B.S. Biochemistry Requirements

The Biochemistry major focuses on understanding life at the level of how molecules interact and react, explaining such things as how oxygen is transported in the blood, how food is converted into metabolic energy, and how medicines work within our bodies. The major combines critical thinking and quantitative analysis skills with hands-on laboratory experience using state-of-the-art instrumentation. Students are prepared for graduate programs in Biochemistry and related fields as well as health professional schools including pharmacy, medical, and physician's assistant programs. Students are also prepared for entering directly into the pharmaceutical or biotechnology workforces. Students majoring in Biochemistry choose from one of two tracks: Traditional or Pharmacy, which are differentiated by the math and biology requirements.

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

Required Biochemistry Core Courses – 52 credits

Chemistry – 34 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 312 Biochemistry II (4 credits)
CHEM 314 Physical Chemistry I (4 credits)
CHEM 380 Senior Seminar in Chemistry (2 credits)

Introductory Biology – 8 credits

BIOL 104 Principles of Biology (4 credits)
BIOL 106 Intro to Zoology *or* BIOL 108 Intro to Botany (4 credits)

Genetics/Molecular/Cellular Biology – 6 credits

BIOL 216 Genetics *or* BIOL 346 Molecular Biology (3 credits)
BIOL 350 Cell Biology *or* BIOL 354 Developmental Biology *or* BIOL 356 Immunology (3 credits)

Physics – 4 credits

Note that PHYS 100 Physics I is included as part of Directed General Education requirements listed below.
PHYS 102 Physics II (4 credits)

Biochemistry Major Electives – 7 credits

Note: The combined credits between Chemistry Electives and Biology Electives should total 7 credits with 4-7 from CHEM and 0-3 from BIOL. The combined credit total toward the major program for CHEM 37X & BIOL 370 may not exceed 4 credits.

Chemistry – 4-7 credits

CHEM 300-level (3-4 credits)
CHEM 300-level (3-4 credits)
CHEM 37X Research in Chemistry (1-4 credits)
CHEM 39X Chemistry Elective (1-4 credits)

Biology – 0-3 credits

Any course from Genetics/Molecular/Cell Biology if not used to satisfy those requirements (3 credits)
BIOL 224 Appl. Env. Microbiology (3 credits)

BIOL 232 Plant Physiology (3 credits)
BIOL 235 General Physiology (3 credits)
BIOL 306 Food Microbiology (3 credits)
BIOL 330 Histology (3 credits)
BIOL 334 Medical Parasitology (3 credits)
BIOL 336 Medical Microbiology (3 credits)
BIOL 357 Virology (3 credits)
BIOL 370 Research in Biology (1-3 credits)
BIOL 390 Internship in Biology (3-6 credits)
BIOL 460 Cancer Biology (3 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)
MATH 182 Calculus II – Category C3 (4 credits)

University Electives – 4 to 16 credits

Program Plan Code: BS_BIOC
Effective Date: Spring 2020

B.S. Biochemistry 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 GPA requirement for Biochemistry is 2.0.

Chemistry Courses - 34 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 312 Biochemistry II	4 credits	Grade:
CHEM 314 Physical Chemistry I	4 credits	Grade:
CHEM 380 Senior Seminar in Chem.	2 credits	Grade:
Total Credits	34 total credits	

Introductory Biology – 8 credits

BIOL 104 Principles of Biology	4 credits	Grade:
BIOL 106 Intro. to Zoology *or* BIOL 108 Intro. to Botany	4 credits	Grade:
Total Credits	8 credits	

Genetics / Molecular / Cellular Biology – 6 credits

Course 1:	3 credits	Grade:
Course 2:	3 credits	Grade:
Total Credits	6 total credits	

Physics – 4 Credits

PHYS 102 Physics II	4 credits	Grade:
Total Credits	4 total credits	

Biochemistry Major Electives – 7 credits

The combined credits between Chemistry Electives and Biology Electives should total 7 credits with 4-7 from CHEM and 0-3 from BIOL. The combined credit total toward the major program for CHEM 37X & BIOL 370 may not exceed 4 credits. See program requirements for course options.

