Geology

Bachelor of Science degree with a major in Geology
Bachelor of Arts degree with a major in Geology — Geosciences concentration

Minor in Geology
See Environmental Systems for details on the Master of Science degree.

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The Program
The geology program provides students with a solid foundation in Earth system science, how the Earth and its processes affect humans, and how human activities affect the Earth.

Students completing this program will:
- understand the fundamental concepts of Earth’s many systems
- be able to find, analyze, and assess scientifically credible information about the Earth in both printed and electronic forms
- communicate about Earth science in a meaningful way both verbally and in writing
- be able to make informed and responsible decisions regarding the Earth and its resources
- possess the skills and background to gain employment and/or admission to graduate studies in the Earth sciences.

The BS degree in geology is recommended for students who plan to seek work as professional geologists (e.g., engineering geology, hydrology, environmental geology, natural resource geology) and/or enter graduate school in the geosciences. The BA degree in geology with a concentration in geoscience is aimed toward students who are interested in careers or pursuing graduate work in broader fields of environmental science, hazard/resource management and planning, environmental policy, and teaching. The second discipline provides greater breadth and expertise in an additional field.

Humboldt’s setting provides a natural laboratory to study earthquakes, tsunamis, mountain building, landsliding, river processes, natural mineral and metal resources, volcanism, and rapid coastal erosion. The area also contains good exposures of nearshore marine deposits and fossils recording the late Cenozoic history of the region. Students frequently take field trips to surrounding areas both along the coast and inland. Geology majors may also pursue a thesis project under the supervision of a faculty mentor.

At Humboldt, you will also be able to use research tools including petrographic microscopes, scanning electron microscope, geophysical exploration equipment and a real-time kinematic GPS unit. Employers seek out Humboldt geology graduates because of their competence in the field and rigorous scientific background.

Career opportunities include positions with local/state/federal government, scientific and resource management agencies, geotechnical and environmental consulting firms, nonprofit conservation agencies, and universities/colleges/K-12 schools. Job titles of Humboldt geology graduates include: geologist, petrologist, volcanologist, consultant, technical writer or editor, seismologist, emergency manager; hazards mitigation specialist, field geologist, marine geologist, hydrologist, geomorphologist, museum curator; and science teacher.

Preparation
Students will be most successful if they take mathematics, chemistry, physics, biology and any environmental studies in high school if available. Students need to be able to write and speak effectively in English and are expected to be proficient in computer applications.

Requirements for the Majors
For a description of degree requirements to be fulfilled in addition to those listed below for the major, please see “The Bachelor’s Degree” section of the catalog, pp. 66-81, and “The Master’s Degree” pp. 82-84.

Core Courses

Lower Division Core
CHEM 109 (5) General Chemistry I
GEOL 109 (4) General Geology
GEOL 210 (3) Earth Systems History
MATH 109 (4) Calculus I

Upper Division Core
GEOL 306 (3) General Geomorphology
GEOL 312 (4) Earth Materials
GEOL 332 (4) Sedimentary Geology
GEOL 335 (2) Geologic Field Methods I
GEOL 435 (2) Geologic Field Methods II
GEOL 486 (1) Research Methods

BS in Geology
Core courses plus:

Lower Division
CHEM 110 (5) General Chemistry II
MATH 110 (4) Calculus II
One of the following:
MATH 210 (4) Calculus III, or
STAT 108 (3) Elementary Statistics, or
STAT 108i (3) Elementary Statistics with Integrated Support [Coreq: STAT 8], or
STAT 109 (4) Introductory Biostatistics
One of the following two series:
- PHYX 106 (4) College Physics: Mechanics & Heat
- PHYX 107 (4) College Physics: Electromagnetism & Modern Physics
- PHYX 109 (4) General Physics A: Mechanics
- PHYX 210 (4) General Physics B: Thermodynamics, Waves & Optics

Upper Division
GEOL 314 (4) Petrology
GEOL 334 (4) Structural Geology
GEOL 475 (4) Geology Field Camp
Five units of approved upper division geology areas of specialization, including at least one of the following:
GEOL 457 (3) Engineering Geology
GEOL 460 (3) Solid Earth Geophysics
GEOL 470 (3) Volcanology
GEOL 482 (1-3) Instrumental Methods in Geology
GEOL 490 (1) Senior Thesis, and
GEOL 492 (2) Senior Thesis Project
GEOL 524 (3) Methods of Geochronology
GEOL 531 (1-3) Advanced Physical Geology
GEOL 550 (3) Fluvial Processes
GEOL 551 (3) Hillslope Processes
GEOL 553 (4) Quaternary Stratigraphy
GEOL 554 (2) Advanced Geology Field Methods
GEOL 555 (3) Neotectonics
GEOL 556 (4) Hydrogeology
GEOL 561 (3) Applied Geophysics

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Concentration

Core courses plus:

**Lower Division**

- PHYX 106 (4) College Physics: Mechanics & Heat
- GEOL 110 (1) Field Geology of the Western US

*One of the following:*

- STAT 108 (3) Elementary Statistics, or
- STAT 108i (3) Elementary Statistics with Integrated Support [Coreq: STAT 8], or
- STAT 109 (4) Introductory Biostatistics

**Upper Division**

- GEOL 300 (3) Geology of California
- GEOL 300L (1) Geology of California Field Trip
- GEOL 455 (1) Geology Colloquium
- GEOL 465 (2) Geosciences Senior Project

*One of the following:*

- GEOL 303 (3) Earth Resources & Global Environmental Change, or
- GEOL 308 (3) Natural Disasters

Complete 5 units of approved upper division geology courses.

**Second Discipline**

Complete at least 12 units of department approved courses within a discipline outside of the geology discipline (e.g., business chemistry, geospatial analysis). Students are encouraged, though not required, to pursue a minor in one of these fields so as to broaden technical skills and expertise.

**Requirements for the Minor**

- GEOL 109 (4) General Geology
- GEOL 306 (3) General Geomorphology

*One of the following:*

- GEOL 110 (1-2) Field Geology of the Western US
- GEOL 335 (2) Geologic Field Methods I

*At least one of the following four courses:*

- GEOL 300 (3) Geology of California
- GEOL 303 (3) Earth Resources & Global Environmental Change
- GEOL 305 (3) Fossils, Life & Evolution
- GEOL 308 (3) Natural Disasters

*One of the following:*

- GEOL 312 (4) Earth Materials
- GEOL 332 (4) Sedimentary Geology

Plus 3 units of approved upper division GEOL coursework.