

GEOGRAPHY

College of Liberal Arts

Department Chair: Paul Laris

Department Office: PH1, Room 210

Telephone: (562) 985-4977 / (562) 985-8432

Website: <http://www.cla.csulb.edu/departments/geography/>

Faculty: Hyowon Ban, Suzanne Dallman, Christine L. Jocoy, Paul Laris, Christopher T. Lee, Christine M. Rodrigue, Dmitrii Sidorov, Deborah Thien, Suzanne P. Wechsler

Advisors:

Undergraduate: Austin Beahm

Graduate: Suzanne Dallman

Administrative Support Coordinator: Carol Philipp, Maggie Munoz-Perez

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

Career Possibilities

Urban Planner • Cartographer • Computer Mapping
• Regional, Urban and Environmental Planner •
Natural Resources Manager • Environmental Monitor •
Transportation Planner • Travel Counselor/Agent • Real
Estate Appraiser • Environmental Analyst • Intelligence
Analyst • Marketing Analyst • Community Development
Specialist • Demographer • Recreation Resource Planner
• Industrial Development Specialist • GIS Specialist •
Climatologist • Ecologist • Environmental Impact Report
Writer • Teacher

Introduction

Geography 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.

The Department offers the Bachelor of Arts and Master of Arts degrees, Geography Minor, and two certificates. For further information, go to the department or visit <http://www.csulb.edu/colleges/cla/departments/geography>. For the Master of Arts degree in Geography, candidates are responsible for the general requirements stated in this catalog as well as the specific departmental requirements contained in the Geography Master of Arts Handbook.

Undergraduate Programs

Bachelor of Arts in Geography (120 units)

Requirements

A grade of "C" or better must be achieved in all upper division Geography courses. The Geography major requires at least 39 units of which at least 9 must be at the 400 level. Lower Division (12 units):

Take one of the following courses:

GEOG 130 Geography of Weather and Climate (4)

Prerequisite: One G.E. Foundation course (One B.2. and one A.1 course recommended)

GEOG 140 Introduction to Physical Geography (3)

Prerequisite/Corequisite: One G.E. Foundation course.

Take one of the following courses:

GEOG 100 World Regional Geography (3)

Prerequisite/Corequisite: One G.E. Foundation course

GEOG 120 Geography of Human Diversity in U.S. (3)

Prerequisite/Corequisite: One G.E. Foundation course.

GEOG 160 Introduction to Human Geography (3)

Prerequisite/Corequisite: One G.E. Foundation course.

Take the following courses:

GEOG 280 Intro Geospatial Techniques (3)

Prerequisite: None

GEOG 200 Introduction to Research Methods for Geographers (3)

Prerequisite: None

Upper Division (27 units)

Take all of the following courses:

GEOG 340 Environmental Geography (3)

Prerequisite: GEOG 130 or GEOG 140 or GEOL 280.

GEOG 360 Human Geography (3)

Prerequisites: GEOG 100, GEOG 120, or GEOG 160.

GEOG 380 Introduction to Digital Cartography & Analysis (3)

Prerequisite: None

Take one Regional course (see list below)

Take 3 courses in one of the following concentrations:

Environmental/Physical Geography, Human Geography, Geospatial Techniques, or Global/Regional Studies

Take additional upper division elective courses to reach the minimum of 27 upper division units.

Major Concentrations

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. In addition, programs may be tailored to meet the needs of individual students especially those choosing to double-major.

Environmental/Physical Geography:

GEOG 330, GEOG 355, GEOG 440, GEOG 441, GEOG 442, GEOG 443, GEOG 444, GEOG 445, GEOG 447, GEOG 448, GEOG 455, GEOG 458, GEOG 481.

Human Geography:

GEOG 301, GEOG 319, GEOG 352, GEOG 357, GEOG 402, GEOG 446, GEOG 452, GEOG 460, GEOG 462/562 (also WGSS 462), GEOG 464, GEOG 465, GEOG 467, GEOG 468, GEOG 470, GEOG 471 (also HCA 471).

Geospatial Techniques:

GEOG 400, GEOG 402, GEOG 473, GEOG 474, GEOG 475, GEOG 482, GEOG 484, GEOG 485, GEOG 486, GEOG 487A, GEOG 487B, GEOG 488.

Global and Regional Studies:

Global Studies Courses:

GEOG 319, GEOG 352, GEOG 355, GEOG 452, GEOG 460, GEOG 464, GEOG 468, GEOG 470.

Regional Courses (no more than two):

GEOG 304, GEOG 306, GEOG 308, GEOG 309,

GEOG 313, GEOG 314, GEOG 315, GEOG 316,
GEOG 318, GEOG 321

Additional Courses

The following courses may be included in the above concentrations with approval of the Undergraduate Advisor:
GEOG 392, GEOG 492, GEOG 494, GEOG 497.

Minor in Geography

The Minor in Geography is available to any non-Geography major. Requires a minimum of 18 units.

Take one of the following courses:

GEOG 130 Geography of Weather and Climate (4)
Prerequisite: One G.E. Foundation course (One B.2. and one A.1 course recommended)

GEOG 140 Introduction to Physical Geography (3)
Prerequisite/Corequisite: One G.E. Foundation course.

Take one of the following courses:

GEOG 100 World Regional Geography (3)
Prerequisite/Corequisite: One G.E. Foundation course

GEOG 120 Geography of Human Diversity in U.S. (3)
Prerequisite/Corequisite: One G.E. Foundation course.

GEOG 160 Introduction to Human Geography (3)
Prerequisite/Corequisite: One G.E. Foundation course.

Take one of the following courses:

GEOG 280 Intro Geospatial Techniques (3)
Prerequisite: None

GEOG 380 Introduction to Digital Cartography & Analysis (3)
Prerequisite: None

Take at least 9 units of upper division courses with at least one course selected from the 400 series.

