

# GEOGRAPHY

*College of Liberal Arts*

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Students desiring information should contact the department office for referral to one of the faculty advisors.

View the CSU, Long Beach *Catalog* on-line at [www.csulb.edu](http://www.csulb.edu) by clicking on "Academics" and then "CSULB Catalog."

View the Geography Department website at: <http://www.csulb.edu/geography>

**G**eography focuses on the spatial organization of human and physical landscapes, the interactions between human society and the physical environment, as well as on the meanings that people bring to their place in the world. Geography sits at the nexus of the social and physical sciences, drawing from a range of theoretical and methodological approaches for understanding the world around us. We organize the major into three distinct areas of concentration – Human Geography, Environmental/Physical Geography, and Geospatial Techniques – as a way to structure the diverse approaches that geographers use in thinking about spatial relationships in geographic context. Students are required to focus within one of these concentrations at the undergraduate level.

Because of the diversity of the subject matter that it considers, geography offers a broad, liberal education, which is applicable to many careers. These include elementary, secondary, and college teaching; cartography; geographic information systems (GIS); computer mapping; regional, urban and environmental planning; natural resources management; business; government; travel and tourism, and the foreign service. The Geography Department offers the Bachelor of Arts and Master of Arts degrees, Geography Minor, and two certificate programs: Urban Studies and Geographic Information Science. Certain Geography courses are applicable to teaching credential programs; to the degree in Liberal Studies; and to certificate programs in Environmental, Urban, Asian, Latin American, and Russian and East European studies, and GIS. Students may obtain materials from the department describing the geography programs and courses recommended for career preparation or visit its home page at <http://www.csulb.edu/geography/>.

The Master of Arts degree in geography is designed for those wishing to expand their geographic competence beyond that expected of the bachelor's degree. The Master of Arts degree is becoming a common requirement for employment advancement and it provides the preparation necessary for success in geography Ph.D. programs at other universities. Candidates are responsible for observing the general requirements stated in this Catalog as well as the specific departmental requirements contained in the Geography Master of Arts Handbook.

## Bachelor of Arts in Geography (code GEOGBA01) (120 units)

### Requirements

The Geography major requires at least 45 units. These units are broken down into two broad categories:

Lower Division: 15 units required (GEOG 100 or 120, 140, 160, 200 and 280).

Upper Division: 30 units required, which must include at a minimum: GEOG 380, one Regional course, one course from each of the three following Concentrations – Human Geography, Environmental/Physical Geography or Geospatial Techniques – and an additional 12 units within one Concentration.

### FOUR YEAR PLAN TO COMPLETE THE B.A. DEGREE in GEOGRAPHY (GEOGBA01)

120 units required		Department of Geography	
<b>Semester 1</b>		<b>Semester 2</b>	
University 100	1	Oral Comm or Composition	3
Composition or Oral Comm	3	GE Math or other GE Class	3-4
GE Math or other GE Class	3-4	Critical Thinking or other GE	3
GEOG 100 or 120	3	GEOG 140	3
GE Class	3	GE Class	3
Elective Class	1-3		
TOTAL UNITS	14-17	TOTAL UNITS	15-16

Semester 3		Semester 4	
Critical Thinking or other GE	3	GEOG 280	3
GEOG 160	3	GE Class	3-4
GEOG 200	3	GE Class	3
GE Class	3-4	GE Class	3
GE Class	3	GE Class	3
TOTAL UNITS	15-16	TOTAL UNITS	15-16

Semester 5		Semester 6	
Major Elective- Regional Class	3	GEOG 380	3
Major Elective- Human Geog	3	Major Elective- Geospatial Tech	3
Major Elective- Environ/Physical	3	Major Concentration Class	3
GE Capstone*	3	GE Capstone*	3
Elective Class	3	Elective Class	3
TOTAL UNITS	15	TOTAL UNITS	15

Semester 7		Semester 8	
Major Concentration Class	3	Major Concentration Class	3
Major Concentration Class	3	Major Elective (if needed)	3
GE Capstone*	3	Elective class	3
Elective class	3	Elective class	3
Elective class	3	Elective class	3
TOTAL UNITS	15	TOTAL UNITS	15

\* GE Interdisciplinary Capstones may count in GE and major - see advisor

### FAQ Concerning Road Maps for Completion of Undergraduate Degrees

For each undergraduate major, the on-line Catalog shows plans for scheduling all required courses to complete the degree in four, five, or six years.

While CSULB will make every effort to schedule classes at the times shown in the plans, we cannot guarantee that courses will be available in specific semesters. It is possible that shortage or budget or of personnel will make it impossible to offer as many classes as we would wish.

The plans are not substitutes for working with an advisor. You are strongly encouraged to see an advisor when planning your program each term.

#### I am a freshman. Do I have to choose now whether to follow the four, five, or six-year plan?

No. Most freshmen take 12-15 units. You need at least 12 units to receive full financial aid. With experience, you will be able to judge how heavy a load you find comfortable. This will depend on your outside obligations, such as a job, and on your personal circumstances. In theory, each unit requires three hours a week, including preparing for class, attending class, and completing assignments. Use these guidelines to budget your time and plan an appropriate schedule.

