

GEOLOGY, BACHELOR OF ARTS

College of Letters & Science

"Civilization exists by geological consent—subject to change without notice." — Will Durant

Geology is the study of the Earth, and in particular its history, structure, and the processes that have molded our planet and its biosphere. Geology involves the origin of continents & ocean basins, earthquakes & volcanoes, variations in global climate, and how these physical changes impact the evolution of life. All of these planetary processes are viewed through the prism of "deep time," a perspective unique to geologists and one that distinguishes geology from most of the other physical sciences.

A significant component of geology is oriented toward the interaction between humans and the Earth. This aspect includes the study of resources such as minerals, oil, and water; identification & mitigation of Earth hazards such as earthquakes, landslides, floods, and volcanic eruptions; identification & mitigation of polluted ground water; land use planning; and the study of ancient & modern climate change.

The Program

Students interested in becoming professional geologists or continuing their geological studies at the graduate level should choose the Bachelor of Science degree program. The Bachelor of Arts program is for students interested in an interdisciplinary program of study, or who plan to go into pre-college teaching. The upper division electives are not restricted to geology courses but must be chosen to provide a relevant, coherent, and in-depth program of study.

Undergraduate Research

The geosciences span many disciplines at UC Davis, and students have opportunities to participate in undergraduate research (<https://eps.ucdavis.edu/students/undergrad/gel/research/>) in a variety of interest areas. Many students choose to complete a senior thesis to develop their research and writing skills during their senior year.

Internships & Careers

A degree in Geology provides students with knowledge and practical experience needed to pursue careers (<https://eps.ucdavis.edu/students/careers/>) in the geosciences (government, private sector, research, teaching). The major program includes flexibility to participate in research, internships, and fieldwork to help prepare students for these career paths.

Global Learning in Geology

Consider studying or interning abroad through programs available through the Global Learning Hub (<https://eps.ucdavis.edu/students/undergrad/gel/studyabroad/>).

Get Involved

Find your community (<https://eps.ucdavis.edu/students/undergrad/gel/involved/>) through clubs, events, seminars, and workshops relating to geoscience.

Graduation Honors

Students graduating from the College of Letters & Science are eligible for Departmental Honors, depending on their GPA and whether or not they complete a Senior Thesis. Students who graduate with a GPA in the top percentages of their college (<https://catalog.ucdavis.edu/academic-information-policies-regulations/college-major-minor-information/>) will automatically graduate with Honors. Students who qualify for Honors at graduation may also be eligible for High Honors or Highest Honors, based upon the quality of their Senior Thesis (<https://eps.ucdavis.edu/students/undergrad/gel/research/>) (course number 194A-194B) or Senior Honors Thesis (course number 194HA-194HB). It is Department of Earth and Planetary Sciences policy that an "A-" grade on the thesis will earn the student High Honors, and an "A" grade will earn the student Highest Honors.

Advising

Visit the staff major advisor (<https://eps.ucdavis.edu/students/undergrad/advising/>) for help navigating major requirements and planning for your degree. Visit the faculty major advisors (<https://eps.ucdavis.edu/students/undergrad/advising/>) for additional advice on courses, careers, and graduate school. Faculty advisors: R. Motani, D. A. Osleger, M. Rudolph.

Visit the College of Letters & Science advisors (<https://lettersandscience.ucdavis.edu/advising/>) for help navigating university requirements (<https://catalog.ucdavis.edu/undergraduate-education/university-degree-requirements/>) and college requirements (<https://catalog.ucdavis.edu/academic-information-policies-regulations/college-major-minor-information/>).

Graduate Study

The coursework, research and internship opportunities, and fieldwork requirements in the Geology major help prepare students to enter graduate programs (<https://eps.ucdavis.edu/students/careers/gradschool/>) to continue their studies and prepare for their career. Students should meet with advisors and faculty to build a strong application for graduate school through additional independent research or other co-curricular involvements.

