

# BACHELOR OF ARTS IN CHEMISTRY ROADMAP – QUANTITATIVE REASONING CATEGORY III/IV

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120 Total Units Required

Minimum Number of Units in the Major: 54

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
<b>First Semester</b>		
MATH 197	Prelude to Calculus I (Prerequisite for CHEM 115 and MATH 226) <sup>1</sup>	3
GE Area 1: English Communication - Take Two		6
GE Area 3: Arts and Humanities		3
GE Area 4: Social and Behavioral Sciences <sup>2</sup>		3
		<b>Units</b>
		<b>15</b>
<b>Second Semester</b>		
CHEM 115	General Chemistry I (Major Lower-Division)	4
MATH 198	Prelude to Calculus II (GE 2, Prerequisite for MATH 226) <sup>1</sup>	3
GE Area 1A: English Composition <sup>3</sup>		3
GE Area 5B: Biological Science		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>16</b>
<b>Third Semester</b>		
CHEM 215	General Chemistry II (Major Lower-Division)	4
MATH 226	Calculus I (Major Lower-Division, GE 2) <sup>1</sup>	4
GE Area 3: Arts and Humanities		3
GE Area 4: Social and Behavioral Sciences <sup>2</sup>		3
		<b>Units</b>
		<b>14</b>
<b>Fourth Semester</b>		
CHEM 233 & CHEM 234	Organic Chemistry I and Organic Chemistry I Laboratory (Major Lower-Division)	5
MATH 227	Calculus II (Major Lower-Division)	4
Select One Set of Courses (Major Lower-Division, GE 5A, GE 5C): <sup>4</sup>		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	
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>16</b>

**Fifth Semester**

CHEM 235 & CHEM 236	Organic Chemistry II and Organic Chemistry II Laboratory (Major Lower-Division)	5
CHEM 390GW	Contemporary Chemistry and Biochemistry Research - GVAR (Major Upper-Division)	3
Select One Set of Courses (Major Lower-Division): <sup>4</sup>		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 <sup>5</sup>		3
	<b>Units</b>	<b>15</b>

**Sixth Semester**

Select One (Major Upper-Division):		3
CHEM 300	Physical Chemistry for Life Sciences I	
CHEM 351	Physical Chemistry I: Thermodynamics and Kinetics	
CHEM 321 & CHEM 322	Quantitative Chemical Analysis and Quantitative Chemical Analysis Laboratory (Major Upper-Division)	5
Select One (Major Upper-Division):		3
CHEM 340	Biochemistry I	
CHEM 349	General Biochemistry	
GE Area 3UD: Upper-Division Arts or Humanities		3
	<b>Units</b>	<b>14</b>

**Seventh Semester**

CHEM 325	Inorganic Chemistry (Major Upper-Division)	3
GE Area 5UD or 2UD: Upper-Division Sciences or Upper-Division Mathematical Concepts		3
GE Area 4UD: Upper-Division Social and Behavioral Sciences		3
SF State Studies or University Elective - Take Two <sup>5</sup>		6
	<b>Units</b>	<b>15</b>

**Eighth Semester**

Upper-Division Electives <sup>6</sup>		3
SF State Studies or University Elective - Take Four <sup>5</sup>		12
	<b>Units</b>	<b>15</b>
	<b>Total Units</b>	<b>120</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> First-time freshmen must take one lower-division Area 4 course that meets US History (USH).

<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> PHYS 111 and PHYS 112 are prerequisites for PHYS 121 and PHYS 122. PHYS 220 and PHYS 222 are prerequisites for PHYS 240 and PHYS 242.

<sup>5</sup> **Complementary Studies**  
Students in the BA Chemistry program will satisfy the Complementary Studies requirement with the completion of courses in physics and mathematics that are required in the major.

<sup>6</sup> **Upper-Division Electives (3 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/chemistry-biochemistry/ba-chemistry/#degreerequirementstext>).