# 2019 - 2020 Major Map

## Biological Sciences (Biology and Society), BS

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

### LABSCSBS

<table>
<thead>
<tr>
<th>Term 1 0 - 15 Credit Hours</th>
<th>Critical course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LIA 101:</strong> Student Success in the College of Liberal Arts and Sciences</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BIO 281:</strong> Conceptual Approaches to Biology for Majors I (SQ)</td>
<td></td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td><strong>CHM 113:</strong> General Chemistry I (SQ)</td>
<td></td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td><strong>ENG 101</strong> or <strong>ENG 102:</strong> First-Year Composition or <strong>ENG 105:</strong> Advanced First-Year Composition or <strong>ENG 107</strong> or <strong>ENG 108:</strong> First-Year Composition</td>
<td></td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td><strong>STP 231:</strong> Statistics for Life Science (CS)</td>
<td></td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

Term hours subtotal: **15**

- Mathematics Placement Assessment score determines placement in mathematics and science course
- LIA 101, ASU 101, or other First Year Seminar required of all freshman students
- An SAT, ACT, Accuplacer, IELTS, or TOEFL score determines placement into first-year composition courses
- Students transferring General Biology I (BIO 181) will fulfill BIO 281 requirement
- Students transferring General Statistics (STP 226 or PSY 230) will fulfill STP 231 requirement
- Select your career interest area and play me3@ASU

<table>
<thead>
<tr>
<th>Term 2 15 - 32 Credit Hours</th>
<th>Critical course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIO 282:</strong> Conceptual Approaches to Biology for Majors II</td>
<td></td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td><strong>CHM 116:</strong> General Chemistry II (SQ)</td>
<td></td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td><strong>ENG 101 or ENG 102:</strong> First-Year Composition OR <strong>ENG 105:</strong> Advanced First-Year Composition OR <strong>ENG 107 or ENG 108:</strong> First-Year Composition</td>
<td></td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td><strong>MAT 251:</strong> Calculus for Life Sciences (MA)</td>
<td></td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Global Awareness (G)</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Complete BIO 281 AND BIO 282 course(s).**

**Complete ENG 101 OR ENG 105 OR ENG 107 course(s).**

Term hours subtotal: **17**

- Join a student organization
- Create a resume & Handshake account with the Career & Professional Development Center
- Explore Research Opportunities
- Attend a Pre-Health 101 Session
- Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)
- Students transferring General Biology II (BIO 182) will fulfill BIO 282 requirement
- Students transferring General Statistics (STP 226 or PSY 230) will fulfill STP 231 requirement

<table>
<thead>
<tr>
<th>Term 3 32 - 48 Credit Hours</th>
<th>Critical course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIO 340:</strong> General Genetics</td>
<td></td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td><strong>BIO 311:</strong> Biology and Society OR HPS 340: Biology and Society</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Pre-health students should take CHM 233 and CHM 237 instead of the elective in this term. See pre-health website for more information.
Complete 2 courses:
Elective

Complete First-Year Composition requirement.
Complete Mathematics (MA) requirement.

Term hours subtotal: 16

If CHM 233 and 237 are taken, then CHM 234 and 238 must be taken the following semester.
BIO 311 may be used to satisfy the upper division Science and Society requirement for the College of Liberal Arts and Sciences.
Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)
Attend a Study Abroad 101 Session
Explore Minors or Certificates

### Term 4 - 48 - 63 Credit Hours

<table>
<thead>
<tr>
<th>Course</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>Literacy and Critical Inquiry (L)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

Complete 2 courses:
Elective

Term hours subtotal: 15

Pre-health students should take CHM 234 and 238 instead of the elective in this term. See 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 or pursue internship opportunities.
Meet with the Career & Professional Development Center to learn how to develop professional skills.

### Term 5 - 63 - 77 Credit Hours

<table>
<thead>
<tr>
<th>Course</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></td>
</tr>
<tr>
<td>Upper Division Science in Contemporary Society Interface Course</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>CLAS Science and Society Elective</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Humanities, Arts and Design (HU) AND Historical Awareness (H)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Elective

Term hours subtotal: 14

Pre-health students should take PHY 111 and 113 instead of PHY 101 this term. See the pre-health website for more information.
BIO 314 is recommended in this term, but can also be taken in Term 7.
BIO 314 is only taught in the Fall semester.
Meet with your advisor to discuss ways to maximize your remaining time at ASU (i.e. pre-health; 4+1 Masters Programs; study abroad).
Some upper division Science in Contemporary Society Interface courses require lower division prerequisites which may be taken as electives.
Explore graduate school or full-time opportunities.

### Term 6 - 77 - 93 Credit Hours

<table>
<thead>
<tr>
<th>Course</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></td>
</tr>
<tr>
<td>Upper Division Major Biological Sciences Elective</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>
</tbody>
</table>

Complete 2 courses:
Elective

Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).

