School of Physical Sciences and Technologies

Geology

Faculty

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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 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.

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.

Associate in Arts Degree in Geology:

Students must complete a minimum of 60 units of credit, including the courses in the major and general education requirements (page 22), with an overall GPA of 2.0 or better. A minimum of 12 units must be completed at Irvine Valley College. See pages 20-21 for further information, including other options for fulfilling the major requirement.

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 baccalaureate degree. Students who plan to transfer to a four-year college or university should (1) refer to the transfer section of this catalog, (2) consult the catalog of their 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 beginning their program. It may be helpful to meet with the department faculty at IVC.

Associate in Arts Degree
Geology Major

Complete the following courses:		**Units**
CHEM 1A	General Chemistry	5
CHEM 1B	General Chemistry	5
GEOL 2	Historical Geology	4
MATH 3A	Analytic Geometry and Calculus I	5
MATH 3B	Analytic Geometry and Calculus II	5
Choose <u>one</u> course from the following:		
GEOL 1	Physical Geology	4
ERTH 20	Introduction to Earth Science	4
MS 20	Introduction to Oceanography	4
GEOL 10	Marine Geology	4
Choose <u>two</u> courses from the following:		
PHYS 2A	Introduction to Physics	4
PHYS 2B	Introduction to Physics	4
OR		
PHYS 4A	General Physics	4
PHYS 4B	General Physics	4
Choose <u>one</u> course from the following:		
GEOL 181	Geology Field Studies: Coastal and Offshore Geology	1
OR		
GEOL 170-185	Any other geology field studies course	1
	TOTAL UNITS:	**37**

Recommended electives: GEOL 3, 10, 23, 110; a course in mechanical drafting (if not taken in high school); ENGR 23.

Earth Science Courses

ERTH 20: Introduction to Earth Science **4 Units**

3 hours lecture, 3 hours lab

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

Geology Courses

GEOL 1: Physical Geology **4 Units**

3 hours lecture, 3 hours lab

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. (CAN GEOL 2) NR

GEOL 2: Historical Geology **4 Units**

3 hours lecture, 3 hours lab

Prerequisite: 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 class. (CAN GEOL 4) NR

GEOL 3: Geology of California **3 Units**

3 hours lecture

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

GEOL 10: Marine Geology **4 Units**

3 hours lecture, 3 hours lab

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

GEOL 22: Earth History **4 Units**

3 hours lecture, 3 hours lab

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. UC credit pending. NR

GEOL 23: Natural Disasters **4 Units**

3 hours lecture, 3 hours lab

This course will discuss the interaction of man and the geologic environment. It will include environmental studies into the 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

GEOL 110: Geology of National Parks **3 Units**

3 hours lecture

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. This 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

Special Topics Courses

GEOL 99: Seminar in Geology **0.5- 5 units**

0.5–5 hours lecture, 0.5–5 hours lab

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

GEOL 189: Special Topics in Geology **0.5-5.0 Units**

0.5–5 hours lecture, 0.5–5 hours lab

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

GEOL 199: Seminar in Geology **0.5–5 units**

0.5–5 hours lecture, 0.5–5 hours lab

Geology 199 is a lower-division seminar given over to the study of a specific topic, issue, or problem within 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

GEOL 289: Special Topics in Geology **0.5- 5 units**

0.5–5 hours lecture, 0.5–5 hours lab

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 within the course differs from other offerings in the same course. R-E

Geology Field Studies Courses

GEOL 170: Geology Field Studies: National Parks and Monuments **1 or 1.5 or 3 or 4 Units**

0.5 or 1 or 1.5 or 3 hours lecture
1.5 or 2 or 4.5 or 6 hours lab

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 172: Geology Field Studies: Mojave Desert **1 or 1.5 Units**

0.5 or 1 hour lecture, 1.5 or 2 hours lab

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

GEOL 173: Geology Field Studies: Death Valley **1 or 1.5 Units**

0.5 or 1 hour lecture, 1.5 or 2 hours lab

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

GEOL 174: Geology Field Studies: Eastern Sierras **1 or 1.5 Units**

0.5 or 1 hour lecture, 1.5 or 2 hours lab

This is a lecture and laboratory field course offered to study the origin, evolution, and geology of the Eastern Sierras, the Owen's 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

GEOL 175: Geology Field Studies: San Andreas Fault **1 or 1.5 Units**

0.5 or 1 hour lecture, 1.5 or 2 hours lab

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

GEOL 178: Field Studies: Joshua Tree, San Jacinto, Colorado Desert **1 or 1.5 Units**

0.5 or 1 hour lecture, 1.5 or 2 hours lab

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. The course is scheduled to minimize conflict with other classes. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

GEOL 179: Geology Field Studies: Kings Canyon and Sequoia **1 or 1.5 Units**

0.5 or 1 hour lecture, 1.5 or 2 hours lab

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

GEOL 181: Field Studies: Coastal and Offshore Geology **1 or 1.5 Units**

0.5 or 1 hour lecture, 1.5 or 2 hours lab

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 182: Geology Field Studies: Coast Ranges/Morro Bay **1 or 1.5 Units**

0.5 or 1 hour lecture, 1.5 or 2 hours lab

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. Students in geology, earth science, and geography are encouraged to enroll. R-E-3

GEOL 183: Geology Field Studies: Anza-Borrego and Salton Trough **1 or 1.5 Units**

0.5 or 1 hour lecture, 1.5 or 2 hours lab

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

GEOL 185: Geology Field Studies: Yosemite **1 or 1.5 Units**

0.5 or 1 hour lecture, 1.5 or 2 hours lab

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

Marine Science Courses

MS 20: Introduction to Oceanography **4 Units**

3 hours lecture, 3 hours lab

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