Overview

Geography is the science of place and space. Geographers study the relationships among geographic places, natural systems, society, cultural activities, and the interdependence of all these over space.

Program Maps

Geography, A.S. Degree (/crc/main/doc/programs/program-maps/geog-as-degree-ho.pdf)
Geography, A.A.-T Degree (/crc/main/doc/programs/program-maps/geog-aa-t-degree-ho.pdf)
Geography, A.A.-T Degree, IGETC (/crc/main/doc/programs/program-maps/geog-aa-t-degree-ho-igetc.pdf)
Geography, Environmental Studies and Sustainability, A.S. Degree (/crc/main/doc/programs/program-maps/geog-env-studies-sustainability-as-degree-ho.pdf)
Geography, Sustainability, Certificate of Achievement (/crc/main/doc/programs/program-maps/geog-sustainability-cert-ho.pdf)

Geography
Dean: Banafsheh Amini (/about-us/contact-us/faculty-and-staff-directory/banafsheh-амини)
Department Chair: Scott Crosier (/about-us/contact-us/faculty-and-staff-directory/scott-crosier)
Phone: (916) 691-7029
Email: AminiB2@crc.losrios.edu (mailto:AminiB2@crc.losrios.edu)

Associate Degrees for Transfer

A.A.-T. in Geography

Geography is the science of place and space. Geographers study the relationships among geographic places, natural systems, society, cultural activities, and the interdependence of all these over space.

There are two main branches of geography: human geography and physical geography. Human geography is concerned with the spatial aspects of human existence – how people and their activities are distributed in space, how people use and perceive space, and how people create and sustain the places that make up Earth’s surface. Physical geographers study the physical elements and spatial processes that make up and shape the environment, including energy, air, water, weather, climate, landforms, soils, animals, plants, etc. Many human and physical geographers have skills in cartography and Geographic Information Systems (GIS).

Geographers also study the linkages between human activity and natural systems. Geographers were, in fact, among the first scientists to sound the alarm that human-induced changes to the environment were beginning to threaten the balance of life itself. Geographers today are active in the study of global warming, desertification, deforestation, loss of biodiversity, groundwater pollution, flooding, and more.

The Associate in Arts in Geography for Transfer Degree (AA-T) is designed to provide a seamless transfer pathway for students interested in pursuing a Geography degree in the California State University (CSU) system. The required and elective coursework surveys a broad spectrum of physical geography, human geography, geospatial technologies (e.g. GIS, the Global Positioning System, remote sensing), and related disciplines. The degree is comprised of lower division coursework typically required by CSU institutions. Students must complete a total of 60 transferable semester units with a minimum 2.0 GPA, to include either the California State University General Education Breadth pattern or the Intersegmental General Education Transfer Curriculum; students must also earn a grade of C or better in all the courses for the major as described in the Required Program. Upon successful completion of the degree requirements, students will be guaranteed admission to the CSU system with junior status and will not have to repeat lower division coursework. Students are encouraged to meet with a counselor to develop their educational plans as degree options and general education requirements vary for each university.

Catalog Date: June 1, 2020

Degree Requirements

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>UNITS</th>
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<tbody>
<tr>
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<tr>
<td>GEOG 300</td>
<td>Physical Geography: Exploring Earth's Environmental Systems</td>
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<td>GEOG 301</td>
<td>Physical Geography Laboratory</td>
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<td>GEOG 310</td>
<td>Human Geography: Exploring Earth's Cultural Landscapes</td>
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<tr>
<td>GEOG 306</td>
<td>Weather and Climate (3)</td>
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<td>GEOG 320</td>
<td>World Regional Geography (3)</td>
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<td>GEOG 322</td>
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### Course Title and Units

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<td>GEOG 331</td>
<td>Exploring Maps and Geographic Technologies (3)</td>
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<td>GEOG 335</td>
<td>Introduction to Geographic Information Systems Applications (3)</td>
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<td>GEOG 391</td>
<td>Field Studies in Geography: Mountain Landscapes (1 - 4)</td>
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<td>Field Studies in Geography: Coastal Landscapes (1 - 4)</td>
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<td>GEOG 393</td>
<td>Field Studies in Geography: Arid Landscapes (1 - 4)</td>
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<tr>
<td>GEOG 394</td>
<td>Field Studies in Geography: Volcanic Landscapes (1 - 4)</td>
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</table>

**Elective List B:**

A minimum of 6 units from the following:

- GEOG 302 Environmental Studies & Sustainability (3)
- GEOG 305 Global Climate Change (3)
- ANTH 310 Cultural Anthropology (3)
- GEOL 300 Physical Geology (3)
- POLS 310 Introduction to International Relations (3)
- STAT 300 Introduction to Probability and Statistics (4)
- or PSYC 330 Introductory Statistics for the Behavioral Sciences (3)
- or ECON 310 Statistics for Business and Economics (3)

Total Units: 19

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**Student Learning Outcomes**

Upon completion of this program, the student will be able to:

- Demonstrate understanding of the global natural and cultural environments and the geographic methods by which they are studied. (PSLO1)
- Compare and contrast the general biophysical and socio-cultural differences and similarities among world regions that operate through time and over space. (PSLO2)
- Evaluate and analyze critical geographic issues facing the world today. (PSLO3)
- Recognize the diversity of peoples, places, and events globally as well as within specific geographic regions. (PSLO4)
- Interpret maps and mapped data utilizing basic map elements, including scales, common coordinate systems, and map symbols. (PSLO5)
- Use a computer effectively to research, map, and analyze geographic information. (PSLO6)
- Compare and contrast common geographic technologies such as geographic information systems (GIS) and the global positioning system (GPS). (PSLO7)
- Communicate geographic information effectively in oral, written, and graphic form. (PSLO8)

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**Career Information**

The AA-T in Geography provides students with the foundational knowledge necessary for transfer to a 4-year Bachelor of Arts (BA) degree program. Career opportunities for geographers are as varied as the scope of geography itself. Geographers are found throughout the public and private sector, though rarely in positions with the title of “Geographer.” When combined with appropriate internships and other work experience, a baccalaureate degree in geography is excellent preparation for careers in natural resource management, environmental conservation, international development, urban and regional planning, education (K-12 through University), tourism, international business, cartography, climatology, transportation planning, real estate, international business marketing, land surveying, demography, and many other fields. Some careers may require additional training. Students planning to transfer to a CSU must complete GEOG 331 (Exploring Maps and Geographic Technologies) because it is a required lower-division course at many CSUs.

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**Associate Degrees**

### A.S. in Environmental Studies & Sustainability

The Environmental Studies & Sustainability Associate of Science degree is an interdisciplinary and multidisciplinary program of study that presents a broad overview of ecological issues from a variety of perspectives in the natural, physical, and social sciences. The program coursework examines the interplay between natural and social systems, and the ideological foundations of humankind’s attitudes and behaviors with respect to their ever-changing environment. This program is designed to prepare students to research, analyze, and propose solutions to the myriad environmental challenges facing the world today.

This degree is designed to correlate with the lower division courses required to transfer into an Environmental Studies program at many four-year institutions as well as provide broad-based environmental education for transfer in related disciplines.

