# Science, General

## Program Description
This program is designed to provide students with a basic science background, preparing them to move into a curriculum at a four-year institution leading to a degree in such fields as chemistry, biology, physics, geology, or health sciences. This program is a path for immediate entry into science-based technology careers.

## Associate in Science Degree
The Associate in Arts Degree can be obtained by completing a total of 60 units, including a minimum of 18 units in the major, the general education requirements, and electives. The major consists of courses selected from the lists below and must include twelve (12) units in courses with laboratory work and at least one course in each of the areas Biological Science and Physical Science. All courses for this major must be completed with a grade of C or better or a P if the course is taken on a pass-no pass basis.

## Program Outcomes
This information is not available at the time of printing. Please check online for current information as it is available.

### Biological Science
- BIO 001 * Principles of Organismal Biology
- BIO 002 * Principles of Cell and Molecular Biology
- BIO 005 * Introductory Physiology
- BIO 004 * Human Anatomy
- BIO 012 Environmental Science
- BIO 012L * Environmental Science Laboratory
- BIO 014 Principles of Microbiology
- BIO 015 * Introduction to Biology
- BIO 016 Introduction to Human Biology
- BIO 018 Biology of Sex
- BIO 019 * Marine Biology
- ANTH 001 Physical Anthropology

### Physical Science
- ASTR 010 General Astronomy
- ASTR 020 * Astronomy Laboratory
- ASTR 030 The Solar System
- ASTR 040 Stars, Galaxies, and Cosmology
- CHEM 001 * General Chemistry
- CHEM 002 * General Chemistry
- CHEM 003 * Organic Chemistry I
- CHEM 004 * Organic Chemistry II
- CHEM 010 * Intermediate Chemistry
- CHEM 011 * Basic Organic Chemistry and Biochemistry
- CHEM 051 Chemistry for the Health Sciences
- GEOG 001 Physical Geography
- GEOG 001L * Physical Geography Laboratory
- GEOL 001 Physical Geology
- GEOL 002 * Geology Laboratory
- GEOL 005 Geology of California
- METR 010 Elements of Meteorology
- PHSC 012 * Introduction to Principles of Physical Science
- PHYS 002 * General Physics (Non-calculus)
- PHYS 004 * General Physics (Non-calculus)
- PHYS 006 * Physics for Science and Engineering
- PHYS 007 * Physics for Science and Engineering
- PHYS 008 * Physics for Science and Engineering
- PHYS 010 Descriptive Physics

*Laboratory Class
Science, General

Anthropology

ANTH 001 3.0 Units
Physical Anthropology
Course Advisory: SCC minimum English standard. An introduction to physical anthropology covering evolutionary theory, human disease and genetics, human variation and adaptation, primatology, primate and hominid evolution. Three hours lecture.

ANTH 002 3.0 Units
Cultural Anthropology
Course Advisory: SCC minimum English standard. Introduction to the study of human culture, with an emphasis on the changing relations between individual people, families, and other social groups, and various types of social inequality. We will also study cultural institutions from around the world, such as religion and magic, political and economic change, varieties of art forms, and the cultural future. Three hours lecture.

ANTH 007 3.0 Units
Prehistoric Archaeology
Course Advisory: SCC minimum English and math standards. An introduction to the theories and methods of anthropological archaeology, with an emphasis on and an overview of prehistory. This course will stress the evolution of social systems and technology. Case studies from around the world will illustrate the various ways archaeology deciphers past behavior. Three hours lecture.

ANTH 049 2.0 Units
Anthropology Honors
Prerequisites: Completion of 24 units of college credit with a minimum GPA of 3.3; a minimum of 5 units in the discipline with a grade of “B” or better; an ability to work independently; and permission of the Division Dean based on instructor availability. Open to students qualified to do advanced work in the field. The program may include research, directed reading, field work, or other advanced study. Repeatable 1 time. Six hours weekly by arrangement.

Astronomy

ASTR 010 3.0 Units
General Astronomy
Course Advisories: Eligibility for ENGL 001; SCC minimum math standard. An introductory study of the universe, including the properties and evolution of galaxies, stars, pulsars, black holes, quasars, the sun, planets, and life in the universe. Field trip may be required. Three hours lecture.

ASTR 020 1.0 Unit
Astronomy Laboratory
Prerequisites: ASTR 010, 030, or 040 (they may be taken concurrently). Course Advisory: SCC Minimum Math standard, Eligibility for ENGL 001. Students will gain familiarity with the sky, telescopes, and other astronomical equipment. They will do experiments in Physics related to Astronomy. Topics will cover the moon, planets, stars, galaxies, and cosmology. Field trips may be required. Three hours lab.

