

# GEOLOGY, BS

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

Department of Geological Sciences (<https://catalog.csub.edu/general-information/csub-information/school-natural-sciences-mathematics-engineering/department-geological-sciences/>)

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

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

## Program Requirements

Code	Title	Units
<b>General Education Requirements</b>		
First-Year Seminar (FYS) 2		
Lower Division Area A: Foundational Skills 9		
Lower Division Area B: Natural Sciences <sup>5</sup> 3		
Lower Division Area C: Arts and Humanities 6		
Lower Division Area D: Social and Behavioral Sciences 3		
Lower Division Area E: Student Enrichment and Lifelong Learning (SELF) <sup>6</sup> 0		
Lower Division Area F: Ethnic Studies 3		
American Institutions: Government and History 6		
Junior Year Diversity & Reflection (JYDR) 3		
Graduation Writing Assessment Requirement (GWAR) 3		
Upper Division Thematic Area C and D 6		
General Education Capstone <sup>5</sup> 0		
General Education Subtotal <sup>7</sup> 44		
<b>Major Requirements<sup>1</sup></b>		
<i>Lower Division</i>		
GEOL 2010	Physical Geology	4
GEOL 2040	Historical Geology	4
<i>Upper Division</i>		
GEOL 3000	Mineralogy and Petrology	4
GEOL 3010	Fundamentals of Geochemistry	4
GEOL 3040	Sedimentology and Stratigraphy	4
GEOL 3060	Applied Geochemistry	4
GEOL 3070	Structural Geology	4
GEOL 3090	Principles of Geophysics	4
GEOL 4090	Field Course in Geology <sup>2</sup>	5
GEOL 4200	Professional Development for BA-BS Students	2
GEOL 4908	Senior Field Seminar	4

A minimum of twelve additional GEOL units above 3000-level, 3 units of which must be at the 4000-level<sup>3</sup> 12

GEOL 3011	Natural History of National Parks	
GEOL 3031		
GEOL 3050	Geological Oceanography	
GEOL 3080	Geomorphology	
GEOL 3339	Dinosaurs: Paleocology, Evolution and Extinction	
GEOL 4010	Hydrogeology	
GEOL 4020	Environmental Geochemistry	
GEOL 4030	Lithospheric Geodynamics	
GEOL 4050	GIS for Natural Sciences	
GEOL 4060	Fundamentals of Petroleum Exploration and Production	
GEOL 4070	Sequence Stratigraphy	
GEOL 4080	Physical Volcanology	
GEOL 4110	Clay Mineralogy	
GEOL 4150	Applied GIS	
GEOL 4170	Well Log Analysis	
GEOL 4770	Special Topics in Geology	
GEOL 4771	Special Topics in Geology 2	

### Cognates

CHEM 1000	Foundations of Chemistry	3
or 1010		
or EQUIVALENT		
MATH 2010	Calculus for the Biological and Chemical Sciences I	4
or MATH 2310	Single Variable Calculus I for Engineers	
or MATH 2510	Single Variable Calculus I	
PHYS 2110	College Physics I	4
or PHYS 2210	Physics for Scientists and Engineers I	
Major Subtotal		66
<b>Additional Units Needed Towards Graduation</b>		<b>10</b>
<b>Total Units</b>		<b>120</b>

<sup>1</sup> The minimum acceptable GPA for these 66 units is 2.0

<sup>2</sup> GEOL 4090 Field Course in Geology is generally taken during the Summer following the senior year.

<sup>3</sup> GEOL 3310 Integrated Science: Earth Science, GEOL 3318 California Geology and Society, and GEOL 3328 Water and the West are General Education courses intended for non-majors and do not count toward degree requirements); at least 3 units must be GEOL 4000 or above. Graduate level classes may be substituted with advisor approval.

<sup>4</sup> Or equivalent

<sup>5</sup> Area B1 satisfied in major and cognates, B4 satisfied in cognates, and Capstone satisfied in major

<sup>6</sup> The SELF requirement is met by completing a LD C or D course with a SELF component.

<sup>7</sup> Some General Education requirements are included in major.

The following additional courses are strongly recommended for students planning graduate studies:

Code	Title	Units
CHEM 1100	Foundations of Analytical Chemistry	2
& CHEM 1600	and Foundations of Physical Chemistry	
MATH 2020	Calculus for Biological & Chemical Sciences II	4
or MATH 2320	Single Variable Calculus II for Engineers	

or MATH 2520	Single Variable Calculus II	
PHYS 2120	College Physics II	4
or PHYS 2220	Physics for Scientists and Engineers II	
<b>Total Units</b>		<b>10</b>

**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.