# 2019 - 2020 Major Map

## Biological Sciences (Biology and Society), BS

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

## Term 1 - 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></td>
</tr>
<tr>
<td>BIO 281: Conceptual Approaches to Biology for Majors I (SQ)</td>
<td>4</td>
<td>C</td>
<td>• Mathematics Placement Assessment score determines placement in mathematics and science course</td>
</tr>
<tr>
<td>CHM 113: General Chemistry 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>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>• An SAT, ACT, Accuplacer, IELTS, or TOEFL score determines placement into first-year composition courses</td>
</tr>
<tr>
<td>STP 231: Statistics for Life Science (CS)</td>
<td>3</td>
<td>C</td>
<td>• Students transferring General Biology I (BIO 181) will fulfill BIO 281 requirement</td>
</tr>
</tbody>
</table>

**Term hours subtotal:** 15

## Mathematics Placement Assessment score determines placement in mathematics and science course

## 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>• Join a student organization</td>
</tr>
<tr>
<td>CHM 116: General Chemistry II (SQ)</td>
<td>4</td>
<td>C</td>
<td>• Create a resume &amp; Handshake account with the Career &amp; Professional Development Center</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>• Explore Research Opportunities</td>
</tr>
<tr>
<td>MAT 251: Calculus for Life Sciences (MA)</td>
<td>3</td>
<td>C</td>
<td>• Attend a Pre-Health 101 Session</td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Global Awareness (G)</td>
<td>3</td>
<td></td>
<td>• Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)</td>
</tr>
<tr>
<td>Complete BIO 281 AND BIO 282 course(s).</td>
<td></td>
<td></td>
<td>• Students transferring General Biology II (BIO 182) will fulfill BIO 282 requirement</td>
</tr>
<tr>
<td>Complete ENG 101 OR ENG 105 OR ENG 107 course(s).</td>
<td></td>
<td></td>
<td>• Students transferring Calculus (MAT 270 or MAT 210) will fulfill MAT 251 requirement</td>
</tr>
</tbody>
</table>

**Term hours subtotal:** 17

## Term 3 - 32 - 48 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 340: General Genetics</td>
<td>4</td>
<td>C</td>
<td>• Pre-health students should take CHM 233 and CHM 237 instead of the elective in this term. See pre-health website for more information.</td>
</tr>
<tr>
<td>BIO 311: Biology and Society OR HPS 340: Biology and Society</td>
<td>3</td>
<td></td>
<td>• If CHM 233 and 237 are taken, then CHM 234 and 238 must be taken the following semester</td>
</tr>
<tr>
<td>Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)</td>
<td>3</td>
<td></td>
<td>• BIO 311 may be used to satisfy the upper division Science and Society requirement for the College of Liberal Arts and Sciences</td>
</tr>
</tbody>
</table>

**Complete 2 courses:**  

**Elective** | 6 | | |

**Term hours subtotal:** 16
### Term 4 48 - 63 Credit Hours

<table>
<thead>
<tr>
<th>Course Description</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>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.</td>
</tr>
<tr>
<td>Literacy and Critical Inquiry (L)</td>
<td>3</td>
<td></td>
<td>If CHM 233 and 237 are taken, then CHM 234 and 238 must be taken the following semester.</td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB)</td>
<td>3</td>
<td></td>
<td>Explore or pursue internship opportunities</td>
</tr>
<tr>
<td>Complete 2 courses:</td>
<td></td>
<td></td>
<td>Meet with the Career &amp; Professional Development Center to learn how to develop professional skills</td>
</tr>
<tr>
<td>Elective</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term hours subtotal:</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Term 5 63 - 77 Credit Hours

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 314: Research Colloquium in Biology and Society I (L)</td>
<td>2</td>
<td>C</td>
<td>Pre-health students should take PHY 111 and 113 instead of PHY 101 this term. See the pre-health website for more information.</td>
</tr>
<tr>
<td>Upper Division Science in Contemporary Society Interface Course</td>
<td>3</td>
<td>C</td>
<td>BIO 314 is recommended in this term, but can also be taken in Term 7</td>
</tr>
<tr>
<td>CLAS Science and Society Elective</td>
<td>3</td>
<td>C</td>
<td>BIO 314 is only taught in the Fall semester.</td>
</tr>
<tr>
<td>Humanities, Arts and Design (HU) AND Historical Awareness (H)</td>
<td>3</td>
<td>C</td>
<td>Meet with your advisor to discuss ways to maximize your remaining time at ASU (i.e. pre-health; 4+1 Masters Programs; study abroad)</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
<td></td>
<td>Some upper division Science in Contemporary Society Interface courses require lower division prerequisites which may be taken as electives</td>
</tr>
<tr>
<td>Term hours subtotal:</td>
<td>14</td>
<td></td>
<td>Explore graduate school or full-time opportunities</td>
</tr>
</tbody>
</table>

### Term 6 77 - 93 Credit Hours

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Division History and Philosophy of Science Interface Course</td>
<td>3</td>
<td>C</td>
<td>Pre-health students should take PHY 112 and 114 this term. See the pre-health website for more information.</td>
</tr>
<tr>
<td>Upper Division Major Biological Sciences Elective</td>
<td>3</td>
<td>C</td>
<td>Research employment opportunities or graduate school programs</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:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>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>
<tr>
<td>Term hours subtotal:</td>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Term 7 93 - 107 Credit Hours

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Division Additional Major Core Elective Courses</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Complete 2 courses:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Upper Division Major Biological Sciences Elective

BIO 322: Conservation of Biodiversity
BIO 323: Ecosystem Restoration and Management