ASTR 030 3.0 Units
The Solar System
Course Advisories: Eligibility for ENGL 001; SCC minimum math standard. An introductory study of solar system astronomy, the physics related to that astronomy, the planets and their moons, the sun, solar system debris, and the possibility of extraterrestrial life. Field trips may be required. Three hours lecture.

ASTR 040 3.0 Units
Stars, Galaxies, And Cosmology
Course Advisories: Eligibility for ENGL 001; SCC minimum math standard. An introductory study of stars, galaxies, the universe, and the physics related to these topics. This includes an examination of the facts relating to the sun, stellar lifetimes, supernovae, black holes, and cosmology. Field trip may be required. Three hours lecture.

Geography

GEOG 001 3.0 Units
Physical Geography
Course Advisory: SCC minimum English standard. An introductory study of Earth’s natural environment. The course includes a detailed analysis of weather, geologic landforms, climate, natural vegetation, the oceans and other natural environmental elements. Special emphasis is given to the human impact on the environment. Field trips may be required. Three hours lecture.

GEOG 001L 1.0 Unit
Physical Geography Laboratory
Prerequisite: GEOG 001 (may be taken concurrently). Course Advisory: SCC minimum English and math standards. A lab course to supplement GEOG 001 (Physical Geography). Emphasis will be placed on using the skills and tools of modern physical geography and analyzing and interpreting geographic data. Maps, aerial photographs, satellite images, weather instruments and computer analysis are stressed. One or more field trips are required and may occur outside of class time. Three hours lab.
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<tr>
<th>Course Code</th>
<th>Units</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>GEOG 002</td>
<td>3.0</td>
<td>Cultural Geography</td>
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<td><em>Course Advisory: Eligibility for ENGL 001.</em> Introduction to humans and their impact on the land. This course includes a detailed evaluation of man’s cultural world with special emphasis given to man’s religions, political states, population problems, and economic systems. A field trip may be required. However, if the student cannot attend the field trip, there will be an optional research paper assignment. <strong>Three hours lecture.</strong></td>
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| GEOG 004    | 3.0   | World Geography |
|             |       | *Course Advisory: Eligibility for ENGL 001.* Geographic study of the world’s major regions. Special emphasis is given to the major problems confronting humanity in these regions including an analysis of population growth, hunger and poverty, modification and destruction of the natural environment, and natural resource and energy problems. A field trip may be required with the course. However, if a student cannot attend the trip, there will be an optional research paper assignment. **Three hours lecture.** |

| GEOG 006    | 3.0   | California Geography |
|             |       | *Course Advisory: Eligibility for ENGL 001.* Catalog Description: This course examines the diversity in the physical and human landscapes of California. Major topics in the physical landscape include geology, biogeography, weather/climate, and hydrology; while the human landscape component includes culture, population issues, urbanization, and economics. A field trip is required. **Three lecture hours.** |

| GEOG 010    | 3.0   | Introduction to Geographic Information Systems |
|             |       | *Course Advisory: SCC minimum English and math standards.* Eligibility for ENGL 001. Basic computer literacy is recommended. Provides an in-depth introduction to the fundamentals of Geographic Information Systems (GIS). The course will include an introduction to basic cartographic principles including map scales, coordinate systems, and map projections. Various applications of GIS technology used in science, business, and government will also be presented. Specific topics covered in lectures will include an understanding of GIS terminology, raster and vector data structures, data sources and accuracy, methods of data acquisition, conversion and input, requirements for metadata, working with spatial data databases, and spatial analysis. The above topics will be reinforced in the laboratory with hands-on experience. Same as GEOL 010. Not open to students who have completed GEOL 010. **Two hours lecture, three hours lab.** |

| GEOG 060    | 3.0   | Advanced Geographic Information Systems |
|             |       | *Prerequisite(s): GEOG 010 or GEOL 010 with a grade of “C” or better. Course Advisory: SCC minimum English and math standards.* Basic computer literacy is desirable. Application of advanced analytical techniques of geographic information systems (GIS) to manipulate, analyze and predict spatial patterns. Students will work on individual projects to learn the issues involved in managing and representing spatial information. **Two lecture hours and 3 lab hours.** |

| GEOG 061    | 3.0   | Introduction to Global Positioning Systems |
|             |       | *Course Advisory: SCC minimum English and math standards; Basic computer literacy is desirable. An introduction to the Global Positioning System (GPS). Development of the GPS, operational characteristics, limitations, potential errors and applications will be covered. Activities with GPS receivers will be required. This course will prepare students for advanced course work in the GPS or for course work in Geographic Information Systems. Two lecture hours and 3 lab hours.** |

