

## Definition

The Geosciences include the disciplines of Geography, Geographic Information Systems (GIS) and Geology. These disciplines all explore Earth's surface.

## Staff

To access faculty and staff, dial (661) 722-6300, then the 4-digit extension.

### Program Advisement:

Dr. Leslie Uhazy, Dean ext. 6417

### Administrative Assistant:

Wendy Cios ext. 6415

### Clerical Assistant:

Suzanne Olson ext. 6046

### Faculty:

Richard Balogh ext. 6428

Dr. Richard Coffman ext. 6176

Michael Pesses ext. 6914

### Adjunct Faculty:

To access adjunct faculty voice mail, dial (661) 722-6300, then the 4-digit number.

V.M.

Steven Adams 2370

Kathy Duret 2234

Dr. Igor Marder 6238

Abu Rahman 2471

Ed Teets 2149

Laura Verity 2054

Molly Zorba 2404

## Transfer

Students planning to continue studies at a four-year college or university after AVC should visit the Transfer Resource Center and consult with a counselor as soon as possible. Additional information on official transfer articulation agreements from AVC to many CSU/UC campuses can be found at the following Web site: [www.assist.org](http://www.assist.org)

## Prerequisite Completion

If a course is listed as a prerequisite for another course, that prerequisite course must be completed with a satisfactory grade in order to enroll in the next course. According to Title 5, Section 55200(d), a satisfactory grade is a grade of "A," "B," "C" or "P". Classes in which the Pass/No Pass option is available are indicated with an asterisk (\*) before the course title. See "Pass/No Pass Option" in the catalog for full explanation.

## Geography

### Program Description

The field of geography explores spatial relationships and the patterns created by humans and the natural environment on Earth's surface. All geography courses are transferable to CSU and UC institutions.

### Distinctive Features

The study of geography prepares students for transfer to four-year institutions and gives them skills to understand the spatial relationships that surround them. Geographic skills compliment many other academic fields. See GIS Certificate Program below.

### Career Options

Geographers find employment options in the following areas:

Demographics  
Environmental Sciences  
Fire Management  
Hazardous Waste Cleanup  
Homeland Security  
Hydrology and Watershed Management  
Meteorology  
Regional and Urban Planning  
Resource Management  
Teaching

Transportation Analysis

(Many of these fields require education beyond the two-year college level.)

### Certificate Program

Certificate not applicable.

### Associate Degree

An associate degree with a major in Geography is not available. Geography courses can be included in the 18 units necessary for an associate degree with a major in Liberal Arts and Sciences. (See Graduation/Associate Degree Requirements.)

## Geography Courses

### GEOG 101 \*PHYSICAL GEOGRAPHY: EARTH'S SURFACE LANDSCAPES

3 units

3 hours weekly

*Advisory:* Eligibility for College Level Reading, ENGL 101 and MATH 102.

An introduction to the processes at work shaping Earth's surfaces. Students will explore the role of plate tectonics, volcanism and earthquakes in building our landscape. Students will also examine the forces that erode and modify Earth's surfaces. The interactions between location, climates, soils and bioregions will also be explored. (CSU, UC, AVC)

### GEOG 101L \*PHYSICAL GEOGRAPHY LAB: EARTH'S SURFACE LANDSCAPES

1 unit

3 hours weekly

*Prerequisite:* Completion of or concurrent enrollment in GEOG 101.

*Advisory:* Eligibility for College Level Reading, ENGL 101 and MATH 102.

Provides students with a hands-on introduction to the processes at work shaping Earth's surfaces. This class provides an introduction to the methods used to present spatial relationships found in our physical environment. Students will identify, explore, analyze, and compare methods used in mapping and expressing spatial relationships. Students will develop fundamental geographic skills that can be used in variety of professional situations. (CSU, UC, AVC)

### GEOG 102 \*PHYSICAL GEOGRAPHY: EARTH'S WEATHER AND CLIMATE

3 units

3 hours weekly

*Advisory:* Eligibility for College Level Reading, ENGL 101 and MATH 102.

