



Geography

College of Natural Sciences and Mathematics

**Bachelor of Arts
Minor • Certificate**

PROGRAM DESCRIPTION

Geography students at Sacramento State explore Earth's natural and cultural landscapes using methods from the natural sciences and the social sciences. Students study climate, weather, landforms, water resources, plants and animals, and at the same time, peoples, societies, economies, and cities. Geography's approach to these phenomena emphasizes their interrelationships and spatial patterns, which overlap in intricate ways and give rise to distinctive places and regions. Students work with quantitative and qualitative data from a variety of sources, including published censuses and maps, aerial imagery, field and lab work, and surveys and interviews. They use a variety of tools, including Global Positioning Systems (GPS), Geographic Information Systems (GIS), and other computer applications to collect, display, and analyze spatial data. Students of geography study and address complex issues, especially those with a human-environment interface, such as climate change, resource degradation, urban growth and design, globalization, immigration, and ethnic and territorial conflict. Geographical understanding is applied at different scales, from the local to the global, and regional expertise is cultivated.

Lower division offerings in physical geography, cultural geography, and geographical techniques introduce students to the discipline. At the upper division level, students can choose among regional classes on many parts of the Earth, topical classes on subjects from meteorology to transportation, and technique classes that include GIS, map making, spatial analysis, remote sensing, and field work. Majors select a concentration in a geographic subfield. Although not required, the department encourages students to take elective courses and/or pursue a minor complementary to their geographical interests.

Concentrations

- BA: General Geography / Cartography, Geographic Information Systems and Planning / Human Geography / Physical Geography
- Certificates: Metropolitan Planning / Resource Planning

Special Features

- Numerous internships and jobs in the Sacramento area, including many with state and local government
- Many opportunities for field work in a variety of settings
- A senior project class in which each student conducts his/her own research
- A small major allowing for lots of interaction with faculty and fellow students, including attendance at state and regional professional meetings

Career Possibilities

Geographer • Cartographer • Climatologist • Environmental Scientist • Geographic Information System Specialist • Land Economist • Recreation Planner • Locational Analyst • Soil Conservationist • Urban Planner • Transportation Planner • Aerial Photo Interpreter • Remote Sensing Specialist • Community Development Specialist • Land Use Planner • Demographer • Teacher

Faculty

Robin Datel, Marsha Dillon, Bruce Gervais, Thomas Krabacher, Miles Roberts, Michael Schmandt, James Wanket

Contact Information

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UNDERGRADUATE PROGRAMS

Requirements • Bachelor of Arts Degree

Units required for Major: 45

Minimum total units required for BA: 120

Courses in parentheses are prerequisites.

Note: Every candidate must complete **all** of the Geography Core and **one** Concentration.

A. Required Lower Division Core Courses (10 units)

- (3) GEOG 1 Physical Geography: The Distribution of Natural Phenomena
- (3) GEOG 2 Cultural Geography
- (3) GEOG 3 Introduction to Maps and Geographic Technologies
- (1) GEOG 11 Laboratory in Physical Geography (GEOG 1; may be taken concurrently)

B. Required Upper Division Core Courses (21 units)

- (3) GEOG 102 Ideas and Skills in Geography (GEOG 1, GEOG 2, GEOG 3, or GEOG 11)
- (3) GEOG 118 The Changing Earth's Ecosystems
- (3) GEOG 190 Senior Research Seminar in Geography (GEOG 1, GEOG 2, GEOG 3, GEOG 102; senior standing; passing score on WPE)

One course from each of the following **four** areas:

Geographic Techniques

- GEOG 105 Computer Cartography
- GEOG 107 Remote Sensing (GEOG 103; passing score on the ELM recommended)
- GEOG 109 Geographic Information Systems
- GEOG 110 Advanced Geographic Information Systems (GEOG 109 or instructor permission)
- GEOG 163 Applied Geographic Information Systems (GEOG 109)
- GEOG 181 Spatial Analysis
- GEOG 182 Internet Geographic Information Systems (GEOG 109, CSC 1; or instructor permission)
- GEOG 193A Field Geography: Urban-Metropolitan
- GEOG 193B Field Geography: Suburban-Rural (GEOG 1, GEOG 103 or GEOG 105; or instructor permission)
- GEOG 193C Field Geography: Physical (GEOG 1, GEOG 109, GEOG 117 or GEOG 103 or GEOG 105; or instructor permission)