The disciplines of environmental studies and geography are complementary fields, both focused on aspects of human-environment interaction. This complementarity is reflected in the many 4-year institutions that house combined Geography and Environmental Study programs. Students interested in double-majoring in these two closely-related disciplines, and/or simultaneously earning a Certificate in Geographic Information Systems, are encouraged to examine the required coursework and plan their program of study accordingly.

Students interested in pursuing an Environmental Science major should consult with science faculty and counselors to tailor the specific coursework necessary to transfer to the 4-year...
Degree Requirements

<table>
<thead>
<tr>
<th>COURSE CODE</th>
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<tbody>
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<td>GEOG 302</td>
<td>Environmental Studies &amp; Sustainability</td>
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<td>BIOL 350</td>
<td>Environmental Biology (3)</td>
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<td>or BIOL 352</td>
<td>Conservation Biology (3)</td>
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<tr>
<td>ECON 306</td>
<td>Environmental Economics</td>
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**Field/Applied Courses:**
A minimum of 3 units from the following:

- BIOL 390  Natural History Field Study (0.5 - 4)
- GEOG 391  Field Studies in Geography: Mountain Landscapes (1 - 4)
- GEOG 392  Field Studies in Geography: Coastal Landscapes (1 - 4)
- GEOG 393  Field Studies in Geography: Arid Landscapes (1 - 4)
- GEOG 394  Field Studies in Geography: Volcanic Landscapes (1 - 4)
- GEOL 390  Field Studies in Geology (1 - 4)
- GEOG 331  Exploring Maps and Geographic Technologies (3)
- GEOG 335  Introduction to Geographic Information Systems Applications (3)

**Natural Science/Ecology Courses:**
A minimum of 3 units from the following:

- BIOL 300  The Foundations of Biology (3)
- BIOL 307  Biology of Organisms (4)
- BIOL 310  General Biology (4)
- BIOL 400  Principles of Biology (5)

**Chemistry Courses:**
A minimum of 4 units from the following:

- CHEM 305  Introduction to Chemistry (5)
- CHEM 321  Environmental Chemistry (3)
- CHEM 322  Environmental Chemistry Laboratory (1)
- CHEM 400  General Chemistry I (5)

**Earth Science Courses:**
A minimum of 3 units from the following:

- GEOG 300  Physical Geography: Exploring Earth's Environmental Systems (3)
- GEOG 301  Physical Geography Laboratory (1)
- GEOG 305  Global Climate Change (3)
- GEOL 300  Physical Geology (3)
- GEOL 301  Physical Geology Laboratory (1)

**Quantitative Courses:**
A minimum of 3 units from the following:

- ECON 310  Statistics for Business and Economics (3)
- PSYC 330  Introductory Statistics for the Behavioral Sciences (3)
- STAT 300  Introduction to Probability and Statistics (4)
- MATH 350  Calculus for the Life and Social Sciences I (3)
- MATH 400  Calculus I (5)

**Social Science Courses:**

- ECON 304  Principles of Microeconomics
- GEOG 310  Human Geography: Exploring Earth's Cultural Landscapes

**Total Units:** 31

The Environmental Studies & Sustainability Associate in Science (A.S.) degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See CRC graduation requirements.

**Student Learning Outcomes**

Upon completion of this program, the student will be able to:

- Articulate an understanding of the natural environment and human societies’ relationship to it. This includes the ability to:
  1. Communicate effectively about environmental issues and sustainability, correctly utilizing vocabulary while indicating a complex understanding of disciplines in the program.
  2. Articulate an awareness of the relevance of environmental studies to the student’s life and wider community at both local and global scales.
  3. Recognize the importance of interdisciplinary and multidisciplinary approaches to solving environmental problems.
- Evaluate and analyze environmental processes and human impacts on the natural environment. This includes the ability to:
  1. Use logical and quantitative reasoning to solve environmental problems.
  2. Analyze critical environmental problems facing the world today.
  3. Evaluate data and draw reasonable conclusions.
4. Utilize the scientific method.
5. Employ information-gathering tools to investigate environmental ideas.

PSLO-3: Recognize the ethical dimensions of decisions and actions and engage in the ethical reasoning necessary to be a responsible local and global citizen. This includes the ability to:

1. Recognize the ethical implications of research and the responsibility to use knowledge wisely.
2. Articulate the value of understanding environmental systems.

PSLO-4: Transfer to a 4-year program and further prepare for employment in an environmental career.

Career Information

Natural Resource Management; Forestry; Range Management; Park Ranger; Wildlife Biology; Agriculture; Soil and Water Conservation; Land Use Planning; Waste Management; Environmental Education; Environmental Policy And Planning; Environmental Law; Environmental Consulting; Environmental Lobbying; Environmental Planning; Environmental Protection; Environmental Compliance; Environmental Engineering; Air Quality Control; Landscape Architecture; Urban and Regional Planning; Alternative Energy Development; Risk Analysis; Contaminated Lands Reclamation; Research; Consulting

A.S. in General Science

Areas of Study include:

- Physical Anthropology
- Astronomy
- Biology
- Chemistry
- Engineering
- Physical Geography
- Geology
- Physics

Eighteen (18) units of transfer level course work in science is required. Two laboratory courses must be included: one in the physical sciences and one in the biological sciences. Courses may be selected from astronomy, biology, chemistry, geology, physical geography, physical anthropology, and physics. The student, in consultation with a counselor, should choose science courses to meet his or her program, transfer, or general education requirements.

Students interested in transferring to a four-year university with a science major are encouraged to complete a science AS or AS-T degree such as Anthropology, Biology, Chemistry, Engineering, Geography, Geology, or Physics. This General Science degree may not include the majors-level transfer courses needed for many science majors. Students are strongly recommended to see a counselor for guidance.

Catalog Date: June 1, 2020

Degree Requirements

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<tr>
<td>ANTH 300</td>
<td>Biological Anthropology (3)</td>
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<td>and ANTH 301</td>
<td>Biological Anthropology Laboratory (1)</td>
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<td>BIOL 307</td>
<td>Biology of Organisms (4)</td>
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<td>BIOL 310</td>
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<td>BIOL 400</td>
<td>Principles of Biology (5)</td>
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<td>BIOL 440</td>
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A minimum of 4 units from the following:

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<td>and ASTR 300</td>
<td>Introduction to Astronomy (3)</td>
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<td>CHEM 300</td>
<td>Beginning Chemistry (4)</td>
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<tr>
<td>CHEM 305</td>
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<td>CHEM 306</td>
<td>Introduction to Organic and Biological Chemistry (5)</td>
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<td>CHEM 309</td>
<td>Integrated General, Organic, and Biological Chemistry (5)</td>
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<td>CHEM 322</td>
<td>Environmental Chemistry Laboratory (1)</td>
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<td>and CHEM 321</td>
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<tr>
<td>CHEM 400</td>
<td>General Chemistry I (5)</td>
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<tr>
<td>CHEM 401</td>
<td>General Chemistry II (5)</td>
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<td>CHEM 420</td>
<td>Organic Chemistry I (5)</td>
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<td>CHEM 421</td>
<td>Organic Chemistry II (5)</td>
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<tr>
<td>GEOG 301</td>
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<tr>
<td>and GEOG 300</td>
<td>Physical Geography: Exploring Earth's Environmental Systems (3)</td>
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<td>GEOL 301</td>
<td>Physical Geology Laboratory (1)</td>
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A minimum of 3 units from the following:
COURSE CODE | COURSE TITLE
--- | ---
and GEOL 300 | Physical Geology (3)
GEOL 306 | Earth Science Laboratory (1)
and GEOL 305 | Earth Science (3)
GEOL 311 | Historical Geology Laboratory (1)
and GEOL 310 | Historical Geology (3)
ENGR 304 | How Things Work (3)
PHYS 350 | General Physics (4)
PHYS 360 | General Physics (4)
PHYS 370 | Introductory Physics - Mechanics and Thermodynamics (5)
PHYS 380 | Introductory Physics - Electricity and Magnetism, Light and Modern Physics (5)
PHYS 411 | Mechanics of Solids and Fluids (4)
PHYS 421 | Electricity and Magnetism (4)
PHYS 431 | Heat, Waves, Light and Modern Physics (4)

