Core III)	3	<b>GEOG 3924</b> , Analytic Methods in Geography	4
	<b>TOTAL CREDIT HOURS</b>	<b>14</b>	<b>TOTAL CREDIT HOURS</b>	<b>17</b>
<b>JUNIOR</b>	<b>ENGL 3153</b> , Technical Writing	3	<b>GEOG 3243</b> , Principles of Economic Geography	3
	<b>GEOG 3213</b> , Principles of Human Geography	3	<b>GEOG 4233</b> , Digital Image Processing	3
	<b>GEOG 4133</b> , Fundamentals of Remote Sensing	3	<b>GEOG 4553</b> , GIS Applications	3
	<b>GEOG 4453</b> , Geographical Information Systems	3	<sup>1</sup> General Education Understanding Artistic Forms (Core IV)	3
	<sup>1</sup> General Education Non-Western Culture (Core IV)	3	<sup>2</sup> Science Elective	3
	<b>TOTAL CREDIT HOURS</b>	<b>15</b>	<b>TOTAL CREDIT HOURS</b>	<b>15</b>
<b>SENIOR</b>	<sup>2</sup> Science Elective	3	<b>GEOG 4200</b> , Internship in Geography, or Free Elective	3
	<sup>2</sup> Science Elective	3	<b>GEOG 4953</b> , Proseminar in Geography (Capstone)	3
	Free Elective	3	<sup>2</sup> Science Elective	3
	Free Elective	3	<sup>2</sup> Science Elective	3
	Free Elective	3	Free Elective	3
	<b>TOTAL CREDIT HOURS</b>	<b>15</b>	<b>TOTAL CREDIT HOURS</b>	<b>15</b>

• = Students who have not completed two years of the same foreign language in high school are required to take two college courses in the same foreign language. This additional coursework may add 6-10 hours to the minimum hours required for graduation.  
<sup>1</sup> = To be chosen from the University-Wide General Education Approved Course List. Three hours of general education must be upper-division outside the major. At least one General Education approved math course must be completed.  
<sup>2</sup> = A minimum of 15 hours of upper-division (3000-4000-level) courses in chemistry, computer science, engineering, geology, geophysics, mathematics, management information systems (MIS), meteorology, or physics, or statistics courses from meteorology, psychology, sociology, political science, botany, or microbiology.  
 \*=This course fulfills the Computer Literacy Requirement for graduation as required by the Oklahoma State Regents for Higher Education.

**Students must complete 48 hours of upper-division coursework for graduation.**

**University-Wide General Education Requirements (minimum 40 hours)**

Courses designated as Core I, II, III, IV, or Capstone are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list, including at least one upper-division Gen. Ed. course outside of the student's major. Courses graded S/U or P/NP will not apply.

<b>Core I</b>	<b>Symbolic and Oral Communication (9-19 hours, 3-5 courses)</b> • English Composition-6 hours, 2 courses • Mathematics-3 hours, 1 course • Foreign Language-0-10 hours, 2 courses in the same language, (which can be met by successfully completing two years of the same foreign language in high school) • Other (courses such as communication, logic or public speaking)
<b>Core II</b>	<b>Natural Science (7 hours, 2 courses)</b> • Courses must be taken from different disciplines in the biological and/or physical sciences; one of which must include a laboratory.
<b>Core III</b>	<b>Social Science (6 hours, 2 courses)</b> • One course must be P SC 1113, "American Federal Government"
<b>Core IV</b>	<b>Humanities (12 hours, 4 courses)</b> • Understanding Artistic Forms-3 hours, 1 course • Western Civilization and Culture-6 hours, 2 courses, including HIST 1483 or HIST 1493 • Non-Western Cultures-3 hours, 1 course
<b>Senior Capstone Experience (3 hours, 1 course)</b>	

**COURSES IN GEOGRAPHIC INFORMATION SCIENCE (GIS)**

**4200 Internship in Geoinformatics.** 1 to 6 hours. Prerequisite: permission of instructor. Provides career training experience whereby students may apply geoinformatics skills and further develop professional capabilities in a realistic setting. Students will be assigned to private industry, government agencies or educational institutions on an individual basis and report on their experience to the instructor. (F, Sp, Su)

