2019 - 2020 Major Map  
**Biological Sciences (Biomedical Sciences)**, BS  
**School/College:** The College of Liberal Arts and Sciences  
**Location:** Tempe campus  
**LABSCMBS**

**Term 1 - 15 Credit Hours**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical course signified by:</strong></td>
<td></td>
<td></td>
<td></td>
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<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></td>
</tr>
<tr>
<td>CHM 113: General Chemistry I (SQ)</td>
<td>4</td>
<td>C</td>
<td></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>STP 231: Statistics for Life Science (CS)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td><strong>Term hours subtotal:</strong></td>
<td><strong>15</strong></td>
<td></td>
<td></td>
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</table>

- Mathematics Placement Assessment score determines placement in mathematics and science courses  
- LIA 101, ASU 101, or other First-Year Seminar is 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.

**Term 2 - 15 - 32 Credit Hours**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
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<tbody>
<tr>
<td><strong>Critical course signified by:</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>BIO 282: Conceptual Approaches to Biology for Majors II</td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>CHM 116: General Chemistry II (SQ)</td>
<td>4</td>
<td>C</td>
<td></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></td>
<td></td>
<td></td>
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<tr>
<td>Social-Behavioral Sciences (SB) AND Global Awareness (G)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Complete BIO 281 AND BIO 282 course(s).</strong></td>
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<td></td>
<td></td>
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<tr>
<td><strong>Complete ENG 101 OR ENG 105 OR ENG 107 course(s).</strong></td>
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<td></td>
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<tr>
<td><strong>Term hours subtotal:</strong></td>
<td><strong>17</strong></td>
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</table>

- Create a resume & Handshake account with the Career & Professional Development Center to explore research or internship opportunities  
- Attend a Pre-Health 101 Session  
- Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)  
- Join a student organization  
- Students transferring General Biology II (BIO 182) will fulfill BIO 282 requirement  
- Students transferring Calculus (MAT 270 or MAT 210) will fulfill MAT 251 requirement

**Term 3 - 32 - 46 Credit Hours**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
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<tbody>
<tr>
<td><strong>Critical course signified by:</strong></td>
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<tr>
<td>BIO 340: General Genetics OR MBB 347: Molecular Genetics: From Genes to Proteins</td>
<td>4</td>
<td>C</td>
<td></td>
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<tr>
<td>CHM 231: Elementary Organic Chemistry (SQ) AND CHM 235: Elementary Organic Chemistry Laboratory (SQ)</td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>CLAS Science and Society Elective</td>
<td>3</td>
<td>C</td>
<td></td>
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<tr>
<td>Humanities, Arts and Design (HU) AND Historical Awareness (H)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Complete First-Year Composition requirement.</strong></td>
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<tr>
<td><strong>Complete Mathematics (MA) requirement.</strong></td>
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<tr>
<td><strong>Term hours subtotal:</strong></td>
<td><strong>14</strong></td>
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- Pre-health students should take CHM 233 and CHM 237 instead of CHM 231 and CHM 235. 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 extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)
**Term 4 46 - 61 Credit Hours** Critical course signified by  

<table>
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<tr>
<td>3</td>
<td>C</td>
<td><strong>BIO 345: Organic Evolution</strong>&lt;br&gt;<strong>Literacy and Critical Inquiry (L)</strong>&lt;br&gt;<strong>Social-Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C)</strong>&lt;br&gt;<strong>Complete 2 courses:</strong>&lt;br&gt;<strong>Elective</strong>&lt;br&gt;Term hours subtotal: 15</td>
</tr>
</tbody>
</table>

* Attend a Study Abroad 101 Session  
* Explore minors or certificates

**Pre-health students should take CHM 234 and CHM 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 extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)  
* Meet with the Career & Professional Development Center to learn how to develop professional skills

**Term 5 61 - 75 Credit Hours** Necessary course signified by 🟠

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<tr>
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<th>Notes</th>
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</table>
| 4 | C | **BCH 361: Advanced Principles of Biochemistry** AND **BCH 367: Elementary Biochemistry Laboratory**
| 3 | C | **BIO 353: Cell Biology**
| 3 | C | **BIO 360: Animal Physiology**
| 4 | C | **PHY 101: Introduction to Physics (SQ)**
| | | Term hours subtotal: 14 |

* Pre-health students should take PHY 111 and PHY 113 instead of PHY 101 in this term. See 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 - 90 Credit Hours** Necessary course signified by 🟢