Human Geography

- GEOG 141 Geography of Economic Activity
- GEOG 145 Population Geography
- GEOG 147 Urban Geography
- GEOG 148 Urban and Regional Planning (GEOG 147 or instructor permission)
- GEOG 149 Transportation Geography (GEOG 141 or GEOG 147 or instructor permission)
- GEOG 163 Applied GIS (GEOG 109)

Physical Geography

- GEOG 111 Elements of Meteorology (GEOG 1 or instructor permission)
- GEOG 113 Climate (Knowledge of general world distribution of climatic elements as given in an introductory physical geography course.)

- GEOG 115 Geography of Plants and Animals (GEOG 1)
- GEOG 116 Global Climate Change (GEOG 1 or instructor permission)
- GEOG 117 Landforms (GEOG 1 or instructor permission)
- GEOG 161 California's Water Resources

Regional Geography

- GEOG 121 United States and Canada
- GEOG 122B South America
- GEOG 125 Geography of East Asia
- GEOG 128 Geography of Europe
- GEOG 131 California

Additional Requirements for Concentrations

Note: Courses cannot double count for the core and the concentration.

General Geography Concentration

Students must take **TWO** of the following - GEOG 105, GEOG 107, GEOG 109, GEOG 110, GEOG 163, GEOG 181, GEOG 182 - plus one additional course from each of the human, physical and regional course listings.

Students must take **ONE** of the following human geography courses in addition to the one chosen for their core: GEOG 141, GEOG 145, GEOG 147, GEOG 163.

Students must take **ONE** of the following physical geography courses in addition to the one chosen for their core: GEOG 111, GEOG 113, GEOG 115, GEOG 117, GEOG 161.

Students must take **ONE** of the following regional geography courses in addition to the one taken for their core: GEOG 121, GEOG 122B, GEOG 125, GEOG 128, GEOG 131.

Cartography, Geographic Information Systems and Planning Concentration

Students must take **FIVE** of the following - GEOG 105, GEOG 107, GEOG 109, GEOG 110, GEOG 148, GEOG 163, GEOG 181, GEOG 182 and the GEOG 193 series. Only one of these may be a field course (GEOG 193 series).

Human Geography Concentration

Students must take **TWO** additional courses from the human geography course listings - GEOG 141, GEOG 145, GEOG 147, GEOG 148, GEOG 149, and GEOG 163, - **TWO** additional courses from the regional course listings - GEOG 121, GEOG 122B, GEOG 125, GEOG 127, GEOG 128 and GEOG 131, and **ONE** additional technique course from among the following: - GEOG 105, GEOG 107, GEOG 109, GEOG 110, GEOG 163, GEOG 181, GEOG 182, and the GEOG 193 series. The technique cannot be a field course (GEOG 193A, GEOG 193B, GEOG 193C) if a field course was taken for the core.

Physical Geography Concentration

Students must take **FOUR** of the following - GEOG 111, GEOG 113, GEOG 115, GEOG 116, GEOG 117, GEOG 161 - plus **ONE** additional technique course chosen from the following - GEOG 105, GEOG 107, GEOG 109, GEOG 110, GEOG 163, GEOG 181, GEOG 182 and the GEOG 193 series. The technique cannot be a field course (GEOG 193A, GEOG 193B, GEOG 193C) if a field course was taken for the core.

