

ENVIRONMENTAL GEOSCIENCES, BS

Natural Sciences, Mathematics, and Engineering (nsme) (<https://catalog.csub.edu/general-information/csub-information/school-natural-sciences-mathematics-engineering/>)

Department of Geological Sciences

Department Chair: Anthony Rathburn

Office: Science Building II, 340

Phone: (661) 654-3027

Email: geology@csub.edu

www.csub.edu/geology (<http://www.csub.edu/geology/>)

Program Maps for Natural Sciences, Mathematics, and Engineering (<https://programmap.csub.edu/academics/interest-clusters/4e942a6e-b8e4-4b60-a1ae-334235acc581/>)

Program Description

The Department of Geological Sciences offers the Bachelor of Arts in Geology, the Bachelor of Science in Geology, the Master of Science in Geology, and the Bachelor of Science in Environmental Sciences. A minor in Geology is also available. Geology and Environmental Science encompass a broad array of studies focused on natural and physical sciences related to Earth and environmental issues and their impact on society. Our degree programs address geological and environmental topics related to the geosphere, biosphere, hydrosphere, and atmosphere through the development of fundamental knowledge and skills, with an emphasis on experiential learning. The curricula in the Geology and Environmental Science programs are designed to provide flexibility for interdisciplinary exploration that incorporates fieldwork, technical analysis, individual study, and research participation. Students are encouraged to take advantage of diverse opportunities to conduct fundamental and applied research with experienced research mentors using state-of-the-art scientific equipment.

CSUB is located in an excellent geographic region with convenient access to mountain ranges, valleys, rivers, deserts, oil fields, agricultural areas, nature conservancies, national parks, and the Pacific Coast.

At the completion of their Geology or Environmental Science degree program, students will have broad foundational knowledge and strong field and laboratory skills that provide them with the qualifications for professional employment as well as prepare them for continued academic studies in a graduate degree program.

Graduates with degrees in Geology or Environmental Science have excellent employment opportunities locally, across California, and elsewhere in the United States. These careers can be in government regulation, carbon management, minerals exploration, pollution remediation, energy and water resources, environmental consulting, hazard mitigation, land use planning, and conservation. The degree programs also provide a strong foundation for secondary school science teaching or graduate study in Geology and Environmental Science. Students planning on attending graduate school are advised to pursue a BS degree as the coursework typically represents the

minimum coursework required for acceptance into a graduate program, including the Master of Science in Geology program at CSUB.

Program Requirements

Code	Title	Units
General Education Requirements		
Subject Area 1A: English Composition		3
Subject Area 1B: Critical Thinking		3
Subject Area 1C: Oral Communication		3
Subject Area 2: Mathematical Concepts & Quantitative Reasoning ¹		0
Subject Area 3A: Arts		3
Subject Area 3B: Humanities		3
Upper Division 3 Arts or Humanities: (3UD) ²		3
Subject Area 4: Social and Behavioral Sciences		3
Upper Division 4 Social and Behavioral Sciences: (4UD) ²		3
Subject Area 5A: Physical Science ¹		0
Subject Area 5B: Biological Sciences ¹		0
Subject Area 5C: Laboratory ¹		0
Upper Division 5 Science: (5UD) ¹		0
Subject Area 6: Ethnic Studies		3
<i>General Education Subtotal</i>		27
Campus Requirements		
First-Year Seminar (FYS)		2
American Institutions: Government ⁴		3
American Institutions: History		3
Junior Year Diversity Requirement (JYDR)		3
Graduation Writing Assessment Requirement (GWAR)		3
Capstone ¹		0
<i>Campus Requirement Subtotal</i>		14
Major Requirements		
<i>Required Lower Division Courses</i>		
GEOL 2010	Physical Geology	4
GEOL 2020	Introduction to Environmental Science	4
GEOL 2050	Introduction to Soil Science	4
GEOL 2069	Sustainable Energy and Environment	3
<i>Required Upper Division Courses</i>		
GEOL 3010	Fundamentals of Geochemistry	4
GEOL 3080	Geomorphology	4
GEOL 4010	Hydrogeology	4
GEOL 4050	GIS for Natural Sciences	4
GEOL 4200	Professional Development for BA-BS Students	2
GEOL 4928	Senior Seminar for Environmental Science	1
ERM 4110	Environmental Law I	3
INST 4200	Electronic Legal Research Methods	1
Select a minimum of 20 units ³		20
Required Cognates		
Complete 15 units of Cognates		15
<i>Biology Cognate</i>		
Select one of the following courses:		
BIOL 2010	Introductory Biology - Cells	
BIOL 2110	Introductory Biology - Animals	
BIOL 2120	Introductory Biology - Plants	

Chemistry Cognate

Select one of the following courses (or equivalent):

CHEM 1000	Foundations of Chemistry
CHEM 1010	Preparation for College Chemistry

Mathematics Cognate

Select one of the following courses (or equivalent):

MATH 1060	Precalculus II
MATH 2010	Calculus for the Biological and Chemical Sciences I
MATH 2310	Single Variable Calculus I for Engineers
MATH 2510	Single Variable Calculus I

Physics Cognate

Select one of the following courses:

PHYS 2110	College Physics I
PHYS 2210	Physics for Scientists and Engineers I

Major Subtotal⁴ **73****Additional Units Needed Towards Graduation** **6****Total Units** **120**

Note: One semester unit normally represents 50 minutes of lecture or 150 minutes of laboratory study. For every unit, students are expected to devote 2-3 hours of outside study per week.

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- Some General Education requirements are covered within the major and cognates.
 - Subject Area 2, 5A, 5B, and 5C
 - Some Campus Requirements are satisfied in the major and cognates.
 - Capstone

- ² General Education courses for Upper Division Areas 3 and Upper Division Area 4 that are particularly relevant to the Bachelor of Science in Environmental Sciences:

- Upper Division Areas 3 (3 units are required for GE)
 - COMM 3089 Communication and the Environment
 - ENGL 3268 Writing Nature: Literature and the Environment
 - HIST 3258 The American Environment
 - PHIL 3368 Environmental Philosophy
- Upper Division Area 4 (3 units are required for GE)
 - ECON 3418 Energy Economics and Policy
 - ECON 3508 Environmental Economics
 - SOC 4008 Society and the Natural Environment

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- Select a minimum of 20 units in any combination of:
 - natural science (GEOL, BIOL, CHEM, PHYS), mathematics (MATH), engineering (ENGR), computer science (CMPS), or public health (PH) disciplines, with at least 12 units from upper division courses.
 - Students should check with their advisors about prerequisites for interdisciplinary elective courses. GE courses are not acceptable as interdisciplinary electives. Courses required for the Environmental Science B.S. degree (including cognates) cannot be counted as interdisciplinary electives. A maximum of four (4) units of research may be applied toward interdisciplinary elective requirements.

- ⁴ The minimum acceptable GPA for these 73 units is 2.0

- ⁵ American Institution - Government (American & Constitutional Ideals) satisfies one course of the two required in Subject Area 4.