**4453 GIS and Spatial Analysis (Slashlisted with 5453).** Prerequisite: 2453, upper-division standing or permission of instructor. Fundamentals of spatial analytical approaches, database management, spatial modeling and geocomputation in GIS. No student may earn credit for both 4453 and 5453. (Sp)

**4653 Spatial Programming and GIS (Slashlisted with 4653).** Prerequisite: 4453, upper-division standing or permission of instructor. Introduces students to geocomputation concepts, spatial programming skills and computational approaches to spatial data services and spatial problem solving. No student can earn credit for both 4653 and 5653. (F)

**4953 Geoinformatics Capstone Seminar.** Prerequisite: senior standing or permission of instructor. Introduction to contemporary research challenges in geoinformatics and formulating a research question and proposal which will guide the student in senior research project design, implementation and presentation to address fundamental or applied problems with spatial thinking. (Irreg.)

**COURSES IN GEOGRAPHY**

**1103 Human Geography.** An introduction to the humanized Earth; specifically, to the geography of population, the global pattern of cultures and such affiliated elements as language, religion, technology, and political organization, and to the physical expression of those cultures in rural and urban settings. (F, Sp, Su) [IV-WC]

**1113 The Language of Maps.** How to read, analyze and interpret graphic information symbolized on a wide variety of maps. Topics include: scale, location, distance and direction, navigation, interpreting human and physical landscapes, map propaganda, maps in the media and comparisons of maps in western and non-western societies. [I-O]

**1114 Physical Geography.** A systematic introduction to the physical Earth; including Earth materials, landform processes and resultant landforms, Earth-sun relations, weather, climate, the water cycle, natural vegetation, and soil types. Emphasis is placed on the inter-relationships among these phenomena. (F, Sp, Su) [III-LAB]

**1213 Economic Geography.** A survey of the contemporary global economy and of the analytical approaches developed by geographers studying it. Economic systems are examined at the household, urban, regional, national, and international levels. Special attention is given to changes in resource use, regional specialization, trade, industrial and retail location, and modernization. (F, Sp) [III-SS]

**2453 Introduction to Computer Mapping and Analysis.** An introductory survey of computer applications in mapping and map analysis. Designed to provide fundamental concepts and techniques necessary for visual presentation, analysis, and interpretation of geographic data using desktop mapping technologies. The course covers the nature of geographic data, desktop mapping, and map analysis. (F)

**2603 World Regional Geography.** A broad survey of the world's major culture regions emphasizing basic physical, cultural, economic, and political patterns, as well as the processes that have created those patterns. Emphasis on economic development, ethnic conflict, and environmental degradation, as well as on the changing role of the United States. (F, Sp, Su) [IV-WC]

**3001 Dialogue on the Discipline of Geography.** Prerequisite: 1103, 1114 and 1213; or permission of instructor. Introduction to the discipline of geography, nature of geographical research and the interests and ideas of departmental faculty and students.

**3023 Principles of Physical Geography.** Prerequisite: Upper division standing or permission of instructor. Provides a foundation in physical geography. Students should gain a broad, comprehensive but focused viewpoint of lithospheric, biospheric and atmospheric processes as well as the interdependence among them. (Sp)

**3203 Globalization and the Environment.** Prerequisite: junior standing or permission of instructor. Explores the complex assemblage of economic, political, and cultural processes popularly known as "globalization" and examines their implications for resource use and the environment. A central objective is to facilitate critical thinking on global environmental issues and enable students to challenge the increasingly polarized rhetoric concerning economic growth and the environment. (Irreg.)

**3213 Principles of Human Geography.** Prerequisite: upper-division standing or permission of instructor. Introduction to the distribution of humans and their activities on the surface of the earth and the processes that generate these distributions. Special attention given to the influence of economy, culture, and politics in shaping the land and the spatial character and organization of human life. A key theme is the relationship of human diversity and places to the environment. (F)

**3243 Principles of Economic Geography.** Prerequisite: upper division standing or permission of instructor. An examination of the distribution of economic activities and the processes that generate them. Special attention is given to principles of economic location and their application to patterns of production, consumption, and exchange. Students will learn the theories and methods used by geographers in studying economic activities from the local to the global scale. (Sp)

