

BACHELOR OF SCIENCE IN BIOLOGY: CONCENTRATION IN MARINE SCIENCE ROADMAP – QUANTITATIVE REASONING CATEGORY III/IV

120 Total Units Required

Minimum Number of Units in the Major: 57

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, ES, SJ) requirements within your GE or major.

Course	Title	Units
First Semester		
MATH 197	Prelude to Calculus I (Prerequisite for MATH 226) ¹	3
GE Area 1A: English Composition ² 3		
GE Area 1: English Communication 3		
GE Area 3: Arts and Humanities 3		
SF State Studies or University Elective 3		
		Units 15
Second Semester		
BIOL 230	Introductory Biology I (Major Lower-Division Core)	5
BIOL 231	Advising for Success as a Biology Major (Major Lower-Division Core)	1
CHEM 115	General Chemistry I (Major Lower-Division Core)	4
MATH 198	Prelude to Calculus II (Prerequisite for MATH 226, GE 2) ¹	3
GE Area 1: English Communication 3		
		Units 16
Third Semester		
BIOL 240	Introductory Biology II ³	5
MATH 226	Calculus I (Major Lower-Division Core, GE 2) ¹	4
CHEM 130	General Organic Chemistry (Major Lower-Division Core)	3

GE Area 4: Social and Behavioral Sciences ⁴		3
		Units 15
Fourth Semester		
Select One (Major Lower-Division Core): ⁵		4
CHEM 215	General Chemistry II	
MATH 227	Calculus II	
Select One (Major Lower-Division Core, GE 5A, GE 5C): ⁶		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 3: Arts and Humanities		3
GE Area 4: Social and Behavioral Sciences ⁴		3
		Units 14
Fifth Semester		
BIOL 355	Genetics ⁷	3
BIOL 458	Biometry	4
Select One Set of Courses Not already Taken (Major Lower-Division Core):		4
CHEM 215	General Chemistry II	
MATH 227	Calculus II	
PHYS 121 & PHYS 122	General Physics II and General Physics II Laboratory ⁶	
PHYS 230 & PHYS 232	General Physics with Calculus II and General Physics with Calculus II Laboratory ⁶	
GWAR Option - Select One ⁸		3
		Units 14
Sixth Semester		
BIOL 337	Evolution (Major Upper-Division Core)	3
Oceanography Elective - Select One ⁹		3-4
Major Upper-Division Electives (6-7 units) - Take Two ¹⁰		6-7
GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/undergraduate-education/general-education/areasix/)		3
		Units 15-17
Seventh Semester		
GE Area 3UD: Upper-Division Arts or Humanities		3
GE Area 4UD: Upper-Division Social and Behavioral Sciences		3
SF State Studies or University Elective - Take Three		9
		Units 15
Eighth Semester		
U.S. and California Government (https://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg)		3
SF State Studies or University Elective - Take Four		13
		Units 16
Total Units		120-122

- ¹ 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 \(https://gatorsmartstart.sfsu.edu/howtofindyourpathways/\)](https://gatorsmartstart.sfsu.edu/howtofindyourpathways/). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)
- ² 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 \(https://gatorsmartstart.sfsu.edu/howtofindyourpathways/\)](https://gatorsmartstart.sfsu.edu/howtofindyourpathways/). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)
- ³ GE Area 5B (Biological Science) is satisfied upon completion of BIOL 240.
- ⁴ First-time freshmen must take one lower-division Area 4 course that meets US History (USH).
- ⁵ Students are encouraged to take MATH 227 if they are taking PHYS 220/PHYS 222.
- ⁶ PHYS 111/PHYS 112 are prerequisites for PHYS 121/PHYS 122. PHYS 220/PHYS 222 are prerequisites for PHYS 230/PHYS 232.
- ⁷ [Area 5UD \(Upper-Division Science\)](#) is satisfied upon completion of BIOL 355.
- ⁸ **GWAR Option - Select One**
A full list of courses that can fulfill this requirement can be found in the Degree Requirements (<https://bulletin.sfsu.edu/colleges/science-engineering/biology/bs-biology-concentration-marine-science/#programrequirements>).
- ⁹ **Oceanography Elective - Select One**
A full list of courses that can fulfill this requirement can be found in the Degree Requirements (<https://bulletin.sfsu.edu/colleges/science-engineering/biology/bs-biology-concentration-marine-science/#programrequirements>).
- ¹⁰ **Upper-Division Electives (6-7 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/biology/bs-biology-concentration-marine-science/#programrequirements>).