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Geology

The 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 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 geology courses exploring our national parks and monuments, to courses in environmental geology. More specialized courses examine the physical and biological coevolution of the planet earth, the fundamental physical and chemical properties of minerals, and basic crystallography. The curriculum also includes a wide range of popular field courses within the physiographic provinces in California and other areas in western North America.

The Associate Degree 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.

If you intend to transfer:

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 baccalaureate degree. If you plan to transfer to a four-year college or university, you should (1) refer to the transfer section of this catalog, (2) consult the catalog of your prospective transfer institution (see the IVC Transfer Center for assistance), and (3) schedule an appointment with an IVC counselor to develop a plan of study before you begin your program. In addition, it may be helpful to meet with the appropriate department faculty at IVC.

If you plan to complete an associate degree:

You must complete the following set of courses to fulfill the major requirement and, in addition, meet the general education requirements listed on page 21 for the Associate in Arts (A.A.) degree. Refer to page 16 for additional options for fulfilling the major requirement.

Geology Major

(A.A. Degree)

First Year		*Units*
CHEM 1A	General Chemistry	5
CHEM 1B	General Chemistry	5
GEOL 1	Physical Geology	(4)
or	*or*	
ERTH 20	Introduction to Earth Science	(4)
GEOL 2	Historical Geology	4
MATH 2†	Pre-Calculus	5
MATH 3A	Analytic Geometry and Calculus I	5
Second Year		
GEOL 6	Principles of Mineralogy	4
MATH 3B	Analytic Geometry and Calculus II	5
PHYS 2A	Introduction to Physics	4
PHYS 4A	General Physics	4

Second Year (continued)		*Units*
PHYS 2B	Introduction to Physics	(4)
or	*or*	
PHYS 4B	General Physics	(4)
BIO 5	Principles of Zoology	(4)
or	*or*	
BIO 1/1L	Principles of Biology/Lab	(4)
	Total units:	**53**

Recommended electives*: GEOL 3, 23, 110, and any geology field studies course; WR 102 strongly recommended; a course in mechanical drafting (if not taken in high school); ENGR 23.*

†MATH 2 is required of students who are not prepared for MATH 3A.

Earth Science Courses

ERTH 20 **4 units**

Introduction to Earth Science

This course introduces and unifies the central theories of geology, oceanography, meteorology, and astronomy. Earth science studies 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. The course also studies 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 on the natural environment. Field trips may be required. UC credit provisions (see UC course list). NR

Lecture hours: 3 Lab hours: 3

Geology Courses

GEOL 1 **4 units**

Physical Geology

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, the processes of mountain building and volcanism, the sculpturing of the earth's surface, the evaluation of natural resources, the implications of geology to society, and aspects of the environment in which our lives are spent. Laboratory exercises in the identification of common rocks and minerals, fossils, topographic maps, aerial photographs, geologic maps, and cross-sections will be used to interpret the environment. Field trips may be required. NR

Lecture hours: 3 Lab hours: 3

GEOL 2 **4 units**

Historical Geology

Prereq: Erth. 20 or Geol. 1. Geology 2 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 to fulfill the objectives of this course. (CAN GEOL 4) NR

Lecture hours: 3 Lab hours: 3

GEOL 3 **3 units**

Geology of California

This course will show the geologic development of California through plate tectonics, including a description of major landforms and processes. Earthquakes and faulting will be examined as well as their effect on the state's population. Energy resources will be described and their relative importance discussed and evaluated. The interrelationship between geology, climate, and land use will be investigated. NR

Lecture hours: 3

GEOL 6 **4 units**

Principles of Mineralogy

Prereq: Erth. 20 or Geol. 1. Geology 6 examines the fundamental physical and chemical properties of minerals and basic crystallography. It will include identification of minerals by physical and chemical methods. Field trips may be required to fulfill the objectives of this course. NR

Lecture hours: 2 Lab hours: 6

GEOL 10 **4 units**

Marine Geology

This is an introductory course in physical oceanography with an emphasis on the development of the ocean basins and morphology. The course also provides an introduction to the evolution of our planet as expressed in ocean basin features such as spreading center ridges and rises, trenches, fracture zones, sea mounts, guyots, atolls, hot spots, lineaments, continental shelves, and submarine canyons. Ocean sediments and resources will also be evaluated. Field trips may be required. NR

Lecture hours: 3 Lab hours: 3

GEOL 23 **4 units**

Natural Disasters

This course will discuss the interaction of man and the geologic environment. It will include environmental studies of problems related to earthquakes, volcanism, floods, landslides, the shoreline, energy resources, and pollution. Students will learn the principles of sound planning for human use of the planet earth. Field trips may be required to fulfill the objectives of this course. NR

Lecture hours: 3 Lab hours: 3

GEOL 99 **0.5-5 units**

Seminar in Geology

Geology 99 is a lower-division seminar given over to the study of a specific topic, issue, or problem within geology which is not part of the regular college curriculum. Granting of UC credit for courses of this kind is contingent upon a review of the course outline by a UC campus. R-E

