Biochemistry, B.A.

To maximize student flexibility, the curriculum for the B.A. with a major in biochemistry is identical to the B.S. degree in the first two years of study.

Requirements

The Bachelor of Arts with a major in biochemistry requires a minimum of 120 s.h., including 58 s.h. of work for the major. Students must maintain a g.p.a. of at least 2.00 in all courses for the major and in all UI courses for the major. They also must complete the College of Liberal Arts and Sciences GE CLAS Core.

The biochemistry major for the Bachelor of Arts degree provides a rigorous education in biochemical concepts and practice in the laboratory while giving students flexibility to specialize in additional disciplines or to obtain clinical volunteer experience. The B.A. program is intended for most students majoring in biochemistry, including those with pre-medicine, pre-pharmacy, pre-dental, and other pre-health professions interests. It also is appropriate for students earning more than one major.

Qualified students may graduate with honors in the biochemistry major; see “Honors in the Major” under Honors [p. 1] in this section of the Catalog.

The B.A. with a major in biochemistry requires the following course work.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Common Requirements</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>Additional Requirements</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Total Hours</td>
<td>58</td>
</tr>
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</table>

Common Requirements

Students complete the following during their first two years.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC:3120 &amp; BIOC:3130</td>
<td>Biochemistry and Molecular Biology I-II</td>
<td>6</td>
</tr>
<tr>
<td>BIOC:3140</td>
<td>Experimental Biochemistry</td>
<td>2</td>
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<tr>
<td>BIOL:1411-1412</td>
<td>Foundations of Biology - Diversity of Form and Function</td>
<td>8</td>
</tr>
<tr>
<td>CHEM:1110 &amp; CHEM:1120</td>
<td>Principles of Chemistry I-II</td>
<td>8</td>
</tr>
<tr>
<td>CHEM:2210 or CHEM:2230</td>
<td>Organic Chemistry I for Majors</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:2220 or CHEM:2240</td>
<td>Organic Chemistry II for Majors</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:2410</td>
<td>Organic Chemistry Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM:2420</td>
<td>Organic Chemistry Laboratory for Majors</td>
<td></td>
</tr>
<tr>
<td>MATH:1850 &amp; MATH:1860</td>
<td>Calculus I-II</td>
<td>8</td>
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<tr>
<td>PHYS:1511 or PHYS:1611</td>
<td>College Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS:1512 or PHYS:1612</td>
<td>College Physics II</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOC:4241</td>
<td>Biophysical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>BIOC:4242</td>
<td>Biophysical Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:4430</td>
<td>Principles of Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:4431</td>
<td>Physical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:4432</td>
<td>Physical Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>And: Advanced science electives, approved by biochemistry advisor</td>
<td>6</td>
<td></td>
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</tbody>
</table>

Students intending to earn advanced degrees in the biological or health sciences are advised to earn at least 4 s.h. in BIOC:3993 Undergraduate Biochemistry Research or BIOC:4999 Advanced Undergraduate Biochemistry Research. There are no prerequisites for BIOC:3993. The course involves experience in an active biochemistry research lab, which must be arranged ahead of time with a supervising faculty member. Students may make arrangements directly with the faculty member, or they may request assistance from an undergraduate advisor. Credit earned in BIOC:3993 does not count toward the major, but it does count toward the minimum of 120 s.h. required to graduate.

Before students register for BIOC:4999 Advanced Undergraduate Biochemistry Research, they must have completed BIOC:3120 Biochemistry and Molecular Biology I, BIOC:3130 Biochemistry and Molecular Biology II, BIOC:3140 Experimental Biochemistry, and BIOC:3150 Development of Senior Research Project, with a grade of B-minus or higher in each course. Students also are required to have prior research experience, such as in BIOC:3993 Undergraduate Biochemistry Research, URES:3994 Undergraduate Research and Creative Projects, or HONR:3994 Honors Research Practicum, and permission of the instructor.

Teacher Licensure

Students interested in teaching in elementary and/or secondary schools should seek admission to the Teacher Education Program (TEP) in the College of Education.

To qualify for licensure in secondary teaching, students in the TEP complete a degree in education as well as a related College of Liberal Arts and Sciences degree. See Teacher Education Program Application and Admission on the College of Education website for details on requirements and deadlines for applying to the College of Education and about TEP choices of majors leading to licensure.

Honors

Honors in the Major

Students have the opportunity to graduate with honors in the major. Departmental honors students must maintain a cumulative University of Iowa g.p.a. of at least 3.33. They must earn 6 s.h. in BIOC:4999 Advanced Undergraduate Biochemistry Research and present their research results in a
honors thesis written in the form of a journal article and in an oral report given at a special open departmental seminar.

University of Iowa Honors Program

In addition to honors in the major, students have opportunities for honors study and activities through membership in the University of Iowa Honors Program. Visit Honors at Iowa to learn about the University’s honors program.

