













## 2024 - 2025 Major Map



### Biological Sciences (Biomedical Sciences), BS



School/College: The College of Liberal Arts and Sciences  
LABSCMBS



Term 1 0 - 15 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 BIO 181: General Biology I (SCIT OR SQ)	4	C	<ul style="list-style-type: none"> <li>LIA 101, ASU 101, or other First-Year Seminar is required of all first-year students</li> <li>Students transferring General Statistics (STP 226 or PSY 230) will fulfill STP 231 requirement</li> <li>Select your <b>career interest area</b> and play <b>me3@ASU</b>.</li> </ul>
 LIA 101: Student Success in The College of Liberal Arts and Sciences	1		
CHM 113: General Chemistry I (SCIT OR SQ)	4	C	
ENG 101 or ENG 102: First-Year Composition OR			
ENG 105: Advanced First-Year Composition OR	3	C	
ENG 107 or ENG 108: First-Year Composition			
STP 231: Statistics for Life Science (QTRS OR CS)	3	C	
Term hours subtotal:	15		
Term 2 15 - 32 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 BIO 182: General Biology II (SCIT OR SG)	4	C	<ul style="list-style-type: none"> <li>Create a resume and <b>Handshake</b> account with the Career &amp; Professional Development Center to explore research or internship opportunities</li> <li>Attend a <b>Pre-Health 101 Session</b></li> <li>Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)</li> <li>Join a <b>student organization</b></li> <li>Students transferring Calculus (MAT 270 or MAT 210) will fulfill MAT 251 requirement</li> </ul>
CHM 116: General Chemistry II (SCIT OR SQ)	4	C	
ENG 101 or ENG 102: First-Year Composition OR			
ENG 105: Advanced First-Year Composition OR	3	C	
ENG 107 or ENG 108: First-Year Composition			
MAT 251: Calculus for Life Sciences (MATH OR MA)	3	C	
Social and Behavioral Sciences (SOBE)	3		
 Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Term hours subtotal:	17		
Term 3 32 - 46 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 BIO 340: General Genetics OR MBB 347: Molecular Genetics: From Genes to Proteins	4	C	<ul style="list-style-type: none"> <li>Some pre-health students may need CHM 233 and CHM 237 instead of CHM 231 and CHM 235. See pre-health <b>website</b> for more information.</li> <li>If CHM 233 and 237 are taken, then CHM 234 and 238 must be taken the following semester.</li> <li>It is not recommended to take more than two lab courses in a term.</li> <li>On-campus students are encouraged to take MBB 347 to satisfy the genetics requirement.</li> <li>Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)</li> </ul>
CHM 231: Elementary Organic Chemistry (SCIT OR SQ)	3	C	
CHM 235: Elementary Organic Chemistry Laboratory (SCIT OR SQ)	1	C	
Science and Society Elective	3	C	
Humanities, Arts and Design (HUAD)	3		
 Complete First-Year Composition requirement.			
 Complete Mathematics (MATH) requirement.			
Term hours subtotal:	14		

- Attend a [Study Abroad 101 Session](#)
- Explore [minors or certificates](#)

Term 4 46 - 61 Credit Hours <b>Critical course signified by</b> 	Hours	Minimum Grade	Notes
 BIO 345: Evolution	3	C	<ul style="list-style-type: none"> <li>• Some pre-health students may need CHM 234 and CHM 238 instead of the elective in this term. See pre-health <a href="#">website</a> for more information.</li> <li>• If CHM 233 and 237 are taken, then CHM 234 and 238 must be taken the following semester.</li> <li>• Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.)</li> <li>• Meet with the <a href="#">Career &amp; Professional Development Center</a> to learn how to develop professional skills.</li> </ul>
Humanities, Arts and Design (HUAD)	3		
Global Communities, Societies and Individuals (GCSI)	3		
Complete 2 courses:	6		
Elective			
Term hours subtotal:	15		

Term 5 61 - 75 Credit Hours <b>Necessary course signified by</b> 	Hours	Minimum Grade	Notes
 BIO 360: Animal Physiology	3	C	<ul style="list-style-type: none"> <li>• Some pre-health students may need PHY 111 and PHY 113 instead of PHY 101 in this term. See pre-health <a href="#">website</a> for more information.</li> <li>• Meet with your <a href="#">advisor</a> to discuss ways to maximize your remaining time at ASU (i.e. pre-health; Accelerated Masters Programs; study abroad)</li> </ul>
 BCH 361: Advanced Principles of Biochemistry	3	C	
 BCH 367: Elementary Biochemistry Laboratory	1	C	
PHY 101: Introduction to Physics (SCIT OR SQ)	4	C	
Sustainability (SUST)	3		
Term hours subtotal:	14		

Term 6 75 - 90 Credit Hours <b>Necessary course signified by</b> 	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	<ul style="list-style-type: none"> <li>• Some pre-health students may need PHY 112 and PHY 114 instead of an elective in this term. See pre-health <a href="#">website</a> for more information</li> <li>• BIO 312 or BIO 416 will be used to satisfy the upper-division Science and Society credit for The College</li> <li>• Some upper-division Medicine in Society and Biomedical Research Courses require prerequisites, which may be taken as electives</li> <li>• Research <a href="#">employment opportunities</a> or <a href="#">graduate school</a> programs</li> </ul>
 BIO 353: Cell Biology	3	C	
BIO 312: Bioethics (HUAD OR HU) OR BIO 416: Biomedical Research Ethics (L)	3	C	
Upper Division Elective	4		
Elective	2		
Term hours subtotal:	15		