Minor in Geographic Information Science

The minor in Geographic Information Science (GISci) is designed to help students who are looking for professional careers in the rapidly expanding sectors dealing with geospatial technology and mapping sciences. The field of geographic information science, while rooted in the discipline of geography, has applications in a variety of fields including but not limited to planning, environmental science, journalism, transportation, business and public health. The GISci minor provides an academic credential for students who are pursuing a degree in another discipline that have developed basic mastery of both geographic concepts relevant to responsible use of the technology, as well as technical and applied aspects of this field. The Minor in GISci is available to any CSULB student, except for those who are majors in geography.

Requirements

A minimum of 21 units is required. One of these courses is a basic 3-unit course in statistics which can be satisfied by GEOG 200, PSY 110, BIOL 260, HDEV 190, SOC 170 or a similar statistics course per advisor consent. In addition to a basic statistic course, the minor consists of an additional 18 units as follows:

The Minor in GISci is composed of two core courses:

GEOG 280 Introduction to Geospatial Techniques (3)
Prerequisites: None.

GEOG 380 Introduction to Digital Cartography & Analysis (3)
Prerequisites: None.

Students must also take 12 units of 400-level GISci courses from the following list:

GEOG 471, GEOG 473, GEOG 474, GEOG 475,
GEOG 481, GEOG 482, GEOG 484, GEOG 485,
GEOG 487A, GEOG 487B, GEOG 488

Certificate in Geographic Information Science

This certificate provides experience in quantitative spatial analysis using Geographic Information Systems software, remotely sensed imagery and field-derived data, and effective communication through maps. The certificate serves as a supplement to standard degree programs. Further information on the GIScience Certificate is available from the Geography undergraduate advisor, and online at www.csulb.edu/geography.

This certificate program is eligible for Financial Aid. Please see the department web site for required Federal disclosure information.

Requirements

1. A bachelor's degree, which may be earned concurrently.
2. Consultation with the certificate advisor in the Geography Department.

3. Satisfactory completion of prerequisites (9 units):

GEOG 200 Introduction to Research Methods for Geographers (3) or equivalent
Prerequisite: None

GEOG 280 Intro Geospatial Techniques (3) or equivalent
Prerequisite: None

GEOG 380 Introduction to Digital Cartography & Analysis (3)
Prerequisite: None

4. A minimum of 23 units distributed as follows:

- A. Core Courses. Take all the following courses:

GEOG 400 Multivariate Geographical Analysis (4)
Prerequisite: GEOG 200 or any introductory statistics course or consent of instructor.

GEOG 473 Remote Sensing (4)
Prerequisites GEOG 200 (or equivalent) and GEOG 280 or GEOG 471 or GEOG 481; or consent of instructor.

GEOG 485/585 Principles of Geographic Information Science (4)
Prerequisites: GEOG 200 or equivalent AND GEOG 280 or GEOG 471 or GEOG 481; or consent of instructor.

- B. Specialization (three courses):

Students are encouraged to select a specialization in one of the following three areas, although courses can be selected between categories with advisor approval.

Geographic Information Systems:

GEOG 487A/587A, GEOG 487B/587B, GEOG 488/588

Remote Sensing: GEOG 474, GEOG 475

Cartography: GEOG 482, GEOG 484/584

One of the following courses may be substituted for the above courses with advisor consent: GEOG 446, GEOG 492, GEOG 494, GEOG 497, GEOG 697, GEOG 680. Substitutions may also be made for courses in database, computer programming, surveying and/or web design and visualization with approval from the Certificate Advisor.

Certificate in Urban Studies

The Urban Studies Certificate, housed in the Department of Geography, takes an interdisciplinary approach. Students take a core of courses in Geography and take courses from one of two concentrations (Urban Theory and Practice or Applied Urban Geography). For further information, go to www.csulb.edu/geography.

This certificate program is eligible for Financial Aid. Please see the department web site for required Federal disclosure information.

Requirements

1. A bachelor's degree, which may be earned concurrently.
2. Consultation with the undergraduate advisor in the Geography Department.
3. A minimum of 23 units distributed as follows:

Core requirements (6 units):

Take the following courses:

GEOG 301 The Urban Scene (3)

Prerequisites: GE Foundation requirement, one or more Exploration courses, and upper division standing.

GEOG 464 Urban Geography: Sustainable Cities (3)

Prerequisite: GEOG 100, GEOG 120, or GEOG 160 or GEOG 301 or consent of instructor; GEOG 360 recommended.

Corequisite: GEOG 301

Concentration Requirement (minimum 17 units)

Choose One Option:

Concentration A - Urban Planning:

Take one from each category:

Planning Course: GEOG 446

GIS Course: GEOG 485/585* or GEOG 471/HCA 471

Policy Course: GEOG 467/567 or CAFF 322 or CAFF 422

Applications course: GEOG 487/587B or GEOG 488/588 or GEOG 492

Electives: as needed to reach 23 units total. Any course listed above or any of the following:

CHLS 320, CHLS 421, HIST 474, ANTH 416/516, POSC 327, WGSS 432, DESN 367, GEOG 468

*GEOG 485/585 prerequisite: GEOG 280 or GEOG 471 or HCA 471. GEOG 280 does not count toward the Certificate.

Concentration B - Urban Theory and Praxis:

Two courses from the following:

Place, Space, and Power: POSC 327, WGSS 432, CHLS 421, GEOG 452, GEOG 462, GEOG 465

One from each of the following:

Policy: GEOG 467, CAFF 322, CAFF 422

Community Development: CHLS 320, ASAM 345, GEOG 492

Planning or Design: GEOG 446

Electives: Additional courses as needed from either concentration

Graduate Programs

Master of Arts in Geography

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. Completion of Graduate Record Examination (GRE),
7. 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. Fulfillment of the Graduation Writing Assessment Requirement (GWAR),
3. Completion of 30 units of approved upper division and graduate courses. A minimum of 24 units of Geography courses. A minimum of 21 units of 500 and 600-level courses

Take the following two courses:

GEOG 596 Geographic Thought and Literature (3)
Prerequisite: Consent of instructor.

GEOG 696 Seminar in Geographical Research Methods (3)

Prerequisites: GEOG 596, graduate standing in geography, and consent instructor.

