2023 - 2024 Major Map

Biochemistry, BS

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

Term 1 0 - 14 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
CHM 117: General Chemistry for Majors I (SQ) AND CHM 111: General Chemistry Laboratory for Majors I (SQ) OR CHM 113: General Chemistry I (SQ)	4	C	• ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students. • Students placing in lower level math classes can still graduate in four years. See an academic advisor for planning. • Select your Career Interest Areas and play me3@ASU.
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	
LIA 101: Student Success in The College of Liberal Arts and Sciences	1		
MAT 270: Calculus with Analytic Geometry I (MA) OR MAT 265: Calculus for Engineers I (MA)	3-4	C	
Humanities, Arts and Design (HU) AND Global Awareness (G)	3		
Term hours subtotal:	14-15		

Term 2 14 - 28 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
BIO 181: General Biology I (SQ)	4	C	• Research the timeline for health careers and professional program admissions preparation.
CHM 118: General Chemistry for Majors II (SQ) AND CHM 112: General Chemistry Laboratory for Majors II (SQ) OR CHM 116: General Chemistry II (SQ)	4	C	
MAT 271: Calculus with Analytic Geometry II (MA) OR MAT 266: Calculus for Engineers II (MA)	3-4	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	
Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Term hours subtotal:	14-15		

Term 3 28 - 43 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
CHM 233: General Organic Chemistry I	3	C	• Research admission requirements for health-related professional schools. • Discuss study abroad opportunities with a School of Molecular Sciences advisor.
CHM 237: General Organic Chemistry Laboratory I	1	C	
PHY 111: General Physics (SQ)	3	C	
BIO 182: General Biology II (SG)	4	C	
PHY 113: General Physics Laboratory (SQ)	1	C	
Computer/Statistics/Quantitative Applications (CS)	3		
Complete First-Year Composition requirement.			
Complete Mathematics (MA) requirement.			
Term hours subtotal:	15		

Term 4 43 - 60 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes

PHY 112: General Physics (SQ)	3	C
CHM 234: General Organic Chemistry II	3	C
CHM 238: General Organic Chemistry Laboratory II	1	C
PHY 114: General Physics Laboratory (SQ)	1	C
Humanities, Arts and Design (HU) AND Historical Awareness (H)	3	
Social-Behavioral Sciences (SB)	3	
Elective	3	
Term hours subtotal:	17	

- Due to lower-division prerequisites, pre-health students are encouraged to choose upper-division General Studies (HU or SB) and Science and Society courses.
- Connect with a career advisor by registering for a Handshake account.

Term 5 60 - 75 Credit Hours Necessary course signified by	**Hours**	**Minimum Grade**
BCH 341: Physical Chemistry with a Biological Focus	3	C
BCH 461: General Biochemistry	3	C
Advanced BIO Elective	3-4	C
Social-Behavioral Sciences (SB)	3	
Upper Division Elective	3	
Term hours subtotal:	15-16	

- Create a first draft resume.

Term 6 75 - 90 Credit Hours Necessary course signified by	**Hours**	**Minimum Grade**
BCH 462: General Biochemistry	3	C
BCH 463: Biophysical Chemistry	3	C
Advanced BIO Elective	3-4	C
Literacy and Critical Inquiry (L)	3	
Upper Division Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C) OR Upper Division Social-Behavioral Sciences (SB) AND Upper Division Cultural Diversity in the U.S. (C)	3	
Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).		
Term hours subtotal:	15-16	

- This is an ideal semester to study abroad. BCH courses may be taken in the final two terms.
- Explore internship opportunities in industry and health fields.

Term 7 90 - 105 Credit Hours Necessary course signified by	**Hours**	**Minimum Grade**
BCH 467: Analytical Biochemistry Laboratory (L)	3	C
Science and Society Elective	3	C
Upper Division Elective OR BCH 484: Internship	3	
Complete 2 courses: Upper Division Elective	6	
Term hours subtotal:	15	

- Apply for full-time career opportunities .

Term 8 105 - 120 Credit Hours Necessary course signified by	**Hours**	**Minimum Grade**
BCH OR CHM Upper Division Elective	3	C
Upper Division Science and Society Elective	3	C
Complete 3 courses: Upper Division Elective	9	
Term hours subtotal:	15	

- Upper Division BCH or CHM Elective must be completed at Tempe campus and cannot be met with BCH 361, BCH 367, BCH 371, BCH 372, CHM 341, CHM 460, or CHM 480.

- 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.

- With prior approval of an academic advisor in the School of Molecular Sciences, other courses may be used to satisfy the Advanced BIO Elective requirement.

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

Advanced BIO Elective
BIO 201: Human Anatomy and Physiology I (SG)
BIO 202: Human Anatomy and Physiology II (SG)
BIO 302: Cancer--Mother of All Diseases (L)
BIO 325: Oceanography or CHM 385: Oceanography
BIO 340: General Genetics or MBB 347: Molecular Genetics: From Genes to Proteins
BIO 351: Developmental Biology
BIO 353: Cell Biology
BIO 360: Animal Physiology
BIO 440: Functional Genomics
BIO 446: Principles of Human Genetics (L)
BIO 450: Advanced Developmental Biology
BIO 451: Cell Biotechnology: Cell Culture, Immunocytochemistry and Bioimaging
BIO 465: Neurophysiology
MBB 343: Genetic Engineering and Society (L)
MBB 350: Applied Genetics
MIC 205: Microbiology (SG)
MIC 206: Microbiology Laboratory (SG)
MIC 220: Biology of Microorganisms
MIC 360: Bacterial Physiology
MIC 379: Medical Bacteriology
MIC 461: Geomicrobiology

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.