

Degree:

AS-T – Geology for Transfer

Division of Science and Allied Health

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Geology
 Associate in Science for Transfer

Program Information

Geology is an interdisciplinary science that seeks to study and understand the physical processes of Earth and other planets, including plate tectonics, rocks, minerals, earthquakes, volcanoes, the fossil record and Earth’s history and past climate, and natural geological resources. The Associate in Science in Geology for Transfer provides students with a major that fulfills the general requirements of the California State University for transfer. Students with this degree will transfer with junior standing to the California State University system.

The Associate Degree for Transfer (ADT) student completion requirements (as stated in SB1440 law):

- (1) Completion of a minimum of 60 semester units or 90 quarter units that are eligible for transfer to the California State University, including both of the following:
 - (A) The California State University General Education-Breadth Requirements or the Intersegmental General Education Transfer Curriculum (IGETC).
 - (B) A minimum of 18 semester units or 27 quarter units in a major or area of emphasis, as determined by the community college district.
- (2) Obtainment of a minimum grade point average of 2.0.

ADTs also require that students must earn a “C” or better in all courses required for the major or area of emphasis.

Career Opportunities

The Geology transfer degree is designed to facilitate students’ successful transfer to four-year colleges that prepare them for advanced study in a variety of graduate programs as well as a variety of career opportunities in the fields of environmental monitoring, protection and remediation, energy and mineral exploration, paleontology, vulcanology, seismology, climatology, teaching, and research.

Upon completion of this program, the student will be able to:

- evaluate ideas about the natural universe using testable methodology, differentiate between scientific and non-scientific information, and demonstrate understanding of the scientific method by designing a valid scientific inquiry.
- examine and enumerate orally and/or in writing the importance of continuous examination and modification of accepted ideas as a fundamental element in the progress of science.
- analyze a wide variety of natural phenomena using basic definitions and fundamental theories of natural science.
- apply knowledge of current geologic processes to the understanding of Earth’s past geologic history.
- synthesize diverse geological terminology and concepts and be able to explain them to a diverse audience.
- evaluate and analyze contemporary geologic problems including the implications of human activities on geologic resources.
- integrate information about the rate and scale of simple geologic processes and be able to convert between them.

| Required Program | Units |
|---|--------------|
| CHEM 400 General Chemistry I..... | 5 |
| CHEM 401 General Chemistry II..... | 5 |
| GEOL 302 Physical Geology..... | 4 |
| GEOL 310 Historical Geology..... | 3 |
| GEOL 311 Historical Geology Laboratory..... | 1 |
| MATH 400 Calculus I..... | 5 |
| MATH 401 Calculus II..... | 5 |
| Total Units Required | 28 |

Associate in Science for Transfer Degree

The Associate in Science in Geology for Transfer (AS-T) degree may be obtained by completion of 60 transferable, semester units with a minimum 2.0 GPA, including (a) the major or area of emphasis described in the Required Program, and (b) either the Intersegmental General Education Transfer Curriculum (IGETC) or the California State University General Education-Breadth Requirements.

Geology (GEOL)

GEOL 302 Physical Geology 4 Units

Prerequisite: None.

Advisory: MATH 100 with a grade of “C” or better and ENGRD 310 and ENGWR 300, or ESLR 340 and ESLW 340, with grades of “C” or better; or placement through the assessment process.

General Education: AA/AS Area IV; CSU Area B1; CSU Area B3; IGETC Area 5A

Course Transferable to UC/CSU

Hours: 54 hours LEC; 54 hours LAB

This in-depth course provides an understanding of the dynamic nature of Earth through the study of earth processes including plate tectonics, the major rock types and the minerals that comprise them, volcanoes, earthquakes and Earth’s interior, crustal deformation and mountain building, fossils and deep time, energy and mineral resources, surface water and groundwater, oceans and coasts, glaciers, deserts, and global change. The course uses real-world examples of the scientific method as a foundation for understanding the geological sciences and focuses on the relevance of geology to our everyday lives. At least one field trip (for example to Cache Creek Canyon or Point Reyes National Seashore) or an appropriate alternative activity will be required as an introduction to geological environments and field methods in geology. (C-ID GEOL 101)

GEOL 305 Earth Science 3 Units

Prerequisite: None.