#### Must I take the courses in the semesters shown on the plan?

The plan shows one possible way of completing all requirements for the degree. Consult your advisor about whether it is essential to take a given course in the semester shown. There are some rules to keep in mind:

- 1) You can take the General Education Foundation courses (Composition, Oral Communication, Critical Thinking, Mathematics) in any semester in the first 36 units of baccalaureate-level course work completed at CSULB.
- 2) You cannot take upper division courses until you have completed at least 30 units. (Exceptions can be made for students who already have completed advanced study in the subject.) You cannot take General Education Capstone courses until you have completed at least 60 units.
- 3) For some majors it is essential to complete courses in the correct sequence. You cannot take a more advanced course until you have completed the prerequisite course(s).
- 4) You must complete all requirements for admission to impacted majors within the first 60 units.

#### I have been told that I must take one or more pre-baccalaureate courses. How can I plan my program?

Your advisor at SOAR can help you identify which courses must be postponed. You must still complete the minimum number of baccalaureate units required for the degree.

You may be able to catch up by taking additional courses in later semesters or by taking classes in summer or winter session, or you may choose to spend an additional semester completing the program. You cannot begin the sequence of required courses for some majors until you are ready for baccalaureate-level Mathematics. See your major advisor to develop a plan for scheduling the required courses.

#### I didn't complete the exact list of courses shown. Can I still graduate on time?

The answer depends on your major and on what courses you have completed. The plans are not rigid requirements; they are only intended to provide guidance in planning a program. There are many reasons for students to follow a different pattern, such as changing the major, choosing to take fewer classes in a given semester, choosing to complete a minor or a second major. See your advisor for help in planning a program that will work for you.

#### If I follow the plan, will I have all requirements for graduation completed?

The plans include the specific courses required for the major. For some majors, there are restrictions on the choice of major electives. It is important that you select General Education courses to meet the required distribution pattern. You may need to take an additional General Education course to complete the minimum number of units required for each category. This is likely to happen if you took three-unit courses in Category B, Physical Universe.

#### Minor in Geography (code GEOGUM01)

The Minor in Geography is available to any non-Geography major. The minor requires a minimum of 21 units consisting of GEOG 140, 160, and 280, and at least 9 units of upper division courses with at least one course selected from the 400 series.

*Human Geography:* GEOG 301I, 307, 319I, 352, 381, 446, 452, 460, 465, 466, 467, 470.

*Environmental/Physical Geography:* GEOG 355I, 440, 442, 443, 444, 445, 455; GEOG 458 or, with approval, GEOL 339.

*Geospatial Techniques:* GEOG 400, 402, 473, 474, 475, 481<sup>†</sup>, 482, 484, 485, 486, 487A, 487B, 488.

<sup>†</sup> Only eligible to students concentrating outside Geospatial Techniques

*Regional Courses:* GEOG 304, 306, 308I, 309I, 313I, 314I, 315I, 316, 318, 320I, 326I.

#### Additional Courses

The following courses may be included in the above concentrations with approval of the Undergraduate Advisor: GEOG 492, 494, 497.

## Certificate in Geographic Information Science (code GEOGCT01)

Director

Franklin Gossette

Associate Directors

Judith Tyner

Christopher Lee

Suzanne Wechsler

### Requirements

This program offers specialized training in a variety of theoretical and applied geospatial techniques. The program is designed to provide experience in quantitative spatial analysis through GIS, working with remotely sensed imagery and field-derived data, and effective communication through maps. The certificate serves as a supplement to standard degree programs. It provides essential training for those seeking careers in the geospatial technologies in both the public and private sector.

A brochure describing the GIScience Certificate Program in greater detail is available in the Geography Department Office, LA 4-106, or on-line at [www.csulb.edu/geography](http://www.csulb.edu/geography).

### Certificate Requirements

1. A bachelor's degree, which may be earned concurrently.
2. Consultation with the certificate advisor in the Geography Department.
3. Thirty (30) units distributed as follows:
  - A. Core requirements (15 units): GEOG 380, 482, 473, 485/585
  - B. Specialization (12 units, selected from the following with the approval of Certificate Advisor): GEOG 400, 474, 475/575, 484/584, 487A/587A, 487B/587B, 488/588, 680, 494, 497, 697
  - C. Elective (3-4 units): Any course chosen from the Specialization courses listed above or the following: GEOG 381, 481, 492 (chosen with the approval of the Certificate Advisor); a course in databases, chosen with the approval of the Certificate Advisor; a course in graphic design, chosen with the approval of the Certificate Advisor; a course in surveying and mapping, chosen with the approval of the Certificate Advisor.

## Certificate in Urban Studies (code GEOGCT02)

The Urban Studies Program, housed in the Department of Geography, offers an education in the analysis of urban patterns, processes, and issues, and serves as an excellent supplement to standard degree programs. It offers essential training for those seeking both private sector and public sector careers or graduate study in fields concerned with the urban region, its development, characteristics, problems, and special communities.

Because urban issues cut across a variety of disciplines, the program takes an interdisciplinary approach. Each student participates in a small core of courses in Geography and Political Science but also assembles a distinctive mix of related courses from a variety of departments. The result is a customized program that provides essential information about the dynamics, form, and characteristics of urban regions while allowing a student to design an individualized program of study.

A brochure describing the Urban Studies Certificate Program in greater detail is available in the Geography Department Office, LA 4-106, or on-line at [www.csulb.edu/geography](http://www.csulb.edu/geography).

