










2019 - 2020 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
 LIA 101: Student Success in the College of Liberal Arts and Sciences	1		<ul style="list-style-type: none"> 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.
BIO 281: Conceptual Approaches to Biology for Majors I (SQ)	4	C	
CHM 113: General Chemistry I (SQ)	4	C	
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition	3	C	
STP 231: Statistics for Life Science (CS)	3	C	
Term hours subtotal:	15		
Term 2 15 - 32 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
BIO 282: Conceptual Approaches to Biology for Majors II	4	C	<ul style="list-style-type: none"> 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
CHM 116: General Chemistry II (SQ)	4	C	
ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition	3	C	
MAT 251: Calculus for Life Sciences (MA)	3	C	
Social-Behavioral Sciences (SB) AND Global Awareness (G)	3		
 Complete BIO 281 AND BIO 282 course(s).			
 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"> 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
CHM 231: Elementary Organic Chemistry (SQ) AND CHM 235: Elementary Organic Chemistry Laboratory (SQ)	4	C	

CLAS Science and Society Elective	3	C
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3	
 Complete First-Year Composition requirement.		
 Complete Mathematics (MA) requirement.		
Term hours subtotal:	14	

- the following semester
- 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 46 - 61 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 BIO 345: Organic Evolution	3	C	<ul style="list-style-type: none"> • 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
Literacy and Critical Inquiry (L)	3		
Social-Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C)	3		
Complete 2 courses: Elective	6		
Term hours subtotal:	15		

Term 5 61 - 75 Credit Hours Necessary course signified by 	Hours	Minimum Grade	Notes
 BCH 361: Advanced Principles of Biochemistry AND BCH 367: Elementary Biochemistry Laboratory	4	C	<ul style="list-style-type: none"> • 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
 BIO 353: Cell Biology	3	C	
 BIO 360: Animal Physiology	3	C	
PHY 101: Introduction to Physics (SQ)	4	C	
Term hours subtotal:	14		

Term 6 75 - 90 Credit Hours Necessary course signified by 	Hours	Minimum Grade	Notes
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★	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	C
	Humanities, Arts and Design (HU)	3	
	Upper Division Elective	4	
	Elective	2	
★	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 ★	Hours	Minimum Grade	Notes
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★	Upper Division Biomedical Research Course OR Upper Division Medicine in Society Course	4-2	C
	Upper Division CLAS Science and Society Elective	3	C
	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	

- 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

★ Term 8 106 - 120 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
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★	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
★	Upper Division Biomedical Research Course OR Upper Division Medicine in Society Course	2-4	C
	Upper Division Elective	3	
	<i>Complete 2 courses:</i> Elective	6	
Term hours subtotal:		14-16	

- 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

- 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.

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 (SB & G & H) or HST 301: Global History of Health (SB & G & H) or SSH 301: Global History of Health (SB & G & H)	ASB 100: Introduction to Global Health (SB & G)
BIO 343: Genetic Engineering and Society (L) or MBB 343: Genetic Engineering and Society (L)	ASM 401: Health and Human Biology	ASB 102: Introduction to Cultural Anthropology (SB & G)
BIO 352: Laboratory in Vertebrate Developmental Anatomy	ASB 355: Traditional Medicine and Healing (HU or SB)	ASB 222: Buried Cities and Lost Tribes ((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 443: Cross-Cultural Studies in Global Health ((L or SB) & G) or SSH 403: Cross-Cultural Studies in Global Health ((L or SB) & G)	ASB 223: Aztecs, Incas and Mayas ((HU or SB) & G & H)
BIO 361: Animal Physiology Laboratory	ASB 452: Community Partnerships for Global Health (SB) or SSH 402: Community Partnerships for Global Health (SB)	ASM 104: Bones, Stones, and Human Evolution (SB or SG)
BIO 415: Biometry (CS)	ASB 462: Medical Anthropology: Culture and Health (SB & C)	BIO 331: Animal Behavior
BIO 435: Research Techniques in Animal Behavior	ASM 345: Disease and Human Evolution	BMI 465: Introduction to Comparative Genomics
BIO 450: Advanced Developmental Biology	BIO 302: Cancer--Mother of All Diseases (L)	HST 101: Global History Since 1500 (HU & H & G) or SGS 111: Global History Since 1500 (HU & H & G)
BIO 451: Cell Biotechnology: Cell Culture, Immunocytochemistry and Bioimaging	BIO 311: Biology and Society or HPS 340: Biology and Society	MBB 445: Techniques in Molecular Biology/Genetics or MIC 445: Techniques in Molecular Biology/Genetics
BMI 465: Introduction to Comparative Genomics	HPS 331: History of Medicine (HU & H)	MIC 420: Immunology: Molecular and Cellular Foundations or BIO 420: Immunology: Molecular and Cellular Foundations
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		
BIO 495: Undergraduate Research or MIC 495: Undergraduate Research or MBB 495: Undergraduate Research		
BIO 492: Honors Directed Study or MIC 492: Honors Directed Study or MBB 492: Honors Directed Study		

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 next to courses on the major map were valid for the 2019 - 2020 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.