

# BIOCHEMISTRY MAJOR

## Requirements

The biochemistry sequence places a greater emphasis on biochemistry and the life sciences. Students pursuing this track will be well prepared for professional schools in the life sciences, graduate schools in biochemistry and the more traditional fields of chemistry, as well as employment in chemical, environmental, or health-related fields.

For a major in biochemistry, students complete the following:

Code	Title	Credits
BIOL 1171 & 1171L	General Biology I and General Biology I Lab	4
BIOL 1172 & 1172L	General Biology II and General Biology II Lab	4
BIOL 1173 & 1173L	General Biology III and General Biology III Lab	4
CHEM 1171 & 1171L	General Chemistry I and General Chemistry I Lab	4
CHEM 1172 & 1172L	General Chemistry II and General Chemistry II Lab	4
CHEM 2271 & 2271L	Organic Chemistry I and Organic Chemistry I Lab	4
CHEM 2272 & 2272L	Organic Chemistry II and Organic Chemistry II Lab	4
CHEM 2282 & 2282L	Chemical Analysis and Chemical Analysis Lab	4
CHEM/BIOL 3323L	Biochemistry Lab	1
CHEM/BIOL 3324	Biochemistry I	3
CHEM/BIOL 3325	Biochemistry II	3
CHEM 3361 & 3361L	Physical Chemistry I and Physical Chemistry I Lab	4
CHEM 3362 & 3362L	Physical Chemistry II and Physical Chemistry II Lab	4
MATH 1141 or MATH 1171	Calculus I for Chemistry, Engineering, and Physics Majors Calculus I	4
MATH 1142 or MATH 1172	Calculus II for Chemistry, Engineering, and Physics Majors Calculus II	4
MATH 2217 or MATH 2243 or MATH 2273	Statistics I Calculus III for Chemistry, Engineering, and Physics Majors Multivariable Calculus	3-4
PHYS 1171 & 1171L	General Physics I and General Physics I Lab	4
PHYS 1172 & 1172L	General Physics II and General Physics II Lab	4
Select one biology elective from the list below		3-4
Select one chemistry elective from the list below		5-6
<b>Total Credits</b>		<b>74-77</b>

## Biology Electives

Code	Title	Credits
BIOL 2261	Genetics	4
BIOL 3327	Cell Biology	4
BIOL 3342	Developmental Biology	4
BIOL 3352	Fundamentals of Microbiology	4
BIOL 3354	Molecular Biology	3
BIOL 3356	Immunology	3
BIOL 3357	General Virology	3

## Chemistry Electives

**Note:** A student pursuing a biochemistry major who takes both chemistry electives is eligible for ACS certification.

Code	Title	Credits
CHEM 3326 & 3326L	Chemical Instrumentation and Instrumental-Analytical Chemistry Lab	6
CHEM 3341 & 3341L	Advanced Inorganic Chemistry and Advanced Inorganic Chemistry Lab (Lab is highly recommended)	5

## ACS Certified Curriculum

For a BS in biochemistry certified by the American Chemical Society, a student must take both Chemistry electives (CHEM 3326 and CHEM 3341) with labs.

Due to the additional lab component of the biochemistry major, CHEM 4971 is recommended but not required for the BS with ACS certification.

## Plan of Study

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
BIOL 1171 & 1171L	General Biology I and General Biology I Lab	4
CHEM 1171 & 1171L	General Chemistry I and General Chemistry I Lab	4
MATH 1141 or MATH 1171	Calculus I for Chemistry, Engineering, and Physics Majors or Calculus I	4
Core Courses		6
<b>Credits</b>		<b>18</b>
<b>Spring</b>		
BIOL 1172 & 1172L	General Biology II and General Biology II Lab	4
CHEM 1172 & 1172L	General Chemistry II and General Chemistry II Lab	4
MATH 1142 or MATH 1172	Calculus II for Chemistry, Engineering, and Physics Majors or Calculus II	4
Core Courses		6
<b>Credits</b>		<b>18</b>

<b>Second Year</b>		
<b>Fall</b>		
BIOL 1173 & 1173L	General Biology III and General Biology III Lab	4
CHEM 2271 & 2271L	Organic Chemistry I and Organic Chemistry I Lab	4
PHYS 1171 & 1171L	General Physics I and General Physics I Lab	4
Select one of the following:		3-4
MATH 2217	Statistics I	
MATH 2243	Calculus III for Chemistry, Engineering, and Physics Majors	
MATH 2273	Multivariable Calculus	
Core Courses and Electives		3
<b>Credits</b>		<b>18-19</b>

<b>Spring</b>		
CHEM 2272 & 2272L	Organic Chemistry II and Organic Chemistry II Lab	4
CHEM 2282 & 2282L	Chemical Analysis and Chemical Analysis Lab	4
PHYS 1172 & 1172L	General Physics II and General Physics II Lab	4
Core Courses and Electives		6
<b>Credits</b>		<b>18</b>

<b>Third Year</b>		
<b>Fall</b>		
CHEM 3361 & 3361L	Physical Chemistry I and Physical Chemistry I Lab	4
Core Courses and Electives		9
<b>Credits</b>		<b>13</b>

<b>Spring</b>		
CHEM 3323L or BIOL 3323L	Biochemistry Lab <sup>1</sup> or Biochemistry Lab	1
CHEM 3324 or BIOL 3324	Biochemistry I or Biochemistry I	3
CHEM 3362 & 3362L	Physical Chemistry II and Physical Chemistry II Lab	4
Biology Elective		3-4
Core Courses and Electives		9
<b>Credits</b>		<b>20-21</b>

<b>Fourth Year</b>		
<b>Fall</b>		
CHEM 3323L or BIOL 3323L	Biochemistry Lab <sup>1</sup> or Biochemistry Lab	1
CHEM 3325 or BIOL 3325	Biochemistry II or Biochemistry II	3
Chemistry Elective		3-5
Core Courses and Electives		6-9
<b>Credits</b>		<b>13-18</b>

<b>Spring</b>		
Chemistry Elective		3

Core Courses and Electives	9
<b>Credits</b>	<b>12</b>
<b>Total Credits</b>	<b>130-137</b>

<sup>1</sup> Biochemistry Lab is taken only once, concurrently with CHEM 3324 / BIOL 3324 or CHEM 3325 / BIOL 3325.

Students are encouraged to meet with their academic advisors in the Department to discuss variations of the recommended Plan of Study, for example to pursue study abroad and/or research opportunities.