Term 7 90 - 106 Credit Hours <b>Necessary course signified by</b> 	Hours	Minimum Grade	Notes
 Upper Division Biomedical Research Course OR Upper Division Medicine in Society Course	4-2	C	<ul style="list-style-type: none"> <li>• 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</li> <li>• Some upper-division Medicine in Society and Biomedical Research Courses require prerequisites, which may be taken as electives</li> <li>• Explore or apply for <a href="#">full-time career opportunities</a> or <a href="#">graduate school</a></li> </ul>
American Institutions (AMIT)	3		
Governance and Civic Engagement (CIVI)	3		
Complete 2 courses:	6		
Upper Division Elective			
Term hours subtotal:	16-14		

- Meet with your **advisor** to verify remaining degree requirements have been met prior to Term 8

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	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Continue to apply for <b>full-time career opportunities</b> or <b>graduate school</b></li> </ul>
★ Upper Division Biomedical Research Course OR Upper Division Medicine in Society Course	2-4	C	
Upper Division Elective	3		
Complete 2 courses:	6		
Elective			
Term hours subtotal:		14-16	

- Students must take at least one course from the Medicine in Society group and at least one course from the Biomedical Research group, and at least one of those must be a lab course.
- 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 BS or BSP degree in The College of Liberal Arts and Sciences must complete two courses from the Science and Society list found at <https://thecollege.asu.edu/resources/science-society>. At least one of the two courses must be upper-division and students must earn a C or better in the courses. Both Science and Society courses (i.e., all six credits) may count towards any major, minor, related fields, and ASU General Studies requirements.

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

Biomedical Research	Medicine in Society	Suggested Electives
BIO 342: General Genetics Laboratory	ASB 301: Global History of Health (HUAD OR SB & G & H) or HST 301: Global History of Health (HUAD OR SB & G & H) or SSH 301: Global History of Health (HUAD OR SB & G & H)	ASB 100: Introduction to Global Health (GCSI OR SB & G)
BIO 343: Genetic Engineering and Society (L) or MBB 343: Genetic Engineering and Society (L)		ASB 102: Introduction to Cultural Anthropology (GCSI OR SB & G)
BIO 352: Laboratory in Vertebrate Developmental Anatomy	ASB 443: Cross-Cultural Studies in Global Health (GCSI OR (L or SB) & G) or SSH 403: Cross-Cultural Studies in Global Health (GCSI OR (L or SB) & G)	ASB 222: Buried Cities and Lost Tribes (HUAD OR (HU or SB) & G & H)
BIO 354: Cell Biology Laboratory		ASB 223: Aztecs, Incas and Mayas (SOBE OR (HU or SB) & G & H)
BIO 355: Introduction to Computational Molecular Biology (CS) or MAT 355: Introduction to Computational Molecular Biology (CS) or MBB 355: Introduction to Computational Molecular Biology (CS)	ASB 452: Community Partnerships for Global Health (GCSI OR SB) or SSH 402: Community Partnerships for Global Health (GCSI OR SB)	ASM 104: Bones, Stones, and Human Evolution (SCIT OR SG)
BIO 357: Cell and Molecular Biology Laboratory	ASB 462: Medical Anthropology: Culture and Health (SOBE OR SB & C)	BIO 331: Animal Behavior
BIO 361: Animal Physiology Laboratory	ASM 345: Disease and Human Evolution	HST 101: Global History Since 1500 (GCSI OR HU & H & G) or SGS 111: Global History Since 1500 (GCSI OR HU & H & G)
BIO 370: Vertebrate Zoology	ASM 401: Health and Human Biology	MBB 445: Techniques in Molecular Biology/Genetics or MIC 445: Techniques in Molecular Biology/Genetics
BIO 390: Medical/Dental Field Placement or BIO 484: Internship or MIC 484: Internship	ASM 403: Evolutionary Medicine and Global Health or BIO 403: Evolutionary Medicine and Global Health	
BIO 415: Statistical Models for Biology (QTRS OR CS)	ASM 414: Urban, Environmental and Health Challenges (SUST OR SB)	

BIO 435: Research Techniques in Animal Behavior	BIO 302: Cancer--Mother of All Diseases (L)
BIO 439: Computing for Research	BIO 311: Biology and Society or HPS 340: Biology and Society
BIO 450: Advanced Developmental Biology	BIO 382: Spanish for Biomedical Sciences
BIO 451: Cell Biotechnology: Cell Culture, Immunocytochemistry and Bioimaging	BIO 394: Healing Traditions of Latino-America
BIO 475: Advanced Human Anatomy	BIO 408: Advanced Evolutionary Medicine
BIO 492: Honors Directed Study or MBB 492: Honors Directed Study or MIC 492: Honors Directed Study	BIO 494: Introduction To Clinical Healthcare
BIO 495: Undergraduate Research or MBB 495: Undergraduate Research or MIC 495: Undergraduate Research	HPS 331: History of Medicine (HUAD OR HU & H) or BIO 318: History of Medicine (HUAD OR HU & H)
BMI 465: Computational Genomics	MIC 314: HIV/AIDS: Science, Behavior, and Society or SSH 314: HIV/AIDS: Science, Behavior, and Society
MBB 446: Techniques in Molecular Biology/Genetics Lab or MIC 446: Techniques in Molecular Biology/Genetics Lab	
MIC 421: Experimental Immunology	
MIC 425: Advanced Immunology	

- **Total Hours:** 120
- **Upper Division Hours:** 45 minimum
- **University Undergraduate Graduation Requirements**

#### Notes:

Mathematics Placement Assessment score determines placement in first mathematics course.

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 Studies designations listed next to courses on the major map were valid for the 2024 - 2025 academic year. Please refer to the course catalog for current General Studies designations at time of class registration. General Studies credit is applied according to the designation the course carries at the time the class is taken.