C. Additional Science Courses:
A minimum of 11 units from the following:

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<td>The New Plagues: New and Ancient Infectious Diseases Threatening World Health (3)</td>
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Total Units: 18
A.S. in Geography

Geography is the science of place and space. Geographers study the relationships among geographic places, natural systems, society, cultural activities, and the interdependence of all these over space.

There are two main branches of geography: human geography and physical geography. Human geography is concerned with the spatial aspects of human existence – how people and their activities are distributed in space, how people use and perceive space, and how people create and sustain the places that make up Earth's surface. Physical geographers study the physical elements and spatial processes that make up and shape the environment, including energy, air, water, weather, climate, landforms, soils, animals, plants, etc. Many human and physical geographers have skills in cartography and Geographic Information Systems (GIS).

Geographers also study the linkages between human activity and natural systems. Geographers were, in fact, among the first scientists to sound the alarm that human-induced changes to the environment were beginning to threaten the balance of life itself. Geographers today are active in the study of global warming, desertification, deforestation, loss of biodiversity, groundwater pollution, flooding, and more.

The CRC Geography program offers courses that satisfy lower division General Education requirements in both the physical and social sciences. In addition, the program offers an Associate Degree in Geography that provides students with a solid foundation in geography as well as the standard prerequisites for upper-division coursework leading to the baccalaureate degree. Students may also earn a certificate in Geographic Information Systems (GIS). Students planning to transfer to a four-year school with a major in Geography should consult the lower division requirements at the university they plan to attend.

Note to Transfer Students:
If you are interested in transferring to a four-year college or university to pursue a bachelor's degree in this major, it is critical that you meet with a CRC counselor to select and plan the courses for your major. Schools vary widely in terms of the required preparation. The courses that CRC requires for an Associate's degree in this major may be different from the requirements needed for the Bachelor's degree.

Highlights include:
* Comprehensive course offerings including a Physical Laboratory as well as specialized training in Geographic Information Systems (GIS)
* Program's students have won top awards at state-level competitions annually since 1999
* Field study courses to Yosemite, Pt. Reyes, Monterey/Big Sur, Tahoe, and the Eastern Sierra
* Internships available with State of California, County of Sacramento, and Federal Land Management Agencies
* Three courses fulfill the CRC and CSU multicultural requirement
* Day, evening, and online sections

Catalog Date: June 1, 2020

Degree Requirements

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>UNITS</th>
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<tr>
<td>GEOG 300</td>
<td>Physical Geography: Exploring Earth's Environmental Systems</td>
<td>31</td>
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<tr>
<td>GEOG 301</td>
<td>Physical Geography Laboratory</td>
<td>1</td>
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<tr>
<td>GEOG 310</td>
<td>Human Geography: Exploring Earth's Cultural Landscapes</td>
<td>3</td>
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<tr>
<td>GEOG 331</td>
<td>Exploring Maps and Geographic Technologies (3)</td>
<td>3</td>
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</tbody>
</table>

Check with departments for scheduled offering:
* PSYC 330 Introductory Statistics for the Behavioral Sciences (3) - 4
* STAT 300 Introduction to Probability and Statistics (4)
* ECON 310 Statistics for Business and Economics (3)

A minimum of 6 units from the following:

- ANTH 310 Cultural Anthropology (3)
- BIOL 350 Environmental Biology (3)
- BIOL 310 General Biology (4)
- BIOL 307 Biology of Organisms (4)
- ECON 304 Principles of Microeconomics (3)
- ECON 302 Principles of Macroeconomics (3)
- GEOG 302 Environmental Studies & Sustainability (3)
- GEOG 305 Global Climate Change (3)
### Catalog Date: June 1, 2020

### Student Learning Outcomes

Upon completion of this program, the student will be able to:

- **SLO#1:** demonstrate understanding of the global natural and cultural environments and the geographic methods by which they are studied.
- **SLO#2:** compare and contrast the general biophysical and socio-cultural differences and similarities among world regions that operate through time and over space.
- **SLO#3:** evaluate and analyze critical geographic issues facing the world today.
- **SLO#4:** recognize the diversity of peoples, places, and events globally as well as within specific geographic regions.
- **SLO#5:** interpret maps and mapped data utilizing basic map elements, including scales, common coordinate systems, and map symbols.
- **SLO#6:** use a computer effectively to research, map and analyze geographic information.
- **SLO#7:** compare and contrast common geographic technologies such as geographic information systems (GIS) and the global positioning system (GPS).
- **SLO#8:** communicate geographic information effectively in oral, written, and graphic form.

### Career Information

Natural Resource Management; Environmental Conservation; International Development; Urban and Regional Planning; Education (K-12 through University); Tourism; Cartographer; Climatologist; Park Ranger; Transportation Specialist; Real Estate Analyst; International Business; Marketing Analyst; Land Surveyor; Research Scientist; Remote Sensing Specialist; Demographer; GIS Analyst; and many more (please contact the program for additional information). Some career options may require more than two years of college study.

### Certificates of Achievement

#### Field Data Mapping and Geographic Information Systems (GIS) Certificate

Students interested in research related to field data collection and analysis will need certain skills to correctly find locations in the field, identify locations, map sites, and integrate collected data into a Geographic Information System (GIS) for display and analysis. This interdisciplinary certificate program provides students with the tools needed to collect, map, display, and analyze data collected in a field-based setting and coordinate this with other mapping data and sources.

