# Biological Sciences, BS

**School/College:** The College of Liberal Arts and Sciences  
**Location:** Tempe campus  
**LABSCBS**

## Term 1 0 - 15 Credit Hours

<table>
<thead>
<tr>
<th>Critical course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIA 101: Student Success in the College of Liberal Arts and Sciences</td>
<td>1</td>
<td></td>
<td>• Mathematics Placement Assessment score determines placement in mathematics and science courses</td>
</tr>
<tr>
<td>BIO 281: Conceptual Approaches to Biology for Majors I (SQ)</td>
<td>4</td>
<td>C</td>
<td>• LIA 101, ASU 101, or other First-Year Seminar required of all freshman students</td>
</tr>
<tr>
<td>CHM 113: General Chemistry I (SQ)</td>
<td>4</td>
<td>C</td>
<td>• An SAT, ACT, Accuplacer, IELTS, or TOEFL score determines placement into first-year composition courses</td>
</tr>
<tr>
<td>ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition</td>
<td>3</td>
<td>C</td>
<td>• Students transferring General Biology I (BIO 181) will fulfill BIO 281 requirement</td>
</tr>
<tr>
<td>STP 231: Statistics for Life Science (CS)</td>
<td>3</td>
<td>C</td>
<td>• Students transferring General Statistics (STP 226 or PSY 230) will fulfill STP 231 requirement</td>
</tr>
</tbody>
</table>

Term hours subtotal: **15**

## Term 2 15 - 32 Credit Hours

<table>
<thead>
<tr>
<th>Critical course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 282: Conceptual Approaches to Biology for Majors II</td>
<td>4</td>
<td>C</td>
<td>• Students transferring General Biology II (BIO 182) will fulfill BIO 282 requirement</td>
</tr>
<tr>
<td>CHM 116: General Chemistry II (SQ)</td>
<td>4</td>
<td>C</td>
<td>• Students transferring Calculus (MAT 270 or MAT 210) will fulfill MAT 251 requirement</td>
</tr>
<tr>
<td>ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MAT 251: Calculus for Life Sciences (MA)</td>
<td>3</td>
<td>C</td>
<td>• Join a student organization</td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Global Awareness (G)</td>
<td>3</td>
<td></td>
<td>• Create a resume &amp; Handshake account with the Career &amp; Professional Development Center</td>
</tr>
<tr>
<td>Complete BIO 281 AND BIO 282 course(s). Complete ENG 101 OR ENG 105 OR ENG 107 course(s).</td>
<td></td>
<td></td>
<td>• Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)</td>
</tr>
</tbody>
</table>

Term hours subtotal: **17**

## Term 3 32 - 46 Credit Hours

<table>
<thead>
<tr>
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<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 340: General Genetics</td>
<td>4</td>
<td>C</td>
<td>• Pre-health students should take CHM 233 and CHM 237 instead of CHM 231 and CHM 235. See the pre-health website for more information</td>
</tr>
<tr>
<td>CHM 231: Elementary Organic Chemistry (SQ) AND CHM 235: Elementary Organic Chemistry Laboratory (SQ)</td>
<td>4</td>
<td>C</td>
<td>• If CHM 233 and 237 are taken, then CHM 234 and 238 must be taken the following semester</td>
</tr>
<tr>
<td>CLAS Science and Society Elective</td>
<td>3</td>
<td>C</td>
<td>• Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)</td>
</tr>
<tr>
<td>Humanities, Arts and Design (HU) AND Historical Awareness (H)</td>
<td>3</td>
<td></td>
<td>• Attend a Study Abroad 101 Session</td>
</tr>
<tr>
<td>Complete First-Year Composition requirement. Complete Mathematics (MA) requirement.</td>
<td></td>
<td></td>
<td>• Explore minors or certificates</td>
</tr>
</tbody>
</table>

Term hours subtotal: **14**
### Term 4 46 - 61 Credit Hours

<table>
<thead>
<tr>
<th>Critical course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 345: Organic Evolution</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Additional Major Requirement Course</td>
<td>3-4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Literacy and Critical Inquiry (L)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Term hours subtotal: 15-16

- Pre-health students should take CHM 234 and CHM 238 instead of the elective in this term. See the pre-health website for more information
- If CHM 233 and 237 are taken, then CHM 234 and 238 must be taken the following semester
- Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)
- Explore or pursue internship opportunities
- Meet with the Career & Professional Development Center to learn how to develop professional skills

### Term 5 61 - 75 Credit Hours

<table>
<thead>
<tr>
<th>Necessary course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Laboratory/Research Course</td>
<td>1-4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>PHY 101: Introduction to Physics (SQ) OR PHY 111: General Physics (SQ) AND PHY 113: General Physics Laboratory (SQ)</td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division Additional Major Requirement Course</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Humanities, Arts and Design (HU)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Division Elective OR BIO 484: Internship OR MIC 484: Internship</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Term hours subtotal: 14-17

- Pre-health students should take PHY 111 and PHY 113 instead of PHY 101 in this term. See the pre-health website for more information
- Meet with your advisor to discuss ways to maximize your remaining time at ASU (i.e. pre-health; 4+1 Masters Programs; study abroad)
- Explore graduate school or full-time opportunities

### Term 6 75 - 91 Credit Hours

<table>
<thead>
<tr>
<th>Necessary course signified by</th>
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<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Division Additional Major Requirement Course</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division Major Laboratory/Research Course</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division Social-Behavioral Sciences (SB) OR Upper Division Humanities, Arts and Design (HU)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete 2 courses: Elective</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Term hours subtotal: 16

- Pre-health students should take PHY 112 and PHY 114 instead of an elective in this term. See the pre-health website for more information
- Use Handshake to research employment opportunities
- Explore graduate school or full-time opportunities

