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
Students who complete the Associate Degree will be able to:
1. Demonstrate analytical and/or conceptual problem solving skills.
2. Carry out experiments and critically assess their data.
3. Learn the role of hypotheses, measurement and analysis in the development of scientific theory as evidence by laboratory reports.
4. Learn how to write a laboratory report or give an oral presentation.

BIOLOGICAL SCIENCE
ANTH 001 Physical Anthropology
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

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
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
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Anthropology

ANTH 001 3 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 hominin evolution. Three hours lecture.

ANTH 002 3 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 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 Units
Anthropology Honors
Prerequisite: 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. Six hours weekly by arrangement.

Astronomy

ASTR 010 3 Units
General Astronomy
Course Advisory: 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 Unit
Astronomy Laboratory
Prerequisite: 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 Units
The Solar System
Course Advisory: 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 Units
Stars, Galaxies, and Cosmology
Course Advisory: 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 Units
Physical Geography
Course Advisory: SCC minimum English standard. An introductory study of the 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 Units
Physical Geography Laboratory
Prerequisite: GEOG 001 (may be taken concurrently). Course Advisory: SCC minimum English and Math standards. A lab course to supplement GEOG 1. 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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GEOG 002 3 Units
Cultural Geography
Course Advisory: Eligibility for ENGL 001. 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. Three hours lecture.

GEOG 004 3 Units
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 Units
California Geography
Course Advisory: Eligibility for ENGL 001. 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 Units
Introduction to Geographic Information Systems
Course Advisory: SCC minimum English and Math standards. Eligibility for ENGL001. 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.

Geology

GEOL 001 3 Units
Physical Geology
Course Advisory: 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.

GEOL 002 1 Unit
Geology Laboratory
Prerequisite: GEOL 001 or 005 (either may be taken concurrently). Course Advisory: 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 3 Units
Geology of California
Course Advisory: 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.
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**GEOL 010** 3 Units  
Introduction to Geographic Information Systems  
*Course Advisory: SCC minimum English and Math standard. Eligibility for ENGL 001. 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 GEOL 010. Not open to students who have completed GEOL 010. Two hours lecture, three hours lab.*

**GEOL 049** 1.00 to 3.00 Units  
Geology Honors  
*Prerequisite: 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.*

**PHSC 012** 4 Units  
Introduction to Principles of Physical Science  
*Course Advisory: 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 geo-sciences. 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.*