The major requirements below are in addition to meeting University Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/university-degree-requirements/>) & College Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/college-degree-requirements/>); unless otherwise noted. The minimum number of units required for the Geology Bachelor of Arts is 79.

Code	Title	Units
Preparatory Subject Matter		
<i>Geology</i>		
GEL 050	Physical Geology	3
GEL 050L	Physical Geology Laboratory	2
GEL 053	Introduction to Geobiology (Discontinued for fall 2026) or EPS 142 or EPS 003 or GEL 003 DISCONTINUED FOR FALL 2026**	3
GEL 055	Introduction to Geochemistry (Discontinued for winter 2026) or CHE 002C or CHE 004C	3-5
	General Chemistry General Chemistry for the Physical Sciences & Engineering	
GEL 060	Earth Materials: Introduction (Discontinued for fall 2026)**	4
<i>Mathematics</i>		

Choose a series:		6-8	Choose from courses GEL 130-194 or pre-selected non-GEL courses. Only one of GEL 181/EDU 181 or GEL 183/EDU 183 or GEL 185A or 185B or 186 may be applied toward elective credit. Pre-selected non-GEL courses in related fields: CHE 100, ECI 171/ECI 171L, ECI 175, ESM 100, ESM 186, ESP 152, HYD 144, HYD 146, LED 150/LDA 150/ABT 150, SSC 100, WFC 102. Other courses in related fields must be approved in advance by the major advisor. No more than 3 units of upper division elective credit for courses GEL 115-GEL 120. No more than 6 units of upper division elective credit for GEL 192 or GEL 194A-GEL 194B or GEL 194HA-GEL 194HB. Students who receive approval to do a senior thesis for part of the capstone requirement may not use GEL 194A-GEL 194B or GEL 194HA-GEL 194HB for the upper division elective courses.
MAT 016A and (Discontinued for spring 2025) ** & MAT 016B DISCC			
MAT 017A Calculus for Biology & Medicine & MAT 017B and Calculus for Biology & Medicine			
MAT 019A Calculus for Data-Driven Applications & MAT 019B and Calculus for Data-Driven Applications			
MAT 021A Calculus & MAT 021B and Calculus			
Chemistry			
Choose a series:	10		
CHE 002A General Chemistry & CHE 002B and General Chemistry			GEL 130 Non-Renewable Natural Resources (Discontinued for winter 2026) **
CHE 004A General Chemistry for the Physical Sciences & Engineering & CHE 004B and General Chemistry for the Physical Sciences & Engineering			GEL 131 Risk: Natural Hazards & Related Phenomena
Physics			GEL 132 Introductory Inorganic Geochemistry
Choose a series:	8-10		GEL 133 Environmental Geochemistry (Discontinued for fall 2026) ** or EPS 133
PHY 007A General Physics & PHY 007B and General Physics			GEL 134 Environmental Geology & Land Use Planning (Discontinued for fall 2026) ** or EPS 134
PHY 009A Classical Physics & PHY 009B and Classical Physics			GEL 136 Ecogeomorphology of Rivers & Streams (Discontinued for fall 2026) or EPS 136
PHY 009HA Honors Physics & PHY 009HB and Honors Physics			GEL 138 Introductory Volcanology (Discontinued for fall 2026) ** or EPS 138
Statistics			GEL 139 Rivers: Form, Function & Management (Discontinued for fall 2026) **
Choose one:	4		GEL 140 Introduction to Process Geomorphology (Discontinued for winter 2026) **
STA 013 Elementary Statistics or STA 013Y Elementary Statistics			GEL 141 Evolutionary History of Vertebrates (Discontinued for fall 2026) ** or EPS 141
STA 032 Gateway to Statistical Data Science			GEL 142 Basin Analysis (Discontinued for fall 2026) **
STA 100 Applied Statistics for Biological Sciences			GEL 143 Advanced Igneous Petrology (Discontinued for winter 2026) **
Preparatory Subject Matter Subtotal	43-49		GEL 144 Historical Ecology (Discontinued for fall 2026) ** or EPS 144
Depth Subject Matter			GEL 145 Advanced Metamorphic Petrology (Discontinued for winter 2026) **
Geology			GEL 146 Radiogenic Isotope Geochemistry & Cosmochemistry (Discontinued for winter 2026) **
EPS 102 or GEL 101 DISCONTINUED FOR FALL 2026**	2		GEL 147 Geology of Ore Deposits (Discontinued for winter 2026) **
EPS 102L or GEL 101L DISCO	2		GEL 148 Stable Isotopes & Geochemical Tracers (Discontinued for winter 2026) **
EPS 103 or GEL 103 DISCONTINUED FOR SPRING 2026 **	4		GEL 149 Geothermal Systems (Discontinued for winter 2026) **
EPS 109 or GEL 109 DISCON	3		
EPS 109L or GEL 109L DISCONTINUED FOR FALL 2026 **	2		
GEL 107 Earth History: Paleobiology	3		
GEL 107L Earth History: Paleobiology Laboratory	2		
GEL 108 Earth History: Paleoclimates	3		
Upper Division Electives			
Choose 14 units:	14		