This course examines Earth's weather and climate patterns from a geographic perspective. Students explore the basic principles of weather and climate as well

as causes and effects. Emphasis is placed on understanding various elements and controls of weather and climate as well as interpreting weather maps and charts. Techniques and principles involved in interpreting weather data, weather charts and maps and weather forecasting will also be introduced. (CSU, UC, AVC)

### **GEOG 102L \*PHYSICAL GEOGRAPHY LAB: EARTH'S WEATHER AND CLIMATE**

1 unit

3 hours weekly

**Prerequisite:** Completion of or concurrent enrollment in GEOG 102.

Provides “hands-on” experience in understanding, defining and interpreting the basic principles of weather and climate topics presented in GEOG 102. Emphasis is placed on understanding various elements and controls of weather and climate, making and interpreting weather maps and charts. Techniques and principles involved in interpreting weather data, weather charts and maps and weather forecasting will also be introduced. (CSU, AVC)

### **GEOG 105 \*CULTURAL GEOGRAPHY**

3 units

3 hours weekly

**Advisory:** Completion of or concurrent enrollment in ENGL 101, and Eligibility for College Level Reading and MATH 102.

An introduction to the fundamental concepts of human geography allowing students to explore the spatial patterns created by the interactions of diverse ethnic groups. Students will use basic geographic concepts to explore relationships between human cultures and their environments, race and ethnicity, diffusion of languages, religions and social customs. Students will explore issues in human population dynamics and migrations and investigate impacts of patterns created by political boundaries and economic development. **NOTE:** Does not meet Physical Science requirement. (CSU, UC, AVC)

### **GEOG 106 \*CALIFORNIA**

### **GEOGRAPHY**

3 units

3 hours weekly

**Advisory:** Completion of ENGL 101 and GEOG 101 or GEOG 105, and Eligibility for College Level Reading.

This course will explore California's diverse physical, cultural and economic geography. We will be exploring the many relationships between the State's past, present and future physical, historical, cultural and economic landscapes as we examine California's modern landscapes. We will also explore issues faced by all Californians including but not limited to growing population, limited resources, water, urbanization, and agriculture. This course will be valuable for geography majors, future teachers, transfer students, and anyone with an interest in California. (CSU, UC, AVC)

### **GEOG 299 \*SPECIAL TOPICS—FIELD GEOGRAPHY**

1 unit

20 hours total

**Advisory:** Completion of or concurrent enrollment in GEOG 101, GEOG 102, GEOG 106, GEOL 101 or ERSC 101.

This course will allow students opportunities to observe geographic phenomenon in field setting covered in classroom lectures. Students will become familiar with some of the basic techniques used in observing, identifying, describing, mapping and recording field data. Specific features to be observed will be chosen for each trip based on destinations and themes. This course will be valuable for all geography, science, natural resource and planning majors, future teachers and anyone interested in our natural environment. (CSU, AVC) (R3)

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## **Geographic Information Systems (GIS)**

### **Definition**

Geographic Information Systems (GIS) is a computer-based tool used to map and analyze things that exist and happen on the surface of Earth. GIS technology integrates database operations with

statistical analysis and presents this information visually using maps. GIS can be used to explain events, predict outcomes and plan for the future.

Students must receive a minimum grade of “C” or better in all required core courses and the specific courses listed as program electives in order to qualify for the degree or certificate.

### **Program Description**

The GIS certificate program allows geography and other majors to transfer into four-year geography programs having completed a documented specialization in GIS that includes marketable job skills that can be used concurrently with the pursuit of advanced degrees. The GIS certificate program will benefit persons with previous training in a variety of fields by allowing them to gain new skills that can be applied in their place of employment. All GIS courses are transferable to CSU and UC institutions.

### **Distinctive Features**

Students work in up-to-date computer labs with modern scanners, digitizing equipment, Global Positioning Satellite (GPS), plotters and other specialized equipment. All classes are project-based allowing students opportunities to work with real world data.

### **Career Options**

GIS is a multibillion-dollar industry employing hundreds of thousands worldwide in many fields including:

- Anthropology
- Archeology
- Biology
- Business
- Criminal Justice
- Demographics
- Epidemiology
- Environmental Sciences and Protection
- Fire Management
- Geomatics Engineering
- Hazardous Waste Cleanup
- Homeland Security
- Meteorology
- Regional and Urban Planning
- Resource Management
- Transportation Networks
- Watershed Management

Zoology  
GIS applications and the job opportunities open to individuals with training in GIS. (Many of these fields require education beyond the two-year college level.)