**3253 Environmental Conservation.** Contemporary environmental issues and policies. Problems of population growth, food production, energy shortages, resource depletion and pollution impacts will be stressed. The social aspects of conservation management policies will be viewed at both global and national scales. (F) [III-SS]

**3353 Introduction to Cartography.** A basic survey of maps: their properties, conception and design, construction, compilation and editing, production, and use, with exercises in mapmaking. (F)

**3513 Political Geography.** A survey, stressing current geopolitical conflicts. Special topics include the nation-state, territoriality, the legacies of colonialism, spheres of political influence, regional conflicts, political-geographical integration in such areas as Europe and the Pacific Rim, demographic and resource considerations in world politics, and emerging culturally based conflicts. (F, Sp) [IV-WC]

**3563 Geography of Natural Resources.** Definition and evaluation of mineral, agricultural, forest, and water resources, including their variation over time, between cultures, and as affected by technological innovation. Emphasis is placed on the distribution, technologies, institutions, and landscapes of natural resources in modern economies. (F, Sp)

**3613 Geography of Oklahoma.** A study of the physical regions, populations, distribution, economic development and recreational resources of Oklahoma. (Irreg.)

**†G3633 Historical Geography of the United States.** America's changing geography is considered under three headings: the Colonial Pattern, the Humid East, and the Dry West. Special attention is given to those human activities that have shaped successive cultural landscapes and to those patterns that persist to give present day regions their distinctive character. (F, Sp) [IV-WC]

**3890 Selected Studies in Geography.** 1 to 3 hours. Prerequisite: permission of instructor. May be repeated with change of subject matter; maximum credit nine hours. To be used for special intersession courses and occasional (irregularly scheduled) courses of special concern and use for the undergraduate. (F, Sp)

**†G3924 Analytic Methods in Geography.** Prerequisite: Mathematics 0123 or satisfactory score on Math placement test. Introduces students to methods of organizing, classifying and describing geographic data, together with methods of interpreting spatial relationships and aerial associations. **Laboratory** (F)

**3930 Field Techniques for Geographers.** 1 to 4 hours. Prerequisite: 12 hours of geography or permission of instructor. May be repeated with change of subject matter; maximum credit six hours. Basic methods of data acquisition: surveying, measuring, sampling, sketching, and mapping. Individual and group projects may be required. (Irreg.)

**3933 Interpretation of Aerial Photographs.** Prerequisite: 1114 or permission. An introduction to the photographic inventory of physical and cultural land resources including current processes of change, and to the use of aerial photographs in evaluating present land use, potential alternatives, and associated risks. (Irreg.)

**4003 The Global City and Planning Issues (Crosslisted with Regional and City Planning 4003; Slashlisted with 5003).** Prerequisite: English 1213 and junior standing. An introduction to the concept of globalization and its effects on cities, and the city planning issues related to those effects. Characteristics, theories, and strategies of city development are reviewed. Cities are observed from several perspectives: natural and built environment, governance, society, economics, and history. No student may earn credit for both 4003 and 5003. (Sp)

**G4203 Geomorphology.** Prerequisite: 1114, or comparable work in earth sciences, junior standing. Development and modification of land-surface form by atmospheric, fluvial, glacial, mass-wasting, volcanic and tectonic agents. Emphasis is placed on spatial aspects of the interactions at the interfaces of land, air and water. (Irreg.)

**4243 Geography of Asia.** Prerequisite: junior standing or permission of instructor. A survey of the Middle East and central, south, southeast and east Asia. The course includes overviews of the continent's physical, social, and economic characteristics, but it treats primarily of the evolution of Asia's contemporary cultural landscapes as an expression of Asian cultures. (Sp) [IV-NW]

**4253 Latin America Geography.** Prerequisite: junior standing or permission of instructor. An exploration of the ways in which natural, cultural, and historical processes have combined to shape a unique region of the world. Special emphasis will be placed on the legacies of colonialism, cultural landscapes, social movements, and environmental degradation and resource conservation. (Sp) [IV-WC]

