

TAG 101, 102, 201,

Emphasis in Science and Mathematics

(Select 18 units minimum*)

ANTH 100, 101
 ASTR 100, 120
 BIOL 100, 101, 102, 105, 106, 110, 114, 118, 130, 131, 185, 200, 201
 BOT 100, 101, 110, 115
 BUS 110
 CHEM 100, 102, 104, 110, 115, 210
 ENGR 210
 ES 100, 115
 FCS 185
 GEOG 100, 110, 115, 125
 GEOL 100, 110, 120, 125, 150
 MATH 56, 60, 100, 105, 110, 115, 120, 130, 135, 140, 200
 MICR 200
 OCN 100, 101, 115
 PHSC 100, 101
 PHYS 101, 102, 120, 200, 201, 230
 PSYC 205, 210
 SOC 205
 ZOO 100, 101, 115, 116, 120, 145, 200, 203, 205

*Although not listed, related lab courses may be included as part of the 18 unit minimum.

Emphasis in Social and Behavioral Sciences

(Select 18 units minimum)

AIS 101, 102, 120, 125, 130, 140, 165
 AJ 100, 106
 ANTH 105, 110, 115, 125, 126, 130, 140, 145, 150
 AMS 110, 200
 AS 101, 102, 110, 120, 125, 126
 CHDV 100, 110, 115
 COMM 100, 105
 COUN 100, 110, 120
 CS 101, 102, 120, 125
 ECON 100, 101, 102, 110, 115
 ENG 150
 FCS 101, 105
 GEOG 103, 105
 HIST 101, 102, 107, 108, 110, 114, 130, 140, 141, 150, 151, 152
 JS 105
 LS 121, 240
 MCS 100, 110, 165, 200
 PLS 121, 240
 POSC 100, 101, 102, 110
 PSYC 100, 105, 110, 115, 120, 125, 130, 145
 SOC 100, 105, 110, 115, 120, 125, 145, 200
 SPCH 120, 131

Geography (GEOG)

Contact the Earth, Space, and Aviation Sciences Department for further information, (760) 744-1150, ext. 2512

Associate in Arts degree requirements, Certificate of Achievement requirements, and Certificate of Proficiency requirements are listed in Section 6 (green pages) of the catalog.

PROGRAM OF STUDY

Geographic Information Systems

The Geographic Information Systems Certificate program is designed to provide entry-level training for students seeking employment in this fast-growing profes-

sion, or to upgrade the skills for those already working in the field of Geographic Information Systems. The program may be completed in one year including summer session.

Associate in Arts degree requirements are listed in Section 6 of the catalog. Certificates of Achievement or Proficiency require a minimum grade of 'C' in each of the required courses.

CERTIFICATE OF PROFICIENCY

| Program Requirements | | Units |
|------------------------------------|--|----------------|
| GEOG 120 | Intro to Geographic Information Sys/GIS Software | 4 |
| GEOG 132 | Database Management and Data Acquisition | 4 |
| GEOG 136 | Intermediate ArcGIS: GIS Analysis | 2 |
| GEOG 138 | GIS Internship | 2 |
| Electives (Select 1 course) | | |
| CSIS 117 | Introductions to Visual Basic | 4 |
| GEOG 134 | GIS Applications | 2 |
| TOTAL UNITS | | 14 - 16 |

COURSE OFFERINGS

GEOG 100 Physical Geography (3)

3 hours lecture

Transfer acceptability: CSU; UC; CAN GEOG 2

A study of earth's physical environment with emphasis on weather, climate, landform, soils, and natural vegetation and the interrelationship between these elements within unique physical landscapes.

GEOG 100L Physical Geography Laboratory (1)

3 hours laboratory

Prerequisite: Completion of, or concurrent enrollment in, GEOG 100

Transfer acceptability: CSU; UC

Laboratory and field investigations in weather elements, climate regions, soils, world ecosystems, and Earth's landform features. Satisfies laboratory requirement in physical sciences.

GEOG 103 World Regional Geography (3)

3 hours lecture

Transfer acceptability: CSU; UC

Critical survey of the major world regions with specific focus on physical and cultural components, such as development, economics, population and migration, political structure, and natural resources and the physical environment.

GEOG 105 Introduction to Human Geography (3)

3 hours lecture

Transfer acceptability: CSU; UC; CAN GEOG 4

Human elements of geography, including population distribution, general land use patterns, religion, trade and economy, and their correlation with the physical elements. Emphasis on world cultural regions with attention paid to interdependence and globalization.

GEOG 110 Meteorology: Weather and Climate (3)

3 hours lecture

Transfer acceptability: CSU; UC

Elements of weather including temperature, moisture, air pressure, and circulation of the atmosphere; air masses, storms, and their geographical distribution. Practical applications in the use of weather instruments, and the reading and interpretation of weather maps and climatological data.

GEOG 115 Natural Disasters and Environmental Hazards (3)

3 hours lecture

Note: Cross listed as ES 115

Transfer acceptability: CSU; UC

Examination and analysis of natural disasters and environmental hazards including earthquakes, tsunamis, volcanic activity, hurricanes, flooding, air and water pollution, and global climate change.