**Catalog Date:** June 1, 2020

### Certificate Requirements

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>UNITS</th>
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<tbody>
<tr>
<td>GEOG 306</td>
<td>Weather and Climate (3)</td>
<td></td>
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<tr>
<td>GEOG 320</td>
<td>World Regional Geography (3)</td>
<td></td>
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<tr>
<td>GEOG 322</td>
<td>Geography of California (3)</td>
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<tr>
<td>GEOG 335</td>
<td>Introduction to Geographic Information Systems Applications (3)</td>
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<tr>
<td>GEOG 391</td>
<td>Field Studies in Geography: Mountain Landscapes (1 - 4)</td>
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<tr>
<td>GEOG 392</td>
<td>Field Studies in Geography: Coastal Landscapes (1 - 4)</td>
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<tr>
<td>GEOG 393</td>
<td>Field Studies in Geography: Arid Landscapes (1 - 4)</td>
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<tr>
<td>GEOG 394</td>
<td>Field Studies in Geography: Volcanic Landscapes (1 - 4)</td>
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<tr>
<td>GEOL 300</td>
<td>Physical Geology (3)</td>
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<tr>
<td>GEOL 301</td>
<td>Physical Geology Laboratory (1)</td>
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<tr>
<td>GEOL 330</td>
<td>Introduction to Oceanography (3)</td>
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<tr>
<td>HIST 371</td>
<td>History of the Americas from the 19th Century Wars of Independence to the Present (3)</td>
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<tr>
<td>or HIST 370</td>
<td>History of the Americas through the 19th Century Wars of Independence (3)</td>
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<tr>
<td>or HIST 360</td>
<td>History of African Civilizations (3)</td>
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<tr>
<td>or HIST 308</td>
<td>History of World Civilizations, 1500 to Present (3)</td>
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<tr>
<td>or HIST 307</td>
<td>History of World Civilizations to 1500 (3)</td>
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<tr>
<td>HUM 332</td>
<td>American Humanities (3)</td>
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<tr>
<td>or HUM 324</td>
<td>Global Islam: Culture and Civilization (3)</td>
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<tr>
<td>or HUM 320</td>
<td>Asian Humanities (3)</td>
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<tr>
<td>PHIL 352</td>
<td>Introduction to World Religions (3)</td>
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<tr>
<td>POLS 310</td>
<td>Introduction to International Relations (3)</td>
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<tr>
<td>SOC 300</td>
<td>Introductory Sociology (3)</td>
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**Total Units:** 19 - 20

A minimum of 60 units is required for the A.S. degree which includes core courses, electives, and general education (GE) graduation requirements. Geography majors are encouraged to complete additional GE requirements from a list of suggested courses on file in the Geography Department and at the Counseling Center. Students should use PROJECT ASSIST (http://www.assist.org) to research lower division major requirements at the transfer institution of their choice and also work with a counselor to determine the most appropriate transfer coursework.

The Geography Associate in Science (A.S.) degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See CRC graduation requirements.
Student Learning Outcomes

Upon completion of this program, the student will be able to:

- SLO #1: DEMONSTRATE AN UNDERSTANDING OF THE MAJOR MODES OF GEOGRAPHIC INQUIRY.
- SLO #2: DEMONSTRATE AN UNDERSTANDING OF MAPPING CONCEPTS, GIS, AND THE ABILITY TO INTERPRET MAPS AND MAPPED DATA.
- SLO #3: DEMONSTRATE AN UNDERSTANDING OF COMMON GEOGRAPHIC TECHNOLOGIES AND THE ABILITY TO USE THEM TO COLLECT, ANALYZE, AND DISPLAY GEOSPATIAL DATA.
- SLO #4: ORGANIZE, MANIPULATE, ANALYZE AND DISPLAY TABULAR DATA INTO SPATIAL VISUALIZATIONS.
- SLO #5: EXHIBIT SKILLS LEARNED THROUGH MAPPING AND GIS PROJECT DEVELOPMENT.

Sustainability Certificate

This certificate advances student’s understanding of the principles of sustainability and sustainable practices with respect to ecosystems, green buildings, business, agriculture, nutrition, natural resource management and conservation, waste management, energy, transportation systems, urban planning and design, and more. Theoretical and practical aspects of sustainability are explored including social, economic, and environmental dimensions.

Catalog Date: June 1, 2020

Certificate Requirements

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>UNITS</th>
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<tbody>
<tr>
<td>GEOG 302</td>
<td>Environmental Studies &amp; Sustainability</td>
<td>3</td>
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<tr>
<td></td>
<td><strong>A minimum of 9 units from the following:</strong></td>
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<tr>
<td>ARCH 342</td>
<td>Introduction to Green Buildings (3)</td>
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<tr>
<td>BIOL 350</td>
<td>Environmental Biology (3)</td>
<td></td>
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<tr>
<td>BIOL 352</td>
<td>Conservation Biology (3)</td>
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<tr>
<td>ECON 306</td>
<td>Environmental Economics (3)</td>
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<tr>
<td>GEOG 300</td>
<td>Physical Geography: Exploring Earth's Environmental Systems (3)</td>
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<tr>
<td>GEOG 305</td>
<td>Global Climate Change (3)</td>
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<tr>
<td>HORT 300</td>
<td>Introduction to Horticulture (3)</td>
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<tr>
<td>PLTS 310</td>
<td>Soils, Soil Management, and Plant Nutrition (3)</td>
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<tr>
<td>or HORT 302</td>
<td>Soils, Soil Management, and Plant Nutrition (3)</td>
<td></td>
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<tr>
<td>HORT 313</td>
<td>Sustainable Agriculture (3)</td>
<td></td>
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<tr>
<td>NUTRI 303</td>
<td>Plant-Based Nutrition (3)</td>
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<tr>
<td>NUTRI 331</td>
<td>Plant-Based Food Principles and Preparation (3)</td>
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<td></td>
<td><strong>Total Units:</strong></td>
<td>12</td>
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</tbody>
</table>

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- PSLO#1: Communicate effectively about environmental issues and sustainability, utilizing correct vocabulary.
- PSLO#2: Articulate an awareness of the relevance of sustainability to the student's life and wider community at both local and global scales.
- PSLO#3: Evaluate and analyze environmental problems facing the world today and propose sustainable solutions.
- PSLO#4: Employ information-gathering tools to investigate theoretical and practical aspects of sustainability in the context of energy consumption, transportation systems, food production, water resources, industry, the built environment, and socio-cultural institutions and practices.

Career Information

This certificate prepares students for entry-level sustainability consultant/technician positions in a variety of industries and settings, including private firms, nonprofit organizations, educational institutions, and government agencies at the local, state, and federal levels. Work opportunities for those pursuing additional coursework include positions in environmental economics, sustainable business practices, green building, natural resource management, food systems, energy, transportation, and urban planning.
Geography (GEOG) Courses

GEOG 300 Physical Geography: Exploring Earth's Environmental Systems

This course investigates the interrelationships between Earth and humans, with an emphasis on natural systems (solar energy balance, weather and climate, water resources, landforms, natural hazards, vegetation, and soil). Relevant application of these elements to today's world is stressed to help students better understand Earth's physical environment as well as human-environment interaction. A field trip may be required to relate class discussions to the real world.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- SLO 1: DEMONSTRATE AN UNDERSTANDING OF THE MAJOR MODES OF GEOGRAPHIC INQUIRY AND TOOLS USED FOR GEOGRAPHIC ANALYSIS.
  - Describe how the scientific method and spatial analysis are used to research topics in physical geography.
  - Demonstrate how to locate places on Earth using the geographic grid (latitude and longitude).
  - Discuss several methods used to collect geographic data as well as several tools used to visualize and analyze this data.
  - Demonstrate the ability to interpret maps and mapped data.