Take one advanced geographic methods course, approved by the Thesis Advisory Committee Chair, from the following:

GEOG 400 Multivariate Geographical Analysis (4)
Prerequisite: GEOG 200 or any introductory statistics course or consent of instructor.

GEOG 474 Intro to Digital Image Processing (4)
Prerequisite: GEOG 473 or consent of instructor.

GEOG 502 Qualitative Geographic Analysis (4)
Prerequisite: GEOG 360 or consent of instructor.

GEOG 575 Geographical Applications in Remote Sensing (4)
Prerequisites: GEOG 473 or consent of instructor.

GEOG 584 Enterprise GIS Development (4)
Prerequisite: GEOG 280 and GEOG 380 or GEOG 471 or GEOG 481 or consent of instructor.

GEOG 586 Field Methods in Landscape Analysis (4)
Prerequisite: GEOG 340 or consent of instructor.

GEOG 587A Applications of GIS: Environment and Natural Resources (4)
Prerequisites: GEOG 485 or GEOG 585 or consent of instructor.

GEOG 587B Applications of Geographic Information Science: Urban and Economic (4)
Prerequisite: GEOG 485 or GEOG 585 or consent of instructor.

GEOG 588 Geographic Information Science (GIS) Programming (4)
Prerequisites: GEOG 485 or GEOG 585 or consent of instructor.
Corequisites: GEOG 485 or GEOG 585 or consent of instructor.

Take 2 topical seminars (each of the following seminars may be taken with credit twice to meet this requirement), from the following:

GEOG 640 Seminar in Physical/Environmental Geography (3)
Prerequisite: Consent of instructor.

GEOG 650 Seminar in Cultural Geography (3)
Prerequisite: Consent of instructor.

GEOG 666 Seminar in Urban Geography (3)
Prerequisite: Consent of instructor.

GEOG 680 Seminar in Geospatial Science (3)
Prerequisite: Consent of instructor.

Take 6 units of thesis:

GEOG 698 Thesis (6)
Prerequisite: Consent of instructor.

4. A "B" or better in two core courses:

GEOG 596 Geographic Thought and Literature (3)
Prerequisite: Consent of instructor.

GEOG 696 Seminar in Geographical Research Methods (3)
Prerequisites: GEOG 596, graduate standing in geography, and consent of instructor.

Master of Science in Geographic Information Science

This program is offered through the College of Continuing and Professional Education at a higher tuition rate.

The Master of Science in Geographic Information Science (MSGISci) is designed to address the needs of individuals across the geospatial workforce who require focused and specialized training to become competitive and contribute to the range of positions in this diverse industry. This one-year 30-unit applied training program combines advanced technical and analytic training in the geospatial sciences with training in interpersonal and business skills. The program's coursework is designed as a professional science masters to develop competencies essential for successful geospatial practitioners.

Prerequisites

Prerequisites include an undergraduate GPA of 3.0 and experience comparable to the following:

- a bachelor's degree in geography with a minimum of one upper division course in geospatial techniques (geographic information science, cartography, and/or remote sensing); or
- a bachelor's degree in a related discipline with a minimum of one upper division course in geospatial techniques (geographic information science, cartography, and/or remote sensing); or
- a bachelor's degree in a related discipline with a minimum of one year of demonstrated work experience in

a field with direct application of geospatial technologies.

University Requirements

- Completion of courses required to remove prerequisite deficiencies (see prerequisites above);
- Fulfillment of the Graduation Writing Assessment Requirement (GWAR);
- Completion of 30 units of approved MSGISci graduate courses.

Program Requirements

Take the following courses:

GISC 601 Geospatial Professionalism(1)
Prerequisites: None

GISC 602 Applied GIS (4)
Prerequisite/Corequisite: GISC 601

GISC 603 Cartographic Visualization (4)
Prerequisite/Corequisite: GISC 601

GISC 604 Enterprise GIS Development (4)
Prerequisite/Corequisite: GISC 601

GISC 605 GIS Development (4)
Prerequisite/Corequisite: GISC 601

GISC 606 Applied Remote Sensing (4)
Prerequisite/Corequisite: GISC 601

GISC 607 Project Orientation and Support (2)
Prerequisites/Corequisites: GISC 601, GISC 602, GISC 603, GISC 604, GISC 605, GISC 606; or advisor consent.

GISC 608 Applied Project (4)
Prerequisites: GISC 601, GISC 602, GISC 603, GISC 604, GISC 605, GISC 606, and a grade of "C" or better in GISC 607; or advisor consent.

Take one PPA/NSCI course or 3 units of advisor approved, professionally focused upper-division coursework.

Culminating Experience

The program culminates with an applied research experience. The research project allows students to actively apply and demonstrate the knowledge and skills that they have both brought to and acquired through the curriculum. Applied research topics will have relevant practical applications and will be informed by our network of GIScience Professionals in the local workforce community. Topics may address spatial problems currently faced by members of our advisory board, our network of GISci professionals, or existing faculty research. Students will participate in the equivalent of 6 units of work on an applied research project to engage them in a relevant hands-on research activity. Project reports will integrate the core competencies developed through the curriculum and reflect students' integration of instruction. The project deliverable will include a written project report and oral presentation.

General

392. Climate Action and Sustainability at CSULB
492. Applied Internship
494. Selected Topics in Geography
497. Directed Studies

Global and Regional

GLOBAL:

- 319. International Development
- 352. Geography of Travel and Tourism
- 355. International Environmental Issues
- 452. Geography of the Global Economy
- 468. World Cities/Cities of the World
- 470. Political Geography

REGIONAL:

- 100. World Regional Geography
- 304. California
- 306. United States and Canada
- 308. Africa South of the Sahara
- 309. The Middle East and North Africa
- 313. Southeast Asia
- 314. South Asia
- 315. East Asia
- 316. Europe
- 318. Russia and Its Neighbors
- 321. Geography of Latin America

