Biology, B.A.

Requirements

The Bachelor of Arts with a major in biology requires a minimum of 120 s.h., including at least 68-77 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 major for the Bachelor of Arts prepares students for graduate study in the biological sciences and is especially appropriate for those interested in careers in biological science education at all levels. It also provides suitable preparation for professional positions in industry, laboratory, field research, or for professional study in medicine and other health-related fields.

The B.A. program is broadly based. It introduces students to key concepts in important areas of biology and, compared to the B.S. program, provides more flexibility in choosing elective courses. Students working toward a Bachelor of Arts degree must complete the chemistry/math foundation; the biology core; three courses from the breadth menus; one course with a laboratory; and five or six elective courses, which may include one course in the history or philosophy of science.

Students who wish to apply transfer credit toward the biology major should consult their biology advisor.

The B.A. with a major in biology requires the following coursework.

Chemistry/Mathematics Foundation

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM:1110-</td>
<td>Principles of Chemistry I-II</td>
<td>8</td>
</tr>
<tr>
<td>CHEM:1120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL:3110</td>
<td>Biochemistry</td>
<td>3</td>
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One of these:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MATH:1460</td>
<td>Calculus for the Biological Sciences</td>
<td>4</td>
</tr>
<tr>
<td>MATH:1550</td>
<td>Engineering Mathematics I: Single Variable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH:1850</td>
<td>Calculus I</td>
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Course with a Laboratory

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BIOL:2246</td>
<td>Entomology Lab</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:2346</td>
<td>Vertebrate Zoology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:3244</td>
<td>Animal Behavior</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:3626</td>
<td>Cell Biology Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:3655</td>
<td>Neurogenetics Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:3656</td>
<td>Neurobiology Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:3676</td>
<td>Evolution Lab</td>
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Biology Core

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>BIOL:1411</td>
<td>Foundations of Biology - Diversity of Form and Function</td>
<td>8</td>
</tr>
<tr>
<td>BIOL:2512</td>
<td>Fundamental Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:2723</td>
<td>Cell Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:3172</td>
<td>Evolution</td>
<td>4</td>
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Breadth Menus

Genes and Genomes

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL:3314</td>
<td>Genomics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:3373</td>
<td>Human Population Genetics and Variation</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:3713</td>
<td>Molecular Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:4213</td>
<td>Bioinformatics</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:4373</td>
<td>Molecular Evolution: Genes, Genomes, and Organisms</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:4386</td>
<td>Introduction to Scientific Computing for Biologists</td>
<td>3</td>
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</table>

Biological Systems

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOL:2254</td>
<td>Endocrinology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:2603</td>
<td>Mechanisms of Aging</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:2673</td>
<td>Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:2753</td>
<td>Introduction to Neurobiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:3233</td>
<td>Introduction to Developmental Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:3244</td>
<td>Animal Behavior</td>
<td>3,5</td>
</tr>
<tr>
<td>BIOL:3253</td>
<td>Neurobiology I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:3343</td>
<td>Animal Physiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:3363</td>
<td>Plant Developmental Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:3383</td>
<td>Introduction to Systems Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:4333</td>
<td>Genes and Development</td>
<td>3</td>
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May include one of these:

<table>
<thead>
<tr>
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<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOL:2663</td>
<td>Plant Response to the Environment</td>
<td>3</td>
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<tr>
<td>BIOL:3663</td>
<td>Plant Response to the Environment</td>
<td>3</td>
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Total Hours

68-77
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOL:3716</td>
<td>Genetics and Biotechnology Lab</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:3736</td>
<td>Developmental Biology Lab</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:4314</td>
<td>Introduction to Synthetic Biology in the Lab</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:4999</td>
<td>Honors Research in Biology</td>
<td>6</td>
</tr>
<tr>
<td>MICR:2157-2158</td>
<td>General Microbiology - General Microbiology Laboratory</td>
<td>5</td>
</tr>
</tbody>
</table>

Iowa Lakeside Laboratory courses (consult advisor) 4-5

**Electives**

Students complete at least two biology elective courses (prefix BIOL) for 6 s.h. plus 12 s.h. of coursework outside the Department of Biology from the list below.