- SLO 2: DEMONSTRATE AN UNDERSTANDING OF HOW EARTH'S FOUR MAJOR OPEN SYSTEMS WORK AND INTERACT WITH ONE ANOTHER.
  - Explain latitudinal variation in energy receipt and how this relates to global patterns of temperature, precipitation, weather & climate, vegetation, wildlife habitat, etc.
  - Diagram important physical processes (e.g., anticyclonic and cyclonic circulation, the global atmospheric circulation model, local & regional winds, the hydrologic cycle, the rock cycle, types of plate boundaries, etc.).
  - Outline how processes in the atmosphere, hydrosphere, and lithosphere interact to create Earth's biosphere.

- SLO 3: RECOGNIZE AND EXPLAIN THE LOCATION OF MAJOR PHYSICAL FEATURES ON EARTH.
  - Locate and identify the major significant physical features in California and elsewhere in the world.
  - Apply knowledge of the hydrologic cycle, the rock cycle, Plate Tectonics, and other geomorphic processes to explain the location and formation of Earth's major landforms and natural hazards.

- SLO 4: PRODUCE A RESEARCH PROJECT (E.G., ACADEMIC POSTER, TERM PAPER, OR SIMILAR PRODUCT) ON A COURSE-RELATED THEME.
  - Research information from multiple sources (maps, books, periodicals, Internet, interviews, etc.).
  - Synthesize findings in written format and document sources using an approved in-text citation method with references listed in standard bibliographic format.

- SLO 5: RECOGNIZE THE IMPORTANCE OF, AND THINK CRITICALLY ABOUT, GEOGRAPHIC INFORMATION RELEVANT TO LIFE ON EARTH.
  - Analyze the role of humans in modifying Earth's physical environment as well as the environment's role in shaping human activities.
  - Evaluate the personal and societal implications of current geographic issues (e.g., climate change, ozone depletion, sea-level rise, pollution, natural hazards, etc.).

GEOG 301 Physical Geography Laboratory

This course provides "hands-on" study of the basic principles and concepts involved in understanding Earth's environment systems. Labs feature observation, collection, analysis and display of data related to the study of Earth's energy balance, weather and climate, vegetation, tectonic processes, landforms, and natural hazards. Additionally, labs involve geographic methods and technology, including interpretation of maps and other geographic imagery, weather instrumentation, navigation equipment such as a compass and the Global Positioning System (GPS), and other relevant computer and Internet applications. A field trip may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- SLO#1: Collect, measure, and/or analyze geographic data using common instruments.
  - Measure angular distance north/south of the Equator and east/west of the Prime Meridian in order to specify precise geographic coordinates on a map and/or globe.
  - Collect and analyze data using common meteorological instruments (e.g. thermometer, anemometer, barometer, sling psychrometer, etc.), geomorphic instruments (e.g. stereoscopic imagery), and navigational instruments (e.g. compass, Global Positioning System (GPS) unit).
  - Calculate unit conversions for various types of data (e.g. angular and linear distance, temperature, air pressure, etc.).
  - Interpret and analyze geographic information using maps (thematic, regional, and topographic).
  - Define the concepts of map scale and projection and explain how these concepts affect the way that geographic information is represented on maps and/or globes.
  - Analyze global, regional, and/or local temperature, atmospheric pressure maps, and synoptic-scale weather maps and explain reasons for observed patterns.
  - Interpret elevation data shown on a topographic map and use this information to construct a topographic profile for an area.
  - Analyze and describe geomorphic processes and landforms using topographic maps.
**GEOG 302 Environmental Studies & Sustainability**

**Units:** 3  
**Hours:** 54 hours LEC  
**Prerequisite:** None  
**Transferable:** CSU, UC  
**General Education:** AA/AS Area V(b); CSU Area D5; CSU Area D7; IGETC Area 4E; IGETC Area 4G  
**Catalog Date:** June 1, 2020

This introductory course offers an interdisciplinary perspective on the major environmental problems confronting society and explores solutions directed toward producing a more sustainable future. Course topics include an introduction to environmental issues, and related values, ethics and politics; a primer on Earth system science — the interconnected nature of the atmosphere, hydrosphere, lithosphere, and biosphere; a global survey of natural resources and exploitation; changing global climates; the world water crisis; the demography of human population, and contrasts between less- and more-developed countries; agricultural and food supply challenges; renewable and nonrenewable energy resources; and land use patterns and related issues. Throughout the course, human impacts on the environment, environmental impacts on human societies, and the sustainability of economies and practices at local, regional, and global scales are investigated. A field trip may be required to relate class discussions to the real world.

**Student Learning Outcomes**

Upon completion of this course, the student will be able to:

- Communicate effectively about environmental issues and sustainability, correctly utilizing vocabulary while demonstrating understanding of topics studied.  
- Explain the relevance of environmental issues to the student's life and wider community at local, regional, and global scales.  
- Analyze critical environmental problems facing the world today, recognizing the interconnections between humans, their activities, and resulting effects on the environment.  
- Evaluate data and draw reasonable conclusions.  
- Employ information-gathering tools to investigate environmental issues.  
- Investigate and formulate sustainable solutions to environmental problems.  
- Recognize the ethical dimensions of decisions and actions and engage in the ethical reasoning necessary to be a responsible local and global citizen.  
- Articulate an understanding of the natural environment and human societies’ relationship to it. This includes the ability to:  
- Compare and contrast local geographic data with other locations at regional, national and global scales.  
- Explain geographic processes which act upon and shape Earth's physical environment.  
- Explain how and why the amount of solar insolation received on Earth varies by latitude and relate how this affects life processes.  
- Apply concepts related to atmospheric and geomorphic processes to predict impacts on Earth's physical and human environments.  
- Identify types of landforms created by endogenic processes (e.g. volcanic and tectonic activity) and exogenic processes (e.g. weathering, erosion, and deposition).  
- Construct climographs for Sacramento, various other locations in CA, the U.S. and the world and identify factors responsible for observed climatic differences.  
- Analyze meteorologic and geomorphic patterns in Sacramento, CA, the U.S., and the world and explain why these phenomena are observed where they are found.

**GEOG 305 Global Climate Change**

**Units:** 3  
**Hours:** 54 hours LEC  
**Prerequisite:** None  
**Transferable:** CSU, UC  
**General Education:** AA/AS Area IV; CSU Area B1; IGETC Area 5A  
**Catalog Date:** June 1, 2020

This interdisciplinary course examines the natural and human factors causing the Earth's climate to change. Students will be provided with the scientific tools to analyze evidence that climate change is a looming threat. Through lectures, readings, discussions and projects, students will examine the Earth's present and past climates as well as the influence of climate on the geographical distribution of plants, animals and human societies.