### Certificate Requirements

1. A bachelor's degree, which may be earned concurrently.
2. Consultation with the undergraduate advisor in the Geography Department.
3. 24 units distributed as follows:

Core requirements, 9 units: U/ST 3011 (same as GEOG 3011), GEOG 466 and 467 or POSC 327

Elective Courses, 15 units, to be selected from the following: AIS 319 (same as ASAM 319, B/ST 319, CHLS 319, W/ST 319); ANTH 416; ASAM 345; BIOL 303 (same as GEOL 303); B/ST 335, 452; DESN 367; FCS 322, 422, 428; GEOG 446 (same as U/ST 446); HIST 468, 469, 474I; POSC 327, 442; W/ST 432.

## Master of Arts in Geography (code GEOGMA01)

### Prerequisites

1. A bachelor's degree in geography; or,
2. A bachelor's degree with 24 units of upper division courses substantially equivalent to those required for a geography major at this University; or,
3. A bachelor's degree in a related discipline with 24 units of upper division courses in a combination of geography and approved courses in related disciplines,
4. Completion of introductory methods course,
5. An undergraduate GPA of 3.0 ("B") or better in geography, or alternative evidence of ability to do graduate work,
6. File with the department a declaration of intent to seek the master's degree in geography

### Advancement to Candidacy

1. See the Geography Graduate Student Handbook;
2. See the general University requirements.

### Requirements

1. Completion of courses required to remove foundational and prerequisite deficiencies (see prerequisites above),
2. Passage of the Writing Proficiency Examination,
3. Completion of 30 units of approved upper division graduate courses. A minimum of 24 units of Geography courses. A minimum of 18 units of 500- and 600-level courses, which must include GEOG 586, 596, 696, 1 additional seminar, and 6 units of thesis (GEOG 698).

### Grouping of Geography Courses

The CSULB Geography Department encourages geography students to acquire a knowledge of the breadth of the discipline, to develop an understanding of the regional and systematic approaches to studying and applying the discipline, and to become proficient in the application of the methods of inquiry and analysis that are employed in the discipline. To facilitate the development of a prepared and well rounded geographer, Geography courses are grouped into three affinity clusters: Regional Geography, Systematic Geography (Human or Environmental); and Methods and Techniques Geography. Students are urged to complete courses in each cluster and to seek the advice of the undergraduate advisor and other faculty to identify courses that are best suited to meet their educational and career objectives.

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## Regional

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These courses examine the relationships among peoples, cultures, and their landscapes in specific areas of the world. There are no pre-requisites for these courses; their broad scope provides the student with a better understanding and appreciation of the world in which we live. Thus, they are ideally suited for general education and liberal studies.

- 100. World Regional Geography
- 304. California
- 306. United States and Canada
- 307I. Modernization in Global Perspective
- 308I. Africa South of the Sahara
- 309I. The Middle East and North Africa
- 313I. Southeast Asia
- 314I. South Asia
- 315I. East Asia
- 316. Europe
- 318. Russia and Its Neighbors
- 320I. Latin America
- 326. Pacific Island Area

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## Systematic Geography

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These courses address with diverse subjects and are organized to provide the basic framework for the physical and cultural sub-fields of the discipline.

H = Human Geography

E = Environmental Geography

- 120. Geography of Human Diversity in the United States (H)
- 140. Introduction to Physical Geography (E)
- 160. Introduction to Human Geography (H)
- 301I. Urban Life and Problems (H)
- 319I. International Development (H)
- 352. Geography of Travel and Tourism (H)
- 355I. International Environmental Issues (E)
- \*381. Maps and Civilization (H)
- 440./540. Land and Water Environments (E)
- \*442. Biogeography (E)
- \*444. Climatology (E)
- \*446 Land Use Planning (H)
- \*452. Economic Geography (H)
- \*455. People As Agents of Environmental Change (E)
- 458. Hazards and Risk Management (E)
- \*460. Population Geography (H)
- 465. Social Geography (H)
- \*466. Urban Geography: Principles (H)
- 467./567. Urban Geography: Metropolitan Problems (H)
- \*470. Political Geography (H)

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## Methods and Techniques

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These courses develop skills in graphic and statistical communication and field analysis which are used within the various sub-fields of the discipline.

- 200. Introduction to Research Methods for Geographers
- 280. Introduction to Geospatial Techniques
- 380. Map Interpretation and Analysis
- \*400. Geographical Analysis
- 402./502. Qualitative Geographic Analysis
- \*482. Thematic Map Design for Presentation and GIS
- \*473. Remote Sensing
- 474. Introduction to Digital Image Processing
- 484./584. Advanced Concepts in Presentation Cartography
- 485./585. Introduction to Geographic Information Systems
- \*486. Field Methods in Landscape Analysis
- 488./588. Geographic Information Systems

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## General

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- \*492. Internship in Applied Geography
- \*494. Special Topics
- \*497. Directed Studies

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## Geography Courses (GEOG)

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### Lower Division

#### 100. World Regional Geography (3)

Prerequisite/Corequisite: One G.E. Foundation course. Through a spatial approach, World Regional Geography introduces students to the world's geographic realms and examines their cultural, population and political dynamics, resources and economic development, patterns of settlement and environmental elements. Same course as GEOG 100W. Not open to students with credit in GEOG 100W.

#### 100W. World Regional Geography (3)

Through a spatial approach, World Regional Geography introduces students to the world's geographic realms and examines their cultural, population, and political dynamics, resources and economic development, patterns of settlement and environmental elements. Same course as GEOG 100. Not open to students with credit in GEOG 100.