Biology courses may include courses chosen from the “Breadth Menus” list or the “Course with a Laboratory” list above that have not been used to satisfy those requirements; other 2-4 s.h. courses numbered 2000 or above offered by the Department of Biology except for BIOL:2120 Good Genes Gone Bad: Genetic Disorders of Notable Celebrities and BIOL:2211 Genes, Genomes, and the Human Condition; and approved advanced biology courses taught at Iowa Lakeside Laboratory with approval from the advisor.

Students may count BIOL:3994 Introduction to Research (2-3 s.h.) and BIOL:4897 Teaching Internship in Biology (1-3 s.h.) only once toward the elective requirement.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anth</td>
<td>Origins of Human Infectious Disease</td>
<td>3</td>
</tr>
<tr>
<td>ANTH:2320</td>
<td>Modern Human Origins</td>
<td>3</td>
</tr>
<tr>
<td>ANTH:3325</td>
<td>Human Evolutionary Genetics</td>
<td>3</td>
</tr>
<tr>
<td>ANTH:3328</td>
<td>Molecular Genetics of Human Disease</td>
<td>3</td>
</tr>
<tr>
<td>ASP:3160</td>
<td>Biology of Aging</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:2210</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:2220</td>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CPH:2230</td>
<td>Finding Patient Zero: The Exploration of Infectious Disease Transmission and Pandemic Threats</td>
<td>3</td>
</tr>
<tr>
<td>CPH:3230</td>
<td>Human Genetics and Public Health</td>
<td>3</td>
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<tr>
<td>CS:1110</td>
<td>Introduction to Computer Science</td>
<td>3</td>
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<tr>
<td>CS:2110</td>
<td>Programming for Informatics</td>
<td>4</td>
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<tr>
<td>EES:3070</td>
<td>Marine Ecosystems and Conservation</td>
<td>3</td>
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<tr>
<td>EES:3220</td>
<td>Evolution of the Vertebrates</td>
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<tr>
<td>EES:4700</td>
<td>Evolution of Ecosystems</td>
<td>3</td>
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<tr>
<td>ENV:3095</td>
<td>Field Ecology</td>
<td>4</td>
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<tr>
<td>ENV:3096</td>
<td>Winter Ecology</td>
<td>2</td>
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<tr>
<td>ENV:3097</td>
<td>Introduction to Bird Study</td>
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<tr>
<td>GEOG:2374</td>
<td>Biogeography</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3310</td>
<td>Landscape Ecology</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3350</td>
<td>Urban Ecology</td>
<td>3</td>
</tr>
<tr>
<td>GHS:2415</td>
<td>Bioethics</td>
<td>3</td>
</tr>
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</table>

From the physics courses, students may choose from the following (maximum of two courses); if they select PHYS:1511, they could take PHYS:1512; if they select PHYS:1611, they could take PHYS:1612:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS:1400</td>
<td>Basic Physics</td>
<td>3-4</td>
</tr>
<tr>
<td>PHYS:1511</td>
<td>College Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS:1512</td>
<td>Introductory Physics I</td>
<td>3-4</td>
</tr>
</tbody>
</table>

Only one course from the list below may count toward the elective requirement:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG:3110</td>
<td>Geography of Health</td>
<td>3</td>
</tr>
<tr>
<td>HIST:4162</td>
<td>History of Global Health</td>
<td>3</td>
</tr>
<tr>
<td>HIST:4419</td>
<td>Ancient and Medieval Science</td>
<td>3</td>
</tr>
<tr>
<td>PHIL:3604</td>
<td>Introduction to Philosophy of Science</td>
<td>3</td>
</tr>
</tbody>
</table>

**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.