## Certificate Program

### Low-Unit Certificate of Achievement

#### Geographic Information Systems

The following courses (15 units) are required for the certificate.

Required Courses:	units
GEOG 205, Introduction to GIS	3
GEOG 220, Data Acquisition and Management	3
GEOG 221, Spatial Analysis	3
GEOG 222, Cartography	3
Complete a total of 3 units from: GEOG 298A, 298B or 298C, Special Studies in GIS	3
<b>Total</b>	<b>15</b>

### Associate Degree

Associate degree not available.

## Geographic Information Systems Courses

### GEOG 201 \*MAP INTERPRETATION AND GPS

(formerly same course as FTEC 201)

4 units

3 hours weekly

18 total hours of supervised field application

**Advisory:** Completion of MATH 080, and Eligibility for College Level Reading and ENGL 101.

This course will provide students with the skills necessary to interpret maps. Projection and reference systems, scale concepts, coordinate systems, topographic maps, air photo interpretation, use of compasses and clinometers will be explored. Students will also cover the basics of how GPS works and examine some of the ways GPS technologies can be used to solve real-world problems. Students will gain hands-on experience mapping field-collected data and importing the data to

computer mapping software. Students will be required to participate in a minimum of 18 hours of supervised off-campus field application sessions. This class will meet needs of geography, geology, archaeology, wildlife biology and fire technology students. (CSU, AVC)

### GEOG 205 \*INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS

3 units

3 hours weekly

**Advisory:** Completion of CA 103 and MATH 080, and Completion of or concurrent enrollment in GEOG 201 and MATH 102, and Eligibility for College Level Reading and ENGL 101.

This course will introduce students to the fundamentals of Geographic Information Systems (GIS). Students will explore the methods, technology and software used to capture, manage, analyze and present geographic data. Students will use their knowledge to complete a GIS project in a field of interest. This course is intended for Geography/GIS majors and persons interested using GIS in professional settings. **NOTE:** Does not meet Physical Science requirement. (CSU, AVC)

### GEOG 220 \*DATA ACQUISITION AND MANAGEMENT IN GEOGRAPHIC INFORMATION SYSTEMS

3 units

3 hours weekly

**Prerequisite:** Completion of GEOG 205.

**Advisory:** Completion of CA 131, MATH 080 and MATH 102, and Completion of or concurrent enrollment in MATH 115, and Eligibility for College Level Reading and ENGL 101.

This course provides a general survey of basic methods of data acquisition, database design and management for GIS. This course focuses on the specific data requirements of GIS. Students will examine methods of digitizing preexisting data and explore database development and management. Students will use their knowledge to complete GIS projects. **BEFORE ENROLLING,** students must have the computer skills,

knowledge of georeferencing, coordinate systems, processes of data capture, data management and analysis and the skills necessary to produce a GIS map gained in GEOG 205. This course is intended for Geography/GIS majors and persons using GIS in professional settings. (CSU, AVC)

### GEOG 221 \*SPATIAL ANALYSIS IN GEOGRAPHIC INFORMATION SYSTEMS

3 units

3 hours weekly

**Prerequisite:** Completion of GEOG 205.

**Advisory:** Completion of MATH 080 and MATH 102, and Completion of or concurrent enrollment in MATH 115, and Eligibility for College Level Reading and ENGL 101.

This course provides a general survey of the fundamentals of spatial information systems and a survey of quantitative techniques applicable to spatial data. This course is focused on the functionality of GIS as an effective tool for modeling and analyzing complex spatial relationships. The applications of a variety of quantitative methods will be explored using GIS software including ArcGIS and ArcInfo. Students will use their knowledge to complete a GIS project. **BEFORE ENROLLING,** students must have computer skills, knowledge of georeferencing, coordinate systems, processes of data capture, data management and analysis and the skills necessary to produce a GIS map. This course is intended for Geography/GIS majors and persons using GIS in professional settings. **NOTE:** Does not meet Physical Science requirement. (CSU, UC, AVC)