Human Geography

- 120. Geography of Human Diversity in the United States
- 160. Introduction to Human Geography
- 301. Urban Life and Problems
- 319. International Development
- 352. Geography of Travel and Tourism
- 357. Sacred Geographies
- 360. Human Geography
- 446. Land Use Planning
- 452. Geography of the Global Economy
- 460. Population Geography
- 462/562. Gender, Place and Culture
- 464. Urban Geography: Sustainable Cities
- 465./565. Social Geography
- 467./567. Urban Geography: Metropolitan Problems and Solutions
- 468. World Cities/Cities of the World
- 470. Political Geography
- 471. Geographic Information Science (GIS) for Health
- 562/462. Gender, Place and Culture

Environmental/Physical Geography

- 101. The Global Environment
- 130. Geography of Weather and Climate
- 140. Introduction to Physical Geography
- 330. California Ecosystems
- 340. Environmental Geography
- 355. International Environmental Issues
- 440./540. Land and Water Environments
- 441./541. Geography of Mars
- 442. Biogeography
- 443. Watersheds: Processes and Management
- 444. Climatology
- 445. Paleoclimatology
- 447. Landscape Restoration
- 448. Environmental Assessment
- 455. People As Agents of Environmental Change
- 458./558. Hazards and Risk Management
- 481. Geographic Information Science for Natural Sciences

Methods and Techniques

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. Multivariate Geographical Analysis
- 402. Qualitative Geographic Analysis
- 482. Thematic Map Design for Presentation and GIS
- 473. Remote Sensing
- 474. Introduction to Digital Image Processing
- 475. Geographical Application Remote Sensing
- 484./584. Advanced Concepts in Presentation Cartography
- 485./585. Introduction to Geographic Information Systems
- 486. Field Methods in Landscape Analysis
- 487A./587A. Applications of GIS: Environment and Natural Resources
- 487B./587B. Applications of GIS: Urban and Economic
- 488. Geographic Information Systems (GIS) Programming

Geography Courses (GEOG)

LOWER DIVISION

100. World Regional Geography (3)

Prerequisite/Corequisite: One G.E. Foundation course.

Through a spatial approach, introduction to the world's geographic realms and examination of their cultural, population and political dynamics, resources and economic development, patterns of settlement and environmental elements.

101. The Global Environment (3)

Prerequisites: One Foundation course

Introduction to the Earth's principal human-environmental relationships and biogeographic processes with a focus on how human actions impact the geography of living things from the local to the global scale.

Same course as ESP 101. Not open for credit to students with credit in ESP 101.

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

Prerequisite/Corequisite: One G.E. Foundation course.

Examines America's Human Diversity from a geographic perspective focusing on the spatial distribution and organization of race/ethnicity and gender/sexuality groups across the U.S.'s rural and urban cultural landscapes while emphasizing the spatial politics of inclusion and exclusion.

130. Geography of Weather and Climate (4)

Prerequisite: One G.E. Foundation course (One B.2. and one A.1 course recommended)

Introduction to Earth's atmosphere, weather processes, global climate patterns, drivers of climate change and their interactions with the biotic and abiotic environment. Analysis of how human activities affect weather and climate processes and the patterns of global climate impacts.

Letter grade only (A-F). (3 hours lecture, 2 hours field activity)

140. Introduction to Physical Geography (3)

Prerequisite/Corequisite: One G.E. Foundation course.

Systematic study of the physical environment including human-environmental interaction, environmental hazards, and natural resources.

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 human perception, organization and use of the environment.

200. Introduction to Research Methods for Geographers (3)

Introduction to the scientific method in geography, with an emphasis on basic quantitative and qualitative techniques and their applications.

Not open for credit to student with credit in first course in statistics. (2 hours lecture, 2 hours laboratory).

250. Early World Historical Geography (4)

Prerequisites: Open only to Integrated Teacher Education Program (ITEP) students.

Emergence and changing nature of urban life, cultural and technological diffusions, and variations in the intensity of contact and exchange among cultures and civilizations over time. Geographic and historical factors, such as location and place, human/environment interactions, migrations, and diffusion.

Same course as HIST 250. Not open for credit to students with credit in HIST 250.

280. Introduction to Geospatial Techniques (3)

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.

301. The Urban Scene (3)

Prerequisites: GE Foundation requirement, one or more Exploration courses, and upper division standing.

Analysis of urban life-styles; land use and design; population trends; conflicts in the increasingly multicultural urban setting; housing and community development; suburban-central city relationships; human utilization of urban life spaces; opinions of landmark urbanists; and future trends.

304. California (3)

Prerequisite: Completion of the GE Foundation.

An exploration of 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)

Prerequisites: GE Foundation requirement.

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.

308. Africa South of the Sahara (3)

Prerequisites: GE Foundation requirement, 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.

309. The Middle East and North Africa (3)

Prerequisites: GE Foundation requirement, 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.

313. Southeast Asia (3)

Prerequisites: GE Foundation requirement, one or more Exploration courses and upper division standing. Students must have scored 11 or higher on the GVAR Placement Examination

or successfully completed the necessary portfolio course that is a prerequisite for a GVAR Writing Intensive Capstone.

Cross-cultural examination of the characteristics and problems found across Southeast Asia, specifically, environmental and cultural patterns, historical development of the spatial organization of society, demographic and other dynamics of social change, and issues of socio-economic and political development.

Letter grade only (A-F).

314. South Asia (3)

Prerequisites: GE Foundation requirement, one or more Exploration courses and upper division standing. Students must have scored 11 or higher on the GVAR Placement Examination or successfully completed the necessary portfolio course that is a prerequisite for a GVAR Writing Intensive Capstone.

Cross-cultural examination of the various characteristics and problems found across the region of South Asia. Specific foci are 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).

315. East Asia (3)

Prerequisites: GE Foundation requirement, one or more Exploration courses and upper division standing. Students must have scored 11 or higher on the GVAR Placement Examination or successfully completed the necessary portfolio course that is a prerequisite for a GVAR Writing Intensive Capstone.

Cross-cultural examination of the characteristics and problems found across East Asia, specifically, environmental and cultural patterns, historical development of the spatial organization of society, demographic and other dynamics of social change, and issues of socio-economic and political development.

Letter grade only (A-F).

316. Europe (3)

Prerequisites: GE Foundation requirement.

