## University Core and Graduation Requirements

### University Core Requirements:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion Cornerstones</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
<td>2.0</td>
<td>REL A 275</td>
</tr>
<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
<td>2.0</td>
<td>REL A 250</td>
</tr>
<tr>
<td>Foundations of the Restoration</td>
<td>1</td>
<td>2.0</td>
<td>REL C 225</td>
</tr>
<tr>
<td>The Eternal Family</td>
<td>1</td>
<td>2.0</td>
<td>REL C 200</td>
</tr>
<tr>
<td>The Individual and Society</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Heritage</td>
<td>1-2</td>
<td>3-6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Year Writing</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Advanced Written and Oral Communications</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
<td>4.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
<td>4.0</td>
<td>MATH 112*</td>
</tr>
<tr>
<td>Arts, Letters, and Sciences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilization 1</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Civilization 2</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Arts</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Letters</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Biological Science</td>
<td>1</td>
<td>4.0</td>
<td>BIO 130*</td>
</tr>
<tr>
<td>Physical Science</td>
<td>2</td>
<td>7.0</td>
<td>CHEM 105* and PHSCS 105*</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Core Enrichment: Electives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religion Electives</td>
<td>3-4</td>
<td>6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
</tr>
</tbody>
</table>

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (15 hours overlap)*

### Graduation Requirements:

- Minimum residence hours required: 30.0
- Minimum hours needed to graduate: 120.0

## Suggested Sequence of Courses

### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-year Writing or American Heritage</td>
<td>3.0</td>
</tr>
<tr>
<td>BIO 130</td>
<td>4.0</td>
</tr>
<tr>
<td>CHEM 105</td>
<td>4.0</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>16.0</strong></td>
</tr>
</tbody>
</table>

### 2nd Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 106 &amp; 107</td>
<td>4.0</td>
</tr>
<tr>
<td>BIO 220 or 230</td>
<td>4.0</td>
</tr>
<tr>
<td>First-year Writing or American Heritage</td>
<td>3.0</td>
</tr>
<tr>
<td>Total Hours</td>
<td>16.0</td>
</tr>
</tbody>
</table>

### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>3rd Semester</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology elective</td>
<td>5.0</td>
</tr>
<tr>
<td>General electives</td>
<td>5.0</td>
</tr>
<tr>
<td>Social Science elective</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion elective</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>15.0</strong></td>
</tr>
</tbody>
</table>

### 4th Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 104 or MATH 112</td>
<td>4.0</td>
</tr>
<tr>
<td>PHSCS 105 &amp; 107</td>
<td>4.0</td>
</tr>
<tr>
<td>MMBIO 240</td>
<td>3.0</td>
</tr>
<tr>
<td>Civilization 2 elective</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>16.0</strong></td>
</tr>
</tbody>
</table>

### JUNIOR YEAR

<table>
<thead>
<tr>
<th>5th Semester</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology elective</td>
<td>5.0</td>
</tr>
<tr>
<td>General electives</td>
<td>5.0</td>
</tr>
<tr>
<td>Social Science elective</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion elective</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>14.0</strong></td>
</tr>
</tbody>
</table>

### 6th Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 106 &amp; 108</td>
<td>4.0</td>
</tr>
<tr>
<td>Biology elective</td>
<td>3.0</td>
</tr>
<tr>
<td>Civilization 2 elective</td>
<td>3.0</td>
</tr>
<tr>
<td>Arts or Letters Elective</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>15.0</strong></td>
</tr>
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</table>

### SENIOR YEAR

<table>
<thead>
<tr>
<th>7th Semester</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology elective</td>
<td>2.0</td>
</tr>
<tr>
<td>Global &amp; Cultural Awareness elective</td>
<td>3.0</td>
</tr>
<tr>
<td>General electives</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>14.0</strong></td>
</tr>
</tbody>
</table>

### 8th Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Note:</strong> This degree program requires a minimum of 120.0 hours for graduation. Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, which could include spring and/or summer terms. Taking fewer credits substantially increases the cost and the number of semesters to graduate.</td>
<td></td>
</tr>
</tbody>
</table>
**BS in Biology (282022)**