### Term 7 91 - 106 Credit Hours

<table>
<thead>
<tr>
<th>Necessary course signified by</th>
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<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Division Additional Major Requirement Course</td>
<td>3-4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division Major Elective Course</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division CLAS Science and Society Elective</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division Literacy and Critical Inquiry (L)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Division Elective</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Term hours subtotal: 15-16

- Explore or apply for full-time career opportunities or graduate school
- Meet with your advisor to verify remaining degree requirements have been met prior to Term 8

### Term 8 106 - 120 Credit Hours

<table>
<thead>
<tr>
<th>Necessary course signified by</th>
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<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Division Additional Major Requirement Course</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division Major Elective Course</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
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<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division Literacy and Critical Inquiry (L)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Division Elective</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Term hours subtotal: 15-16

- Explore or apply for full-time career opportunities or graduate school
- Meet with your advisor to verify remaining degree requirements have been met prior to Term 8

- Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)
- Explore or pursue internship opportunities
- Meet with the Career & Professional Development Center to learn how to develop professional skills
### Major Laboratory/Research Courses

- BIO 308: Plant Physiology
- BIO 342: General Genetics Laboratory
- BIO 343: Genetic Engineering and Society (L) or MBB 343: Genetic Engineering and Society (L)
- BIO 352: Laboratory in Vertebrate Developmental Anatomy
- BIO 354: Cell Biology Laboratory
- BIO 361: Animal Physiology Laboratory
- BIO 370: Vertebrate Zoology
- BIO 385: Comparative Invertebrate Zoology
- BIO 386: General Entomology
- BIO 435: Research Techniques in Animal Behavior
- BIO 451: Cell Biotechnology: Cell Culture, Immunocytochemistry and Bioimaging
- BIO 453: Introduction to Computational Molecular Biology (CS) or MAT 355: Introduction to Computational Molecular Biology (CS)
- BIO 484: Internship or MBB 484: Internship or MIC 484: Internship
- BIO 495: Undergraduate Research or MBB 495: Undergraduate Research or MIC 495: Undergraduate Research
- MBB 350: Applied Genetics
- MIC 302: Advanced Bacteriology Laboratory (L)
- MIC 220: Biology of Microorganisms AND MIC 206: Microbiology Laboratory (SG)

### Major Elective Courses

- BCH 361: Advanced Principles of Biochemistry
- BIO 302: Cancer—Mother of All Diseases (L)
- BIO 304: Plants and Civilization (L) or ENV 302: Plants and Civilization (L)
- BIO 313: The Flora of Arizona
- BIO 316: History of Biology: Conflicts and Controversies (H) or HPS 330: History of Biology: Conflicts and Controversies (H)
- BIO 318: History of Medicine (HU & H) or HPS 331: History of Medicine (HU & H)
- BIO 322: Conservation of Biodiversity
- BIO 323: Ecosystem Restoration and Management
- BIO 325: Oceanography
- BIO 355: Introduction to Computational Molecular Biology (CS) or MAT 355: Introduction to Computational Molecular Biology (CS)
- BIO 412: Conservation in Practice or SOS 412: Conservation in Practice
- BIO 415: Biometry (CS)
- BIO 416: Biomedical Research Ethics (L) or HPS 410: Biomedical Research Ethics (L)
- BIO 423: Population and Community Ecology
- BIO 427: Fire (H)
- BIO 431: Genes, Development, and Evolution (L)
- BIO 436: Sociobiology and Behavioral Ecology
- BIO 440: Functional Genomics or MBB 440: Functional Genomics

### Additional Major Requirements Courses

- BIO 303: Plant Diversity and Evolution (L or SG) or ENV 300: Plant Diversity and Evolution (L or SG)
- BIO 308: Plant Physiology
- BIO 312: Bioethics (HU) or PHI 320: Bioethics (HU) or BIO 311: Biology and Society or HPS 340: Biology and Society or PHI 314: Philosophy of Science (HU) or HPS 314: Philosophy of Science (HU)
- BIO 320: Fundamentals of Ecology
- BIO 331: Animal Behavior
- BIO 351: Developmental Biology
- BIO 353: Cell Biology
- BIO 360: Animal Physiology
- BIO 370: Vertebrate Zoology
- MIC 220: Biology of Microorganisms AND MIC 206: Microbiology Laboratory (SG)

**Hide Course List(s)/Track Group(s)**

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- BIO 331: Animal Behavior
- BIO 351: Developmental Biology
- BIO 353: Cell Biology
- BIO 360: Animal Physiology
- BIO 370: Vertebrate Zoology
- MIC 220: Biology of Microorganisms AND MIC 206: Microbiology Laboratory (SG)
Notes:

- Please keep in mind that the applicability of a specific transfer course toward an ASU degree program depends on the requirements of the department, division, college or school in which you are enrolled at ASU. Transfer agreements that guarantee the completion of university level requirements do not necessarily meet college and major requirements. Please consult with an advisor for more information.

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.00 minimum
Total hrs at ASU: 30 minimum
Hrs Resident Credit for Academic Recognition: 56 minimum
Total Community College Hrs: 64 maximum
Total College Residency Hrs: 12 minimum

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General University Requirements Legend
General Studies Core Requirements:

- Literacy and Critical Inquiry (L)
- Mathematical Studies (MA)
- Computer/Statistics/Quantitative Applications (CS)
- Humanities, Arts and Design (HU)
- Social-Behavioral Sciences (SB)
- Natural Science - Quantitative (SQ)
- Natural Science - General (SG)

General Studies Awareness Requirements:

- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

First-Year Composition
General Studies designations listed on the major map are current for the 2019 - 2020 academic year.