Requirements • Minor

Total units required for Minor: 21

- (3) GEOG 1 Physical Geography: The Distribution of Natural Phenomena
- (3) GEOG 2 Cultural Geography
- (1) GEOG 11 Laboratory in Physical Geography (GEOG 1; may be taken concurrently)
- (3) GEOG 102 Ideas and Skills in Geography (GEOG 1, GEOG 2, GEOG 3, or GEOG 11)
- (2) GEOG 103 Map and Air Photo Interpretation
- (3) GEOG 111 Elements of Meteorology (GEOG 1 or instructor permission) **OR**
- GEOG 113 Climate (Knowledge of general world distribution of climatic elements as given in an introductory physical geography course)
- (3) Select **one** of the following:
 - GEOG 141 Geography of Economic Activity
 - GEOG 145 Population Geography
 - GEOG 147 Urban Geography
- (3) Course in Geography with Departmental advisor approval.

Requirements • Certificate - Pre-planning

The Pre-Planning program consists of 15-16 units in addition to the major and culminates in a certificate. Select **either** the Metropolitan or Resource Planning Concentration below. No more than two courses may be taken in any one department.

Metropolitan Planning Concentration

- (15) Select five of the following:
 - ECON 104 Introduction to the U.S. Economy
 - ECON 120 Economics and Environmental Degradation
 - GEOG 109 Geographic Information Systems
 - GEOG 145 Population Geography
 - GEOG 147 Urban Geography
 - GEOG 148 Urban and Regional Planning (GEOG 147 or instructor permission)
 - GEOG 149 Transportation Geography (GEOG 141 or GEOG 147 or instructor permission)
 - GEOG 161 California's Water Resources
 - GOVT 170 Public Policy Development (GOVT 1 or equivalent; passing score on WPE)
 - GOVT 180 California State and Local Government
 - HIST 163 The City in U.S. History

Resource Planning Concentration

- (15-16) Select five of the following:
 - BIO 5 General Biology
 - ECON 120 Economics and Environmental Degradation
 - GEOG 109 Geographic Information Systems
 - GEOG 117 Landforms (GEOG 1 or instructor permission)
 - GEOG 161 California's Water Resources
 - GEOL 10 Physical Geology
 - GOVT 170 Public Policy Development (GOVT 1 or equivalent; passing score on WPE)
 - GOVT 180 California State and Local Government
 - HROB 101 Management of Contemporary Organizations

Students must have an advisor and will not be allowed to proceed in the program without an advisor's signature. In some cases courses may be accepted that have already been completed. There can be no double counting from among courses used in the major.

Lower Division Courses

GEOG 1. Physical Geography: The Distribution of Natural Phenomena. Introductory study of the distribution over the face of the earth of selected aspects of climate, plant cover, soils, and landforms and of processes and conditions giving rise to these distributions. The use of maps as communicative devices in comparative analysis and study of distribution and processes. **Units:** 3.0.

GEOG 2. Cultural Geography. Consideration of the diversity of patterns of land use, settlement and movement established and evolved by humans as a result of the interaction of cultural and physical factors; emphasis on student use of maps and other tools of geographic presentation for analyzing the nature, variation and distribution of cultural features of the earth's surface. **Units:** 3.0.

GEOG 3. Introduction to Maps and Geographic Technologies. Introduction to maps, map concepts, and geographic technologies. Maps are the most effective way to communicate spatial data, and introduces students to the quickly changing world of maps (both hard-copy and digital) and geographic technologies including map and aerial photograph interpretation, spreadsheet operations, introductory statistics, global positioning systems (GPS), Internet mapping, satellite and aerial images, and geographic information systems (GIS) that aid in data collection, analysis, and presentation. Lecture two hours; laboratory two hours. **Units:** 3.0.

GEOG 5. Violent Weather/Changing Atmosphere. Introduction to meteorological and climatological principles and concepts. These principles will be used to examine severe atmospheric phenomena, including hurricanes, tornadoes, thunderstorms, lightning, destructive winds, severe storms, heat waves, droughts and floods, particularly in relation to human-caused climate change and the effects of these phenomena on humanity. **Units:** 3.0.

GEOG 11. Laboratory in Physical Geography. Makes the ideas and relationships of introductory physical geography more clear by observation and experiment. Use is made of maps, globes, models, meteorological instruments and records, satellite photos and observations of the local scene. Laboratory, three hours. **Prerequisite:** GEOG 1; may be taken concurrently. **Units:** 1.0.