#### 120. Geography of Human Diversity in the United States (3)

Prerequisite/Corequisite: One G.E. Foundation course. This course examines America's Human Diversity from a geographic perspective. Four broad themes are considered: (1) the ways in which the social categories of race/ethnicity and gender/sexuality impact the spatial distributions of different people across the country; (2) the distinctive expressions of human diversity on/in the cultural landscapes of rural and urban United States; (3) the day-to-day spatial politics (i.e., social-spatial processes) that exclude/include different groups in different places; and (4) the patterns that emerge in a particular spatial context, southern California.

#### 140. Introduction to Physical Geography (3)

Prerequisite/Corequisite: One G.E. Foundation course. Systematic study of the physical environment with an emphasis on human-environmental interaction and perceptions of environmental hazards and resources. Not open to students who have completed GEOG 150. (CAN GEOG 2)

#### 150. Planet Earth: An Introduction (3)

Prerequisite/Corequisite: One G.E. Foundation course. Introduction to the earth as a whole, its many regions, and the structures and processes that determine the environment we live in. Explorations of weather and climate: landforms, earthquakes, volcanoes; coastal and water resources; ecosystem patterns; and human-environmental interactions. Focus on the dynamic environment of southern California. Small group activity sections involve field experiences, computer based activities and lab projects. Not open to students who have completed GEOG 140.

#### 160. Introduction to Human Geography (3)

Prerequisite/Corequisite: One G.E. Foundation course. Geographic aspects of culture, including the past and present social, political and economic factors that are related to man's perception, organization and use of his environment. (CAN GEOG 4)

#### 200. Introduction to Research Methods for Geographers (3)

Prerequisite: Not open for credit to those who already have completed a first course in statistics. An introduction to the scientific method in geography, with an emphasis on basic quantitative and qualitative techniques and their applications. (2 hours lecture, 2 hours laboratory).

#### 250. Early World Historical Geography (4)

Prerequisites: Open only to Integrated Teacher Education Program (ITEP) students. This course uses the perspectives of history and geography to introduce students to the civilizations of Eurasia, Africa, and the Americas as they developed prior to European contact. To understand their origins and subsequent growth and development, special attention will be given to geographic and historical factors such as location and place, human/environment interactions, migrations, cultural and technological diffusion as well as the intensity of cross-cultural contact and exchange between cultures and civilizations over time. Same as HIST 250.

### 280. Introduction to Geospatial Techniques (3)

This course provides an introduction to geospatial techniques, which include geographic information science (GIS), cartography, global positioning systems (GPS), and remote sensing. Students will be introduced to the geographic concepts required for spatial analysis. (3 hours lecture.)

### Upper Division

General Education Category A must be completed prior to taking any upper division course.

### 3011. The Urban Scene (3)

Prerequisites: ENGL 100 and upper division status. Not open to students with credit in SOC 419. Review and analysis of the changing urban scene: urban life-styles; community patterns of land use and design; population trends; conflicts in the increasingly multicultural setting of the central city; housing and community development; suburban-central city relationships; human utilization of urban life spaces; examination of the views of landmark urbanists; and future trends. Same course as U/ST 3011.

### 304. California (3)

California's diverse natural and cultural environment with emphasis upon social and economic problems and the human response to environmental hazards.

### 306. United States and Canada (3)

Common social, economic and political interests of the major human use regions of the United States and Canada. Describes and interprets the culture patterns of each region in relation to the natural settings in which they have developed.

### 3071. Modernization in Global Perspective (3)

Prerequisites: Completion of the G.E. Foundation, one or more Explorations courses, and upper-division standing. An exploration of the ways in which current psychological and material problems in modern society (both western and Third World) can be traced to a process of accelerating change which began with the advance of technology, the rise of capitalism, the abandonment of "old values," the increasing complexity of bureaucracy and a lowering of social barriers. Exploration of all facets of modernization utilizing films, discussions and readings (fiction and nonfiction). Same course as ANTH 3071.

### 3081. Africa South of the Sahara (3)

Prerequisites: Completion of the G.E. Foundation, one or more Explorations courses, and upper-division standing. Human and environmental settings of Africa South of Sahara and the ecological, cultural, demographic, economic settlement and political relationships that characterize them.

### 3091. The Middle East and North Africa (3)

Prerequisites: Completion of the G.E. Foundation, one or more Explorations courses, and upper-division standing. Human and physical settings of the Middle East and North Africa and the cultural, economic, settlement, and political relationships that characterize them stressing those factors which underlie the region's instability and global importance.

### 3131. Southeast Asia (3)

Prerequisites: Completion of the GE Foundation, one or more Exploration courses and upper division status. This course is a cross-cultural examination of the various characteristics and problems found across the region of: Southeast Asia. The specific foci will be: environmental and cultural patterns, the historical development of the spatial organization of society, demographic and other dynamics of social change related to issues of socio-economic and political development. Letter grade only (A-F).

### 3141. South Asia (3)

Prerequisites: Completion of the GE Foundation, one or more Exploration courses and upper division status. This course is a cross-cultural examination of the various characteristics and problems found across the region of: South Asia. The specific foci will be: environmental and cultural patterns, the historical development of the spatial organization of society, demographic and other dynamics of social change related to issues of socio-economic and political development. This course will satisfy an interdisciplinary capstone requirement. Letter grade only (A-F).