**2021-2022 Program Requirements (60 Credit Hours)**

<table>
<thead>
<tr>
<th>REQUIREMENT 1: Complete 5 courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>BIO 130 - Biology</em></td>
</tr>
<tr>
<td><em>BIO 350 - Ecology</em></td>
</tr>
<tr>
<td><em>BIO 420 - Evolutionary Biology</em></td>
</tr>
<tr>
<td><em>MMBIO 240 - Molecular Biology</em></td>
</tr>
<tr>
<td><em>PWS 340 - Genetics</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REQUIREMENT 2: Complete 1 course</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>BIO 220 - Biological Diversity: Animals</em></td>
</tr>
<tr>
<td><em>BIO 230 - Biological Diversity: Plants</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REQUIREMENT 3: Complete 2 options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OPTION 3.1</strong> Complete 7 courses</td>
</tr>
<tr>
<td><em>CHEM 105 - General College Chemistry 1 with Lab (Integrated)</em></td>
</tr>
<tr>
<td><em>CHEM 106 - General College Chemistry 2</em></td>
</tr>
<tr>
<td><em>CHEM 107 - General College Chemistry Laboratory</em></td>
</tr>
<tr>
<td><em>PHSCS 105 - General Physics 1</em></td>
</tr>
<tr>
<td><em>PHSCS 106 - General Physics 2</em></td>
</tr>
<tr>
<td><em>PHSCS 107 - General Physics Lab 1</em></td>
</tr>
<tr>
<td><em>PHSCS 108 - General Physics Lab 2</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>OPTION 3.2</strong> Complete 1 course</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>BIO 264 - Statistical Analysis for Biologists</em></td>
</tr>
</tbody>
</table>

| *MATH 112 - Calculus 1* | 4.0 |

<table>
<thead>
<tr>
<th>REQUIREMENT 4: Complete 10.0 hours from the following course(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NOTE: BIO 220 AND BIO 230, IF TAKEN FOR REQUIREMENT 2, DO NOT DOUBLE COUNT HERE. NOTE: STUDENTS MAY COUNT EITHER BIO 370 (BIOETHICS) OR PHIL 212R (INTRO TO MEDICAL ETHICS) TOWARD THEIR OVERALL ELECTIVES BUT NOT BOTH.</strong></td>
</tr>
<tr>
<td><em>BIO 120 - Field Biology</em></td>
</tr>
<tr>
<td><em>BIO 194 - Introduction to Mentored Research</em></td>
</tr>
<tr>
<td><em>BIO 220 - Biological Diversity: Animals</em></td>
</tr>
<tr>
<td><em>BIO 230 - Biological Diversity: Plants</em></td>
</tr>
<tr>
<td><em>BIO 316 - Advanced Scientific Writing and Communication</em></td>
</tr>
<tr>
<td><em>BIO 370 - Bioethics</em></td>
</tr>
<tr>
<td><em>BIO 380 - Comparative Animal Physiology and Anatomy</em></td>
</tr>
<tr>
<td><em>BIO 399R - Academic Internship</em></td>
</tr>
<tr>
<td><em>You may take up to 2 credit hours.</em></td>
</tr>
<tr>
<td><em>BIO 430 - Plant Classification and Identification</em></td>
</tr>
<tr>
<td><em>BIO 441 - Entomology</em></td>
</tr>
<tr>
<td><em>BIO 443 - Ichthyology</em></td>
</tr>
<tr>
<td><em>BIO 445 - Herpetology</em></td>
</tr>
<tr>
<td><em>BIO 447 - Mammalogy</em></td>
</tr>
<tr>
<td><em>BIO 450 - Capstone in Biodiversity and Conservation</em></td>
</tr>
</tbody>
</table>

