

Geology

**GEOLOGY – GEOL**

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**Possible career opportunities**

Geologists work in exploration for oil, natural gas, coal and uranium for energy, and for metals used in everyday life. They search for clean sources of groundwater for drinking and agriculture (hydrology). They seek to understand geologic hazards and how to mitigate them (seismology, flood and landslide control, and volcanology). They work to monitor and clean up pollutants in soil, groundwater and surface water. Currently, the best employment opportunities are in hydrology and pollution control. Many career options may require more than two years of college study.

**Program-level student learning outcomes**

Program learning outcomes are subject to change. The most current list of program learning outcomes for each program is published on the DVC website at [www.dvc.edu/slo](http://www.dvc.edu/slo).

**Associate in science degree  
 Geology**

**Students completing the program will be able to...**

- A. identify, describe, and classify earth materials, formations, and structures and interpret them in terms of geologic processes.
- B. synthesize information from a variety of physical science disciplines to solve geologic problems.
- C. develop and demonstrate analytical and critical thinking skills required for transfer into a four-year geologic science program.

The geology major at Diablo Valley College (DVC) prepares students to transfer to a University of California, California State University, or other baccalaureate-granting college or university to earn a bachelor’s degree in geology or other earth science.

The geology major at DVC consists of at least 38 units of study, including 8 units of geology where students will learn the fundamentals of geologic science and gain hands-on experience in geology laboratories. In addition, students will complete a year of calculus courses, a year of chemistry courses, and a year of physics courses that are typically required for a bachelor’s degree at baccalaureate-granting institutions. A list of electives including courses such as California Geology, Maps and Cartography, or Introduction to Field Geology allows the student to explore specific fields of greater interest.

The DVC geology major is intended for transfer. Students who intend to transfer must consult with a program advisor or counselor to ensure that the requirements for transfer to baccalaureate-granting institutions of their choice are met. Students who intend to transfer are advised to select General Education Option 2 (IGETC) or Option 3 (CSU GE). Option 1 (DVC General Education) is not generally advised.

To earn an associate in science degree with a major in geology, students must complete each course used to meet a major requirement with a “C” grade or higher and maintain an overall GPA of 2.5 or higher in the coursework required for the major. Certain courses may satisfy both major and general education requirements; however, the units are only counted once.

*Group 1: Core geology courses*

	<i>units</i>
GEOL-120 Physical Geology.....	3
GEOL-121 Earth and Life Through Time .....	3
GEOL-122 Physical Geology Laboratory.....	1
GEOL-124 Earth and Life Through Time Laboratory .....	1

*Group 2: Core mathematics courses*  
*complete at least the first two courses (at least 10 units):*

MATH-192 Analytic Geometry and Calculus I .....	5
MATH-193 Analytic Geometry and Calculus II .....	5
MATH-292 Analytic Geometry and Calculus III .....	5

*Group 3: Core chemistry courses*  
*complete 10 units from:*

CHEM-120 General College Chemistry I.....	5
CHEM-121 General College Chemistry II.....	5

*Group 4: Core physics courses*  
*complete a minimum of two terms from one sequence (at least 8 units):*

PHYS-130 Physics for Engineers and Scientists A: Mechanics and Wave Motion.....	4
PHYS-230 Physics for Engineers and Scientists B: Heat and Electro-Magnetism.....	4
PHYS-231 Physics for Engineers and Scientists C: Optics and Modern Physics.....	4
or	
PHYS-120 General College Physics I.....	4
PHYS-121 General College Physics II.....	4

*Group 5: Electives*  
*complete at least one course (2-4 units):*

GEOG-125 Introduction to Geographic Information Systems (GIS).....	3
GEOG-160 Introduction to Remote Sensing.....	4
GEOG-162 Map Design and Visualization.....	3
GEOL-125 Geology of California .....	3
GEOL-135 Introduction to Field Geology .....	2
<b>total minimum required units</b>	<b>36</b>

Geology

**Associate in science in geology for transfer**

Students completing the program will be able to...

- A. identify, describe, and classify earth materials, formations, and structures and interpret them in terms of geologic processes.
- B. synthesize information from a variety of physical science disciplines to solve geologic problems.
- C. develop and demonstrate analytical and critical thinking skills required for transfer into a four-year geologic science program.

The associate in science in geology for transfer at Diablo Valley College (DVC) prepares students to transfer to a California State University (CSU) or other four-year college or university to earn a bachelor's of science degree in geology, geological science, or similarly named earth science field. In addition, the course work prepares students for a wide range of professional opportunities across many scientific disciplines.

The associate in science in geology for transfer consists of 28 units of study, including eight units of geology where students will learn the fundamentals of geologic science and gain hands-on experience in geology laboratories. In addition, students will complete a year of calculus courses and a year of chemistry courses. Though not specifically required by this transfer major, it is highly recommended that students also take a year of physics courses that are typically required for a bachelor's degree at four-year institutions.

The associate in science in geology for transfer is intended for students who plan to complete a bachelor's degree in a similar major at a CSU campus. Students completing this degree are guaranteed admission to the CSU system, but not to a particular campus or major.

In order to earn the degree, students must:

- Complete 60 CSU-transferable units.
- Complete the California State University-General Education pattern (CSU GE); or the Intersegmental General Education Transfer Curriculum (IGETC) pattern, including the Area 1C requirement for Oral Communication.
- Complete a minimum of 18 units in the major.
- Attain a minimum grade point average (GPA) of 2.0.
- Earn a grade of "C" or higher in all courses required for the major.

Students transferring to a CSU campus that accepts the degree will be required to complete no more than 60 units after transfer to earn a bachelor's degree. This degree may not be the best option for students intending to transfer to a particular CSU campus or to a university or college that is not part of the CSU system, or those students who do not intend to transfer.