### 3151. East Asia (3)

Prerequisites: Completion of the GE Foundation, one or more Exploration courses and upper division status. This course is a cross-cultural examination of the various characteristics and problems found across the region of: East Asia. The specific foci will be: environmental and cultural patterns, the historical development of the spatial organization of society, demographic and other dynamics of social change related to issues of socio-economic and political development. Letter grade only (A-F).

### 316. Europe (3)

The human and physical patterns of Europe. Current cultural conditions and environmental problems.

### 318. Russia and Its Neighbors (3)

Systematic and regional study of the physical, economic and cultural geography of the Soviet Union.

### 3191. International Development (3)

Prerequisites: Completion of the G.E. Foundation, one Explorations course, upper-division standing. Explores the nature of social, political, and economic development, as well as alternative developmental models. Assesses theories of development, including modernization, diffusion, dependency, and world systems. Compares and contrasts the historical and contemporary experiences of Europe, the U.S., and other "developed" areas of the world with the economic, social, and political challenges facing the governments and peoples of Asia, Africa, Latin America, and other "developing" regions. Same course as I/ST 3191.

### 3201. Latin America (3)

Prerequisites: Completion of the G.E. Foundation, one or more Explorations courses, and upper-division standing. Human and environmental characteristics of Middle and South America with a focus on the historical-cultural factors which shaped their present-day societies and the problems of population growth, resource utilization and economic development.

### 326. Pacific Island Area (3)

Regional synthesis of the physical and cultural geography of Australia, New Zealand and the island groups of Oceania.

### 352. Geography of Travel and Tourism (3)

Historical and contemporary spatial characteristics and dimensions of tourism activity. Tourism, destinations, travel patterns, environmental and economic impacts, and analysis of regional tourism patterns.

### 3551. International Environmental Issues (3)

Prerequisites: Completion of the GE Foundation, one Explorations course, and upper division standing. Examines the deterioration, destruction, maintenance and restoration of environmental systems and resources. Identifies and analyzes major environmental problems that have international dimensions. Investigates ongoing and potential efforts to resolve them. Same course as I/ST3551.

### 380. Map Interpretation and Analysis (3)

Interpretation and understanding of maps as graphic communication with particular emphasis on critical analysis, symbolization, scale, and projection. (Lecture, problems 3 hours)

### \*381. Maps and Civilization (3)

Maps and Civilization is an interdisciplinary and cross-cultural examination of the role maps play in different cultures. It draws upon the disciplines of cartography, geography, history, art, and science. It looks at maps in both Western and non-Western cultures; both conventional and alternative cartographies; and mapping activities of both men and women. Letter grade only (A-F).

**\*400. Geographical Analysis (4)**

Prerequisite: GEOG 200 or any introductory statistics course or consent of instructor. Examination of advanced quantitative techniques commonly employed by geographers in analysis of spatial phenomena. Topics to be covered include multivariate statistical methods as models for geographical analysis. Emphasis on the application of these techniques in geographical research, including the use of computers (3 hours seminar and 2 hours laboratory).

**402. Qualitative Geographic Analysis (4)**

Prerequisite: GEOG 200, or consent of instructor. This course examines qualitative geographic methodologies and methods from a perspective of the various theoretical frameworks that geographers employ in their research. Students will be introduced to survey techniques, interview techniques, focus group techniques, textual analysis, participant observation, and ethnography. The course will include a hands-on research experience as well as a section on qualitative data analysis (four hours of discussion). Letter grade only (A-F).

**440./540. Land and Water Environments (3)**

Prerequisites: GEOG 140 and 380 or consent of instructor. (Undergraduates register in GEOG 440; graduates register in GEOG 540.) Landforms and related soil and water resources as physical components of the human environment. (Lecture-problems and field experience.)

**\*442. Biogeography (3)**

Prerequisite: GEOG 140. A course in biology is strongly recommended. Methods of mapping plant and animal distributions, spatial interaction with environmental limiting factors and man's role in temporal and spatial variation of ecosystems. (Lec-problems; field experience.)

**443. Watersheds: Processes and Management (4)**

Prerequisites: GEOG 140 or 150 or consent of instructor. This course will introduce basic principles of watershed hydrology, including hydrological processes, runoff behavior, and precipitation patterns, providing the context for evaluation of water quality such as nonpoint source pollution, water quantity such as flood and drought and water legislation. Laboratory and field exercises will include hydrologic data collection, processing and evaluation. (3 hours Lecture, 2 hours Laboratory.)

**\*444. Climatology (3)**

Prerequisites: GEOG 140 or GEOG 150 or GEOL. 163. Descriptive and explanatory analysis of the elements and controls of climate. Climates of the world with emphasis on California and North America. (Lecture, problems 3 hours)

**445 Paleoclimatology (4)**

Prerequisites: GEOG 444 or consent of instructor. A survey of the methods and techniques used to describe past climates and climate change and describe their impact on the natural environment with an emphasis on the last 2 million years. This course will examine the use of proxy records, such as marine and lacustrine sediment sequences, ice cores, tree rings, corals and documentary data, to reconstruct past climate. Means of dating past climatic events will also be reviewed. The possible causes of these events will be evaluated in relation to Earth's changing orbital parameters and to internal forcing mechanisms. (Lecture 3 hours, lab activities 2 hours.)

