B.S. Chemistry Requirements

The Chemistry major focuses on developing an understanding of our world from atomic to macroscopic perspectives. It couples theoretical foundations in organic, inorganic, physical, analytical and biochemistry with hands-on laboratory experience involving state-of-the-art instrumentation. This major prepares students for graduate study in chemistry and related disciplines, and for careers in pharmaceutical industries, environmental testing, manufacturing, food science, etc. The track in Applied Chemistry provides the flexibility to pursue courses in areas such as business, supply chain management, criminal justice, computer science, and math to suit individualized career trajectories.

Note that all students must achieve 120 undergraduate credits and a minimum 2.0 overall GPA to graduate. The final major GPA requirement for Chemistry is 2.0.

Required Chemistry Core Courses – 42 credits

CHEM 100 General Chemistry I (4 credits)
CHEM 102 General Chemistry II (4 credits)
CHEM 214 Organic Chemistry I (4 credits)
CHEM 216 Organic Chemistry II (4 credits)
CHEM 230 Analytical Chemistry I (4 credits)
CHEM 310 Biochemistry I (4 credits)
CHEM 314 Physical Chemistry I (4 credits)
CHEM 316 Physical Chemistry II (4 credits)
CHEM 320 Advanced Inorganic Chemistry (4 credits)
CHEM 340 Analytical Chemistry II (4 credits)
CHEM 380 Senior Seminar in Chemistry (2 credits)

Chemistry Major Electives – 7 credits

Chemistry Electives – 3-7 credits

At least 3 credits must be from the CHEM prefix courses listed. The combined credit total toward the major program for CHEM 370, CHEM 371, CHEM 372, and CHEM 373 may not exceed 4 credits. Any additional credit hours count toward University Electives. Some electives are not offered every year.

CHEM 312 Biochemistry II (4 credits)
CHEM 318 Advanced Biochemistry (3 credits)
CHEM 326 Advanced Organic Chemistry (3 credits)
CHEM 336 Advanced Physical Chemistry (3 credits)
CHEM 351 Selected Topics (1-6 credits)
CHEM 370 Research in Chemistry I (1-3 credits)
CHEM 371 Research in Chemistry II (1-3 credits)
CHEM 372 Research in Chemistry III (1-3 credits)
CHEM 373 Research in Chemistry IV (1-3 credits)
CHEM 390 Internship in Chemistry (1-4 credits)

Additional Electives – 0-4 credits
CPSC 123 Introduction to Scientific Programming *or* CPSC 135 Computer Science I (3 credits)
CPSC 223 Advanced Scientific Programming *or* CPSC 136 Computer Science II (3 credits)
MATH 140 Applied Statistical Methods *or* MAT 150 Introduction to Biostatistics (3 credits)
MATH 224 Foundations of Higher Math (3 credits)
MATH 283 Calculus III (4 credits)
SCED 220 Practical Scanning Electron Microscopy (3 credits)
PHYS 220 Electronics (3 credits)
PHYS 230 Optics (3 credits)
PHYS 250 Programming for Experimental Research and Industry (3 credits)

Other Required Courses – 8 credits

Note that MATH 181 Calculus I and PHYS 100 Physics I are included as part of the Directed General Education requirements listed below.
PHYS 102 Physics II (4 credits)
MATH 182 Calculus II (4 credits)

Directed General Education Courses – 12 credits

These courses are required for the major and satisfy the general education requirement "Understanding Science and Technology."
PHYS 100 Physics I – Category C1 (4 credits)
MATH 181 Calculus I – Category C2 (4 credits)
BIOL 104 Principles of Biology – Category C3 (4 credits)

University Electives – 6 to 18 credits

Program Plan Code: BS_CHEM
Effective Date: Fall 2024

B.S. Chemistry Major Check Sheet

Student Name: Student ID Number:

This check sheet provides a mechanism for students and advisors to keep track of a student's progress in the program. Please refer to the program requirements for more details regarding options.

Note that all students must achieve 120 undergraduate credits and a minimum 2.0 overall GPA to graduate. The final major-GPA requirement for Chemistry is 2.0.

