Biomedical Sciences, B.S.

Requirements

The Bachelor of Science with a major in biomedical sciences requires a minimum of 120 s.h., including at least 78-83 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 General Education Program.

The interdisciplinary major provides an excellent foundation for medical training and for research and/or practice in the chemical, genetic, cellular, and physiological bases of human disease. The curriculum includes required and elective course work in biochemistry, biology, chemistry, health and human physiology, mathematics, microbiology and immunology, physics, psychology, sociology, and statistics. Students who wish to apply transfer credit toward the major should consult their departmental advisor.

The B.S. with a major in biomedical sciences requires the following course work.

| Required Courses | 62-63 |
| Elective Courses | 16-20 |
| **Total Hours** | **78-83** |

**Required Courses**

Students complete the following course work (62-63 s.h.).

**Chemistry**

All of these:

- BIOC:3120 Biochemistry and Molecular Biology I 3
- BIOC:3130 Biochemistry and Molecular Biology II 3
- CHEM:1110 Principles of Chemistry I 4
- CHEM:1120 Principles of Chemistry II 4
- CHEM:2210 Organic Chemistry I 3
- CHEM:2220 Organic Chemistry II 3

**Life Sciences**

All of these:

- BIOL:1411 Foundations of Biology 4
- BIOL:2211 Genes, Genomes, and the Human Condition 3
- BIOL:3373 Human Population Genetics and Variation 3
- HHP:3500 Human Physiology 3
- MICR:2157 General Microbiology - General Microbiology Laboratory (both courses must be taken in the same semester) 5

**Mathematics**

One of these:

- MATH:1460 Calculus for the Biological Sciences 4
- MATH:1550 Engineering Mathematics I: Single Variable Calculus 4

**Statistics**

This course:

- STAT:3510 Biostatistics 3

**Physics**

One of these sequences:

- PHYS:1511 College Physics I-II 8
- PHYS:1512
- PHYS:1611 Introductory Physics I-II 8
- PHYS:1612

**Elective Courses**

Students complete a total of 16-20 s.h. of elective course work chosen from the following lists.

**Lecture Courses**

Two of these:

- BIOC:5241 Biophysical Chemistry I 3
- BIOL:2254 Endocrinology 3
- BIOL:2723 Cell Biology 3
- BIOL:2753 Introduction to Neurobiology 3
- BIOL:3233 Introduction to Developmental Biology 3
- BIOL:3343 Animal Physiology 3
- BIOL:4213 Bioinformatics 4
- MICR:3147 Immunology and Human Disease 3
- MICR:3168 Viruses and Human Disease 3

**Chemistry Lab**

One of these:

- BIOC:3140 Experimental Biochemistry 2
- CHEM:2410 Organic Chemistry Laboratory 3

**Investigative Lab**

One of these:

- BIOL:3626 Cell Biology Laboratory 4
- BIOL:3656 Neurobiology Laboratory 4
- BIOL:3676 Evolution Lab 4
- BIOL:3716 Genetics and Biotechnology Lab 4
- BIOL:3736 Developmental Biology Lab 4

**Experimental Learning**

One of these:

- Honors research course 6
- Additional lab course 4

**Honors**

**Honors in the Major**

Students majoring in biomedical sciences are encouraged to graduate with honors in the major. Honors students in the major may enroll in honors sections of courses offered by the Department of Biology and by other departments and
programs. They also are advised to participate in the Iowa Center for Research by Undergraduates (ICRU) and to apply for research scholarships.

To graduate with honors, students must fulfill the following requirements:

- complete the requirements for a major in biomedical sciences with a g.p.a. of at least 3.33 in all University of Iowa course work in the major;
- complete 1 s.h. in BIOL:4998 Communicating Research;
- complete 2 s.h. in either BIOL:4998 Honors Seminar in Biology or an advanced biology seminar course;
- complete a minimum of 6 s.h. (taken over two or more semesters) of BIOL:4999 Honors Research in Biology;
- write a brief research proposal summarizing the background and goals of their proposed research;
- upon completion of their research, submit an acceptable honors thesis; and
- give an oral presentation of their research findings.

Biomedical sciences majors interested in graduating with honors in the major should contact the biomedical sciences honors advisor as early as possible, preferably during their sophomore or junior year, so that they may be matched with an appropriate lab. Contact the Department of Biology to learn more about honors in the major.