### GEOG 222 \*CARTOGRAPHY FOR GEOGRAPHIC INFORMATION SYSTEMS

3 units

3 hours weekly

**Prerequisite:** Completion of GEOG 205.

This course provides a general survey of basic methods used for the presentation of GIS data and analysis. Students will examine methodology used in the presentation of spatial data. Students will use their cartographic skills to complete their GIS projects. **BEFORE ENROLL-**

ING, students must have the computer skills, knowledge of georeferencing, coordinate systems, processes of data capture, data management and analysis and the skills necessary to produce a GIS map gained in GEOG 205. This course is intended for Geography/GIS majors and persons using GIS in professional settings. (CSU, AVC)

### **GEOG 298A, 298B, 298C**

#### **\*SPECIAL STUDIES**

#### **IN GEOGRAPHIC INFORMATION SYSTEMS**

*1 unit, 2.3 hours weekly*

*2 units, 4.6 hours weekly*

*3 units, 7 hours weekly*

**Prerequisite:** Completion of GEOG 205.

**Advisory:** Completion of MATH 080 and Eligibility for College Level Reading, ENGL 101 and MATH 115.

These courses provide students with the opportunity to work independently on a GIS project. Students will use GIS skills to collect data, model and analyze complex spatial relationships.

**BEFORE ENROLLING**, students must have computer skills, knowledge of georeferencing, coordinate systems, process of data capture, data management and analysis, and the skills necessary to produce a GIS map. These courses are intended for Geography/GIS majors and persons interested in using GIS in professional settings. Students will enroll in the section that will match their specific project time commitment and be awarded units accordingly. (CSU, AVC) **(R1)**

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## Geology

### **Definition**

The chemical composition, age and varied landscapes of the earth are examined through investigation of rocks and minerals.

### **Program Description**

The field of geology explores Earth's geologic features and the processes responsible for their formation. All geology courses are transferable to CSU and UC institutions.

### **Distinctive Features**

The study of geology prepares students for transfer to four-year institutions.

### **Career Options**

Geologists find employment options in the following areas:

Civil Engineering

Environmental Sciences

Hazardous Waste Cleanup

Hydrology and Watershed Management

Regional and Urban Planning

Resource Management

Teaching

Transportation Analysis

(Many of these fields require education beyond the two-year college level.)

### **Certificate Program**

Certificate not applicable.

### **Associate Degree**

An associate degree with a major in Geology is not available. Geology courses can be included in the 18 units necessary for an associate degree with a major in Liberal Arts and Sciences. (See Graduation/Associate Degree Requirements.)

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## Geology Courses

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### **GEOLOG 101 \*PHYSICAL GEOLOGY**

*3 units*

*3 hours weekly*

**Advisory:** Eligibility for College Level Reading, ENGL 101 and MATH 102.

Introduction to the Earth's geologic features and processes responsible for their formation. Students will learn about the internal and external processes involved with the formation of the Earth. Topics include the formation of minerals and rocks, tectonic processes, volcanoes, earthquakes, faults and folding, the development of continents and ocean basins, mineral and energy resources, and surface processes and features including weathering, streams, groundwater, glaciers and shorelines. (CSU, UC, AVC)

### **GEOLOG 101L \*PHYSICAL GEOLOGY LAB**

*1 unit*

*3 hours weekly*

**Corequisite:** Completion of or concurrent enrollment in GEOLOG 101.

**Advisory:** Eligibility for College Level Reading, ENGL 101 and MATH 102.

Physical Geology Laboratory provides students with hands-on introduction to the analyses and identification of common minerals and rocks. The class provides an introduction to the analysis and interpretation of topographic and geologic maps. The students will learn basic analytical and geologic skills that will enable them to interpret geologic histories based on fundamental geologic principles. (CSU, UC, AVC)

### **GEOLOG 102 \*HISTORICAL GEOLOGY**

*3 units*

*3 hours weekly*

**Advisory:** Eligibility for College Level Reading, ENGL 099 and MATH 070.

Historical Geology is an overview of the history and development of the Earth and life on Earth. The course will examine the geologic processes that have shaped the Earth, the development of the Earth and life on Earth, and how it has changed over time according to the geologic record. (CSU, UC, AVC)