Pre-health students should take PHY 112 and 114 this term. See the pre-health website for more information.
Research employment opportunities or graduate school programs.
### Term 7 93 - 107 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>Upper Division Additional Major Core Elective Courses</td>
<td>3</td>
<td>C</td>
<td>• Meet with your advisor to verify remaining degree requirements have been met prior to Term 8</td>
</tr>
<tr>
<td>Complete 2 courses:</td>
<td>6</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division Major Biological Sciences Elective</td>
<td></td>
<td></td>
<td>• Explore or apply for full-time career opportunities or graduate school</td>
</tr>
<tr>
<td>Upper Division Ethics Interface Course</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Upper Division Elective</td>
<td>2</td>
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<td></td>
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</table>

Term hours subtotal: **16**

### Term 8 107 - 120 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>★ BIO 414: Research Colloquium in Biology and Society II (L)</td>
<td>1</td>
<td>C</td>
<td>• BIO 414 is only taught in the Spring semester</td>
</tr>
<tr>
<td>★ BIO 484: Internship OR BIO 493: Honors Thesis (L)</td>
<td>3</td>
<td>C</td>
<td>• 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.</td>
</tr>
<tr>
<td>★ Upper Division Major Biological Sciences Elective</td>
<td>3</td>
<td>C</td>
<td>• 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.</td>
</tr>
<tr>
<td>Complete 2 courses:</td>
<td>6</td>
<td></td>
<td>• Continue to apply for full-time career opportunities or graduate school</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Term hours subtotal: **13**

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**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](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.**
BIO 412: Conservation in Practice or SOS 412: Conservation in Practice

BIO 427: Fire (H)

HPS 311: Origins, Evolution, and Creation


WST 360: Women as Healers (SB & G)

BIO 323: Ecosystem Restoration and Management

BIO 324: Environmental Ethics (HU) or PHI 310: Environmental Ethics (HU)

BIO 331: Animal Behavior

BIO 343: Genetic Engineering and Society (L) or MBB 343: Genetic Engineering and Society (L)

BIO 351: Developmental Biology

BIO 353: Cell Biology

BIO 360: Animal Physiology

BIO 370: Vertebrate Zoology

BIO 386: General Entomology

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 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

BIO 446: Principles of Human Genetics (L) or ASM 446: Principles of Human Genetics (L)

BIO 461: Comparative Animal Physiology

BIO 462: Endocrine Physiology

BIO 467: Neurobiology

BIO 471: Ornithology

BIO 472: Mammalogy

BIO 498: Sonoran Desert Field Botany

BMI 465: Introduction to Comparative Genomics

HPS 311: Origins, Evolution, and Creation

HPS 313: Probability, Evidence, and Decision or PHI 313: Probability, Evidence, and Decision

HPS 314: Philosophy of Science (HU) or PHI 314: Philosophy of Science (HU)

HPS 322: History of Science (HU & H) or BIO 317: History of Science (HU & H) or HST 385: History of Chinese Medicine (HU & H & G)

HPS 323: History of Science (HU & H) or BIO 317: History of Science (HU & H) or HST 385: History of Chinese Medicine (HU & H & G)

HPS 331: History of Medicine (HU & H) or BIO 318: History of Medicine (HU & H)

HPS 336: Exploration and Science (SB & H)

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.

**General University Requirements Legend**

**General Studies Core Requirements:**

<table>
<thead>
<tr>
<th>Total Hours:</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Division Hours:</td>
<td>45 minimum</td>
</tr>
<tr>
<td>Major GPA:</td>
<td>2.00 minimum</td>
</tr>
</tbody>
</table>

**History and Philosophy of Science Interface Courses**

- ASB 357: Society, Drugs and Health (SB & G)
- BIO 316: History of Biology: Conflicts and Controversies (H) or HPS 330: History of Biology: Conflicts and Controversies (H)
- HPS 331: History of Medicine (HU & H) or BIO 318: History of Medicine (HU & H)
- HPS 311: Origins, Evolution, and Creation
- HPS 313: Probability, Evidence, and Decision or PHI 313: Probability, Evidence, and Decision
- HPS 314: Philosophy of Science (HU) or PHI 314: Philosophy of Science (HU)
- HPS 322: History of Science (HU & H)
- HPS 323: History of Science (HU & H) or BIO 317: History of Science (HU & H) or HST 385: History of Chinese Medicine (HU & H & G)
- HPS 336: Exploration and Science (SB & H)

**Ethics Interface Courses**

- BIO 312: Bioethics (HU) or PHI 320: Bioethics (HU)
- BIO 324: Environmental Ethics (HU) or PHI 310: Environmental Ethics (HU)
- BIO 416: Biomedical Research Ethics (L) or HPS 410: Biomedical Research Ethics (L)

**MBB 355: Introduction to Computational Molecular Biology (CS) or BIO 355: Introduction to Computational Molecular Biology (CS) or MAT 355: Introduction to Computational Molecular Biology (CS)**

**MIC 220: Biology of Microorganisms**


**MIC 360: Bacterial Physiology**

**MIC 420: Immunology: Molecular and Cellular Foundations**
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

- 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.