**G4273 Regional Climatology.** Prerequisite: junior or senior standing; or permission of instructor. Investigates the nature of the Earth's climate and presents a synthesis of contemporary scientific ideas about atmospheric circulation. Topics include radiation, the hydrologic cycle, general circulation, local and regional climates, and global climate change. Specific attention is focused on the climatic water budget, its utility in evaluating local and regional climates, the emerging role of climate models, and issues in global climate change. (Irreg.) [II-NL]

**4283 Biogeography (Slashlisted with 5283).** Prerequisite: 1114 and junior standing. A survey of spatial patterns and processes in plant populations, plant communities, and vegetated landscapes. Emphasis is placed on the contemporary patterns of species and communities as determined by a combination of factors including physiography, climate, human influences, evolution, and dispersal. Field and laboratory techniques used in biogeographic research are also discussed. No student may earn credit for both 4283 and 5283. (Alt, Sp)

**4293 Hydrologic Science (Slashlisted with 5293).** Prerequisite: Math 1823 and either Physics 2414, 2514 or Chemistry 1315. Study of the processes which control the storage and movement of water at global, regional, and local scales. The emphasis is on the land portion of the hydrologic cycle, and includes the study of processes such as infiltration, soil water flow in the saturated and unsaturated zone, rainfall/runoff and evaporation. Lab sections include exercises on a computer in the field and in a soils lab. No student may earn credit for both 4293 and 5293. (Sp)

**4343 Climate, History, and Society (Slashlisted with 5343).** Prerequisite: junior standing or permission of instructor. This course is an overview of the mutual interactions of climate and human activities, and examines historical examples of significant climatic impacts. The course includes investigation of the nature of earth's climate and a synthesis of contemporary scientific ideas about the climate and its environmental and societal impacts. No student may earn credit for both 4343 and 5343. (Irreg.)

**4353 Introduction to Geospatial Information Technologies.** Prerequisite: junior standing or permission of instructor. Overview of theories, applications, and practices of modern geospatial information technologies, including global positioning systems (GPS), remote sensing (RS), and geographic information systems (GIS). Course includes lectures, discussions, interactive and hands-on computer exercises, field projects, and site visits to OU research centers, local governments, and private geospatial information technologies companies. (Su)

**4433 Cultural and Political Ecology.** Prerequisite: junior standing or permission of instructor. An introduction to the political, economic, and cultural factors that shape human-environmental relations among peasant and indigenous societies around the world. Special attention is placed on how people negotiate decisions about resource use within value and belief systems that vary in response to changing social and environmental contexts. (Sp) [III-SS]

**4443 Urban Ecology (Slashlisted with 5443).** Prerequisite: junior standing and permission of instructor. An interdisciplinary course that examines how cities acquire, utilize, and modify environmental inputs such as land, water, and energy, and in the process generate a complex set of waste streams and environmental impacts such as solid wastes, atmospheric emissions, and habitat modification. No student may earn credit for both 4443 and 5443. (Irreg.)

**4453 Geographic Information Systems (Slashlisted with 5453).** Prerequisite: junior standing or permission of instructor. An introduction to the nature and applications of geographic information systems (GIS) including the categories of geographic data, data input, data models, spatial analysis, output, and the uses of GIS in socio-economic and environmental studies. No student may receive credit for both 4453 and 5453. (F, Sp)

**4553 GIS Applications (Slashlisted with 5553).** Prerequisite: 4453. Emphasizes technical and application practices in geographic information systems (GIS). Through weekly exercises and two projects, students will gain experience with applications and utilities of Geographic Information Systems, and learn how to plan and implement a GIS project. No student may earn credit for both 4553 and 5553. **Laboratory** (Irreg.)

**4563 American Indian Geographies.** Prerequisite: upper-division standing. A survey of the geographical knowledge among Indians in North America. Historical and contemporary topics are covered in a cross-cultural perspective including land use, environmental perception, concepts of space and place, symbolic landscapes, sacred land, and the idea of resources. (Sp) [IV-NW]

**4953 Proseminar in Geography.** Prerequisite: 1103, 1114, 1213, 3213, 3353, 3924, and an upper-division physical geography course; 3353 and 3924 may be taken concurrently with permission of instructor. History and character of the discipline of geography, with particular attention to changing themes, debates, and methods, the discipline's relations with its neighbors, and current trends in the discipline. (Sp) [V]