Upper Division Courses

GEOG 100. Themes in World Geography. Study of the content of geography with a consideration of basic concepts and methods. Emphasis is on patterns and relationships of the elements and manifestations of physical and cultural geography, including both topical and regional discussions. **Units:** 3.0.

GEOG 102. Ideas and Skills in Geography. Study and discussion of geographic ideas, including the history of the discipline. Introduction to library resources appropriate to geographic inquiry. Practice in geographic descriptive and analytical writing and geographic research. Extensive use of maps. Required of Geography majors in the junior year. Lecture three hours. **Prerequisite:** GEOG 1, GEOG 2, GEOG 3, or GEOG 11. **Units:** 3.0.

GEOG 103. Map and Air Photo Interpretation. Introduction to the language and content of maps and air photos. Emphasis on use of topographic maps in the systematic study of landforms of diverse origin. Passing score on ELM recommended. Lecture one hour; laboratory three hours. **Units:** 2.0.

GEOG 105. Computer Cartography. Preparation of maps and diagrams, emphasizing thematic map design using various mapping and design programs. Detailed study of important map projections. Passing score on ELM exam recommended. Lecture one hour, laboratory six hours. **Units:** 3.0.

GEOG 107. Remote Sensing. Aerial photographs and scanned satellite images, emphasis on the former. Topics include the electromagnetic spectrum, cameras, films, image geometry as related to planimetric and topographic mapping, multispectral techniques, and interpretation of imagery, emphasizing land use and landforms. Lecture two hours; laboratory three hours. **Prerequisite:** GEOG 103; passing score on ELM recommended. **Units:** 3.0.

GEOG 109. Geographic Information Systems. Introduction to GIS, including history and overview of current applications; the nature of spatial data; geographic data structures, acquisition, analysis, and display of geographic data. Lab exercises use various computers and include both raster- and vector-based GIS systems. Lecture two hours; laboratory three hours. **Units:** 3.0.

GEOG 110. Advanced Geographic Information Systems. Builds on the introduction to the hardware, software and operations of GIS offered with the previous courses, providing the essentials required by a beginning GIS analyst or applications support specialist. Emphasis will be placed on problem solving strategies in the context of GIS projects. **Prerequisite:** GEOG 109 or instructor permission. **Units:** 3.0.

GEOG 111. Elements of Meteorology. Basic concepts of weather and weather elements: structure and general circulation of the atmosphere, earth's heat and water balance, precipitation, air masses and fronts, air pollution meteorology. Some micrometeorological concepts with application to air pollution, agriculture, and similar problems. **Prerequisite:** GEOG 1 or instructor permission. **Units:** 3.0.

GEOG 113. Climate. Study of the distribution of heat and moisture over the earth's surface. Basic processes by which heat and moisture acquire unequal distributions in space and time. Classification of climate. Climatic change. Climate models. **Prerequisite:** Knowledge of general world distribution of climatic elements as given in an introductory physical geography course. **Units:** 3.0.

GEOG 115. Geography of Plants and Animals. Introduction to the geographic distribution of life. Communities and biomes, changing continents and climates, dispersal, colonization, extinction, life on islands, and past and present human impacts are examined. **Note:** Field trip required. **Prerequisite:** GEOG 1. **Units:** 3.0.

GEOG 116. Global Climate Change. Study of past climate change and the techniques with which they are reconstructed. Focus on the various temporal scales at which climate change operates. Spatial variability of past, present and future climate changes. Anthropogenic climate change in the context of natural climate variability. **Prerequisite:** GEOG 1 or instructor permission. **Units:** 3.0.

GEOG 117. Landforms. Study of the surface forms of the land with particular attention to their distribution and to the accompanying distribution of natural forces and processes which have brought the landforms into being. Study of landforms in the context of Quaternary environmental change. Identification and analysis of landforms using maps and other spatial data. Lecture two hours; laboratory three hours. **Prerequisite:** GEOG 1 or instructor permission. **Units:** 3.0.

GEOG 118. The Changing Earth Ecosystems. Studies ecosystems from a geographical standpoint. Regions of the earth are discussed in terms of human induced changes and taken up in the order of human occupation. Recent changes, current problems, and future prospects are a major portion. **Units:** 3.0.

