

BACHELOR OF SCIENCE IN BIOCHEMISTRY ROADMAP – QUANTITATIVE REASONING CATEGORY III/IV

120 Total Units Required

Minimum Number of Units in the Major: 70

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 198 and MATH 226) ¹	3
GE Area 1: English Communication - Take Two		6
GE Area 3: Arts and Humanities		3
GE Area 4: Social and Behavioral Sciences ²		3
Units		15
Second Semester		
BIOL 230	Introductory Biology I (Major Lower-Division)	5
CHEM 115	General Chemistry I (Major Lower-Division)	4
MATH 198	Prelude to Calculus II (GE 2, Prerequisite for MATH 226) ¹	3
GE Area 1A: English Composition ³		3
Units		15
Third Semester		
CHEM 215	General Chemistry II (Major Lower-Division)	4
MATH 226	Calculus I (Major Lower-Division, GE 2) ¹	4
GE Area 3: Arts and Humanities		3
GE Area 4: Social and Behavioral Sciences ²		3
Units		14
Fourth Semester		
CHEM 233 & CHEM 234	Organic Chemistry I and Organic Chemistry I Laboratory (Major Lower-Division)	5

CHEM 321	Quantitative Chemical Analysis (Major Upper-Division)	3
MATH 227	Calculus II (Major Lower-Division)	4
Select One Set of Courses (Major Lower-Division, GE 5A, GE 5B): ⁴		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	
Units		16

Fifth Semester

CHEM 235	Organic Chemistry II (Major Lower-Division)	3
GWAR Elective ⁵		3-4
Select One Set of Courses (Major Lower-Division): ⁴		4
PHYS 121 & PHYS 122	General Physics II and General Physics II Laboratory	
PHYS 230 & PHYS 232	General Physics with Calculus II and General Physics with Calculus II Laboratory	
PHYS 240 & PHYS 242	General Physics with Calculus III and General Physics with Calculus III Laboratory	
SF State Studies or University Elective - Take Two		5
Units		15-16

Sixth Semester

CHEM 340	Biochemistry I (Major Upper-Division)	3
CHEM 343	Biochemistry I Laboratory (Major Upper-Division)	3
Major Electives (15 Units Total) ⁵		3
GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/undergraduate-education/general-education/areasix/)		3
U.S. and California Government (https://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg)		3
Units		15

Seventh Semester

Select One (Major Upper-Division):		3
CHEM 300	Physical Chemistry for Life Sciences I	
CHEM 351	Physical Chemistry I: Thermodynamics and Kinetics	

CHEM 341	Biochemistry II (Major Upper-Division) ⁶	3
Major Electives (15 Units Total) ⁵		3
GE Area 5UD or 2UD: Upper-Division Sciences or Upper-Division Mathematical Concepts		3
GE Area 3UD: Upper-Division Arts or Humanities		3
	Units	15
Eighth Semester		
Select One (Major Upper-Division):		3
CHEM 301	Physical Chemistry for Life Sciences II	
CHEM 353	Physical Chemistry II: Quantum Chemistry and Spectroscopy	
Major Electives (15 Units Total) - Take Two ⁵		6
GE Area 4UD: Upper-Division Social and Behavioral Sciences		3
SF State Studies or University Elective		3
	Units	15
	Total Units	120-121

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/>). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)

² First-time freshmen must take one lower-division Area 4 course that meets US History (USH).

³ 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/>)

⁴ PHYS 111 and PHYS 112 are prerequisites for PHYS 121 and PHYS 122. PHYS 220 and PHYS 222 are prerequisites for PHYS 230/PHYS 232 and PHYS 240/PHYS 242.

⁵ **Upper-Division Electives (15 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/chemistry-biochemistry/bs-biochemistry/#degreerequirementstext>).

⁶ Area 5B (Biological Science) is satisfied upon completion of CHEM 341.