Course 1:	credits	Grade:
Course 2:	credits	Grade:
Course 3 (if needed):	credits	Grade:
Total Credits	7 total credits	

Directed General Education Courses

PHYS 100 Physics I	4 credits	Grade:
MATH 181 Calculus	4 credits	Grade:
MATH 182 Calculus	4 credits	Grade:

University Electives – 4 to 16 credits

Course 1:	credits	Grade:
Course 2:	credits	Grade:
Course 3:	credits	Grade:
Course 4:	credits	Grade:
Course 5:	credits	Grade:
Total Credits	4-16 total credits	

Summary of Graduation Requirements

Total credits from major courses	**59**
Total credits from general education program	**42-45**
Total credits from university electives	**4-16**
Minimum total credits to graduate	**120**
Minimum overall GPA	**2.0**
Minimum GPA in major program	**2.0**

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Effective Date: Spring 2020

B.S. Biochemistry 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

Gen Ed	MATH 105, MATH 106, MATH 115, *or* MATH 181	3-4 CH.	Selection:
Gen Ed	FYSM 100	3 CH.	Selection: FYSM100 -
Major	CHEM 100	4 CH.	Selection:
Major	BIOL 104	4 CH.	Selection:
Total		**14-15 CH.**	

Second Semester Plan

Gen Ed	Category A1	3 CH.	Selection:
Gen Ed	MATH 181 *or* MATH 182	4 CH.	Selection:
Major	CHEM 102	4 CH.	Selection:
Major	BIOL 106	4 CH.	Selection:
Total		**15 CH.**	

Third Semester Plan

Gen Ed	Category A2	3 CH.	Selection:
Gen Ed	PHYS 100	4 CH.	Selection:
Gen Ed	MATH 182	4 CH.	Selection:
Major	CHEM 214	4 CH.	Selection:
Total		**15 CH.**	

Fourth Semester Plan

Gen Ed	Category A3	3 CH.	Selection:
Major	PHYS 102	4 CH.	Selection:
Major	BIOL 216 *or* BIOL 346	3 CH.	Selection:
Major	CHEM 216	4 CH.	Selection:
Total		**14 CH.**	

Fifth Semester Plan

Gen Ed	Category A4	3 CH.	Selection:
Gen Ed	Category B	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Major	CHEM 230	4 CH.	Selection:
Major	CHEM 310	4 CH.	Selection:
Total		**17 CH.**	

Sixth Semester Plan

Gen Ed	Category B	3 CH.	Selection:
Gen Ed	Category D	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Major	CHEM 312	4 CH.	Selection:
Major	Biochemistry Elective (BIOL *or* CHEM)	3-4 CH.	Selection:
Total		**17 CH.**	

Seventh Semester Plan

Gen Ed	Category B	3 CH.	Selection:
Gen Ed	Category D	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Major	CHEM 314	4 CH.	Selection:
Major	Biochemistry Elective (BIOL *or* CHEM)	3-4 CH.	Selection:
Total		**16-17 CH.**	

Eighth Semester Plan

Gen Ed	Category D	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Major	CHEM 380	2 CH.	Selection:
Major	BIOL 350, BIOL 354, *or* BIOL 356	3 CH.	Selection:
Total		14 CH.	

Additional Notes:

1. Instead of BIOL106 in the Spring Freshman Year, BIOL108 - Intro. to Botany could be taken in the Fall.
2. Students may be at a different level of Calculus but should continue within the MATH sequence depending on the initial mathematics course taken.
3. 4 to 7 CH. (credits) are required for CHEM electives, 0-3 CH. are required for BIOL electives.
4. Pre-health profession students may want to take BIOL 121 and BIOL 122 (Anatomy and Physiology I and II) or BIOL 264 and BIOL 235 (Comparative Anatomy and General Physiology) as free electives in the Fall and Spring of the third or fourth year.

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