**Student Learning Outcomes**

Upon completion of this course, the student will be able to:

- Demonstrate an understanding of the physical factors affecting climate and the resulting geographic variation of energy receipt, temperature, precipitation, and biomes.  
- Explain the factors responsible for the latitudinal variation in energy receipt and its effects on global temperature and precipitation patterns.  
- Diagram the global energy balance, accounting for major sources of input and outputs, heat exchange and absorption.  
- Describe the various layers of the atmosphere and explain their role in producing the Greenhouse Effect and anthropogenic global warming.  
- Apply knowledge of meteorology as well as global oceanic circulation to hypothesize how terrestrial and marine biotic communities may be impacted by climate change.  
- Demonstrate an understanding of the physical factors affecting climate and the resulting geographic variation of energy receipt, temperature, precipitation, and biomes.  
- Discuss the importance of physiological tolerance and species interactions in the structure, diversity, and stability of communities.  
- Use data from paleoclimatology to demonstrate how the geographic ranges of organisms may be affected by climate shifts.  
- Apply knowledge of the carbon cycle to explain the physical and biology factors that influence carbon dioxide levels in the atmosphere.  
- Outline how increasing atmospheric carbon dioxide levels may affect the acidity of oceans and the structure of marine communities.  
- Apply scientific reasoning to assess the evidence for human-induced climate change.  
- Describe how scientists collect data to determine the history of the earth's climate and biogeography.  
- Outline how the study of paleoclimatology helps scientists predict future changes.  
- Present data that support and data that contradict the argument that current climate change is primarily due to human activities in contrast to natural forces.  
- Analyze the complexities and difficulties in constructing climate change models.  
- Diagram feedback loops involving atmospheric carbon dioxide and other greenhouse gases, albedo, photosynthesis, temperature, cloud cover, pollution, and other related variables.  
- Discuss the reasons why it is difficult to predict
future climate change.</li>
• <b>SLO 5: UNDERSTAND HOW CLIMATE CHANGE MAY AFFECT THEIR LIVES AND THE FUTURE OF LIFE ON EARTH.</b> 1. Describe the major principles of recent climate policies and discuss their limitations. 2. Identify how global warming may affect weather extremes, incidence of wildfires, availability of water, agriculture, human disease patterns, settlement patterns, economic, political stability, and other aspects of human society. 3. Outline effective short term and long term strategies for mitigating the effects of climate change.

GEOG 306 Weather and Climate

**Units:** 3  
**Hours:** 54 hours LEC  
**Prerequisite:** None.  
**Transferable:** CSU; UC  
**General Education:** AA/AS Area IV; CSU Area B1; IGETC Area 5A  
**C-ID:** C-ID GEOG 130  
**Catalog Date:** June 1, 2020

This course is an introduction to atmospheric processes including energy and moisture exchanges, atmospheric pressure, winds, and global circulation. Severe weather conditions such as hurricanes and tornadoes are also studied. World, regional, and local climates are investigated. Student work will include weather observations and analysis of atmospheric data using charts, weather maps and radar and satellite imagery from the Internet and other sources.

**Student Learning Outcomes**

Upon completion of this course, the student will be able to:

- <b>SLO1: INTERPRET, ANALYZE, AND DISPLAY ATMOSPHERIC DATA.</b> 1. Demonstrate the ability to graph and/or map atmospheric data and explain its significance.
- <b>SLO2: DETAIL THE PROCESSES OF ENERGY EXCHANGE WITHIN THE EARTH-ATMOSPHERE SYSTEM.</b> 1. Draw a simplified diagram explaining Earth's energy balance and explain the energy flows portrayed.
- <b>SLO3: DESCRIBE ATMOSPHERIC HUMIDITY PROCESSES, SPECIFICALLY THOSE INVOLVING PHASE CHANGES OF WATER.</b> 1. Explain atmospheric energy exchange associated with the phase changes of water (latent heat exchange).
- <b>SLO4: EXPLAIN WHY AND WHERE PRECIPITATION OCCURS, INCLUDING SOURCES OF MOISTURE, LIFTING MECHANISMS, ADIABATIC PROCESSES, AND CLOUD/PRECIPTATION FORMATION.</b> 1. Describe moisture sources and the steps necessary for condensation.
- <b>SLO5: COMPARISON AND CONTRAST THE DYNAMICS OF SEVERE WEATHER SYSTEMS, INCLUDING THUNDERSTORMS, HURRICANES, AND TORNADOES.</b> 1. Compare the commonalities and differences among severe weather systems.
- <b>SLO6: CLASSIFY AND INTERPRET ATMOSPHERIC DATA IN ORDER TO DESCRIBE CLIMATIC VARIATION OVER EARTH'S SURFACE.</b> 1. Use the Köppen-Geiger Climate Classification System to classify and describe global climate patterns.
- <b>SLO7: DISCUSS THE MECHANISMS OF CLIMATE CHANGE (BOTH NATURAL AND ANTHROPOGENIC), ITS IMPACTS AND POTENTIAL SOLUTIONS.</b> 1. Define the greenhouse effect, greenhouse gases, and climate change. Provide examples of natural and anthropogenic causes of climate change.

GEOG 310 Human Geography: Exploring Earth's Cultural Landscapes

**Units:** 3  
**Hours:** 54 hours LEC  
**Prerequisite:** None.  
**Transferable:** CSU; UC  
**General Education:** AA/AS Area V(b); AA/AS Area VI; CSU Area D5; IGETC Area 4E  
**C-ID:** C-ID GEOG 120  
**Catalog Date:** June 1, 2020

This course investigates the diverse patterns of human settlement, development, and movement on earth, which evolved as a result of cultural and environmental factors. Emphasis is placed on understanding global population and migration patterns, language, religion, ethnicity, political and economic systems, development issues, agriculture and urbanization.

**Student Learning Outcomes**

Upon completion of this course, the student will be able to:

- <b>SLO1: INTERPRET, ANALYZE, AND DISPLAY ATMOSPHERIC DATA.</b> 1. Analyze human's role in transforming Earth's surface into a series of distinctive cultural landscapes.
- <b>SLO2: PROPOSE EXPLANATIONS FOR THE GEOGRAPHIC ORIGIN AND GLOBAL DIFFUSION OF KEY ASPECTS OF CULTURE.</b> 1. Differentiate between relocation and expansion diffusion as mechanisms for spreading cultural traits.
- <b>SLO3: DESCRIBE WIDER HISTORICAL AND MODERN GLOBAL SOCIOECONOMIC PROCESSES SUCH AS MIGRATION, COLONIZATION, AND GLOBALIZATION.</b> 1. Explain how these processes relate to spatial patterns today, such as ethnicity, unequal development, poverty, conflict, and environmental degradation.
- <b>SLO4: UNDERSTAND KEY CONCEPTS IN THEORETICAL GEOPOLITICS AND THEIR IMPLICATIONS TODAY.</b> 1. Interpret maps of various types of socioeconomic data (e.g. demographic, linguistic, religious, ethnic; AIDS incidence, GNP per capita, etc.) and explain their significance.
- <b>SLO5: COMMUNICATE GEOGRAPHIC INFORMATION EFFECTIVELY IN ORAL, WRITTEN, AND/OR GRAPHIC FORM.</b> 1. Produce a significant research project (e.g. academic poster, term paper, or similar product) on a course-related theme.
GEOG 320 World Regional Geography

This course is a global survey of the world's major geographic realms: their physical environments, cultures and economies; their origins, interactions and global roles. Geographic concepts and ideas are used to study and compare cultures, landscapes, resources, livelihood and land use across Earth. Explanation for the globalization of culture and economy, the widening gap between rich and poor countries, and ethnic diversity in the United States and abroad is stressed throughout the course. A major goal of this course is to improve each student's "mental map of the world."

