











2023 - 2024 Major Map



Microbiology, BS





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




Term 1 0 - 15 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 BIO 181: General Biology I (SQ)	4	C	<ul style="list-style-type: none"> LIA 101, ASU 101, or college-specific First-Year Seminar required of all first-year students. Students transferring General Statistics (STP 226 or PSY 230) will fulfill STP 231 requirement. Select your Career Interest Communities and play me3@ASU.
 LIA 101: Student Success in The College of Liberal Arts and Sciences	1		
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 182: General Biology II (SG)	4	C	<ul style="list-style-type: none"> Join a student organization Activate your Handshake account and build out your profile Explore extracurriculars (i.e. service learning, community service, internships, research, student involvement, shadowing, etc.) Attend a Pre-Health 101 Session 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 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
 MIC 220: Biology of Microorganisms AND MIC 206: Microbiology Laboratory (SG) OR BIO 340: General Genetics or MBB 347: Molecular Genetics: From Genes to Proteins	4	C	<ul style="list-style-type: none"> Students are encouraged to take MBB 347 to satisfy the genetics requirement. MBB 347 is only offered in spring term. Pre-health students should take CHM 233 and CHM 237 this term. See the pre-health website for more information If CHM 231 and 235 are taken, then BCH 361 and 367 must be taken the following semester If CHM 233 and 237 are taken, then CHM 234 and 238 must be taken the following semester It is not recommended to take more than two lab courses in a term. Explore extracurriculars (i.e. service learning, community service,
CHM 231: Elementary Organic Chemistry (SQ) AND CHM 235: Elementary Organic Chemistry Laboratory (SQ) OR CHM 233: General Organic Chemistry I AND CHM 237: General Organic Chemistry Laboratory I	4	C	
Science and Society Elective	3	C	
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		
 Complete First-Year Composition requirement.			
 Complete Mathematics (MA) requirement.			
Term hours subtotal:	14		



internships, research, student involvement, shadowing, etc.)

- Attend a [Study Abroad 101 Session](#)
- Explore [Minors or Certificates](#)

Term 4 46 - 60 Credit Hours Critical course signified by 	Hours	Minimum Grade	Notes
 MIC 220: Biology of Microorganisms AND MIC 206: Microbiology Laboratory (SG) OR BIO 340: General Genetics or MBB 347: Molecular Genetics: From Genes to Proteins	4	C	<ul style="list-style-type: none"> • If MIC 220 and MIC 206 were taken the previous term, BIO 340 or MBB 347 must be taken this term. • Students are encouraged to take MBB 347 to satisfy the genetics requirement. MBB 347 is only offered in spring term. • Pre-health students should take CHM 234 and CHM 238 this term. See the pre-health website for more information • If CHM 231 and 235 were previously taken, then BCH 361 and 367 must be taken this term • If CHM 233 and 237 were previously taken, then CHM 234 and 238 must be taken this term • Meet with the Career & Professional Development Center to learn how to develop professional skills
BCH 361: Advanced Principles of Biochemistry AND BCH 367: Elementary Biochemistry Laboratory OR CHM 234: General Organic Chemistry II AND CHM 238: General Organic Chemistry Laboratory II	4	C	
Literacy and Critical Inquiry (L)	3		
Social-Behavioral Sciences (SB)	3		
Term hours subtotal:	14		

Term 5 60 - 74 Credit Hours Necessary course signified by 	Hours	Minimum Grade	Notes
 MIC 302: Advanced Bacteriology Laboratory (L)	2	C	<ul style="list-style-type: none"> • Pre-health students should take PHY 111 and PHY 113 instead of an elective this term. See the pre-health website for more information • Meet with your advisor to discuss ways to maximize your remaining time at ASU • Two lab courses are required and may be fulfilled by course requirements in other areas • Thinking about graduate school? Consider registering for a grad school test prep course.
 MIC 360: Bacterial Physiology	3	C	
 Upper Division Microbiology/Immunology Major Electives	3-4	C	
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3		
Elective	3		
Term hours subtotal:	14-15		