Required Chemistry Core Courses – 42 credits

CHEM 100 General Chemistry I	4 credits	Grade:
CHEM 102 General Chemistry II	4 credits	Grade:
CHEM 214 Organic Chemistry I	4 credits	Grade:
CHEM 216 Organic Chemistry II	4 credits	Grade:
CHEM 230 Analytical Chemistry I	4 credits	Grade:
CHEM 310 Biochemistry I	4 credits	Grade:
CHEM 314 Physical Chemistry I	4 credits	Grade:
CHEM 316 Physical Chemistry II	4 credits	Grade:
CHEM 320 Advanced Inorganic Chemistry	4 credits	Grade:
CHEM 340 Analytical Chemistry II	4 credits	Grade:
CHEM 380 Senior Seminar in Chemistry	2 credits	Grade:
Total Credits	42 total credits	

Chemistry Major Electives – 7 credits

Course 1:	credits	Grade:
Course 2:	credits	Grade:
Course 3 (if necessary):	credits	Grade:
Course 4 (if necessary):	credits	Grade:
Course 5 (if necessary):	credits	Grade:
Total Credits	7 total credits	

Other Required Courses – 8 credits

PHYS 102 Physics II	4 credits	Grade:
MATH 182 Calculus II	4 credits	Grade:
Total Credits	8 total credits	

Directed General Education Courses

PHYS 100 Physics I (Category C1)	4 credits	Grade:
MATH 181 Calculus I (Category C2)	4 credits	Grade:
BIOL 104 Principles of Biology (Category C3)	4 credits	Grade:

University Electives – 6 to 18 credits

Course 1:	credits	Grade:
Course 2:	credits	Grade:
Course 3:	credits	Grade:
Course 4:	credits	Grade:
Course 5	credits	Grade:
Course 6:	credits	Grade:
Total Credits	6-18 total credits	

Summary of Graduation Requirements

Total credits from major courses	**57**
Total credits from general education program	**42-45**
Total credits from university electives	**6-18**
Minimum total credits to graduate	**120**
Minimum overall GPA	**2.0**
Minimum GPA in major program	**2.0**

Program Plan Code: BS_CHEM
Effective Date: Fall 2024

B.S. Chemistry 8-Semester Planner

Student Name: Student ID Number:

Each semester listed below provides information including course categories, typical credit hours (CH.), and space to add specific course selections. This planner is a suggested path. Consult with your advisor regarding your unique plans and interests as you make choices about your schedule.

First Semester Plan

Major	CHEM 100	4 CH.	Selection:
Major	MATH 105, 106, 115, *or* 181	3 to 4 CH.	Selection:
Gen Ed	FYSM 100	3 CH.	Selection: FYSM100 -
Gen Ed	Category A1	3 CH.	Selection:
Gen Ed	Category A3 (*COMM 010 for example*)	3 CH.	Selection:
Total		**16-17 CH.**	

Second Semester Plan

Major	CHEM 102	4 CH.	Selection:
Major	MATH 106, 181, *or* 182	3-4 CH.	Selection:
Major	BIOL 104 (Category C3)	4 CH.	Selection:
Gen Ed	Category A2	3 CH.	Selection:
Total		**14-15 CH.**	

Third Semester Plan

Major	CHEM 214	4 CH.	Selection:
Major	PHYS 100 (Category C1)	4 CH.	Selection:
Major	MATH 182 (*if not already completed*)	4 CH.	Selection:
Gen Ed	Category B	3 CH.	Selection:
Total		**15 CH.**	

Fourth Semester Plan

Major	CHEM 216	4 CH.	Selection:
Major	PHYS 102	4 CH.	Selection:
Gen Ed	Category B	3 CH.	Selection:
Gen Ed	Category D	3 CH.	Selection:
Total		**14 CH.**	

Fifth Semester Plan

Major	CHEM 314	4 CH.	Selection:
Major	CHEM 230	4 CH.	Selection:
Gen Ed	Category A4	3 CH.	Selection:
Gen Ed	Category D	3 CH.	Selection:
Total		**14 CH.**	

Sixth Semester Plan

Major	CHEM 316	4 CH.	Selection:
Major	CHEM 340	4 CH.	Selection:
Major	Chemistry Elective	3-4 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Total		**14-15 CH.**	

Seventh Semester Plan

Major	CHEM 310	4 CH.	Selection:
Major	CHEM 380	2 CH.	Selection:
Gen Ed	Category D	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Total		**15 CH.**	

Eighth Semester Plan

Major	CHEM 320	4 CH.	Selection:
Major	Chemistry Elective	3-4 CH.	Selection:
Gen Ed	Category B	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Total		**16-17 CH.**	

Additional Notes:

1. MATH courses are dependent on ALEKS placement exam. If there is no ALEKS score, add BIO 104 instead of MATH. If FYSM or Gen Ed A1 or Gen Ed A3 is filled, replace with Gen Ed B or Gen Ed D for the first semester.
2. The combined credit total toward the major program for CHEM 370, CHEM 371, CHEM 372 & CHEM 373 may not exceed 4 credits. Any additional credit hours count toward University Electives.

Program Plan Code: BS_CHEM
Effective Date: Fall 2024