GEOLOGY

School of Physical Sciences and Technologies

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CURRICULUM

The Department of Geological Sciences offers diverse courses for both majors and nonmajors, supporting an interdisciplinary approach to the study of our planet's physical composition and processes and history. The curriculum integrates studies in the biological sciences, environmental studies, marine science, and the physical sciences, including physics and chemistry. Introductory courses range from survey courses in earth science, to field geology courses that explore California and our national parks and monuments, to the study of natural hazards. More specialized courses examine the physical and biological evolution of the planet Earth, and rocks and minerals found in its crust. The curriculum also includes a wide range of popular field courses within California and other areas in western North America.

MAJOR

The course requirements for a major in geology are intended to provide a solid foundation for a variety of student needs. Students pursuing the major may meet transfer requirements for a four-year college or university; or they may complete an Associate in Arts degree in geology.

For those who intend to pursue upper division or graduate study, introductory courses in the other sciences are recommended and are necessary in addition to the core courses required for the major. Students should consult the transfer requirements of prospective institutions. Additional academic counseling is readily available from the program faculty and/or a college counselor.

CAREER OPTIONS

Examples of careers for the geology major include the following:

- City or County Geologist
- Engineering Geologist
- Environmental Geologist
- Exploration Geologist with an Oil Company or Minerals Company
- Marine Geologist
- Paleontologist
- Park Naturalist
- Professor
- Research Geologist
- Science Teacher
- State or Federal Geological Survey
- Geologist
- Volcanologist

ASSOCIATE DEGREE

- **Associate in Arts Degree in Geology**

Students must complete a minimum of 60 units of credit, including the courses in the major ("Major Requirements") and general education requirements (pages 43-49), with an overall GPA of 2.0 or better, and a grade of "A," "B," "C," or "P" in all courses to be counted toward the major. A minimum of 12 units must be completed at Irvine Valley College. See pages 33-34 for further information.

TRANSFER PREPARATION

Courses that fulfill major requirements for an associate degree at Irvine Valley College may not be the same as those required for completing the major at a transfer institution offering a bachelor's degree. Students who plan to transfer to a four-year college or university should schedule an appointment with an IVC counselor to develop a plan of study before beginning their program. It may be helpful to meet with the department faculty at IVC.

ASSOCIATE IN ARTS DEGREE
MAJOR REQUIREMENTS: GEOLOGY

Complete the following courses:		Units
CHEM 1A	General Chemistry I	5
CHEM 1B	General Chemistry II	5
GEOL 1	Physical Geology	4
OR		
ERTH 20	Introduction to Earth Science	4
OR		
MS 20	Introduction to Oceanography	4
GEOL 2	Historical Geology	4
MATH 3A	Analytic Geometry and Calculus I	5
MATH 3B	Analytic Geometry and Calculus II	5
Complete two of the following courses :		
PHYS 2A	Introduction to Physics	4
PHYS 2B	Introduction to Physics	4
OR		
PHYS 4A	General Physics	4
PHYS 4B	General Physics	4
Complete one of the following courses :		
GEOL 140	Lab Research in Geological and Biological Sciences	1.5
GEOL 170	Geology Field Studies: National Parks and Monuments	1 or 1.5
GEOL 181	Geology Field Studies: Coastal and Offshore Geology	1
GEOL 186	Geology Field Studies: Geology of California	1
	TOTAL UNITS:	**37-37.5**

Recommended electives:
GEOL 3, 23; MGT 103 strongly recommended; a course in mechanical drafting (if not taken in high school); ENGR 23.

COURSES

EARTH SCIENCE

ERTH 20: INTRODUCTION TO EARTH SCIENCE

4 Units
3 hours lecture, 3 hours lab
Transfers: CSU, UC credit proviso (see UC course list)
This course introduces and unifies the central theories of geology, oceanography, meteorology, and astronomy. Students study the universe and solar system, the planet Earth and its constituents, rocks and minerals, drifting crustal plates, and processes such as mountain building and earthquakes. Students also study oceans and shorelines, the atmosphere, and climate. The effect of these disparate realms on life, past and present, is considered along with the effects of pollution of the natural environment. Field trips may be required NR