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

318. Russia and Its Neighbors (3)

Prerequisite: GE Foundation requirement.

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

319. International Development (3)

Prerequisites: GE Foundation requirement, one Explorations course, upper-division standing.

Theoretical and practical analysis of social, political, and economic development and alternative developmental models. Contemporary and historical comparisons of how "developed" and "developing" areas of the world have confronted various economic, social, and political challenges.

Same course as I/ST 319. Not open for credit to students with credit in I/ST 319.

321. Geography of Latin America (3)

Prerequisites: GE Foundation requirements. Students must have scored 11 or higher on the GVAR Placement Examination or successfully completed the necessary portfolio course that is a prerequisite for a GVAR Writing Intensive Capstone.

This course examines Latin America from a regional geographical perspective. Utilizing both historical and contemporary points of view, it identifies and interprets the distinguishing environmental, demographic, cultural, social, economic, and geopolitical characteristics of the region.

Not open to students who have taken GEOG 320I. Letter grade only (A-F).

330. California Ecosystems (3)

Prerequisites: GEOG 130 or GEOG 140 or ESP 101 or ESP 200; AND GEOG 200 or BIOL 260; or instructor consent.

Introduction to the ecology and biogeography of natural California landscapes, including field examination of habitats, collection and analysis of environmental data, and reporting of field or laboratory findings.

Letter grade only (A-F). Same course as ESP 330. Not open for credit to students with credit in ESP 330.

(2 hours lecture/activity, 2 hours field/laboratory)

340. Environmental Geography (3)

Prerequisite: GEOG 130 or GEOG 140 or GEOL 280.

Examines interrelationships between society and land and water environments. Focuses is on critical analysis of contemporary environmental issues in American West, including both physical and human factors.

Letter grade only (A-F).

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.

355. International Environmental Issues (3)

Prerequisites: GE Foundation requirement, one Explorations course, and upper division standing. Students must have scored 11 or higher on the GEAR Placement Examination or successfully completed the necessary portfolio course that is a prerequisite for a GEAR Writing Intensive Capstone.

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/ST 355. Not open for credit to students with credit in I/ST 355.

357. Sacred Geographies (3)

Prerequisites: Completion of GE Foundation, one or more Exploration courses and upper division status.

Comparative exploration of sacred spaces across the world. Examines the social, political, and religious processes that create places of ritual and reverence by linking the individual to the communal experience of place.

Letter grade only (A-F).

360. Human Geography (3)

Prerequisites: GEOG 100, GEOG 120, or GEOG 160.

Introduces breadth of research across subfields of human geography through examination of various contemporary topics, such as migration, globalization, cultural landscapes, urbanization, politics, agricultural practices, and development.

Letter grade only (A-F).

380. Introduction to Digital Cartography & Analysis (3)

Introductory knowledge and skills in the creation and analysis of digital cartography for graphic communication of geographical information.

(Lecture, problems 3 hours)

392. Climate Action and Sustainability at CSULB (3)

Prerequisites: Completion of the entire Foundation curriculum along with one or more Explorations courses and upper-division standing

Students join CSULB's efforts to achieve climate neutrality (zero net greenhouse gas emissions) and sustainability through service learning assignments working with staff, faculty and community partners. Provides opportunities for all majors to apply and develop skills through hands-on experience.

6 hours activity.

Same course as ESP 392. Not open for credit to students with credit in ESP 392.

400. Multivariate Geographical Analysis (4)

Prerequisite: GEOG 200 or any introductory statistics course or consent of instructor.

Examination of advanced multivariate statistical techniques employed by geographers in analysis of spatial phenomena and emphasis on applications in geographical research, using spreadsheet and statistical software.

(3 hours seminar and 2 hours laboratory).

402. Qualitative Geographic Analysis (4)

Prerequisite: GEOG 360 or consent of instructor.

Examines qualitative geographic methodologies and methods through the theoretical frameworks that geographers employ in their research. Introduces survey, interview, and focus group techniques, textual analysis, participant observation, and ethnography. Includes a hands-on research experience.

(4 hours discussion). Letter grade only (A-F).

440./540. Land and Water Resources (3)

Prerequisite: ESP 200 or GEOG 340 or consent of instructor.

Examines interrelationships between land and water as components of the human environment. Focus is on management, use and human impacts, with an emphasis on water resources.

Letter grade only (A-F). (Lecture-discussion)

441./541. The Geography of Mars (3)

Prerequisite/Corequisite: GEOG 130 or GEOG 140 or GEOL 102 and GEOG 280 or consent of instructor.

Introduction to the geography of Mars, providing a physical regionalization of the Martian surface and climate and an understanding of underlying tectonic, geomorphic, and meteorological processes. The course reviews remote sensing fundamentals and data sources for geographical analysis of Mars.

Letter grade only (A-F). (2 hours seminar, 2 hours activity).

442. Biogeography (3)

Prerequisite/ Corequisite: GEOG/ESP 330.

Theories and methods of mapping plant and animal distributions, spatial interaction of species with environmental limiting factors, and the human role in temporal and spatial variation of ecosystems.

Letter grade only (A-F). (Lec-problems; field experience)

443. Watersheds: Processes and Management (4)

Prerequisite: ESP 200 or GEOG 340 or consent of instructor.

Basic principles of watershed hydrology, including hydrologic processes, runoff behavior, precipitation patterns and watershed models. Evaluation of water quality elements such as nonpoint source pollution. Laboratory and field exercises will include hydrologic data collection, processing and evaluation.

Letter grade only (A-F). (3 hours Lecture, 2 hours Laboratory)

444. Climatology (3)

Prerequisite: ESP 200 or GEOG 340 or consent of instructor.

Descriptive and explanatory analysis of elements and controls of climate. Climates of world emphasis on California and North America.

Letter grade only (A-F). (Lecture, problems 3 hours)

445. Paleoclimatology (4)

Prerequisite: GEOG 330 or GEOL 240 or GEOL 300.

Methods and theories used in reconstructing and dating climates of the past 2 million years, using such proxies as sediment sequences, packrat middens, ice cores, tree rings, corals, and documentary data. Causes of environmental change and human interactions are analyzed.