Membership in the UI Honors Program is not required to earn honors in the biochemistry major.

Academic Plans

Four-Year Graduation Plan

The following checkpoints list the minimum requirements students must complete by certain semesters in order to stay on the University’s Four-Year Graduation Plan. Courses in the major are those required to complete the major; they may be offered by departments other than the major department.


Before the seventh semester begins: PHYS:1611 Introductory Physics I or PHYS:1511 College Physics I, PHYS:1612 Introductory Physics II or PHYS:1512 College Physics II, BIOC:3120 Biochemistry and Molecular Biology I, BIOC:3130 Biochemistry and Molecular Biology II, BIOC:3140 Experimental Biochemistry, a science elective, and at least 90 s.h. earned toward the degree

Before the eighth semester begins: CHEM:4430 Principles of Physical Chemistry or CHEM:4431 Physical Chemistry I or CHEM:4432 Physical Chemistry II or BIOC:4241 Biophysical Chemistry I or BIOC:4242 Biophysical Chemistry II, and a science elective

During the eighth semester: enrollment in all remaining course work in the major, all remaining GE CLAS Core courses, and a sufficient number of semester hours to graduate

Sample Plan of Study

Sample plans represent one way to complete a program of study. Actual course selection and sequence will vary and should be discussed with an academic advisor. For additional sample plans, see MyUI.

Biochemistry, B.A.

Course Title Hours

Academic Career

Any Semester

Students in good academic standing can switch from the B.A. to the B.S. degree program after completing one semester of organic chemistry (CHEM:2230 Organic Chemistry I for Majors or CHEM:2210 Organic Chemistry I).

First Year

Fall

Course Title Hours

CHEM:1110 Principles of Chemistry I 4
MATH:1850 Calculus I 4
ENGL:1200 or RHET:1030 The Interpretation of Literature or Rhetoric 3 - 4
Elective course 1

Hours 14-15

Spring

Course Title Hours

CHEM:1120 Principles of Chemistry II 4
ENGL:1200 or RHET:1030 The Interpretation of Literature or Rhetoric 3 - 4
MATH:1860 Calculus II 4
GE CLAS Core: Diversity and Inclusion 3
Elective course 1

Hours 15-16

Second Year

Fall

Course Title Hours

BIOL:1411 Foundations of Biology 4
CHEM:2210 or CHEM:2230 Organic Chemistry I or Organic Chemistry I for Majors 3
GE CLAS Core: Historical Perspectives 3
GE CLAS Core: World Languages First Level Proficiency or elective course 4 - 5
Elective course 2

Hours 16-17

Spring

Course Title Hours

BIOL:1412 Diversity of Form and Function 4
CHEM:2220 or CHEM:2240 Organic Chemistry II for Majors or Organic Chemistry Laboratory for Majors 3
GE CLAS Core: World Languages Second Level Proficiency or elective course 4 - 5
Elective course 2

Hours 16-17

Third Year

Fall

Course Title Hours

BIOC:3120 Biochemistry and Molecular Biology I 3
PHYS:1511 or PHYS:1611 College Physics I or Introductory Physics I 4
Major: research or science elective (consult with advisor) 3 - 4
GE CLAS Core: Values and Culture 3

Hours 16-17
GE CLAS Core: World Languages Second Level Proficiency or elective course 4 - 5

Hours 17-18

Spring

BIOC:3130  Biochemistry and Molecular Biology II 3

BIOC:3140  Experimental Biochemistry 2

PHYS:1612  Introductory Physics II b 4
or PHYS:1512  or College Physics II

GE CLAS Core: Literary, Visual, and Performing Arts 3

GE CLAS Core: World Languages Fourth Level Proficiency or elective course 4 - 5

Hours 16-17

Fourth Year

Fall

CHEM:4431  or BIOC:4241  or CHEM:4430  Physical Chemistry I 3
or Biophysical Chemistry I or Principles of Physical Chemistry

Major: research, independent study, or elective (consult with advisor) g, h 3

Major: science elective (consult with advisor) g 3

GE CLAS Core: International and Global Issues e 3

Elective course d 3

Hours 15

Spring

Major: research, independent study, or elective (consult with advisor) g, h 3

Major: science elective (consult with advisor) g 3

GE CLAS Core: Social Sciences e 3

Elective course d 3

Elective course d 3

Degree Application: apply on MyUI before deadline (typically in February for spring, September for fall) i

Hours 15

Total Hours 124-130

Career Advancement

Biochemistry graduates with bachelor's degrees often work as research assistants in industry, government, education, or health services; teach in secondary schools; or go on to advanced study in medicine, dentistry, or other areas. The program offers solid preparation for careers in medicine, biology, chemistry, dentistry, research, or related sciences. About one-third of biochemistry majors go on to study medicine; others enter graduate programs or professional degree programs.

The Pomerantz Career Center offers multiple resources to help students find internships and jobs.