**\*446. Land Use Planning (3)**

Not open to students with credit in U/ST 446 Land Use Planning. This course provides an examination of urban land use planning from the perspective of professional urban planners. The course will focus on planning issues and responses in some of the following major areas: land use; coastal zone planning; resource planning; urban growth, speculation, and economics; design and aesthetic issues; planning parameters for residences, shopping centers; and industrial parks; revitalization of built-up core areas and transportation. Same course as U/ST 446.

**\*452. Economic Geography (3)**

Prerequisite: Consent of instructor. Location theory and its application to the study of the distribution of various economic activities, international and interregional changes in the spatial structure of economic activities and the role of these changes in international and regional development. (Lecture, problems.)

**\*455. People As Agents of Environmental Change (3)**

Spatial variations in environmental change as effected by humans. A systematic and regional analysis at both macro and micro levels. (Lecture 3 hours.)

**458./558. Hazards and Risk Management (3)**

Prerequisites: One earth science course (GEOG 140 or 150 or GEOL 102 or 163 or 190 or consent of instructor) and one social science course (e.g., GEOG 100 or 160 or consent of instructor). Provides a broad overview of hazards and disasters, whether natural or partly technological. This course emphasizes understanding of the physical and social dynamics that must interact to produce hazard, the spatial and temporal distributions of various hazards, and policy options for disaster preparation and loss reduction.

**\*460. Population Geography (3)**

Introduction to the geographic study of population. Includes growth and distribution of world population; results of changing births, deaths, and migration; variations in population composition; related problems such as food supplies and environmental deterioration.

**465./565. Social Geography (3)**

Prerequisite: GEOG 160 or consent of instructor. This course examines the geographies of society. Students are educated in the traditions of social geography from a historical perspective. Students investigate the various methodological and theoretical approaches that make up social geography. Topics can include a mix of the following: socio-spatial inequality, crime, housing, religious systems, medical and health geography, feminist geography, the geography of sexuality, the geography of race, and/or postculturalist geography.

**\*466. Urban Geography: Principles (3)**

Examination of cities; their location, shape, structure and function. Selected world population clusters, theoretical and practical application of urban planning and the evolution of cities are studied. (Lecture-problems.)

**467./567. Urban Geography: Metropolitan Problems (3)**

Prerequisite: GEOG 466 or consent of instructor. (Undergraduates register in GEOG 467; graduates register in GEOG 567.) Geographic components of metropolitan problems and their solutions. Problems related to transportation systems, housing, evolution of ghettos, urban perception and behavioral patterns will be discussed in terms of theoretical and practically applied urban planning solutions. (Lec, problems 3 hrs.)

**\*470. Political Geography (3)**

Prerequisite: GEOG 100 or consent of instructor. Comparative study of the earth's politically organized regions and related systems. Varied approaches are explored, such as power analysis, genetic analysis and functional analysis of political units. Stress is upon political geographic concepts used in analyzing the viability of states and nations. (Lecture, problems.)

**\*473. Remote Sensing (4)**

Prerequisites: GEOG 200 or equivalent and GEOG 380 or consent of instructor. Interpretation and processing of remotely sensed imagery including acquisition or imagery, the electromagnetic spectrum, kinds of imagery, and digital method. (Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

**\*474. Introduction to Digital Image Processing (4)**

Prerequisites: GEOG 140 and 473 or consent of the instructor. Provides a background to the principles and concepts of digital image processing and the extraction of information from digital satellite data with focus various enhancement and extraction techniques, specifically, within the visible and near-infrared portions of the electromagnetic spectrum. (Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

**475. Geographical Applications in Remote Sensing (4)**  
Prerequisites: GEOG 140, 160, 473, and 474. Focuses on remote sensing applications. Students will be introduced to sophisticated imagery and analysis techniques, as applied to weather and fire modeling, arid lands environmental problems, or the urban environment. (Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

**\*481. Geographic Information Science for Natural Sciences (4)**

Prerequisites: Junior/Senior/Graduate standing; GEOG 140 or 150 or BIOL 153 or 211B or GEOL 102. This course introduces the fundamentals of geographic information science and systems (GIS) to non-geography students. The course introduces the concepts of and develops skills in spatial reasoning and spatial thinking. Students explore the use of GIS for spatial query, problem analysis and decision support using examples tailored to biologic, geologic and ecologic applications. Previous course work or experience in GIS would be helpful but is not required. (2 hours of seminar, 2 hours of computer laboratory.)

**\*482. Map Design for Presentation and GIS (4)**

Prerequisites: GEOG 200 or equivalent and 380 or consent of instructor. Theory and techniques in the creation of thematic maps including design, generalization, and symbolization, with an emphasis on computer presentation methods. (Seminar 3 hours, laboratory 2 hours).

**484./584. Advanced Concepts in Presentation Cartography (4)**

Prerequisites: GEOG 140, 160, 473, AND 474. Prerequisites: GEOG 200 or equivalent; GEOG 380; and GEOG 482. Advanced theory and techniques for presentation cartography including communication, visualization, terrain representation, animation, and color. (Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

**485./585. Principles of Geographic Information Science (4)**

Prerequisites: GEOG 200 or equivalent; GEOG 380 and GEOG 482. Fundamental concepts in and techniques of geographic information systems are introduced, including problems of acquiring and processing machine-readable map data. (Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

**\*486. Field Methods in Landscape Analysis (4)**

Prerequisite: GEOG 380 or consent of instructor. Introduction to field techniques, including formulation of field plans, recording direct observation, field mapping, sampling techniques, interviewing, and organizing and evaluating data for presentation. (Lecture-discussion 1 hour, supervised field work 6 hours)

**487A. Applications of Geographic Information Science (GIS): Environment and Natural Resources (4)**

Prerequisites: GEOG 140 or 150; 485 or 585, 488 or 588 or consent of instructor. This course explores the use of Geographic Information Systems for spatial query, problem analysis, spatial modeling and decision support in natural resource analysis such as assessment of landslide hazard, fire hazard or site suitability assessment, natural resources management. This course is designed to introduce students who already possess a background in GIS to applications specific to resource assessment and management. The use of raster GIS is emphasized. (3 hours Lecture, 2 hours Laboratory.)

