

BIOCHEMISTRY - BS

This program is designed to provide a solid background in chemistry and the physical sciences, as well as in the biological sciences.

Biochemistry is an especially versatile major giving undergraduates many options when they complete their BS degree. A biochemistry major provides a strong background for entering graduate school in a variety of fields, and the majority of biochemistry majors go on to graduate school or to professional schools such as medicine, veterinary medicine or dentistry. Biochemistry majors excel in biomedical professional schools because of their strong background in the basic sciences. In addition, a wide variety of job opportunities is open to biochemistry majors with a BS degree. Many find rewarding careers working in laboratories as research scientists, forensic scientists and technicians in clinical, governmental and university laboratories. Biochemists are also employed by diverse companies in the chemical, pharmaceutical, agricultural, food and scientific equipment industries.

Program Requirements

First Year

Fall		Semester Credit Hours
BICH 101/ GENE 101	Introduction to Biochemical and Genetics Research Methods ¹	1
BIOL 111	Introductory Biology I	4
CHEM 119	Fundamentals of Chemistry I	4
MATH 151 or MATH 171	Engineering Mathematics I or Calculus I	4
University Core Curriculum (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ²		3
Semester Credit Hours		16

Spring

BICH 102/ GENE 102	Introduction to Biochemical and Genetic Techniques	1
BIOL 112	Introductory Biology II	4
CHEM 120	Fundamentals of Chemistry II	4
ENGL 104 or ENGL 103	Composition and Rhetoric or Introduction to Rhetoric and Composition	3
MATH 152 or MATH 172	Engineering Mathematics II or Calculus II	4
Semester Credit Hours		16

Second Year

Fall		Semester Credit Hours
BICH 201/ GENE 201	Introduction to Information Literacy and Artificial Intelligence Tools for Biochemistry and Genetics	1
Select one of the following: ¹		4
CHEM 227 & CHEM 237	Organic Chemistry I and Organic Chemistry Laboratory	
CHEM 257	Organic Chemistry I - Structure and Function	

PHYS 206 & PHYS 226	Newtonian Mechanics for Engineering and Science and Physics of Motion Laboratory for the Sciences	4
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Select one of the following:		3
COMM 203	Public Speaking	
COMM 205	Communication for Technical Professions	
COMM 243	Argumentation and Debate	
ENGL 203	Writing about Literature	
ENGL 210	Technical and Professional Writing	

University Core Curriculum (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ²		3
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Semester Credit Hours 15

Spring

BICH 202/ GENE 202	Biochemical and Genetic Concepts in Medicine - Case Studies	1
BICH 491	Research	1
Select one of the following: ¹		4

CHEM 228 & CHEM 238	Organic Chemistry II and Organic Chemistry Laboratory	
CHEM 258	Organic Chemistry II - Reactivity and Applications	

PHYS 207 & PHYS 227	Electricity and Magnetism for Engineering and Science and Electricity and Magnetism Laboratory for the Sciences	4
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University Core Curriculum (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ²		3
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Semester Credit Hours 13

Third Year

Fall		Semester Credit Hours
BICH 440	Biochemistry I ¹	3
BICH 404	Biochemical Calculations ¹	2
BICH 491	Research ¹	1
CHEM 321	Physical Chemistry for Life Sciences	3
GENE 303 or GENE 302	Fundamentals of Genetics or Principles of Genetics	3
GENE 314	Principles of Genetics Laboratory	1
University Core Curriculum (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ²		3

Semester Credit Hours 16

Spring

BICH 414 or BICH 432/ GENE 432	Biochemical Techniques I ¹ or Laboratory in Molecular Genetics	2
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BICH 441	Biochemistry II ¹	3
BICH 491	Research ¹	1

STAT 302 or STAT 312	Statistical Methods or Statistics for Biology	3
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University Core Curriculum (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ²		3
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General elective ³	3
Semester Credit Hours	15
Fourth Year	
Fall	
BICH 431/ GENE 431	Molecular Genetics ¹ 3
BICH 491	Research ¹ 1
BIOL 351	Fundamentals of Microbiology 4
Biochemistry elective ⁵	3
General elective ³	3
Semester Credit Hours	14
Spring	
University Core Curriculum (https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ²	6
Biochemistry elective ⁵	3
General elective ³	6
Semester Credit Hours	15
Total Semester Credit Hours	120

¹ Must make a grade of C or better.

² To be selected from the University Core Curriculum (<https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/>). Of the 21 hours shown as University Core Curriculum (<https://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/>) electives, 3 must be from language, philosophy and culture, 3 from creative arts, 3 from social and behavioral sciences, 6 from American history, 6 from POLS 206 and POLS 207. The graduation requirements include a requirement for 3 hours of International and Cultural Diversity (<https://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/>) courses and 3 hours of Cultural Discourse (<https://catalog.tamu.edu/undergraduate/general-information/degree-information/cultural-discourse-requirements/>) courses which may be met by courses satisfying the Core Curriculum requirements if they are also on the approved list of international and cultural diversity courses.

³ Select from any course 100-499 not used elsewhere (except BICH 303, BICH 410-412 (<https://catalog.tamu.edu/undergraduate/course-descriptions/bich/>); MATH 100-104, 131-148 (<https://catalog.tamu.edu/undergraduate/course-descriptions/math/>); STAT 201). Often used for a minor. Students intending to pursue an advanced degree in biochemistry are strongly encouraged to use some free electives for additional upper division courses in BICH (<https://catalog.tamu.edu/undergraduate/course-descriptions/bich/>), GENE (<https://catalog.tamu.edu/undergraduate/course-descriptions/gene/>), BIOL (<https://catalog.tamu.edu/undergraduate/course-descriptions/biol/>), CHEM (<https://catalog.tamu.edu/undergraduate/course-descriptions/chem/>), MATH (<https://catalog.tamu.edu/undergraduate/course-descriptions/math/>) or STAT (<https://catalog.tamu.edu/undergraduate/course-descriptions/stat/>).

⁴ The fourth registered hour of research must be taken as writing intensive.

⁵ Hours to be selected from any 400-level course in Biochemistry with approval of student's academic advisor. BICH 404, BICH 414, BICH 431/GENE 431, BICH 432/GENE 432, BICH 440, BICH 441, or BICH 491 may not be used to satisfy this requirement.