| GEOG 062    | 3.0   | Advanced Global Positioning Systems |
|             |       | *Prerequisite(s): GEOG 061 with a grade of “C” or better. Course Advisory: SCC minimum English and math standards; Basic computer literacy is desirable. An advanced course on the Global Positioning System (GPS). Advanced topics including data dictionaries, differential GPS and linking GPS to Geographic Information Systems will be covered. This course will prepare students for additional studies in specific applications of GPS or for course work in Geographic Information Systems. In addition, skills obtained in this course may allow students to seek employment in the spatial science field. Two lecture hours and 3 lab hours.** |

| GEOL 001    | 3.0   | Physical Geology |
|             |       | *Course Advisories: Eligibility for ENGL 001 and SCC minimum math standard.* Presents a study of the composition of the earth and the processes responsible for its present characteristics. Topics covered include plate tectonics, rocks and minerals, volcanism, metamorphism, sedimentation, weathering, erosion, landforms, earthquakes, glaciers, mineral resources. Field trips may be taken to areas of geological interest. A written research project, tests, and a comprehensive final examination will be used to evaluate student success. This course satisfies the physical science requirements for colleges and universities. Online work may be required. **Three hours lecture.** |
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#### GEOL 002
**Geology Laboratory**
1.0 Unit
Prerequisites: GEOL 001 or 005 (either may be taken concurrently). Course Advisories: SCC minimum English and math standards. Topics include the identification of rocks and minerals as hand specimen and the study of geologic maps, landforms, and structures. Field trips will be taken to areas of geologic interest. Laboratory projects, written assignments and reports, and examinations will be used to evaluate student success. Three hours lab and discussion, plus field trips by arrangement.

#### GEOL 005
**Geology Of California**
3.0 Units
Course Advisories: Eligibility for ENGL 001 and SCC minimum math standard. An introductory course on the geology of California covering its geologic provinces, minerals (including gold), rocks, geologic hazards including earthquakes, and the development of scenic landscapes. Field trips will be taken to areas of geologic interest. A field trip report will be required. If the student cannot attend the trip, they will have a research paper option. Three hours lecture.

#### GEOL 010
**Introduction To Geographic Information Systems**
3.0 Units
Course Advisories: SCC minimum English and math standard. Eligibility for ENGL001. Basic computer literacy is desirable. Provides an in-depth introduction to the fundamentals of Geographic Information Systems (GIS). The course will include an introduction to basic cartographic principles including map scales, coordinate systems, and map projections. Various applications of GIS technology used in science, business, and government will also be presented. Specific topics covered in lectures will include an understanding of GIS terminology, raster and vector data structures, data sources and accuracy, methods of data acquisition, conversion and input, requirements for metadata, working with spatial data databases, and spatial analysis. The above topics will be reinforced in the laboratory with hands-on experience. Same as GEOG 010. Not open to students who have completed GEOG 010. Two hours lecture, three hours lab.

#### GEOL 049
**Geology Honors**
1.0 to 3.0 Units
Prerequisite(s): Completion of 24 units of college credit with a minimum GPA of 3.0; completion of GEOL 001, GEOL 005, or GEOL 010 with a grade of “B” or better; an ability to work independently; and permission of the Division Dean based on instructor availability. Course Advisory: Eligibility for ENGL 001. Requires students to engage in an independent student project. The project may be a laboratory or field study or a library study that leads to a thesis. In all cases, the final written product should show integration and synthesis of ideas. This project requires the approval of a faculty member sponsor. Three to nine hours weekly by arrangement.

### Meteorology

#### METR 010
**Elements Of Meteorology**
3.0 Units
Course Advisories: Eligibility for ENGL 001; SCC minimum math standard. A non-technical introduction to the science of meteorology and weather processes. Quizzes and tests and a comprehensive final exam will be used to evaluate student success. Three hours lecture.

### Physical Science

#### PHSC 012
**Introduction to the Principles of Physical Science**
4.0 Units
Course Advisories: Eligibility for ENGL 001; SCC minimum math standard. An introduction to the physical universe from atomic particles to the stars, with emphasis on the basic principles of physics, chemistry, astronomy, and the geosciences. This is a general education course in the physical science area for non-science majors that satisfies the physical science requirement for most universities and colleges. Field trips may be required. Three hours lecture, three hours lab.

#### PHSC 048
**Special Topics In Physical Science**
3.0 Units
These courses, numbered 048 or 098 depending upon their transferability, are courses of contemporary interest centered on changing knowledge and important issues in the field. Announcements of Special Topics courses appear in the Schedule of Classes.