**487B. Applications of Geographic Information Science (GIS): Urban and Economic (4)**

Prerequisites: GEOG 485 or 585, 488 or 588 or consent of instructor. This course builds on introductory knowledge of Geographic Information Systems, spatial analysis and spatial data and focuses on urban and economic applications and analyses. (3 hours Lecture, 2 hours Laboratory.)

**488./588. Advanced Topics in Geographic Information Science (4)**

Prerequisites: GEOG 200 or equivalent; 380, 482, 485 or 585 or consent of instructor. Advanced concepts in geographic information systems and techniques are introduced and their applications in geography and related discipline explored (Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

**\*492. Internship in Applied Geography (3)**

Prerequisites: Geography major with upper division or graduate standing, prior geography coursework or equivalent recommended, and consent of instructor. Community-based placement to enhance professional preparation in applied geography. May be repeated to a maximum of 6 units; a second semester experience shall differ substantially from first semester experience. Undergraduates may elect Credit/No Credit or letter grading; letter grading only is required for graduate students. Student will work under faculty supervision.

**\*494. Special Topics (1-3)**

Prerequisite: Consent of instructor. Application of geographical concepts and methodology to selected contemporary problems. Themes will be announced in the *Schedule of Classes*. May be repeated to a maximum of 6 units with consent of department chairperson. May not be credited toward the major in geography without written department consent in advance of enrollment.

**\*497. Directed Studies (1-3)**

Prerequisite: Consent of instructor. Individually directed studies of special problems in geography. May be repeated to a maximum of 6 units with consent of department chairperson. May not be credited toward the major in geography without written department consent in advance of enrollment.

## Graduate Level

**502. Qualitative Geographic Analysis (4)**

Prerequisites: GEOG 200, or consent of instructor. This course examines qualitative geographic methodologies and methods from a perspective of the various theoretical frameworks that geographers employ in their research. Students will be introduced to survey techniques, interview techniques, focus group techniques, textual analysis, participant observation, and ethnography. The course will include a hands-on research experience as well as a section on qualitative data analysis (four hours of discussion). Letter grade only (A-F).

**540./440. Land and Water Environments (3)**

Prerequisites: GEOG 140 and 380 or consent of instructor. (Undergraduates register in GEOG 440; graduates register in GEOG 540.) Landforms and related soil and water resources as physical components of the human environment. (Lecture-problems and field experience.) Letter grade only (A-F).

**543. Watersheds: Processes and Management (4)**

Prerequisites: GEOG 140 or 150 or consent of instructor. This course will introduce basic principles of watershed hydrology, including hydrological processes, runoff behavior, and precipitation patterns, providing the context for evaluation of water quality such as nonpoint source pollution, water quantity such as flood and drought and water legislation. Laboratory and field exercises will include hydrologic data collection, processing and evaluation. (3 hours Lecture, 2 hours Laboratory.)

**545. Paleoclimatology (4)**

Prerequisites: GEOG 444 or consent of instructor. A survey of the methods and techniques used to describe past climates and climate change and describe their impact on the natural environment with an emphasis on the last 2 million years. This course will examine the use of proxy records, such as marine and lacustrine sediment sequences, ice cores, tree rings, corals and documentary data, to reconstruct past climate. Means of dating past climatic events will also be reviewed. The possible causes of these events will be evaluated in relation to Earth's changing orbital parameters and to internal forcing mechanisms. (Lecture 3 hours, lab activities 2 hours.)

**558./458. Hazards and Risk Management**

Prerequisites: One earth science course (GEOG 140 or 150 or GEOL 102 or 163 or 190 or consent of instructor) and one social science course (e.g., GEOG 100 or 160 or consent of instructor). Provides a broad overview of hazards and disasters, whether natural or partly technological. This course emphasizes understanding of the physical and social dynamics that must interact to produce hazard, the spatial and temporal distributions of various hazards, and policy options for disaster preparation and loss reduction.

**565./465. Social Geography**

Prerequisites: GEOG 160 or consent of instructor. This course examines the geographies of society. Students are educated in the traditions of social geography from a historical perspective. Students investigate the various methodological and theoretical approaches that make up social geography. Topics can include a mix of the following: socio-spatial inequality, crime, housing, religious systems, medical and health geography, feminist geography, the geography of sexuality, the geography of race, and/or postculturalist geography.

**567./467. Urban Geography: Metropolitan Problems (3)**

Prerequisite: GEOG 466 or consent of instructor. (Undergraduates register in GEOG 467; graduates register in GEOG 567.) Geographic components of metropolitan problems and their solutions. Problems related to transportation systems, housing, evolution of ghettos, urban perception and behavioral patterns will be discussed in terms of theoretical and practically applied urban planning solutions. (Lec, problems 3 hrs) Letter grade only (A-F).