Cross-listed with GEOL 445. Same course as GEOL 445. Not open for credit to students with credit in GEOL 445

Letter grade only (A-F). (Lecture 3 hours, lab activities 2 hours)

446. Land Use Planning (3)

Examines land use planning, issues and responses concerning land use; coastal zones; environmental resource management; urban growth; design and aesthetics; planning parameters for residences, parks, conservation areas, shopping centers, and industrial areas; urban and regional revitalization, and transportation.

Not open for credit to students with credit in U/ST 446

447. Landscape Restoration (3)

Prerequisite(s)/Corequisite(s): GEOG/ESP 330.

Explores philosophical, political, and ecological issues associated with restoring degraded landscapes. Analysis of theoretical works, scientific research, planning documents and case studies. Examines potential for restoring natural landscapes.

Letter grade only (A-F).

448./548. Environmental Assessment (3)

Prerequisite: ESP 200 or GEOG 340 or consent of instructor.

Introduction to the policy framework and techniques for assessing impacts on various aspects of the biological and physical environment. The course is a survey of multiple topics involving various types of environmental assessment, including data collection, processing and evaluation.

Letter grade only (A-F). (Undergraduates register in GEOG 448; graduates register in 548.) (3 hours lecture, activity)

452. Geography of the Global Economy (3)

Prerequisite: GEOG 360 or consent of instructor.

Examines globalization processes that create integration of world's economic, political, and cultural systems, but operate unevenly across space and time. Focuses on impact on people and places around the world.

(Lecture, problems) Letter grade only (A-F).

455. People As Agents of Environmental Change (3)

Prerequisite: GEOG 340 or consent of instructor.

Examines human impact on biophysical environment from long-term and global perspective. Explores regional and global implications of these changes on people and environments. Examines different theories for explaining major human forces that drive environmental change.

Letter grade only (A-F). (Lecture 3 hours)

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

Prerequisite: ESP 200 or GEOG 340 or consent of instructor.

Broad overview of hazards and disasters, whether natural or technological, emphasizing the physical and social dynamics that interact to produce hazard, the spatial and temporal distributions of various hazards, and policy options for disaster preparation, loss reduction, and community resilience.

Letter grade only (A-F).

460. Population Geography (3)

Prerequisite: GEOG 360 or consent of instructor.

Introduction to 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.

Letter grade only (A-F).

462/562. Gender, Place and Culture (3)

Prerequisite: GEOG 360 or WGSS 300 or consent of instructor

A human geography approach to examining intersections of gender, place and culture. Topics include: body spaces; geographies of sexualities; emotion, care and health; migration; environmental and social justice; feminist post-structural theories and philosophies; and feminist methodological approaches to geographic research.

Letter grade only (A-F). Same course as WGSS 462. Not open for credit to students with credit in WGSS 462

464. Urban Geography: Sustainable Cities (3)

Prerequisite: GEOG 100, GEOG 120, or GEOG 160 or GEOG 301 or consent of instructor; GEOG 360 recommended.

Corequisite: GEOG 301

Examines the function and character of cities as locations for sustainable development related to health, transportation, and neighborhood design. Course focuses on trends in public policy, planning, and community-based activism that seek to balance economic, social, and environmental well-being.

Letter grade only (A-F).

465./565. Social Geography (3)

Prerequisite: GEOG 360 or consent of instructor.

The geographies of society, including various methodological and theoretical approaches to social geography. Topics may include socio-spatial inequality, crime, housing, religious systems, medical and health geography, feminist geography, the geography of sexuality, the geography of race, or poststructuralist geography.

Letter grade only (A-F).

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

Prerequisite: GEOG 360 or consent of instructor.

Examines geographic components of metropolitan problems with a focus on theoretical and practically applied urban planning solutions to transportation, housing, residential segregation, economic development, and community health issues.

Letter grade only (A-F). (Lecture, problems 3 hrs)

468. World Cities/Cities of the World (3)

Prerequisite: GEOG 360 or consent of instructor.

Comparative examination of major world cities within the context of their regional and national urban systems. Compares and contrasts cities of developed and developing worlds. Explores divergent urbanization patterns and world city development in major cultural realms.

Letter grade only (A-F).

470. Political Geography (3)

Prerequisite: GEOG 360 or consent of instructor.

Examines the interface between people, power and territory. We consider how societies are organized at local, national and international scales, how ideologies (including nationalism) have political implications, and how the state is changing through the agency of new state and non-state actors. We explore the consequences of these new geographies of power.

Letter grade only (A-F). (Lecture, problems)

471. Geographic Information Science (GIS) For Health (3)

Prerequisite: GEOG 200 or SOC 170 or equivalent.

An Introduction to the fundamentals of Geographic Information Science and systems (GIS) including concepts and skills in spatial reasoning and spatial thinking. Explores GIS in spatial query, problem analysis and decision support using health-related applications. Lecture/discussion and Laboratory (2 hours seminar, 2 hours computer laboratory)

Letter grade only (A-F). Same course as HCA 471 and GEOG 485/585. Not open for credit to students with credit in HCA 471 or GEOG 485/585.

473. Remote Sensing (4)

Prerequisites: GEOG 200 or equivalent and GEOG 280 or GEOG 471 or GEOG 481; or consent of instructor.

Processing and interpretation of aerial photographs and digital satellite imagery. Topics include the electromagnetic spectrum, energy-matter interactions, sensor characteristics, and the acquisition, processing and interpretation of imagery for applications including the analysis of vegetation dynamics, surface hydrology and urban environments.

Letter grade only (A-F).

474. Introduction to Digital Image Processing (4)

Prerequisite: GEOG 473 or consent of 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.

Letter grade only (A-F). (Seminar 3 hours; Laboratory 2 hours).

475. Geographical Applications in Remote Sensing (4)

Prerequisites: GEOG 473 or consent of instructor

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.

Letter grade only (A-F).

481. Geographic Information Science for Natural Sciences (4)

Prerequisites: Junior/Senior/Graduate standing; GEOG 140 or BIOL 153 or GEOL 102.