Advisory: MATH 100 with a grade of "C" or better and ENGRD 310 and ENGWR 300, or ESLW 340 and ESLR 340, with grades "C" or better; or placement through the assessment process.

General Education: AA/AS Area IV; CSU Area B1; IGETC Area 5A

Course Transferable to UC/CSU

Hours: 54 hours LEC

Earth science is an introductory science course that covers a broad range of topics including geology, oceanography, meteorology, and astronomy. Sub-topics are introduced and placed into the context of the scientific method. Using recent, historical, and prehistorical earth science events as examples, the course emphasizes the interrelatedness of the various disciplines and focuses on Earth as a dynamic, synthetic, and continually evolving – yet stable – planet. (C-ID GEOL 120)

GEOL 306 Earth Science Laboratory 1 Unit

Prerequisite: None.

Corequisite: GEOL 305

Advisory: MATH 100 with a grade of "C" or better and ENGRD 310 and ENGWR 300, or ESLW 340 and ESLR 340, with grades "C" or better; or placement through the assessment process.

General Education: AA/AS Area IV; CSU Area B3; IGETC Area 5A

Course Transferable to UC/CSU

Hours: 54 hours LAB

This course emphasizes scientific methods and systematic laboratory procedures in the earth sciences. It includes practical and written experience in rock and mineral identification, plate tectonics and earthquakes, river and glacial topography, geologic and topographic maps, oceanography and meteorology exercises, and concepts in astronomy. At least one field trip (for example to Cache Creek Canyon or Point Reyes National Seashore) or an appropriate alternative activity will be required as an introduction to geological environments and field methods in geology. The course is not available for credit to students who have completed GEOL 302. (C-ID GEOL 120L)

GEOL 308 Introduction to Geology 3 Units

Prerequisite: None.

Advisory: MATH 34 with a grade of C or better and ENGRD 110 and ENGWR 101, or ESLR 320 and ESLW 320, with grades of "C" or better; or placement through the assessment process.

General Education: AA/AS Area IV; CSU Area B1; IGETC Area 5A

Course Transferable to UC/CSU

Hours: 54 hours LEC

This course provides an introduction to geological processes and the dynamic nature of Earth as a system. It includes discussion of fundamental geological concepts such as plate tectonics, the major rock types and the minerals that comprise them, volcanoes, earthquakes and Earth's interior, crustal deformation and mountain building, deep time, fossils and evolution, and the history of Earth. A focus on the relevance of geology to our everyday lives makes this course ideal for introductory-level and non-science majors and those students desiring a stronger background in the basic sciences.

GEOL 310 Historical Geology 3 Units

Prerequisite: None.

Advisory: ENGRD 310 and ENGWR 300, or ESLR 340 and ESLW 340, and MATH 100, with grades of "C" or better; or placement through the assessment process.

General Education: AA/AS Area IV; CSU Area B1; IGETC Area 5A

Course Transferable to UC/CSU

Hours: 54 hours LEC

This course covers the origin and geologic history of the Earth and the evolution of its living organisms. Plate tectonic theory is used to explain changes in composition and structure of rocks of the Earth's crust from the formation of the Earth to the present. Emphasis is placed on the formation of sedimentary rocks and the fossils contained within them for the purpose of understanding how they record changes in Earth's environmental processes and ecosystems. Evolution and extinction are studied to understand how they reflect environmental changes in the Earth's ocean, atmosphere, and surface. (C-ID GEOL 110)

GEOL 311 Historical Geology Laboratory 1 Unit

Prerequisite: None.

Corequisite: GEOL 310

Advisory: ENGRD 310 and ENGWR 300, or ESLR 340 and ESLW 340, and MATH 100, with grades of "C" or better; or placement through the assessment process.