Some courses in the major satisfy both major and CSU GE/IGETC general education requirements; however, the units are only counted once toward the 60 unit requirement for an associate degree. Some variations in requirements may exist at certain four-year institutions; therefore, students who intend to transfer are advised to refer to the catalog of the prospective transfer institution and consult a counselor.

<i>major requirements:</i>		<i>units</i>
CHEM-120	General College Chemistry I.....	5
CHEM-121	General College Chemistry II.....	5
GEOL-120	Physical Geology.....	3
GEOL-121	Earth and Life Through Time.....	3
GEOL-122	Physical Geology Laboratory.....	1
GEOL-124	Earth and Life Through Time Laboratory.....	1
MATH 192	Analytic Geometry and Calculus I.....	5
MATH 193	Analytic Geometry and Calculus II.....	5
<b>total minimum required units</b>		<b>28</b>

**GEOL-120 Physical Geology**

3 units SC

- 54 hours lecture per term
- Recommended: MATH-090 or MATH-090E or MATH-090SP or one year of high school algebra and eligibility for ENGL-122 or equivalents

This is a general course in geologic science that encompasses nearly all phases of geology. Students will gain an appreciation and understanding of the fundamental processes that have changed, and are presently changing, the Earth's crust. The recognition of common minerals, rocks and landscape features of the Earth will be included. Students will practice quantitative reasoning and mathematical concepts. C-ID GEOL 100, CSU, UC

**GEOL-121 Earth and Life Through Time**

3 units LR

- 54 hours lecture per term
- Recommended: GEOL-120 or equivalent and GEOL-122 or equivalent

This course covers the history of the Earth from its beginning to the present. Topics included are the origin of the Earth, the development of plant and animal life and the physical changes in the Earth that have led to the features that are observed today. C-ID GEOL 110, CSU, UC

**GEOL-122 Physical Geology Laboratory**

1 unit SC

- 54 hours laboratory per term
- Co-requisite: GEOL-120 (may be taken previously) or equivalent
- Recommended: MATH-090 or MATH-090E or MATH-090SP or one year of high school algebra or equivalent
- Note: Field trips may be included in the course

This course is the laboratory component to Physical Geology (GEOL-120). Topics include the description and identification of minerals and all types of rocks, studies of topographic and geologic maps, as well as the internal structure of the earth using cross-sections. Laboratory studies of earthquakes, tectonic activity, and surficial features of the earth are included. C-ID GEOL 100L, CSU, UC

## Geology

**GEOL-124 Earth and Life Through Time Laboratory**

1 unit LR

- 54 hours laboratory per term
- Prerequisite: GEOL-121 or equivalent (may be taken concurrently)

This is a laboratory course on the techniques of historical geological investigations. Topics will include geologic dating, plate tectonics, stratigraphy, fossils, biological evolution, the planet's origin and the processes that have influenced paleogeography during the past 4.6 billion years. Individual laboratories will also include identification and interpretation of the basic rocks and minerals that make up the earth, as well as recognition and classification of the common types of fossils. C-ID GEOL 110L, CSU, UC

**GEOL-125 Geology of California**

3 units SC

- 54 hours lecture per term
- Recommended: Eligibility for ENGL-122 or equivalent

This course is designed to familiarize students with the varied geological, topographical and geographical aspects of California. This will include a general study of the provinces of California, the major rock types and their occurrence, the major earthquake faults and their frequency of activity, and the general geologic history. Mineral and petroleum resources of the state will be discussed. C-ID GEOL 200, CSU, UC

**GEOL-130 Earth Science**

4 units LR

- 54 hours lecture/54 hours laboratory per term
- Recommended: MATH-090 or MATH-090E or MATH-090SP or one year of high school algebra and eligibility for ENGL-122 or equivalents

This course introduces the essentials of earth science including the geosphere, atmosphere, hydrosphere, and solar system. The interactions between physical and chemical systems of the Earth such as the tectonic cycle, rock cycle, hydrologic cycle, weather and climate are explored. C-ID GEOL 121, CSU, UC

**GEOL-135 Introduction to Field Geology**

2 units LR

- 18 hours lecture/54 hours laboratory per term
- Prerequisite: GEOL-120 and GEOL-122 or equivalents
- Note: Field trips are definitely required. Most trips are to local parks or open spaces and students are responsible for their own transportation to and from these required components.

A course in general field methods of geologic science. The course is designed to provide students with the basic skills required to collect geologic data in the field and the skills necessary for constructing simple geologic maps. Types of fieldwork will include compass and orienteering work, measurement of rock features and descriptions of outcrops, as well as identification and mapping of geologic contacts. Geologic field work can be strenuous; students should expect to walk off trail over rough terrain carrying their own equipment. We will work through rain or shine; only seriously inclement weather will suspend work. CSU, UC

**GEOL-298 Independent Study**

.5-3 units SC

- Variable hours
- Note: Submission of acceptable educational contract to department and Instruction Office is required.

This course is designed for advanced students who wish to conduct additional research, a special project, or learning activities in a specific discipline/subject area and is not intended to replace an existing course. The student and instructor develop a written contract that includes objectives to be achieved, activities and procedures to accomplish the study project, and the means by which the supervising instructor may assess accomplishment. CSU

**GEOL-299 Student Instructional Assistant**

.5-3 units SC

- Variable hours
- Note: Applications must be approved through the Instruction Office. Students must be supervised by a DVC instructor.

Students work as instructional assistants, lab assistants and research assistants in this department. The instructional assistants function as group discussion leaders, meet and assist students with problems and projects, or help instructors by setting up laboratory or demonstration apparatus. Students may not assist in course sections in which they are currently enrolled. CSU