GEOLOGY

GEOL 1: PHYSICAL GEOLOGY

4 Units
3 hours lecture, 3 hours lab
Transfers: CSU, UC
This course introduces the principles of geology and the methods of studying the Earth. Consideration is given to the materials of the Earth's crust, earthquakes, plate tectonics, the processes of mountain building and volcanism, sculpturing of the Earth's surface, evaluation of natural resources, the implications of geology to society, and aspects of the environment in which our lives are spent. Laboratory exercises include the identification of common rocks and minerals; reading and using topographic maps, aerial photographs, and geologic maps; and constructing topographic profiles and cross-sections to interpret the Earth's surface. Field trips may be required. (CAN GEOL 2) NR

GEOL 2: HISTORICAL GEOLOGY

4 Units
3 hours lecture, 3 hours lab
Transfers: CSU, UC
Prerequisite: Erth. 20 or Geol. 1
This course is a study of the physical and biological aspects of the evolution of the earth; the history and origin of the earth, continents, oceans and atmosphere; the origin and evolution of life; and the methods and concepts utilized in deciphering the geologic record. Field trips may be required. CAN GEOL 4) NR

GEOL 3: GEOLOGY OF CALIFORNIA

3 Units
3 hours lecture
Transfers: CSU, UC
This course is a study of the geologic development of California, including an exploration of plate tectonic and landform processes responsible for shaping the landscape. This course examines theories and processes related to earthquakes, faulting, volcanic activity and geologic time, as well as energy resources significant to California. Field trips may be required. NR

GEOL 22: EARTH HISTORY

4 Units
3 hours lecture, 3 hours lab
Transfers: CSU, UC credit proviso (see UC course list)
This general education lecture and laboratory science course is a study of the evolution of life on Earth, including the environments where life forms are found in the fossil record. Study includes the origin of continents, oceans and atmosphere; the origin and evolution of life; and the methods and concepts used to decipher Earth history. Field trips may be required to fulfill the objectives of this course. Recommended for non-geology majors. NR

GEOL 23: NATURAL DISASTERS

4 Units
3 hours lecture, 3 hours lab
Transfers: CSU, UC
This course discusses the interaction of man and the geologic environment with particular reference to natural disasters that include earthquakes, volcanic eruptions, landslides, hurricanes, tornadoes, floods, wildfires, and climate change. Students learn the principles of sound planning for human use of the planet Earth. Field trips may be required. NR

GEOL 140: LAB RESEARCH IN GEOLOGICAL AND BIOLOGICAL SCIENCES

1.5 Units
.5 hours lecture, 2.5 hours lab
Transfers: CSU
This course provides laboratory and field experience for students of geological and biological sciences. It focuses on experimental design; equipment use and care; data collection, analysis, and interpretation; and verbal and/or written presentation of results. Geology 140 is also listed as Biology 140; credit will be given in either area, not both. NR

GEOLOGY: FIELD STUDIES

GEOL 170: GEOLOGY FIELD STUDIES: NATIONAL PARKS AND MONUMENTS

1 or 1.5 Units
.5 hour lecture, 1.5 hours lab; or
1 hour lecture, 2 hours lab
Transfers: CSU
This is a lecture and laboratory field course offered to study the origin, evolution, geology, and natural history of national parks and monuments of the western United States. Thematic emphasis, course content, and national parks to be visited will vary. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

GEOL 181: GEOLOGY FIELD STUDIES: COASTAL AND OFFSHORE GEOLOGY

1 Unit
.5 hour lecture, 1.5 hours lab
Transfers: CSU
Limitation: Students must be able to hike and camp (tents, sleeping bags, cooking, limited showers)
This is a lecture and laboratory field course offered to study the origin, evolution, and geology of the coastal and offshore islands of the western United States and Baja California. Thematic emphasis and course content will vary. Students in geology, earth science, marine science and geography are encouraged to enroll. R-E-3

GEOL 186: GEOLOGY FIELD STUDIES: GEOLOGY OF CALIFORNIA

1 Unit
.5 hours lecture, 1.5 hours lab
Transfers: CSU
This lecture and laboratory field course studies the origin, tectonic development, and present geology of California. Thematic emphasis and course content will vary each time the course is offered. Students in geology, earth science, marine science and geography courses are encouraged to enroll. R-E-3

MARINE SCIENCE

MS 20: INTRODUCTION TO OCEANOGRAPHY

4 Units
3 hours lecture, 3 hours lab
Transfers: CSU, UC
This course is an introduction to oceanography including a study of the physical and chemical properties of the sea, with a brief study of the geological and biological operations of the oceanographer. The current thinking of the oceans as economic and natural resources will be stressed, including the current techniques for measurement of the physical and chemical properties of the salt water environment. The laboratory will focus on the basic instruments used by oceanographers. Field trips may be required. NR