GEOG 120 Introduction to Geographic Information Systems and GIS Software (4)

3 hours lecture-3 hours laboratory

Recommended preparation: GEOG 100 and CSIS 105**Transfer acceptability:** CSU; UC

This course is an introduction to the mapping sciences with a primary focus on Geographic Information Systems (GIS). Course will cover the trends, history, structure, application, hardware and software, and basic operations of GIS in order to provide a foundation for the use of GIS software. Related geographic technologies to be examined include mapping, aerial and satellite imagery, and Global Positioning Systems (GPS). The lab portion of the course will provide introductory training in the use of ArcGIS software including identifying, evaluating, and inputting spatial data, developing and using raster and vector data sets, converting data from one form to another, and applying programming with GIS software.

GEOG 125 California Geology and Geography (3)

3 hours lecture

Note: Cross listed as GEOL 125**Transfer acceptability:** CSU; UC

Emphasizes the physical geographic and geologic factors that have combined to form the varied landscapes of California. Climate and vegetation patterns, as well as the various geomorphic processes will be studied.

GEOG 132 Database Management and Data Acquisition (4)

4 hours lecture

Prerequisite: Completion of, or concurrent enrollment in, GEOG 120**Transfer acceptability:** CSU

Course provides students with knowledge and practical experience in the fundamentals of database management, and the acquisition, conversion, and creation of spatial data within Geographic Information Systems (GIS). Topics to include strategic design, querying, modeling techniques, data appropriateness and accuracy, hardware and software requirements, conversion of digital data, creating digital data using digitizers, scanners and Global Positioning Systems (GPS), and utilization of remote sensing, photogrammetry, and web-based data. This course provides hands-on experience with database management and data acquisition using ArcGIS software.

GEOG 134 GIS Applications (2)

4 hours lecture/laboratory

Prerequisite: GEOG 120**Transfer acceptability:** CSU

This course provides students with knowledge and practical experience in Geographic Information Systems (GIS) applications. Students will learn the fundamentals of GIS programming, converting data for web publications, and developing GIS applications. The lab portion of this course provides hands-on experience with GIS programming using Visual Basic for Applications (VBA), data conversion using Arc Tools, and applications development using MapObjects software.

GEOG 136 Intermediate ArcGIS: GIS Analysis (2)

4 hours lecture/laboratory

Prerequisite: GEOG 120**Transfer acceptability:** CSU

This course will focus on more complex operations in using ArcGIS software. Students will gain hands-on experience in advanced querying operations, the use of ArcGIS extensions such as Spatial Analyst and 3D Analyst, transforming coordinates using Coordinate Geometry, using a GPS unit to generate and input spatial data, and the application of ArcGIS as an analytical tool in a variety of disciplines.

GEOG 138 GIS Internship (2)

6 hours laboratory

Prerequisite: GEOG 120**Transfer acceptability:** CSU

The Geographic Information Systems (GIS) internship is a directed program allowing students to apply classroom instruction to real-world GIS problem solving by working with a government or private agency. Students will be under the supervision of an instructor from the college and an advisor from the agency while working in one or more aspects of GIS operations.

GEOG 195 Regional Field Studies in Geography (1,2,3)

2, 4, or 6 hours lecture/laboratory

Transfer acceptability: CSU; UC – Credit determined by UC upon review of course syllabus.

Extended field studies of the geography of selected regions. Emphasis upon field observation and interpretation of climate, meteorology, vegetation, soils, and landforms.

GEOG 295 Directed Study in Geography (1,2,3)

3, 6, or 9 hours laboratory

Prerequisite: Approval of project or research by instructor**Note:** May be taken 4 times for a maximum of six units**Transfer acceptability:** CSU; UC – Credit determined by UC upon review of course syllabus.

Independent study for students who have demonstrated skills and/or proficiencies in geography subjects and have the initiative to work independently on projects or research outside the context of regularly scheduled classes. Students will work under the personal supervision of an instructor.

Geology (GEOL)

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PROGRAM OF STUDY**Geology**

Provides the student with sufficient background to begin upper division coursework and will prepare the student for entry-level jobs that require geologic knowledge. The student is advised to check with the school to which he/she may wish to transfer for additional courses which may be required.

A.A. DEGREE MAJOR**Program Requirements****Group One**

| | | Units |
|-----------|--|-------|
| GEOL 100 | Basic Geology | 3 |
| GEOL 100L | Basic Geology Laboratory | 1 |
| GEOL 150 | Dinosaurs and Earth History | 3 |
| GEOL 150L | Dinosaurs and Earth History Laboratory | 1 |
| GEOL 195 | Regional Field Studies in Geology | 2 |

Group Two (Select at least two sets of courses listed below)**Set 1**

| | | |
|--------------|---|---|
| MATH 140 and | Calculus/Analytic Geometry, First Course | 5 |
| MATH 141 | Calculus/Analytic Geometry, Second Course | 4 |

Set 2

| | | |
|--------------|-----------------------|----|
| PHYS 120 and | General Physics | 8 |
| PHYS 121 | | |
| or | | |
| PHYS 230 and | Principles of Physics | 10 |
| PHYS 231 | | |

Set 3

| | | |
|-----------|------------------------------|---|
| CHEM 110 | General Chemistry | 3 |
| CHEM 110L | General Chemistry Laboratory | 2 |
| CHEM 115 | General Chemistry | 3 |
| CHEM 115L | General Chemistry Laboratory | 2 |

Group Three (Select at least 8 units)

| | | |
|--|-----------------------------------|-------|
| Any other courses in Group Two not taken above | | 8-10 |
| GEOL 110 | General Geology: National Parks | 3 |
| GEOL/ | | |
| GEOG 125 | California Geology and Geography | 3 |
| GEOL 195 | Regional Field Studies in Geology | 1,2,3 |