Lecture hours: 0.5-5 Lab hours: 0.5-5

GEOL 110 **3 units**

Geology of National Parks

This is a survey course of the national parks of the United States with an emphasis on how the geology of each park reflects the geologic growth and development of the North American continent. The course will use plate tectonics and other theories to explain geologic phenomena seen in the national parks and will describe the geologic growth and development of North America using the national parks and monuments as examples. NR

Lecture hours: 3

GEOL 189 **0.5-5 units**

Special Topics in Geology

The Special Topics course is a grouping of short seminars designed to provide students with the latest concepts in the field of geology. The course content is thematic in nature, and each seminar topic within the course differs from other offerings in the same course. R-E

Lecture hours: 0.5-5 Lab hours: 0.5-5

GEOL 199 **0.5-5 units**

Seminar in Geology

Geology 199 is a lower-division seminar given over to the study of a specific topic, issue, or problem within geology which is not part of the regular college curriculum. R-E

Lecture hours: 0.5-5 Lab hours: 0.5-5

GEOL 289 **0.5-5 units**

Special Topics in Geology

The Special Topics course is a grouping of short seminars designed to provide students with the latest concepts in the field of geology. The course content is thematic in nature, and each seminar topic within the course differs from other offerings in the same course. R-E

Lecture hours: 0.5-5 Lab hours: 0.5-5

Geology Field Studies

GEOL 170 **1 or 1.5 or 3 or 4 units**

Geology Field Studies: Geology of National Parks and Monuments

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

Lecture hours: 0.5 or 1 or 1.5 or 2

Lab hours: 1.5 or 2 or 4.5 or 6

GEOL 172 **1 or 1.5 units**

Geology Field Studies: Mojave Desert

This is a lecture and laboratory field course offered to study the origin, evolution, and geology of Mojave Desert and adjacent areas. Thematic emphasis and course content will vary. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

Lecture hours: 0.5 or 1 *Lab hours: 1.5 or 2*

GEOL 173 **1 or 1.5 units**

Geology Field Studies: Death Valley

This is a lecture and laboratory field course offered to study the origin, evolution, and geology of Death Valley National Monument and adjacent areas. Thematic emphasis and course content will vary. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

Lecture hours: 0.5 or 1 *Lab hours: 1.5 or 2*

GEOL 174 **1 or 1.5 units**

Geology Field Studies: Eastern Sierras

This is a lecture and laboratory field course offered to study the origin, evolution, and geology of the Eastern Sierras: the Owens Valley and adjacent areas. Thematic emphasis and course content will vary. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

Lecture hours: 0.5 or 1 *Lab hours: 1.5 or 2*

GEOL 175 **1 or 1.5 units**

Geology Field Studies: San Andreas Fault

This is a lecture and laboratory field course offered to study the origin, evolution, and geology of the San Andreas Fault. Thematic emphasis and course content will vary. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

Lecture hours: 0.5 or 1 *Lab hours: 1.5 or 2*

GEOL 178 **1 or 1.5 units**

Geology Field Studies: Joshua Tree, San Jacinto, Colorado Desert

This is a lecture and laboratory field course offered to study the origin, evolution, and geology of Joshua Tree, San Jacinto, the Colorado Desert, and adjacent areas. Thematic emphasis and course content will vary. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

Lecture hours: 0.5 or 1 *Lab hours: 1.5 or 2*

GEOL 179 **1 or 1.5 units**

Geology Field Studies: Kings Canyon and Sequoia

This is a lecture and laboratory field course offered to study the origin, evolution, and geology of Kings Canyon and Sequoia national parks and adjacent areas. Thematic emphasis and course content will vary. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

Lecture hours: 0.5 or 1 *Lab hours: 1.5 or 2*

GEOL 181 **1 or 1.5 units**

Geology Field Studies: Coastal and Offshore Geology

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. NR

Lecture hours: 0.5 *Lab hours: 1.5 or 2*

GEOL 182 **1 or 1.5 units**

Geology Field Studies: Coast Ranges/Morro Bay

This is a lecture and laboratory field course offered to study the origin, evolution, and geology of the Coast Ranges/Morro Bay and adjacent areas. Thematic emphasis and course content will vary. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

Lecture hours: 0.5 or 1 *Lab hours: 1.5 or 2*

GEOL 183 **1 or 1.5 units**

Geology Field Studies: Anza-Borrego and Salton Trough

This is a lecture and laboratory field course offered to study the origin, evolution, and geology of the Anza-Borrego Desert and adjacent areas. Thematic emphasis and course content will vary. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

Lecture hours: 0.5 or 1 *Lab hours: 1.5 or 2*

GEOL 185 **1 or 1.5 units**

Geology Field Studies: Yosemite

This is a lecture and laboratory field course offered to study the origin, evolution, and geology of Yosemite National Park and adjacent areas. Thematic emphasis and course content will vary. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

Lecture hours: 0.5 or 1 *Lab hours: 1.5 or 2*

Marine Science Courses

MS 20 **4 units**

Introduction to Oceanography

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. NR

Lecture hours: 3 *Lab hours: 3*