BIO 412: Conservation in Practice or SOS 412: Conservation in Practice
BIO 427: Fire (H)
HPS 311: Origins, Evolution, and Creation

Major Biological Sciences Elective 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 309: Plant Anatomy
BIO 312: Bioethics (HU) or PHI 320: Bioethics (HU)
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 320: Fundamentals of Ecology
BIO 322: Conservation of Biodiversity
BIO 323: Ecosystem Restoration and Management
BIO 324: Environmental Ethics (HU) or PHI 310: Environmental Ethics (HU)

Additional Major Core Elective Courses

BIO 302: Cancer—Mother of All Diseases (L)
BIO 304: Plants and Civilization (L) or ENV 302: Plants and Civilization (L)
BIO 312: Bioethics (HU) or PHI 320: Bioethics (HU)
BIO 316: History of Biology: Conflicts and Controversies (H) or HPS 330: History of Biology: Conflicts and Controversies (H)
BIO 322: Conservation Biology and Ecological Sustainability I
BIO 323: Ecosystem Restoration and Management
BIO 324: Environmental Ethics (HU) or PHI 310: Environmental Ethics (HU)
BIO 412: Conservation in Practice or SOS 412: Conservation in Practice
BIO 416: Biomedical Research Ethics (L) or HPS 410: Biomedical Research Ethics (L)

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

• BIO 414 is only taught in the Spring semester
• Students who complete less than 3 hours of BIO 484 or BIO 485 should plan to complete additional elective hours to reach the minimum 120 total hours required for this degree.
• BIO 484 or BIO 495 requires the completion of an individualized instruction form and meeting with a faculty member before the semester begins. These are positions and research experience secured by the student on their own.
• Continue to apply for full-time career opportunities or graduate school

All students pursuing a B.S. or B.S.P. degree in the College of Liberal Arts and Sciences must complete two courses from the Science and Society list found at https://clas.asu.edu/resources/science-society. At least one of the two courses must be upper division. Students must earn a C or better in the courses, and no more than one of the two can also be used to simultaneously fill a requirement of the major, minor or related area. Science and Society courses cannot also be used to fill the general studies HU, SB, SQ or SG requirements.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>WST 360</td>
<td>Women as Healers (SB &amp; G)</td>
</tr>
<tr>
<td>BIO 331</td>
<td>Animal Behavior</td>
</tr>
<tr>
<td>BIO 343</td>
<td>Genetic Engineering and Society (L) or MBB 343: Genetic Engineering and Society (L)</td>
</tr>
<tr>
<td>BIO 351</td>
<td>Developmental Biology</td>
</tr>
<tr>
<td>BIO 353</td>
<td>Cell Biology</td>
</tr>
<tr>
<td>BIO 360</td>
<td>Animal Physiology</td>
</tr>
<tr>
<td>BIO 370</td>
<td>Vertebrate Zoology</td>
</tr>
<tr>
<td>BIO 386</td>
<td>General Entomology</td>
</tr>
<tr>
<td>BIO 412</td>
<td>Conservation in Practice or SOS 412: Conservation in Practice</td>
</tr>
<tr>
<td>BIO 415</td>
<td>Biometry (CS)</td>
</tr>
<tr>
<td>BIO 416</td>
<td>Biomedical Research Ethics (L) or HPS 410: Biomedical Research Ethics (L)</td>
</tr>
<tr>
<td>BIO 427</td>
<td>Fire (H)</td>
</tr>
<tr>
<td>BIO 431</td>
<td>Genes, Development, and Evolution (L)</td>
</tr>
<tr>
<td>BIO 436</td>
<td>Sociobiology and Behavioral Ecology</td>
</tr>
<tr>
<td>BIO 440</td>
<td>Functional Genomics or MBB 440: Functional Genomics</td>
</tr>
<tr>
<td>BIO 446</td>
<td>Principles of Human Genetics (L) or ASM 446: Principles of Human Genetics (L)</td>
</tr>
<tr>
<td>BIO 461</td>
<td>Comparative Animal Physiology</td>
</tr>
<tr>
<td>BIO 462</td>
<td>Endocrine Physiology</td>
</tr>
<tr>
<td>BIO 467</td>
<td>Neurobiology</td>
</tr>
<tr>
<td>BIO 471</td>
<td>Ornithology</td>
</tr>
<tr>
<td>BIO 472</td>
<td>Mammalogy</td>
</tr>
<tr>
<td>BIO 489</td>
<td>Sonoran Desert Field Botany</td>
</tr>
<tr>
<td>BMI 465</td>
<td>Introduction to Comparative Genomics</td>
</tr>
<tr>
<td>HPS 311</td>
<td>Origins, Evolution, and Creation</td>
</tr>
<tr>
<td>HPS 313</td>
<td>Probability, Evidence, and Decision or PHI 313: Probability, Evidence, and Decision</td>
</tr>
<tr>
<td>HPS 314</td>
<td>Philosophy of Science (HU) or PHI 314: Philosophy of Science (HU)</td>
</tr>
<tr>
<td>HPS 322</td>
<td>History of Science (HU &amp; H)</td>
</tr>
<tr>
<td>HPS 323</td>
<td>History of Science (HU &amp; H) or BIO 317: History of Science (HU &amp; H) or HST 385: History of Chinese Medicine (HU &amp; H &amp; G)</td>
</tr>
<tr>
<td>HPS 331</td>
<td>History of Medicine (HU &amp; H) or BIO 318: History of Medicine (HU &amp; H)</td>
</tr>
<tr>
<td>HPS 336</td>
<td>Exploration and Science (SB &amp; H)</td>
</tr>
</tbody>
</table>
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.
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

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.