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- <b>SLO1: Recognize the diversity of peoples, places, and events globally as well as within specific geographic regions.</b><br>1. Generalize the special combination of cultural, physical, historical, economical, and organizational qualities that characterize each of the major geographic regions of the world (such as East Asia, North America, SubSaharan Africa, etc.).</p>

- <b>SLO2: Evaluate and analyze critical geographic issues facing regions of the world today.</b><br>1. Identify major socioeconomic, political, and/or environmental issues currently affecting Earth's major geographic regions.</p>

- <b>SLO3: Use and interpret maps effectively to build geographic understanding of the world.</b><br>1. Recognize and identify the world's major geographic regions, as well as all countries located within them, on a blank outline map.  

- <b>SLO4: Communicate geographic information effectively in oral, written, and/or graphic form.</b><br>1. Produce a significant research project (e.g. academic poster, term paper, or similar product) on a course-related theme.

GEOG 322 Geography of California

This course investigates California's physical, cultural, and economic environments, analyzing cardinal changes resulting from both natural and human interaction. The emphasis is on cultural diversity, human alteration of the landscape, and contemporary problems resulting from accelerated competition for natural, financial, and human resources. Some field trips may be required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- <b>SLO #1: demonstrate understanding of California's physical and human environments, their interconnections, and the geographic processes that form and change them. </b>
  
  Objective 1.1: expound of several examples of the influence of the environment on the human population and the human influence on the environment.
  
  Objective 1.2: describe the change of the environment and human population over time.
  
  Objective 2.1: identify and explain the influence of cultures and ideas from around the world on the State and regions within California.
  
  Objective 2.2: apply basic principles of the physical environment to interpret California’s environmental phenomena.
  
  Objective 3.1: describe both perspectives on several ethical issues facing California and propose some solutions.
  
  Objective 4.1: recognize, appreciate, and understand the geographic diversity of people, places, and events specific to California.
  
  Objective 5.1: develop one or several projects illustrating an understanding of California geography.

GEOG 331 Exploring Maps and Geographic Technologies

Maps are the most effective way to communicate spatial information. This course introduces students to the quickly changing world of maps (both hardcopy and digital) and geographic techniques and technologies such as map and aerial photograph interpretation, spreadsheet operations, basic statistics, cartography, Global Positioning Systems (GPS), Internet mapping, remote sensing and Geographic Information Systems (GIS) that aid in data collection, analysis and presentation.
Student Learning Outcomes

Upon completion of this course, the student will be able to:

- **SLO #1: DEMONSTRATE AN UNDERSTANDING OF THE MAJOR MODES OF GEOGRAPHIC INQUIRY.**
  - discuss how the scientific method and spatial analysis are used to research topics in geography.
  - recognize the potential for misuse of data, whether accidental or intentional, and its consequences.
- **SLO #2: DEMONSTRATE AN UNDERSTANDING OF MAPPING CONCEPTS AND THE ABILITY TO INTERPRET MAPS AND MAPPED DATA.**
  - determine basic geographic information (e.g., location, distance and direction) using various map scales, coordinate systems, and projections.
  - create, analyze, critique, and interpret data using maps, aerial photographs and satellite imagery.
  - demonstrate basic proficiency in traditional and technology-based cartographic skills.
- **SLO #3: DEMONSTRATE AN UNDERSTANDING OF COMMON GEOGRAPHIC TECHNOLOGIES AND THE ABILITY TO USE THEM TO COLLECT, ANALYZE, AND DISPLAY GEOSPATIAL DATA.**
  - critically analyze mapping applications and technologies commonly used in today's society.
  - collect, import and display geospatial data within a GIS.
  - use a GPS unit for basic navigation purposes.
- **SLO #4: ORGANIZE, MANIPULATE, ANALYZE AND DISPLAY TABULAR DATA INTO SPATIAL VISUALIZATIONS.**
  - create and manipulate tabular data using common spreadsheet software (e.g. Excel).
  - conduct basic statistical analysis of numeric data, assess validity, and display results.

GEOG 335 Introduction to Geographic Information Systems Applications

**Units:** 3  
**Hours:** 45 hours LEC; 27 hours LAB  
**Prerequisite:** None.  
**Advisory:** CISC 302  
**Transferable:** Yes  
**C-ID:** GEOG 155  
**Catalog Date:** June 1, 2020

Geographic Information Systems (GIS) are computer-based mapping programs that analyze spatial data. This course provides the foundation for using desktop GIS software. A conceptual overview along with hands-on experience will be used to explore basic GIS software functionality. Emphasis will be placed on display characteristics, attribute querying, database exploration and management, spatial analysis, data creation, and cartographic presentation.

This course is not open to students who have received credit for GEOG 335.1, 335.2, and 335.3.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- **SLO #1: demonstrate an understanding of GIS technologies, theories and practices**
  - Describe and assess fundamental aspects of geographic information and scale, with specific reference to raster and vector digital spatial data models used to represent such information.
  - Compile, compare, and evaluate various types of spatial data, with specific attention to geospatial metadata, data quality, and identification of the most appropriate data type for use in a specific GIS application.
  - Compare and contrast the variety of available coordinate systems, map projections, and datums, and choose the appropriate variety for a specific GIS application.
  - Compare and contrast the effectiveness of various GIS output products, including maps, tables, charts, and other digital output for specific applications.
  - Describe, assess, and compare common map elements and the cartographic design process.
- **SLO #2: apply GIS technical skills in a professional setting**
  - Originate, classify, edit, and manage digital spatial data using various techniques (e.g., manual, scan, and on-screen digitizing, computer-assisted drafting, GPS).
  - Design, synthesize, validate, optimize, and manage spatial attribute tables and databases.
  - Apply appropriate data normalization and classification schemes to attribute data.
  - Formulate geoprocessing and analysis functions that are appropriate for specific applications, and be able to perform and evaluate the results of such processes (such as buffering, overlay, reclassification, address matching, and statistical analysis).
- **SLO #3: exhibit skills learned via GIS project development**
  - Synthesize, design, apply, and manage a GIS project, including estimates of time and labor requirements.
  - Design, create, and disseminate high-quality maps in both hard-copy (paper) and digital (on-screen) form.
  - List and describe several career options for GIS professionals.
- **SLO #4: cultivate spatial analysis and critical thinking skills for decision-making purposes**
- **SLO #5: understand how GIS skills are applicable in specific career fields**

GEOG 353 Introduction to the Global Positioning System (GPS)

**Units:** 1  
**Hours:** 16 hours LEC; 6 hours LAB  
**Prerequisite:** None.  
**Transferable:** Yes
This course introduces the Global Positioning System (GPS). Topics include basic concepts of GPS including hands-on operation of the technology, real-world applications, computer interfaces, GIS and other mapping software. A field trip may be required.

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

- **SLO 1: Demonstrate competent use of GPS technology and function**
  - Evaluate GPS receiver operation for positioning and navigation
  - Design and implement field data collection for mapping
- **SLO 2: Integrate GPS data into computer mapping applications**
  - Describe GPS in relation to basic geographic information system (GIS) concepts
  - Describe the procedure for downloading and uploading GPS data to and from a computer
  - Create maps of GPS data using computer software

### GEOG 390 Field Studies in Geography

**Units:** 1 - 4  
**Hours:** 6 - 24 hours LEC; 36 - 144 hours LAB  
**Prerequisite:** None.  
**Transferable:** CSU  
**C-ID:** C-ID GEOG 160  
**Catalog Date:** June 1, 2020

This course involves the study of geographic principles and processes in the field. Course content will vary by destination but may include topics in physical geography (e.g., plant and animal communities, climate and weather, geology and geomorphology, natural hazards, environmental impacts, etc.), human geography (e.g., cultural landscapes, economic activities, transportation issues, land use patterns, etc.), and/or introduction to tools and techniques used for geographic field research (e.g., map and compass use, the Global Positioning System (GPS), Geographic Information Systems (GIS), etc.). Field trip(s) are required.