Term 6 74 - 90 Credit Hours Necessary course signified by 	Hours	Minimum Grade	Notes
 PHY 101: Introduction to Physics (SQ)	4	C	<ul style="list-style-type: none"> • Pre-health students should take PHY 112 and PHY 114 instead of PHY 101 this term. See the pre-health website for more information • Students must complete one upper-division elective from the list of Microbiology/Immunology Electives and one upper-division elective from the list of General Biology Electives. • Explore graduate school or full-time employment opportunities
Upper Division Additional Major Requirements	3	C	
Upper Division General Biology Major Electives	3-4	C	
Upper Division Social-Behavioral Sciences (SB) OR Upper Division Humanities, Arts and Design (HU)	3		
Elective	3		
 Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).			
Term hours subtotal:	16-17		

Term 7 90 - 106 Credit Hours Necessary course signified by 	Hours	Minimum Grade	Notes
 MIC 401: Research Paper (L)	1	C	

Upper Division Additional Major Requirements	3	C
Upper Division Science and Society Elective	3	C
Complete 3 courses:	9	
Upper Division Elective		
Term hours subtotal:	16	

- MIC 401 requires the completion of an individualized instruction form and meeting with a faculty reader before the semester begins
- Apply for **full-time career opportunities**
- 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
★ Upper Division Additional Major Requirements	3	C	<ul style="list-style-type: none"> • Continue to apply for full-time career opportunities or graduate school
Complete 2 courses:	5		
Upper Division Elective			
Complete 2 courses:	6		
Elective			
Term hours subtotal:	14		

- 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)

General Biology Major Electives	Microbiology/Immunology Major Electives	Additional Major Requirements
BIO 302: Cancer--Mother of All Diseases (L)	BIO 343: Genetic Engineering and Society (L) or MBB 343: Genetic Engineering and Society (L)	BIO 343: Genetic Engineering and Society (L) or MBB 343: Genetic Engineering and Society (L)
BIO 312: Bioethics (HU) or PHI 320: Bioethics (HU)	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
BIO 320: Fundamentals of Ecology	MBB 446: Techniques in Molecular Biology/Genetics Lab or MIC 446: Techniques in Molecular Biology/Genetics Lab	BIO 451: Cell Biotechnology: Cell Culture, Immunocytochemistry and Bioimaging
BIO 343: Genetic Engineering and Society (L) or MBB 343: Genetic Engineering and Society (L)	MIC 314: HIV/AIDS: Science, Behavior, and Society	BIO 492: Honors Directed Study or MBB 492: Honors Directed Study or MIC 492: Honors Directed Study
BIO 345: Evolution	MIC 379: Medical Bacteriology	BIO 495: Undergraduate Research or MBB 495: Undergraduate Research or MIC 495: Undergraduate Research
BIO 351: Developmental Biology	MIC 420: Immunology: Molecular and Cellular Foundations or BIO 420: Immunology: Molecular and Cellular Foundations	MBB 445: Techniques in Molecular Biology/Genetics or MIC 445: Techniques in Molecular Biology/Genetics
BIO 353: Cell Biology	MIC 421: Experimental Immunology	MBB 446: Techniques in Molecular Biology/Genetics Lab or MIC 446: Techniques in Molecular Biology/Genetics Lab
BIO 360: Animal Physiology	MIC 441: Bacterial Genetics	MIC 379: Medical Bacteriology
BIO 416: Biomedical Research Ethics (L) or HPS 410: Biomedical Research Ethics (L)	MIC 442: Bacterial Genetics Laboratory	MIC 421: Experimental Immunology
BMI 465: Introduction to Comparative Genomics	MIC 470: Bacterial Diversity and Systematics	MIC 425: Advanced Immunology
	MIC 484: Internship	MIC 441: Bacterial Genetics
	MIC 485: General Virology	MIC 442: Bacterial Genetics Laboratory

Notes:

- First-Year Composition: All students are placed in ENG 101 unless submission of SAT, ACT, Accuplacer, IELTS, or TOEFL score, or college-level transfer credit or test credit equivalent to ASU's first-year composition course(s), determine otherwise. Students on Polytechnic, Downtown Phoenix and West Campuses are encouraged to complete the Directed Self-Placement survey to choose the first-year composition option they believe best suits their needs. Visit: <https://cisa.asu.edu/DSP>
- 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.

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 2023 - 2024 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.