

# CHEMISTRY, BACHELOR OF SCIENCE

## Requirements

### Total Course Requirements for the Bachelor's Degree

See the "Requirements for the Bachelor's Degree (<https://catalog.csudh.edu/general-information/baccalaureate-degrees-undergraduate-studies/>)" in the University Catalog for complete details on general degree requirements. A minimum of 40 units, including those required for the major, must be upper division.

### Elective Requirements

Completion of elective courses (beyond the requirements listed below) to reach a total of a minimum of 120 units.

### General Education Requirements (49 units)

See the "General Education (<https://catalog.csudh.edu/general-information/double-counting-general-education-courses/general-education/>)" requirements in the University Catalog or the Class Schedule for the most current information on General Education requirements and course offerings.

### Graduation Writing Assessment Requirement

See the "Graduation Writing Assessment Requirement (<https://catalog.csudh.edu/general-information/graduate-writing-examination/>)" in the University Catalog.

### Minor Requirements

Single field major, no minor required.

### Major Requirements (79 units)

The following courses, or their approved transfer equivalents, are required of all candidates for this degree. A grade of "C" or better must be achieved in all courses.

Code	Title	Hours
<b>Lower Division Required Courses</b>		
CHE 110	General Chemistry I	5
CHE 112	General Chemistry II	5
CHE 230	Quantitative Analysis	4
MAT 191	Calculus I	5
MAT 193	Calculus II	5
MAT 211	Calculus III	5
PHY 130	General Physics I	5
PHY 132	General Physics II	5
<b>Upper Division Required Courses</b>		
CHE 310	Organic Chemistry I	4
CHE 311	Organic Chemistry Lab I	1
CHE 312	Organic Chemistry II	3
CHE 313	Organic Chemistry Laboratory II	2
CHE 320	Physical Chemistry I	5
CHE 322	Physical Chemistry II	3
CHE 420	Advanced Applic for Chemistry	2
CHE 431	Adv Integrated Lab I Lec	3
CHE 433	Adv Integrated Lab II Lec	3
CHE 440	Inorganic Chemistry	4

CHE 450	Biochemistry I <sup>1</sup>	4
CHE 451	Biochemistry I Lab	1
CHE 460	Chemical Literature	2
PHY 333	Analog Electronics	3
<b>Total Hours</b>		<b>79</b>

<sup>1</sup> Major students may substitute this course for General Education Area E. Please contact the University Advisement Center to request the course substitution.

## Program Learning Outcomes

1. general familiarity with the following areas in chemistry: analytical, biochemistry, inorganic, organic and physical.
2. developed formal (abstract) thinking skills as well as concrete thinking skills.
3. learned how to think critically and analyze chemical problems
4. the ability to work effectively and safely in a laboratory environment.
5. the ability to work in teams as well as independently.
6. the ability to communicate effectively, both orally and in writing.

## (B.S.) Chemistry Degree Roadmaps

### 4- Year Roadmap

Course	Title	Hours
<b>First Year</b>		
<b>Fall</b>		
GE Area A2 Written Communication		3
CHE 110	General Chemistry I	5
MAT 191	Calculus I	5
HIS 101	History Of United States	3
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
GE Area C1 Arts Courses		3
CHE 112	General Chemistry II	5
MAT 193	Calculus II	5
POL 101	American Institutions	3
<b>Hours</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
CHE 230	Quantitative Analysis	4
GE Area A3 Logic/Critical Thinking		3
PHY 130	General Physics I	5
MAT 211	Calculus III	5
<b>Hours</b>		<b>17</b>
<b>Spring</b>		
PHY 132	General Physics II	5
GE Area C2 Letters Course		3
Addition lower division GE in Area C		3
GE Area D1 Perspectives on Individuals, Groups, and Society		3
GE Area B2 Life Science		3
<b>Hours</b>		<b>17</b>
<b>Third Year</b>		
<b>Fall</b>		
CHE 310	Organic Chemistry I	4
CHE 311	Organic Chemistry Lab I	1
CHE 320	Physical Chemistry I	5
GE Area A1 Oral Communication		3
GE Area D2 Global and Historical Perspectives		3
<b>Hours</b>		<b>16</b>

## 2 Chemistry, Bachelor of Science

<b>Spring</b>			Elective to meet 120 units	3
CHE 420	Advanced Applic for Chemistry	2	<b>Hours</b>	<b>16</b>
CHE 312	Organic Chemistry II	3		
CHE 313	Organic Chemistry Laboratory II	2	<b>Total Hours</b>	<b>64</b>
CHE 322	Physical Chemistry II	3		
GWAR satisfying course		3		
GE Area F Ethnic Studies		3		
	<b>Hours</b>	<b>16</b>		
<b>Fourth Year</b>				
<b>Fall</b>				
GE Area D3 Integrative Studies in the Social Sciences		3		
CHE 431	Adv Integrated Lab I Lec	3		
CHE 450	Biochemistry I	4		
CHE 451	Biochemistry I Lab	1		
CHE 460	Chemical Literature	2		
GE Area E Lifelong Learning and Self-Development		3		
	<b>Hours</b>	<b>16</b>		
<b>Spring</b>				
CHE 440	Inorganic Chemistry	4		
GE Area B5 Integrative Studies in Natural Sciences		3		
GE Area C3 Integrative Studies in the Humanities		3		
CHE 433	Adv Integrated Lab II Lec	3		
PHY 333	Analog Electronics	3		
	<b>Hours</b>	<b>16</b>		
	<b>Total Hours</b>	<b>130</b>		

## 2-Year Roadmap (transfer students)

Course	Title	Hours
<b>First Year</b>		
<b>Fall</b>		
CHE 310	Organic Chemistry I	4
CHE 311	Organic Chemistry Lab I	1
CHE 320	Physical Chemistry I	5
GE Area C3 Integrative Studies in the Humanities		3
Elective to meet 120 units		3
	<b>Hours</b>	<b>16</b>
<b>Spring</b>		
CHE 420	Advanced Applic for Chemistry	2
CHE 312	Organic Chemistry II	3
CHE 313	Organic Chemistry Laboratory II	2
CHE 322	Physical Chemistry II	3
GWAR satisfying course		3
Elective to meet 120 units		3
	<b>Hours</b>	<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
GE Area B5 Integrative Studies in Natural Sciences		3
CHE 431	Adv Integrated Lab I Lec	3
CHE 450	Biochemistry I	4
CHE 451	Biochemistry I Lab	1
CHE 460	Chemical Literature	2
Elective to meet 120 units		3
	<b>Hours</b>	<b>16</b>
<b>Spring</b>		
CHE 440	Inorganic Chemistry	4
GE Area D3 Integrative Studies in the Social Sciences		3
CHE 433	Adv Integrated Lab II Lec	3
PHY 333	Analog Electronics	3