| BID 452 - Marine Biology* | 4.0 |
| BID 455 - Plant Ecology* | 3.0 |
| BID 463 - Genetics of Human Disease* | 3.0 |
| BID 465 - Capstone in Bioinformatics* | 3.0 |
| BID 470 - History and Philosophy of Biology* | 3.0 |
| BID 475 - Plant Developmental Biology* | 3.0 |
| BID 494R - Mentored Research 6.0v |
| *You may take up to 2 credit hours.* |
| BID 510 - Biological Systematics and Curation* | 3.0 |
| BID 511 - Lichenology* | 3.0 |
| BID 512 - Angiosperm Phylogeny* | 3.0 |
| BID 520 - Symmorphosis* | 3.0 |
| BID 525 - Animal Disease, Biosecurity, and Zoonoses* | 3.0 |
| BID 530 - Advanced Genetic Analysis* | 3.0 |
| BID 541 - Aquatic Entomology* | 4.0 |
| BID 556 - Limnology* | 3.0 |
| BID 557 - Stream and Wetland Ecology* | 4.0 |
| BID 560 - Population Genetics* | 4.0 |
| CELL 220 - Human Anatomy (with lab)* | 4.0 |
| CELL 305 - Human Physiology* | 4.0 |
| CELL 360 - Cell Biology* | 3.0 |
| CELL 362 - Advanced Physiology* | 3.0 |
| CELL 363 - Advanced Physiology Laboratory* | 1.0 |
| CHEM 285 - Introductory Bio-organic Chemistry* | 4.0 |
| CHEM 351 - Organic Chemistry 1* | 3.0 |
| CHEM 352 - Organic Chemistry 2* | 3.0 |
| CHEM 353 - Organic Chemistry Laboratory--Nonmajors 2.0v |
| CHEM 481 - Biochemistry* | 3.0 |
| MMBIO 350 - Genetic Counseling* | 3.0 |
| MMBIO 461 - Advanced Bacterial Physiology* | 3.0 |
| MMBIO 465 - Virology* | 3.0 |
| PHIL 212R - Introduction to Medical Ethics* | 3.0 |
| PHIL 212R - Introduction to Applied Ethics* | 3.0 |
| PWS 440 - Plant Physiological Ecology* | 3.0 |
| PWS 446 - Ornithology* | 3.0 |
| STAT 201 - Statistics for Engineers and Scientists* | 3.0 |

<table>
<thead>
<tr>
<th>REQUIREMENT 5: Complete an exit interview.</th>
</tr>
</thead>
<tbody>
<tr>
<td>See catalog for recommended courses for career options in Botany, Pre-veterinary Medicine, and/or Pre-medical and Pre-dental.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THE DISCIPLINE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The biology degree provides students with current, practical knowledge of plants and animals, emphasizing whole organism biology in both ecological and evolutionary contexts. Broad, synthetic training, from molecular to community levels of organization, equips students to address critical issues and contemporary biological problems associated with the long-term preservation of Earth’s biodiversity. Ejective flexibility allows students to emphasize the botanical or zoological fields, or create a combined program of study. Undergraduate research opportunities may include internships, museum collections curation, bioinventory and databasing activities, applied molecular genetics, and field and laboratory research in ecology, conservation biology, and evolutionary biology.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESEARCH OPPORTUNITIES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>One objective of this program is to provide solid preparation for postgraduate studies. For that reason students should take advantage of research opportunities. Department faculty conduct field and laboratory research on diverse topics (including genetics of human diseases, conservation biology, molecular systematics, evolution of life history strategies, biogeographical ecology, bio-inventories, aquatic ecology, and bio-assessment).</td>
</tr>
</tbody>
</table>

| Undergraduates have studied black bears in Utah, mouse systematics in Mexico, stonyfly and trout biogeography in the western U.S., turtles in Amazonia, insects in Borneo, and fish predation in the Provo River. The mentoring option allows up to 2 hours of Bio 494R research credit. |

<table>
<thead>
<tr>
<th>PROFESSIONAL TRAINING, INTERNSHIPS, CO-OP ED, ETC.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduates can seek paid positions in research laboratories. Cooperative programs with the U.S. Forest Service and the U.S. Fish and Wildlife Service may be available, as is summer employment with state and federal agencies. This can lead to permanent employment. Completing Bio 430, PWS 330 and 355 can increase summer employment options with government agencies.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAREERS:</th>
</tr>
</thead>
</table>
Post-graduate study in a wide-variety of sub disciplines in biology (molecular biology, genetics, ecology, evolutionary biology, conservation biology, etc.), as well as preparation for medical or dental school. Students may also pursue employment as a biologist in state and federal agencies, nongovernment organizations, and research laboratories.

FINANCING:
Students in this major may apply for university, college, and departmental scholarships. A number of research or teaching assistant positions for undergraduate students also exist.

MAP DISCLAIMER
While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

DEPARTMENT INFORMATION
Department of Biology
Brigham Young University
4101 Life Sciences Building
Provo, UT 84602
Telephone: (801) 422-2582

ADVICEMENT CENTER INFORMATION
Life Sciences Advisement
Brigham Young University
2060 Life Sciences Building
Provo, UT 84602
Telephone: (801) 422-3042