General Education: AA/AS Area IV; CSU Area B3; IGETC Area 5A

Course Transferable to UC/CSU

Hours: 54 hours LAB

Laboratory activities will accompany and complement GEOL 310, Historical Geology. Use of sedimentary rocks, fossils, geologic maps, and cross sections will aid in interpreting ancient environments, tectonic settings, and geologic history. Other concepts addressed include age relations and correlation of rock and time units, and introduction to fossil identification and biostratigraphy. At least one field trip (for example to Cache Creek Canyon or Point Reyes National Seashore) or an appropriate alternative activity will be required as an introduction to sedimentary environments and field methods in geology. (C-ID GEOL 110L)

GEOL 325 Environmental Hazards and Natural Disasters 3 Units

Prerequisite: None.

Advisory: MATH 100 or 104; AND ENGRD 110, ENGWR 101 OR ESL 325 with a grade of "C" or better

General Education: AA/AS Area IV

Course Transferable to UC/CSU

Hours: 54 hours LEC

This course covers the environmental effects and applications of Earth-related processes. It focuses on earthquakes, volcanic eruptions, landslides, flooding, and hurricanes, as well as covering related current events. Topics also include the availability and exploitation of natural resources, waste disposal, and global climate change. Humans as a force in environmental change are emphasized. This course addresses geology, engineering, environmental studies, natural resources, geography, and science education. One field trip is required.

GEOL 345 Geology of California 3 Units

Prerequisite: None.

Advisory: ENGRD 310 and ENGWR 300, or ESLR 340 and ESLW 340, and MATH 100, with grades of "C" or better; or placement through the assessment process.

General Education: AA/AS Area IV; CSU Area B1; IGETC Area 5A

Course Transferable to UC/CSU

Hours: 54 hours LEC

This course provides a survey of the physical and historical aspects of California geology, emphasizing the linkage of geology and people through economic and social impacts. This course is recommended for non-majors and majors in geology and is of particular value to science, engineering, environmental studies, education, and economics majors. One field trip may be required (for example to Cache Creek Canyon or Point Reyes National Seashore). (C-ID GEOL 200)

GEOL 391 Field Studies in Geology 1-3 Units

Prerequisite: GEOL 302, 305, 308, or 310 with a grade of "C" or better

Enrollment Limitation: For course topic "Geology and Natural History of the Eel River, Northern California," students must demonstrate swimming and basic canoeing abilities. Students must be able to swim 50 yards and demonstrate they can enter and exit a canoe from beach and dock; paddle forward, turn, stop and reverse; right a capsized canoe; and perform an assisted entry from the water.

Swim testing and canoe testing will be administered by the CSU Sacramento Aquatic Center at Lake Natoma or the Humboldt State University Center Activities Program at Humboldt Bay.

Course Transferable to UC/CSU

Hours: 18 hours LEC; 108 hours LAB

This course requires field trips to selected locations of geologic interest. Course content varies according to field trip destination but may include topics in physical geology, environmental geology, economic geology, natural history, and/or introduction to tools and techniques used for geosciences field research [e.g. map and compass, the Global Positioning System (GPS), Geographic Information Systems (GIS), etc.]. Units are awarded based on both lecture and laboratory (one unit per 18 hours lecture and/or 54 hours laboratory or a combination of lecture and laboratory hours).

**GEOL 495 Independent Studies in 1-3 Units
Geology**

Prerequisite: None.

Course Transferable to CSU

Hours: 162 hours LAB

An independent studies project involves an individual student or small group of students in study, research, or activities beyond the scope of regularly offered courses. UC transfer credit will be awarded only after the course has been evaluated by the enrolling UC campus. The units completed for this course cannot be counted towards the minimum 60 units required for admissions. UC transfer credit will be awarded only after the course has been evaluated by the enrolling UC campus. The units completed for this course cannot be counted towards the minimum 60 units required for admissions.

**GEOL 499 Experimental Offering in .5-4 Units
Geology**

Prerequisite: None

Course Transferable to UC/CSU

Hours: 54 hours LEC; 36 hours LAB

See Experimental Offering. UC transfer credit will be awarded only after the course has been evaluated by the enrolling UC campus. The units completed for this course cannot be counted towards the minimum 60 units required for admissions.