# BIOLOGICAL CHEMISTRY

Department Website: [http://chemistry.uchicago.edu/kb](http://chemistry.uchicago.edu/kb)

## PROGRAM OF STUDY

The Department of Chemistry, in conjunction with the Department of Biochemistry and Molecular Biology (BCMB) in the Division of the Biological Sciences, offers a BS degree in Biological Chemistry. The program is designed to prepare students to enter a variety of interdisciplinary fields in biochemical and biophysical sciences. Undergraduate research is strongly encouraged. By combining resources of both departments, students in this program are given the opportunity to study chemistry and physics of macromolecules, mechanisms of actions of enzymes and hormones, molecular and cellular biology, biotechnology, and other related fields.

## SUMMARY OF REQUIREMENTS

### GENERAL EDUCATION

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 11100-11200</td>
<td>Comprehensive General Chemistry I-II</td>
<td>200</td>
</tr>
<tr>
<td>One of the following sequences:</td>
<td></td>
<td>200</td>
</tr>
<tr>
<td>MATH 15100-15200</td>
<td>Calculus I-II</td>
<td></td>
</tr>
<tr>
<td>MATH 16100-16200</td>
<td>Honors Calculus I-II</td>
<td></td>
</tr>
<tr>
<td>MATH 13100-13200</td>
<td>Elementary Functions and Calculus I-II (requires grade of A- or higher)</td>
<td></td>
</tr>
<tr>
<td>BIOS 20186</td>
<td>Fundamentals of Cell and Molecular Biology</td>
<td>100</td>
</tr>
<tr>
<td>BIOS 20187</td>
<td>Fundamentals of Genetics (or AP credit, if an AP 5 Fundamentals Sequence is completed)</td>
<td>100</td>
</tr>
</tbody>
</table>

Total Units: 600

### MAJOR

**One of the following:**
- CHEM 11300 Comprehensive General Chemistry III
- CHEM 12300 Honors General Chemistry III

**One of the following:**
- MATH 18300 Mathematical Methods in the Physical Sciences I
- STAT 24300 Numerical Linear Algebra
- MATH 19620 Linear Algebra
- MATH 20250 Abstract Linear Algebra
- MATH 18400 & MATH 18500 Mathematical Methods in the Physical Sciences II and Mathematical Methods in the Physical Sciences III
- CHEM 20100 Inorganic Chemistry I
- PHYS 12100-12200-12300 General Physics I-II-III (or higher)

**One of the following sequences:**
- CHEM 22000-22100-22200 Organic Chemistry I-II-III
- CHEM 23000-23100-23200 Honors Organic Chemistry I-II-III
- CHEM 26100 & CHEM 26200 Quantum Mechanics and Thermodynamics
- CHEM 26700 Experimental Physical Chemistry

**One of the following:**
- CHEM 20200 Inorganic Chemistry II
- CHEM 23300 Intermediate Organic Chemistry
- CHEM 26300 Chemical Kinetics and Dynamics

**One appropriate 20000-level course in Biology (under the category Advanced-Level Courses)**
- BIOS 20200 Introduction to Biochemistry
- BIOS 21317 Topics in Biological Chemistry
- One approved 30000-level biochemistry or chemistry course

Total Units: 1900
By their third year, students majoring in Biological Chemistry are strongly encouraged to participate in research with a faculty member. For more information on research opportunities and honors in Biological Chemistry, visit chemistry.uchicago.edu/undergraduate-chemistry-major-and-research/.

Excellent students who pursue a substantive research project with a faculty member in the Department of Chemistry or the Department of Biochemistry and Molecular Biology should plan to submit an honors thesis based on their work. Students usually begin this research program during their third year, and they continue their research activities through the following summer and their fourth year. To be considered for honors, students are expected to complete their arrangements with the departmental counselor before the end of their third year and to register for one quarter of CHEM 29900 Advanced Research in Chemistry or one year of CHEM 29600 Research in Chemistry during their third or fourth years.
A BS with honors in Biological Chemistry requires students to write a creditable honors paper describing their research. The paper must be approved by the program advisers in the Department of Chemistry and the Department of Biochemistry and Molecular Biology, and it must be submitted before the deadline established by the department. In addition, an oral presentation of the research is required.

To earn a BS degree with honors in Biological Chemistry, students must also have an overall GPA of 3.0 or higher.

**JOINT DEGREE PROGRAM**

A four-year joint degree program leading to a concurrent award of the BS in Biological Chemistry and the MS in Chemistry is available for a select group of students who have achieved advanced standing through their performance on placement or on accreditation examinations. Special programs are developed for such students. For more information, consult John Anderson at jsanderson@uchicago.edu and Vera Dragisich at vdragisi@uchicago.edu in the Chemistry Department.