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<thead>
<tr>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
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</table>
| 3 | C | **BIO 351: Developmental Biology** OR **BIO 420: Immunology:**
| | | **Molecular and Cellular Foundations** OR **BIO 440: Functional Genomics** OR **BIO 462: Endocrine Physiology** OR **BIO 467: Neurobiology**
| 3 | C | **BIO 312: Bioethics (HU)**
| 3 | | **Humanities, Arts and Design (HU)**
| 4 | | **Upper Division Elective**
| 2 | | **Elective**<br>**Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).**
| | | Term hours subtotal: 15 |

* Pre-health students should take PHY 112 and PHY 114 instead of an elective in this term. See pre-health website for more information.  
* BIO 312 may be used to satisfy an upper division Science and Society credit for the College of Liberal Arts and Sciences provided it is not being used to satisfy an HU credit for general studies.  
* Some upper division Medicine in Society and Biomedical Research Courses require prerequisites, which may be taken as electives.  
* Research employment opportunities or graduate school programs

**Term 7 90 - 106 Credit Hours** Necessary course signified by 🟣

<table>
<thead>
<tr>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
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</thead>
</table>
| 4-2 | C | **Upper Division Biomedical Research Course** OR **Upper Division Medicine in Society Course**
| 3 | C | **Upper Division CLAS Science and Society Elective**

* Pre-health students should take PHY 112 and PHY 114 instead of an elective in this term. See pre-health website for more information.  
* Some upper division Medicine in Society and Biomedical Research Courses require prerequisites, which may be taken as electives.  
* Research employment opportunities or graduate school programs
Term 8 106 - 120 Credit Hours | Necessary course signified by ⭐️ | Hours | Minimum Grade | Notes
---|---|---|---|---
**Upper Division Literacy and Critical Inquiry (L)** | 3
**Elective OR BIO 484: Internship OR MIC 484: Internship OR MBB 484: Internship** | 3
**Elective** | 3
**Term hours subtotal:** | **16-14**

| Term 8 106 - 120 Credit Hours | Necessary course signified by ⭐️ | Hours | Minimum Grade | Notes
---|---|---|---|---
**BIO 351: Developmental Biology OR BIO 420: Immunology: Molecular and Cellular Foundations OR BIO 440: Functional Genomics OR BIO 462: Endocrine Physiology OR BIO 467: Neurobiology** | 3 | C | • Courses from the Medicine in Society and Biomedical Research groups must include at least one course from each group and at least one lab course.
• Some upper division Medicine in Society and Biomedical Research Courses require prerequisites, which may be taken as electives.
• 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

| **Upper Division Biomedical Research Course OR Upper Division Medicine in Society Course** | 2-4 | C | • Courses from the Medicine in Society and Biomedical Research groups must include at least one course from each group and at least one lab course.
• Continue to apply for full-time career opportunities or graduate school.

| **Upper Division Elective** | 3 |
| **Complete 2 courses:** | |
| **Elective** | 6 |
| **Term hours subtotal:** | **14-16**

• Some upper division Medicine in Society Courses require lower division prerequisites, which may be taken as electives. See list of Suggested Electives provided.

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/advising-and-academic-services/science-and-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.

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### Biomedical Research

- **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 355: Introduction to Computational Molecular Biology (CS) or MAT 355: Introduction to Computational Molecular Biology (CS)**
- **BIO 361: Animal Physiology Laboratory**

### Medicine in Society

- **ASB 301: Global History of Health (SB & G & H) or HST 301: Global History of Health (SB & G & H) or SSH 301: Global History of Health (SB & G & H)**
- **ASM 401: Health and Human Biology**
- **ASB 355: Traditional Medicine and Healing (HU or SB)**
- **ASB 443: Cross-Cultural Studies in Global Health (L or SB & G) or SSH 403: Cross-Cultural Studies in Global Health (L or SB & G)**

### Suggested Electives

- **ASB 100: Introduction to Global Health (SB & G)**
- **ASB 102: Introduction to Cultural Anthropology (SB & G)**
- **ASB 222: Buried Cities and Lost Tribes ((HU or SB) & G & H)**
- **ASB 223: Aztecs, Incas and Mayas ((HU or SB) & G & H)**
- **ASM 104: Bones, Stones, and Human Evolution (SB or SG)**
- **BIO 331: Animal Behavior**
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

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.