GEL 150A	Physical & Chemical Oceanography ** (Discontinued for winter 2026)	ESM 186	Environmental Remote Sensing
GEL 150B/ ESP 150B DISCONTINUED or EPS 150B	Geological Oceanography (Discontinued for fall 2026) **	ESP 152	Coastal Oceanography
GEL 150C/ ESP 150C DISCONTINUED	Biological Oceanography (GEL 150C Discontinued for fall 2026) ** or EPS 150C	HYD/EBS 144	Groundwater Hydrology
GEL 152	Paleobiology of Protista (Discontinued for winter 2026) **	HYD 146	Hydrogeology & Contaminant Transport (Discontinued for winter 2026) **
GEL 156	Hydrogeology & Contaminant Transport (Discontinued for winter 2026) **	LDA 150	Introduction to Geographic Information Systems (Discontinued for winter 2026) **
GEL 160 or EPS 160	Geological Data Analysis (Discontinued for fall 2026) **	or ABT 150 or LED 150	Introduction to Geographic Information Systems
GEL 161 or EPS 161	Geophysical Field Methods (Discontinued for fall 2026) **	SSC 100	Principles of Soil Science
GEL 162 or EPS 162	Geophysics of the Solid Earth (Discontinued for fall 2026) **	WFC 102	Field Studies in Fish Biology
GEL 163 or EPS 163	Planetary Geology & Geophysics (Discontinued for fall 2026) **	WFC 102L	Field Studies in Fish Biology: Laboratory
GEL 175	Advanced Field Geology	Depth Subject Matter Subtotal	35
GEL/EDU 181	Teaching in Science & Mathematics	Total Units	78-84
GEL 182	Field Studies in Marine Geochemistry (Discontinued for winter 2026) **	** Course(s) discontinued; see your advisor for course options.	
GEL 183	Teaching High School Mathematics & Science (Discontinued for winter 2026) **		
GEL 185A	Conceptual Integrated Science for Non- Science Majors: The Physical World (Discontinued for winter 2026) **		
GEL 185B	Conceptual Integrated Science for Non- Science Majors: Earth System Science (Discontinued for winter 2026) **		
GEL 186	Facilitating Learning in STEM Classrooms		
GEL 190	Seminar in Geology (Discontinued for winter 2026) **		
GEL 192	Internship in Geology (Discontinued for winter 2026) **		
GEL 194A or EPS 194A	Senior Thesis (Discontinued for fall 2026) **		
GEL 194B or EPS 194A	Senior Thesis (Discontinued for fall 2026) **		
GEL 194HA or EPS 194HA	Senior Honors Project (Discontinued for fall 2026) **		
GEL 194HB or EPS 194HB	Senior Honors Project (Discontinued for fall 2026) **		
CHE 100	Environmental Water Chemistry		
ECI 171	Soil Mechanics		
ECI 171L	Soil Mechanics Laboratory		
ESM 100	Introduction to Water Science		