Introduces fundamentals of geographic information science and systems (GIS) to non-geography students, including concepts and skills in spatial reasoning and spatial thinking. Explores GIS in spatial query, problem analysis and decision support, using biologic, geologic, and ecologic applications.

Letter grade only (A-F). Not open for credit to students with credit in GEOG 485/585.

482. Advanced Digital Cartography & GIS (4)

Prerequisites: GEOG 200 or equivalent and GEOG 380 or consent of instructor.

Advanced theories and techniques for the creation of various types of numerical thematic maps using digital cartography, GIS, and empirical data.

Grading: Letter grade only (A-F)

484./584. Enterprise GIS Development (4)

Prerequisite: GEOG 280 and GEOG 380 or GEOG 471 or GEOG 482 or consent of instructor.

Provides a comprehensive overview of the enterprise geographic information system development process. Focuses specifically on geospatial data acquisition, management, and dissemination methods which utilize geodatabase functionality and custom developed mapping applications.

Letter grade only (A-F).

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

Prerequisites: GEOG 200 or equivalent AND GEOG 280 or GEOG 471 or GEOG 481; or consent of instructor.

Fundamental concepts and techniques of geographic information systems and science are introduced. Emphasizes spatial analyses to address spatial questions.

Letter grade only (A-F).

486. Field Methods in Landscape Analysis (4)

Prerequisite: GEOG 340 or equivalent and consent of instructor. Students must have scored 11 or higher on the GEAR Placement Examination or successfully completed the necessary portfolio course that is a prerequisite for a GEAR Writing Intensive Capstone.

Introduction to field techniques, including formulation of field plans, recording direct observation, field mapping, sampling techniques, interviewing, and organizing and evaluating data for presentation.

Letter grade only (A-F). (Lecture-discussion 1 hour, supervised field work 6 hours)

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

Prerequisites: GEOG 485 or GEOG 585 or consent of instructor.

Use of Geographic Information Systems and science for spatial query, problem analysis, spatial modeling and decision support in natural resource assessment. Students with background in GIS are introduced to environmental applications. Emphasizes use of raster GIS.

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

Prerequisites/Corequisites: GEOG 485 or GEOG 585 or consent of instructor.

Builds on introductory knowledge of Geographic Information Systems, spatial analysis and spatial data and focuses on urban and economic applications and analyses.

488./588. Geographic Information Science (GIS) Programming (4)

Prerequisite: GEOG 485 or GEOG 585 or consent of instructor

Corequisite: GEOG 485 or GEOG 585 or consent of instructor

Introduction to programming techniques for Geographic Information Sciences and applications for geography and related disciplines.

(Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

492. Applied Internship (3)

Prerequisites: Upper division or graduate standing. Open to Geography and Environmental Science and Policy majors only.

Practical experience in an appropriate business, government or community-based organization to enhance professional development.

Same course as ES P 495. (6 hours activity/laboratory). 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. Selected Topics in Geography (1-3)

Prerequisite: Consent of instructor.

Application of geographical concepts and methodology to selected contemporary problems.

May be repeated to a maximum of 6 units with consent of department chair. Topics announced in the *Schedule of Classes*. May not be credited toward the major in geography without written department consent in advance of enrollment.

495. Field Training in Geographic Techniques (1-6)

Prerequisites: GEOG 140 and consent of instructor

In this advanced applied geography course students will enhance their knowledge of various geographic and/or geospatial techniques and apply these skills to address geographic and spatial questions through a combination of intense hands-on field work and data analyses. Topics vary by instructor.

Letter grade only (A-F). (3 - 18 hours Activity)

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

500. Multivariate Geographical Analysis (4)

Prerequisites: GEOG 200 or any introductory statistics course or consent of instructor.

Examination of advanced multivariate statistical techniques employed by geographers in analysis of spatial phenomena. Emphasis on applications in geographical research, using spreadsheet and statistical software.

Letter grade only (A-F). (3 hours seminar, 2 hours laboratory)

502. Qualitative Geographic Analysis (4)

Prerequisite: GEOG 360 or consent of instructor.

Examines qualitative geographic methodologies and methods through the theoretical frameworks that geographers employ in their research. Introduces survey, interview, and focus group techniques, textual analysis, participant observation, and ethnography. Includes a hands-on research experience.

(4 hours discussion). Letter grade only (A-F).

540./440. Land and Water Resources (3)

Prerequisite: ESP 200 or GEOG 340 or consent of instructor.

Examines interrelationships between land and water as components of the human environment. Focus is on management, use and human impacts, with an emphasis on water resources.

Letter grade only (A-F). (Lecture-discussion)

541./441. The Geography of Mars (3)

Prerequisite/Corequisite: GEOG 130 or GEOG 140 or GEOL 102 and GEOG 280 or consent of instructor, and graduate student standing.

Introduction to the geography of Mars, providing a physical regionalization of the Martian surface and climate and an understanding of underlying tectonic, geomorphic, and meteorological processes. The course reviews remote sensing fundamentals and data sources for geographical analysis of Mars.

Letter grade only (A-F). (2 hours seminar, 2 hours activity)

543. Watersheds: Processes and Management (4)

Prerequisite: ESP 200 or GEOG 340 or consent of instructor.

Basic principles of watershed hydrology, including hydrologic processes, runoff behavior, precipitation patterns and watershed models. Evaluation of water quality elements such as nonpoint source pollution. Laboratory and field exercises will include hydrologic data collection, processing and evaluation.

Letter grade only (A-F). (3 hours Lecture, 2 hours Laboratory)

548./448. Environmental Assessment (3)

Prerequisite: ESP 200 or GEOG 340 or consent of instructor.

Introduction to the policy framework and techniques for assessing impacts on various aspects of the biological and physical environment. The course is a survey of multiple topics involving various types of environmental assessment, including data collection, processing and evaluation. (Undergraduates register in GEOG 448; graduates register in 548).

Letter grade only (A-F). (3 hours lecture, activity)

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

Prerequisite: ESP 200 or GEOG 340 or consent of instructor.

