

# BACHELOR OF SCIENCE IN EARTH SCIENCES ROADMAP – QUANTITATIVE REASONING CATEGORY 3/4

120 Total Units Required

Minimum Number of Units in the Major: 63

This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult your Degree Planner (<https://registrar.sfsu.edu/degreeplanner/>) and an advisor for further guidance.

To avoid taking additional units, it is recommended that you meet the SF State Studies (AERM, GP, ESCA, SJ) requirements within your GE or major.

Course	Title	Units
<b>First Semester</b>		
MATH 197	Prelude to Calculus I (Prerequisite for MATH 226) <sup>1</sup>	3
Introduction to Earth Sciences <sup>2</sup>		4
GE Area 1A: English Composition <sup>3</sup>		3
GE Area 1: English Communication		3
SF State Studies or University Elective		3
<b>Units</b>		<b>16</b>
<b>Second Semester</b>		
Select One (Major Science and Math Foundation):		3-4
CHEM 115	General Chemistry I	
CHEM 180	Chemistry for Energy and the Environment	
MATH 198	Prelude to Calculus II (Prerequisite for MATH 226, GE 2) <sup>1</sup>	3
Introduction to Earth Sciences <sup>2</sup>		4
GE Area 1: English Communication		3
GE Area 3: Arts and Humanities		3
<b>Units</b>		<b>16-17</b>
<b>Third Semester</b>		
Select One (Introductory Methods):		3
ERTH 205	Techniques in Earth Sciences	
ENV 205	Our Environment Through Data	
MATH 226	Calculus I (Major Science and Math Foundation, GE 2) <sup>1</sup>	4
GE Area 3: Arts and Humanities		3
GE Area 4: Social and Behavioral Sciences <sup>4</sup>		3
GE Area 5B: Biological Science		3
<b>Units</b>		<b>16</b>
<b>Fourth Semester</b>		
Introduction to Earth Sciences <sup>2</sup>		4

Select One Set of Courses (Major Science and Math Foundation, GE 5A, GE 5C):		4
PHYS 111 & PHYS 112	General Physics I and General Physics I Laboratory	
PHYS 220 & PHYS 222	General Physics with Calculus I and General Physics with Calculus I Laboratory	
GE Area 4: Social and Behavioral Sciences <sup>4</sup>		3
GE Area 6: Ethnic Studies ( <a href="https://bulletin.sfsu.edu/undergraduate-education/general-education/areasix/">https://bulletin.sfsu.edu/undergraduate-education/general-education/areasix/</a> )		3
<b>Units</b>		<b>14</b>
<b>Fifth Semester</b>		
Select One (Earth Systems):		3-4
ERTH 400	Atmosphere and Oceans in the Earth System	
GEOG 313	Earth's Climate System	
ENV 500GW	Physical and Human Dimensions of Climate Change - GWAR (Introductory Methods)	3
Earth Science Elective <sup>5</sup>		3-4
GE Area 5UD or 2UD: Upper-Division Sciences or Upper-Division Mathematical Concepts		3
U.S. and California Government ( <a href="https://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg">https://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg</a> )		3
<b>Units</b>		<b>15-17</b>
<b>Sixth Semester</b>		
ERTH 500	Earth and Life Through Time (Earth Systems)	3
Earth Science Elective <sup>5</sup>		3-4
Techniques in Earth Science <sup>6</sup>		3-4
GE Area 3UD: Upper-Division Arts or Humanities		3
SF State Studies or University Elective		3
<b>Units</b>		<b>15-17</b>
<b>Seventh Semester</b>		
ERTH 442/GEOG 342	Surface Water Hydrology (Earth Systems)	4
Earth Science Elective <sup>5</sup>		3-4
Techniques in Earth Science <sup>6</sup>		3-4
GE Area 4UD: Upper-Division Social and Behavioral Sciences		3
SF State Studies or University Elective		3
<b>Units</b>		<b>16-18</b>
<b>Eighth Semester</b>		
Select One (Capstone):		1-3
ERTH 690	Earth Sciences Capstone Presentation	
ENV 690	Capstone Seminar	

Select One (Capstone): 2-4

ERTH 695	Senior Project
ERTH 697 & ERTH 698	Undergraduate Research and Senior Thesis
GEOG 688	Geographic Internship
Earth Science Elective - Take Two <sup>5</sup>	6-8
SF State Studies or University Elective	3
	<b>Units 12-18</b>
	<b>Total Units 120-133</b>

<sup>1</sup> Students should use their Pathway/Category (<https://gatorsmartstart.sfsu.edu/pathways/>) to determine the appropriate GE 2 course option. For directions on how to view your Pathway/Category, visit how to find your pathway (<https://gatorsmartstart.sfsu.edu/howtofindyourpathways/>). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)

<sup>2</sup> **Introduction to Earth Sciences (12 units)**

A full list of courses that can fulfill this requirement can be found in the Degree Requirements (<https://bulletin.sfsu.edu/colleges/science-engineering/environment/bs-earth-sciences/#degree requirementstext>).

<sup>3</sup> Students should use their Pathway/Category (<https://gatorsmartstart.sfsu.edu/pathways/>) to determine the appropriate GE 1A course option. For directions on how to view your Pathway/Category, visit how to find your pathway (<https://gatorsmartstart.sfsu.edu/howtofindyourpathways/>). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)

<sup>4</sup> First-time freshmen must take one lower-division Area 4 course that meets US History (USH).

<sup>5</sup> **Earth Science Electives (15 units minimum)**

A full list of courses that can fulfill this requirement can be found in the Degree Requirements (<https://bulletin.sfsu.edu/colleges/science-engineering/environment/bs-earth-sciences/#degree requirementstext>).

<sup>6</sup> **Techniques in Earth Science (6-8 units)**

A full list of courses that can fulfill this requirement can be found in the Degree Requirements (<https://bulletin.sfsu.edu/colleges/science-engineering/environment/bs-earth-sciences/#degree requirementstext>).