

# Bachelor of Science in Chemistry

The Bachelor of Science in Chemistry program is certified by Committee on Professional Training of the American Chemical Society. It is designed for the student who plans a career in chemistry or a related field upon graduation or plans to go on to graduate school in the chemical sciences.

It is also an option for students interested in medicine, pharmaceutical sciences, clinical laboratory science, forensics, environmental science, as well as industries such as petrochemicals, instrumentation, food, nutraceuticals, or cosmetics. The program provides foundational course work in the sub-disciplinary areas of organic, inorganic, physical, analytical, and biochemistry with cognate course work in biology, mathematics and physics. A concentration in biochemistry or chemistry is required.

The chemistry option requires in-depth courses in instrumental analysis, an inorganic chemistry lab, materials or polymer chemistry, one upper-division chemistry elective, and completion of a senior project. The biochemistry option requires additional biology and biochemistry course and laboratory work, and may be more appropriate for students interested in the biotech industry, medical, or pharmacy school.

Note the following: BS Chemistry majors pursuing a Chemistry Concentration will fulfill the Upper Division Scientific Inquiry GE B5 requirement by taking the following courses: CHEM 3200, CHEM 4550, and either CHEM 5850 or CHEM 5860.

BS Chemistry majors pursuing a Biochemistry Concentration will fulfill the Upper Division Scientific Inquiry GE B5 requirement by taking the following courses: CHEM 3200, CHEM 4750, and CHEM 5700.

## Requirements (80-81 units)

Total units required for graduation: 120

## Requirements for the B.S. Chemistry

### Lower-division requirements (37)

BIOL 2010	Principles of Biology I	5
CHEM 2100	General Chemistry I	4
CHEM 2100L	General Chemistry I Laboratory	1
CHEM 2200	General Chemistry II	4
CHEM 2200L	General Chemistry II Laboratory	1
MATH 2210	Calculus I	4
MATH 2220	Calculus II	4
MATH 2310	Applied Linear Algebra	4
PHYS 2500	General Physics I	4
PHYS 2500L	General Physics I Lab	1
PHYS 2510	General Physics II	4
PHYS 2510L	General Physics II Lab	1

### Upper-division requirements (19)

CHEM 3200	Quantitative Analysis	4
CHEM 3400	Principles of Organic Chemistry I	5
CHEM 3500	Principles of Organic Chemistry II	5

Note: The organic chemistry requirement may be met with the following five courses (13 units) instead of Chem 3400 and Chem 3500:

CHEM 2400	Organic Chemistry I Lecture	
CHEM 2400L	Organic Chemistry I Laboratory	
CHEM 2500	Organic Chemistry II	
CHEM 2500L	Organic Chemistry II Laboratory	
CHEM 3600	Intermediate Organic Chemistry	
CHEM 4100	Biochemistry I	3
CHEM 4100L	Biochemistry I Laboratory	1
CHEM 5800	Chemistry Seminar	1
CHEM 5990	Undergraduate Comprehensive Examination	0
<b>Select one of the following two concentrations to complete the major (24-25)</b>		<b>24 or 25</b>
<b>Total Units</b>		<b>80-81</b>

## Concentrations (24-25 units)

### Chemistry Concentration (24-25 units)

(Program Code: CHEM)

Choose one of the following: 3  
or  
4

MATH 2270	Differential Equations with Dynamical Systems I	
MATH 2320	Multivariable Calculus	
CHEM 4300	Inorganic Chemistry	4
CHEM 4400	Physical Chemistry I	3
CHEM 4500	Physical Chemistry II	3
CHEM 4550	Physical Chemistry Laboratory	1

Choose one of the following: 2

CHEM 5100	Polymer Science	
CHEM 5150	Materials Chemistry	
CHEM 5200	Instrumental Analysis	5

Choose one of the following: 1

CHEM 5850	Chemistry Senior Project	
CHEM 5860	Chemistry Senior Research	

Elective: Choose at least 2 units from the following list: 2

CHEM 4200	Biochemistry II	
CHEM 5001	Topics in Chemistry	
CHEM 5001L	Topics in Chemistry Laboratory	
CHEM 5002	Topics in Chemistry	
CHEM 5300	Environmental Chemistry	
CHEM 5320	Atmospheric Chemistry	
CHEM 5400	Chemistry of the Elements	
CHEM 5420	Pyrotechnics	
CHEM 5500	Medicinal Chemistry	
CHEM 5550	Computational Chemistry	
CHEM 5751	Internship in Chemistry	
CHEM 5752	Internship in Chemistry	
CHEM 5753	Internship in Chemistry	
CHEM 5901	Directed Laboratory Research	
CHEM 5902	Directed Laboratory Research	
CHEM 5903	Directed Laboratory Research	
CHEM 5951	Independent Study	
CHEM 5952	Independent Study	

## CHEM 5953 Independent Study

Additionally either CHEM 5100 or 5150 may be taken to meet this requirement provided that this course was not taken to satisfy an above requirement.

---

**Total Units** **24-25**

### Biochemistry Concentration (25 units)

(Program Code: CBIO)

BIOL 2020	Principles of Biology II	5
Choose one upper-division biology course from the following:		4
BIOL 3100	Cell Biology	
BIOL 3120	Molecular Biology	
BIOL 3200	Microbiology	
BIOL 3300	Genetics	
CHEM 4200	Biochemistry II	3
CHEM 4200L	Biochemistry II Laboratory	1
CHEM 4350	Bioinorganic Chemistry	3
CHEM 4600	Physical Chemistry for Biochemists I	3
CHEM 4700	Physical Chemistry for Biochemists II	3
CHEM 4750	Physical Chemistry for Biochemists Laboratory	1
CHEM 5700	Biochemistry III Laboratory	2
<b>Total Units</b>		<b>25</b>