Broad overview of hazards and disasters, whether natural or technological, emphasizing the physical and social dynamics that interact to produce hazard, the spatial and temporal distributions of various hazards, and policy options for disaster preparation, loss reduction, and community resilience.

Letter grade only (A-F).

562./462. Gender, Place and Culture (3)

Prerequisite: Graduate Standing

A human geography approach to examining intersections of gender, place and culture. Topics include: body spaces; geographies of sexualities; emotion, care and health; migration; environmental and social justice; feminist post-structural theories and philosophies; and feminist methodological approaches to geographic research.

Letter grade only (A-F). Not open for credit to students with credit in GEOG 462 or WGSS 462.

565./465. Social Geography (3)

Prerequisite: GEOG 360 or consent of instructor.

The geographies of society, including various methodological and theoretical approaches to social geography. Topics may include socio-spatial inequality, crime, housing, religious systems, medical and health geography, feminist geography, the geography of sexuality, the geography of race, or poststructuralist geography.

Letter grade only (A-F).

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

Prerequisite: GEOG 360 or consent of instructor.

Examines geographic components of metropolitan problems with a focus on theoretical and practically applied urban planning solutions to transportation, housing, residential segregation, economic development, and community health issues.

(Lecture, problems 3 hrs) Letter grade only (A-F).

575. Geographical Applications in Remote Sensing (4)

Prerequisites: GEOG 473 or consent of instructor.

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. Enterprise GIS Development (4)

Prerequisite: GEOG 280 and GEOG 380 or GEOG 471 or GEOG 481 or consent of instructor.

Provides a comprehensive overview of the enterprise geographic information system development process. Focuses specifically on geospatial data acquisition, management, and dissemination methods which utilize geodatabase functionality and custom developed mapping applications.

Letter grade only (A-F).

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

Prerequisites: GEOG 200 or equivalent AND GEOG 280 or GEOG 471 or GEOG 481; or consent of instructor.

Fundamental concepts and techniques of geographic information systems and science are introduced. Emphasizes spatial analyses to address spatial questions.

Letter grade only (A-F).

586. Field Methods in Landscape Analysis (4)

Prerequisite: GEOG 340 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.

(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 485 or GEOG 585 or consent of instructor.

The use of Geographic Information Systems and science for spatial query, problem analysis, spatial modeling and decision support in natural resource assessment. Students who possess a background in GIS are introduced to environmental applications. Emphasizes the use of raster GIS.

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

Prerequisite: GEOG 485 or GEOG 585 or consent of instructor.

Builds on introductory knowledge of Geographic Information Systems, spatial analysis and spatial data and focuses on urban and economic applications and analyses.

588./488. Geographic Information Science (GIS) Programming (4)

Prerequisite(s): GEOG 485 or GEOG 585 or consent of instructor.

Corequisite(s): GEOG 485 or GEOG 585 or consent of instructor.

Introduction to programming techniques for Geographic Information Sciences and applications for geography and related disciplines.

(Seminar 3 hours; Laboratory 2 hours). Letter grade only (A-F).

596. Geographic Thought and Literature (3)

Prerequisite: Consent of instructor.

Proseminar in the history of 20th century Anglophone geographic thought with emphasis on the theoretical and interdisciplinary perspectives current in the field today.

Letter grade only (A-F).

640. Seminar in Physical/Environmental Geography (3)

Prerequisite: Consent of instructor.

In depth investigation of physical and/or environmental issues and problems. Topics vary by instructor.

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 standing in geography, and consent of 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.

Geographic Information Science Courses (GISCI)

601. Geospatial Professionalism (1)

Survey of core concepts underlying geographic information science and focus on professional development. A grade of C or better is required.

Letter grade only (A-F). A grade of "C" or better is required for students to progress in the MS GISci program.

602. Applied GIS (4)

Prerequisite/Corequisite: GISCI 601

Explores geographic information systems for spatial query, analysis, and modeling in natural and human environments.

Focuses on geospatial professional development, analytic techniques, GIS-based management and problem solving, and responsible use of geospatial technologies.

Letter grade only (A-F). (2 hours lecture, 2 hours lab)

603. Cartographic Visualization (4)

Prerequisites: GISCI 601

Provides advanced theory and techniques for presentation cartography including communication, visualization, terrain representation, animation, and color.

Letter grade only (A-F). (2 hours lecture, 2 hours lab)

604. Enterprise GIS Development (4)

Prerequisites/Corequisite: GISCI 601

Provides a comprehensive overview of the enterprise geographic information system development process. Focuses specifically on geospatial data acquisition, management, and dissemination methods which utilize geodatabase functionality and custom developed mapping applications.

Letter grade only (A-F).

605. GIS Development (4)

Prerequisite/Corequisite: GISCI 601

Provides training in the use of GIS-relevant programming languages. Students will learn fundamentals of object oriented programming, application development, basic coding, and will complete a project where they develop a GIS utility.

Letter grade only (A-F). (2 hours lecture, 2 hours lab)

606. Applied Remote Sensing (4)

Prerequisite/Corequisite: GISC 601

Principles and concepts of remote sensing and digital image processing are presented and applied. Students extract information from satellite and other data sources, focusing on enhancement and extraction techniques within the visible and near-infrared portions of the electromagnetic spectrum.

Letter grade only (A-F). (2 hours lecture, 2 hours lab)

607. Project Orientation and Support (2)

Prerequisites/Corequisites: GISC 601, GISC 602, GISC 603, GISC 604, GISC 605, GISC 606; or advisor consent.

Develop skills necessary to complete the applied project. Specific focus on proposal development and writing. Review of research methods and project deliverables. A grade of "C" or better is required for students to progress to GISC 608.

Letter grade only (A-F).

608. Applied Project (4)

Prerequisites: (GISC 601, GISC 602, GISC 603, GISC 604, GISC 605, GISC 606, and a grade of "C" or better in GISC 607; or advisor consent.

Students demonstrate analytical, technical, business and interpersonal competencies acquired through the program in a project-focused learning experience. Planning, preparation and completion of an applied geospatial project for the master's degree.

Grading: RP.