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 biomedical sciences 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:** BIOC:3120 Biochemistry and Molecular Biology I, BIOC:3140 Experimental Biochemistry, BIOL:2211 Genes, Genomes, and the Human Condition, BIOL:3373 Human Population Genetics and Variation, STAT:3510 Biostatistics, and CHEM:2410 Organic Chemistry Laboratory or BIOC:3140 Experimental Biochemistry

**During the eighth semester:** enrollment in all remaining course work in the major, all remaining General Education courses, and a sufficient number of semester hours to graduate

Sample Plan of Study

Biomedical Sciences (B.S.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td><strong>First Year</strong></td>
<td></td>
<td></td>
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<tr>
<td>Fall</td>
<td></td>
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<tr>
<td>CHEM:1110</td>
<td>Principles of Chemistry I (also GE: Natural Sciences with a lab)</td>
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<tr>
<td>MATH:1460</td>
<td>Calculus for the Biological Sciences (also GE: Quantitative or Formal Reasoning)</td>
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<td>RHET:1030</td>
<td>Rhetoric (GE: Rhetoric or other General Education course)</td>
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<tr>
<td>GE: World Languages or elective course</td>
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<td>3-5</td>
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<tr>
<td>CSI:1600</td>
<td>Success at Iowa (required)</td>
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<tr>
<td></td>
<td><strong>Hours</strong></td>
<td>17-19</td>
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<tr>
<td>Spring</td>
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<tr>
<td>BIOL:1411</td>
<td>Foundations of Biology (also GE: Natural Sciences with a lab)</td>
<td>4</td>
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<tr>
<td>CHEM:1120</td>
<td>Principles of Chemistry II (also GE: Natural Sciences with a lab)</td>
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<td>PSY:1001</td>
<td>Elementary Psychology</td>
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<td>GE: Diversity and Inclusion</td>
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<td>GE: World Languages or elective course</td>
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<td>3-5</td>
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<td></td>
<td><strong>Hours</strong></td>
<td>17-19</td>
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<td><strong>Second Year</strong></td>
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<td>MICR:2158</td>
<td>General Microbiology Laboratory</td>
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<td>PHYS:1511</td>
<td>College Physics I</td>
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<td>GE: World Languages or elective course</td>
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<td>3-5</td>
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<tr>
<td></td>
<td><strong>Hours</strong></td>
<td>15-17</td>
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<tr>
<td>Spring</td>
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<tr>
<td>CHEM:2220</td>
<td>Organic Chemistry II</td>
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<td>HHP:3500</td>
<td>Human Physiology</td>
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<td>PHYS:1512</td>
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<td>STAT:3510</td>
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<td>GE: World Languages or elective course</td>
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<td><strong>Hours</strong></td>
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<td><strong>Third Year</strong></td>
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<tr>
<td>BIOC:3120</td>
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<td>BIOL:2211</td>
<td>Genes, Genomes, and the Human Condition</td>
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<td>SOC:1010</td>
<td>Introduction to Sociology (also GE: Social Sciences)</td>
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<tr>
<td>Major: chemistry lab option or elective course</td>
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<td>2-3</td>
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<tr>
<td>GE: Historical Perspectives</td>
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<tr>
<td></td>
<td><strong>Hours</strong></td>
<td>14-15</td>
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<tr>
<td>Spring</td>
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<tr>
<td>BIOC:3130</td>
<td>Biochemistry and Molecular Biology II</td>
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</table>
BIOL:3373  Human Population Genetics and Variation 3
ENGL:1200  The Interpretation of Literature (GE: Interpretation of Literature ) 3
PSY:2130  Advanced Psychology for Pre-Medical Track 3
Major: chemistry lab option or elective course 2-3 Hours 14-15

Fourth Year
Fall
Major: elective lecture I course 3
Major: experiential elective or elective course 3-4
Major: investigative lab for elective course 3-4
GE: International and Global Issues 3
Elective course 4 3
Hours 15-17

Spring
Major: elective lecture II course 3
Major: experiential elective or elective course 3-4
Major: investigative lab or elective course 3-4
GE: Literary, Visual, and Performing Arts 3
GE: Values and Culture 3
Hours 15-17
Total Hours 123-137

1 Enrollment in chemistry and math courses require completion of placement exams.
2 General Education (GE) courses may be completed in any order unless used as a prerequisite for another course. Students should consult with an advisor about the best sequencing of courses. For more information, view the General Education Program.
3 Students who have completed four years of a single language in high school have satisfied the College of Liberal Arts and Sciences GE: World Languages requirement. Enrollment in world languages courses requires a placement exam, unless enrolling in a first-semester-level course.
4 Students may use their elective courses to complete a double major, minors, or certificates.

Career Advancement

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