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

- **SLO 1: APPLY BASIC PRINCIPLES OF GEOGRAPHY TO OBSERVATIONS IN THE FIELD**
  - Develop observational skills in the field.
  - Explain any evidence of human-environmental interactions observed in the field and discuss its implications.
  - Understand the roles of biotic and abiotic elements within specific ecosystems.
- **SLO 2: UTILIZE INVESTIGATIONS, OBSERVATIONS AND READINGS TO DEVELOP A GREATER DEPTH OF UNDERSTANDING OF GEOGRAPHIC PRINCIPLES.**
  - Compare knowledge gained from readings and lectures to field observations.
  - Utilize appropriate information sources to increase knowledge of one aspect of the course topic.
- **SLO 3: COMMUNICATE KNOWLEDGE GAINED IN THIS COURSE EFFECTIVELY IN ORAL, WRITTEN, AND/OR GRAPHIC FORM**

### GEOG 391 Field Studies in Geography: Mountain Landscapes

**Units:** 1 - 4  
**Hours:** 6 - 24 hours LEC; 36 - 144 hours LAB  
**Prerequisite:** None.  
**Transferable:** CSU  
**C-ID:** C-ID GEOG 160  
**Catalog Date:** June 1, 2020

This course involves the study of geographic principles and processes in mountain environments. The course content will vary by destination but may include topics in physical geography (e.g., plant and animal communities, climate and weather, geology and geomorphology, natural hazards, environmental impacts, etc.), human geography (e.g., cultural landscapes, economic activities, transportation issues, land use patterns, etc.), and/or introduction to tools and techniques used for geographic field research (e.g., map and compass use, the Global Positioning System (GPS), Geographic Information Systems (GIS), etc.). Field excursions are required.

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

- **SLO 1: demonstrate skill of gaining and applying learned material in a field experience.**
  - apply concepts and processes discussed in lecture to experiences in the field.
  - compose field notes and collect and analyze field data.
- **SLO 2: explain physical and/or cultural phenomena of a specific region.**
  - describe and explain physical and/or cultural phenomena of a specific region.
  - integrate geographic information from various disciplines (geology, biology, ecology, urban studies, anthropology, history, economics, cultural studies, and others) in order to explain landscape patterns and processes.
GEOG 392 Field Studies in Geography: Coastal Landscapes

This is a field studies course of the geography of coastal landscapes. Physical and cultural processes, characteristics and landscapes will be observed and analyzed. Specific content will vary by geographic region. A field trip is required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- <b>SLO 1: demonstrate skills of gaining and applying learned material in a field experience. </b>
- apply concepts and processes discussed in lecture to experiences in the field.
- compose field notes and collect and analyze field data.
- <b>SLO 2: explain physical and/or cultural phenomena of a specific region. </b>
- describe and explain geographic phenomena related to the particular physical and/or human environments under study.
- integrate geographic information from various disciplines (geology, biology, ecology, urban studies, anthropology, history, economics, cultural studies, and others) in order to explain landscape patterns and processes.

GEOG 393 Field Studies in Geography: Arid Landscapes

This course involves the study of geographic principles and processes in arid environments. The course content will vary by destination but may include topics in physical geography (e.g., plant and animal communities, climate and weather, geology and geomorphology, natural hazards, environmental impacts, etc.), human geography (e.g., cultural landscapes, economic activities, transportation issues, land use patterns, etc.), and introduction to tools and techniques used for geographic field research (e.g., map and compass use, the Global Positioning System (GPS), Geographic Information Systems (GIS), etc.). Field excursions are required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- SLO 1: demonstrate skill of gaining and applying learned material in a field experience.
- apply concepts and processes discussed in lecture to experiences in the field.
- compose field notes and collect and analyze field data.
- SLO 2: explain physical and/or cultural phenomena of a specific region.
- describe and explain physical and/or cultural phenomena of a specific region.
- integrate geographic information from various disciplines (geology, biology, ecology, urban studies, anthropology, history, economics, cultural studies, and others) in order to explain landscape patterns and processes.

GEOG 394 Field Studies in Geography: Volcanic Landscapes

This course involves the study of geographic principles and processes in volcanic environments. The course content will vary by destination but may include topics in physical geography (e.g., plant and animal communities, climate and weather, geology and geomorphology, natural hazards, environmental impacts, etc.), human geography (e.g., cultural landscapes, economic activities, transportation issues, land use patterns, etc.), and introduction to tools and techniques used for geographic field research (e.g., map and compass use, the Global Positioning System (GPS), Geographic Information Systems (GIS), etc.). Field excursions are required.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- SLO 1: demonstrate skills of gaining and applying learned material in a field experience.
- apply concepts and processes discussed in lecture to experiences in the field.
- compose field notes and collect and analyze field data.
- SLO 2: explain physical and/or cultural phenomena of a specific region.
- describe and explain geographic phenomena related to the particular physical and/or human environments under study.
- integrate geographic information from various disciplines (geology, biology, ecology, urban studies, anthropology, history, economics, cultural studies, and others) in order to
An independent studies project involves an individual student or small group of students in study, research, or activities beyond the scope of regularly offered courses. See the current catalog section of “Special Studies” for full details of Independent Studies.

### Student Learning Outcomes

Upon completion of this course, the student will be able to:

- **<b>SLO #1: Actively engage in intellectual inquiry beyond that required in order to pass a course of study.</b>**
- Discuss and outline a proposal of study with a supervising instructor in Geography or Geographic Information Systems (GIS) or Environmental Studies.
- Design an independent study (to be completed individually or by collaboration of a small group) to foster special knowledge, skills, and experience that are not available in any one regularly scheduled course.
- Gather data or information needed for analysis in Geography or Geographic Information Systems (GIS) or Environmental Studies.
- **<b>SLO #2: Utilize modes of analysis and critical thinking to apply theoretical perspectives and/or concepts in Geography or Geographic Information Systems (GIS) or Environmental Studies to significant problems and/or educational activities.</b>**
- Analyze and apply the knowledge, skills and experience that are involved in the independent study to theoretical perspectives and/or concepts in Geography or Geographic Information Systems (GIS) or Environmental Studies.
- **<b>SLO #3: Communicate a complex understanding of content matter of Geography or Geographic Information Systems (GIS) or Environmental Studies</b>.**
- Demonstrate competence in the skills necessary to accomplish the independent study.
- Present the results of your research or inquiry.

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**GEOG 499 Experimental Offering in Geography**

- **Units:** 0.5 - 4
- **Prerequisite:** None.
- **Transferable:** CSU; UC (Credit for variable topics courses is given only after a review of the scope and content of the course by the enrolling UC campus.)
- **Catalog Date:** June 1, 2020

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