GEOG 121. United States and Canada. Present distribution and historical development of population, land use and industry in the U.S. and Canada in relation to regional variations in the physical environment and cultural heritage. **Units:** 3.0.

GEOG 122B. South America. Physical and cultural geography of South America are examined in detail. Topics include the distributions of the physical, cultural, and economic geographic phenomena and the processes which generated these patterns, as well as the interrelationships among these features and processes. **Units:** 3.0.

GEOG 125. Geography of East Asia. Geographic setting and nature of Far Eastern civilization; origins, development and present outlines of settlement; cultures, resource use, economic structures, population, levels of technological achievement, and land use in China, Japan and Korea. **Units:** 3.0.

GEOG 127. Geography of Africa. Emphasis is on sub-Saharan Africa with consideration given to selected topics such as population problems, industrialization, regional groupings, transportation, and internal and external relationships. **Units:** 3.0.

GEOG 128. Geography of Europe. Survey of Europe with emphasis on its physical environment, contemporary demographic, economic, and ethnic patterns, and the changing political landscape. Consideration will also be given to Europe's historic and present-day links with other world regions, and to the geographic basis for many of the social, political, economic, and environmental challenges facing contemporary Europe. **Units:** 3.0.

GEOG 131. California. Study of landforms, climate, vegetation, population distribution and change, industry, transportation, water, energy, and agriculture in California. **Units:** 3.0.

GEOG 141. Geography of Economic Activity. Spatial organization of man's activities related to production, exchange and consumption. Attention is given to resource development and the areal variations of factors affecting it, to concepts of spatial interaction and to spatial aspects of agricultural, industrial and urban land use. An examination of problems related to regional economic development. Changing perceptions of spatial organization of economic activities is also considered. Emphasis is on both theoretical framework and case study applications. **Units:** 3.0.

GEOG 145. Population Geography. Spatial patterns of population numbers and characteristics; migration and spread of ideas; potential for economic and cultural developments. **Units:** 3.0.

GEOG 147. Urban Geography. Consideration of cities as centers of human activity from the rise of urban life in the Old and New Worlds to the present day patterns of metropolis and megalopolis. The functions and interactions of cities in Earth's limited space and on Earth's limited resources are studied historically and cross-culturally. Also examined are changing perceptions of the urban phenomenon and attempts to enhance the quality of urban life. **Units:** 3.0.

GEOG 148. Urban and Regional Planning. Introduction to the theory and practice of urban and regional planning. Topics include the history of planning, the development of comprehensive and land use plans, growth management, and transportation and environmental planning. Includes guest speakers from the planning community as well as the opportunity to work on a project with a community organization or government agency to put into practice what is discussed in class. **Prerequisite:** GEOG 147, or instructor permission. **Units:** 3.0.

GEOG 149. Transportation Geography. Explores the geography of transportation using both theory and applications, quantitative and qualitative methods. Topics include the history and economic importance of transportation systems for all major modes; their political, social, and environmental aspects; and basic analytical methods, including accessibility dynamics, network analysis, and spatial interaction models. Focus will be on the U.S., with frequent reference to local issues, though material will be drawn on from around the world. **Prerequisite:** GEOG 141 or GEOG 147, or instructor permission. **Units:** 3.0.

GEOG 161. California's Water Resources. Study of the location and nature of the state's surface and underground water, including development by government agencies, water needs of cities, farms, recreation and wildlife, implications of water rights, water marketing and conservation, and management of floods, droughts and pollution. **Units:** 3.0.

GEOG 163. Applied Geographic Information Systems. Introduction to developing a GIS project, including planning, database research, proposal writing, analysis and evaluation. Lecture 2 hours; Laboratory 3 hours. **Prerequisite:** GEOG 109. **Units:** 3.0.

GEOG 181. Spatial Analysis. Introduction to techniques useful in the analysis of spatial distributions and other geographic phenomena: basic descriptive and inferential techniques, time series, correlation, regression, and the use of models in geography. **Units:** 3.0.