**575 Geographical Applications in Remote Sensing (4)**

Prerequisites: GEOG 140, 160, 473, and 474. Focuses on remote sensing applications. Students will be introduced to sophisticated imagery and analysis techniques, as applied to weather and fire modeling, arid lands environmental problems, or the urban environment. (Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

**584./484. Advanced Concepts in Presentation Cartography (4)**

Prerequisites: GEOG 200 or equivalent; 380 and 482. Advanced theory and techniques for presentation cartography including communication, visualization, terrain representation, animation, and color. (Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

**585./485. Principles of Geographic Information Science (4)**

Prerequisites: GEOG 200 or equivalent; 380 and 482. Fundamental concepts in and techniques of geographic information systems are introduced, including problems of acquiring and processing machine-readable map data. (Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

**586 Field Methods in Landscape Analysis (4)**

Prerequisite: GEOG 380 or consent of the instructor. Introduction to field techniques, including formulation of field plans, recording direct observation, field mapping, sampling techniques, interviewing, and organizing and evaluating data for presentation (Seminar 1 hour; Field Work 6 hours). Letter grade only (A-F).

**587A. Applications of Geographic Information Science (GIS): Environment and Natural Resources(4)**

Prerequisites: GEOG 140 or 150; 485 or 585, 488 or 588 or consent of instructor. This course explores the use of Geographic Information Systems for spatial query, problem analysis, spatial modeling and decision support in natural resource analysis such as assessment of landslide hazard, fire hazard or site suitability assessment, natural resources management. This course is designed to introduce students who already possess a background in GIS to applications specific to resource assessment and management. The use of raster GIS is emphasized. (3 hours Lecture, 2 hours of Laboratory.)

**587B. Applications of Geographic Information Science (GIS): Urban and Economic (4)**

Prerequisites: GEOG 485 or 585, 488 or 588 or consent of instructor. This course builds on introductory knowledge of Geographic Information Systems, spatial analysis and spatial data and focuses on urban and economic applications and analyses. (3 hours Lecture, 2 hours Computer Laboratory.)

**588./488. Advanced Topics in Geographic Information Science (4)**

Prerequisites: GEOG 200 or equivalent; 380, 482, 485 or 585 or consent of the instructor. Advanced concepts in geographic information systems and techniques are introduced and their applications in geography and related discipline explored (Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

**596. Literature and Methods in Geography (3)**

Prerequisite: Consent of instructor. Proseminar in the methods, theory and techniques of geographic investigation with emphasis upon classical and contemporary literature. Letter grade only (A-F).

**600. Seminar in Regional Geography (3)**

Prerequisite: Consent of instructor. Regional methods of study common to geographic research, and their utilization in developing regional concepts. Letter grade only (A-F).

**640. Seminar in Physical Geography (3)**

Prerequisite: Consent of instructor. Physical/environmental issues and problems. May be repeated to a maximum of 6 units with consent of departmental advisor. Letter grade only (A-F).

**650. Seminar in Cultural Geography (3)**

Prerequisite: Consent of instructor. Systematic investigation of human occupancy in its varied environmental and regional settings. May be repeated to a maximum of 6 units with consent of department advisor. Letter grade only (A-F).

**666. Seminar in Urban Geography (3)**

Prerequisite: Consent of instructor. Geographic concepts and techniques of research applied to specific urban areas. May be repeated to a maximum of 6 units with consent of department advisor. Letter grade only (A-F).

**680. Seminar in Geospatial Science (3)**

Prerequisite: Consent of instructor. Application of geographic concepts and methodology to selected cartographic, GIS, remote sensing, and spatial analytic problems. May be repeated to a maximum of 6 units with consent of departmental advisor. Letter grade only (A-F).

**696. Seminar in Geographical Research Methods (3)**

Prerequisites: GEOG 596, graduate status in geography, and consent instructor. Critical survey of contemporary methodologies available for framing research in geography, emphasizing the connection between research models, research questions, and the selection and limitations of particular methods, techniques, and data. Letter grade only (A-F).

**697. Directed Research (1-3)**

Prerequisite: Consent of instructor. Research in geography supervised on an individual basis. Letter grade only (A-F).

**698. Thesis (1-6)**

Prerequisite: Consent of instructor. Planning, preparation and completion of thesis for the master's degree.

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## Urban and Regional Studies Courses (U/ST)

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### Upper Division

General Education Category A must be completed prior to taking any upper division course.

#### 3011. The Urban Scene (3)

Prerequisites: Completion of the G.E. Foundation, one or more Explorations courses, and upper-division standing. Not open to students with credit in SOC 419. Review and analysis of the changing urban scene: urban life-styles; community patterns of land use and design; population trends; conflicts in the increasingly multicultural setting of the central city; housing and community development; suburban-central city relationships; human utilization of urban life spaces; examination of the views of landmark urbanists; and future trends. Same course as GEOG 3011.

#### \*446. Land Use Planning (3)

Not open to students with credit in U/ST 490 Land Use Planning. This course provides an examination of urban land use planning from the perspective of professional urban planners. This course will focus on planning issues and responses in some of the following major areas: land use, coastal zone planning; resource planning; urban growth, speculation, and economics; design and aesthetic issues; planning parameters for residences; shopping centers, and industrial parks; revitalization of built-up core areas and transportation. Same course as GEOG 446.