GEOG 182. Internet Geographic Information Systems. Study of recent developments in Internet-based mapping and GIS services. Emphasis will be placed on standards/protocols of the Internet environment, theory and practice of Internet GIS services, and skills for delivering maps/data over the Internet. Lecture two hours; laboratory three hours. **Prerequisite:** GEOG 109, CSC 1; or instructor permission. **Units:** 3.0.

GEOG 190. Senior Research Seminar in Geography. Writing-intensive capstone course requiring students to complete independent research projects displaying their mastery of geography's content and methods. Projects undertaken in a given semester share a common thematic and/or regional focus. Students use bibliographic, field, spatial analytic, graphic, and verbal skills. Context for projects is provided by a review of the recent history of the discipline. Lecture/discussion three hours. **Prerequisite:** GEOG 1, GEOG 2, GEOG 3, GEOG 102; senior standing; passing score on the WPE. **Units:** 3.0.

GEOG 192. Field Trip in Geography. Field trips to study the physical and cultural geography of the American West. Material and topics studied are broad in scope. Fee course/field trip. May be taken more than once up to a total of 6 units. **Units:** 1.0.

GEOG 193A. Field Geography: Urban-Metropolitan. Examines the internal structure and external relations of Sacramento as a metropolitan center and of nearby urban communities through field observation and exercises. Emphasis is placed on mapping and interviewing as ways of gaining useful information on urban patterns. **Units:** 3.0.

GEOG 193B. Field Geography: Suburban-Rural. Examines competition for land use in suburban Sacramento as urban sprawl overruns less intensive uses. Small towns in the lower Sacramento Valley also examined. Group field trips, interviews, field mapping and discussions. **Prerequisite:** GEOG 1, GEOG 103 or GEOG 105; or instructor permission. **Units:** 3.0.

GEOG 193C. Field Geography: Physical. Survey of selected areas with systematic examination of elements of the natural landscape. Group field trips and individual preparation of reports and consultation with instructor. **Prerequisite:** GEOG 1, GEOG 117, GEOG 109 or GEOG 103 or GEOG 105; or instructor permission. **Units:** 3.0.

GEOG 194. Geography - Related Work Experience. Supervised employment in a company or agency doing geography-related work, arranged through the Department of Geography and the Cooperative Education Program office. Requires preparation of application packet, completion of a 3-6 month full- or part-time work assignment, and a written report. Units not applicable to the Geography major. **Prerequisite:** Upper division status, completion of lower division geography requirements, 2.5 GPA or better, passing score on the WPE, consent of Department Chair. **Graded:** Credit / No Credit. **Units:** 6.0-12.0.

GEOG 195. Internship. Supervised work experience in an approved professional environment, working with professionals in public or private organizations. Supervision supplied by a geography faculty member and on-site supervisor. Placements require 4-12 hours per week, depending on units. **Note:** Open to all Geography majors and minors with permission of supervising faculty member and Department Chair. May be repeated for up to 6 units. **Graded:** Credit / No Credit. **Units:** 1.0-3.0.

GEOG 196. Experimental Offerings in Geography. For upper division students with qualifications and interest in special areas of geographic study. Offered when sufficient number of students justifies an undergraduate proseminar on a particular phase of geography. **Units:** 3.0.

GEOG 198. Co-Curricular Activities. Co-curricular activities related to subject matter and concerns of the Geography Department, e.g. students may qualify for credit by providing special tutorial assistance to EOP students or others in introductory courses. **Graded:** Credit / No Credit. **Units:** 1.0-3.0.

GEOG 199. Special Problems. Individual projects or directed reading. **Note:** Open only to students competent to carry on individual work. **Prerequisite:** Approval of the faculty sponsor and Department chair. **Graded:** Graded (CR/NC Available). **Units:** 1.0-3.0.

Graduate Courses

GEOG 299. Special Problems. Individual projects or directed reading. **Note:** Open only to students competent to carry on individual work. **Prerequisite:** Approval of the faculty sponsor and Department Chair. **Graded:** Graded (CR/NC Available). **Units:** 1.0-3.0.