BIOCHEMISTRY AND MOLECULAR BIOLOGY: BIOTECHNOLOGY, BSAG

Requirements for Students Matriculating in or before Academic Year 2025-2026. Learn more about University Academic Regulation 3.1 (http://catalog.okstate.edu/university-academic-regulations/#matriculation).

Minimum Overall Grade Point Average: 2.00
Total Hours: 120

Code	Title	Hours
General Education Requirements		
English Composition		
See Academic Regulation 3.5 (http://catalog.okstate.edu/university-academic-regulations/#english-composition/)		
ENGL 1113	Composition I	3
or ENGL 1313	Critical Analysis and Writing I	
ENGL 1213	Composition II	3
or ENGL 1413	Critical Analysis and Writing II	
American History & Government		
Select one of the following:		3
HIST 1103	Survey of American History	
HIST 1483	American History to 1865 (H)	
HIST 1493	American History Since 1865 (DH)	
POLS 1113	American Government	3
Quantitative Thought & Logical Reasoning (Q)		
MATH 1813	Preparation for Calculus (Q)	3
Understanding Humanities-Human Heritage & Cultures (H)		
Courses designated (H)		6
Reasoning in the Natural Sciences (N)		
CHEM 1314	Chemistry I (LN)	4
Select two hours of courses designated (N)		2
Exploring Society & Human Behavior (S)		
AGEC 1113	Introduction to Agricultural Economics (S)	3
Diversity (D)		
Courses designated (D)		3
Global Cultural Competency (G)		
Courses designated (G)		3
Additional General Education		
Additional general education credit hours (at least 4 hours) are required to meet the total 40-hour minimum. If courses carry more than one general education designation and can be used to meet multiple minimum general education designation hours above, more than 4 hours of additional general education will be required here to meet the 40-hour minimum.		
Courses designated (Q), (H), (N), (S), (D), (G), or (F).		4
Hours Subtotal		**40**
College/Departmental Requirements		
UNIV 1111	First Year Seminar (or other approved first year seminar course)	1
From two of the following groups, select one course:		6
Group 1		
PLNT 1213	Introduction to Plant and Soil Systems (N)	
HORT 1013	Principles of Horticultural Science (LN)	
NREM 1113	Elements of Forestry	
Group 2		
SOIL 1113	Land, Life and the Environment (N)	
SOIL 2124	Fundamentals of Soil Science (N)	
Group 3		
ANSI 1023 & ANSI 1021	Introduction to the Animal Sciences and Introduction to the Animal Sciences Lab	
or ANSI 1124	Introduction to the Animal Sciences	
FDSC 1133	Fundamentals of Food Science	
ENTO 2993	Introduction to Entomology (LN)	
ENTO 3003	Livestock Entomology	
Group 4		
NREM 1014	Introduction to Natural History (LN)	
NREM 3013	Applied Ecology and Conservation	
ENVR 1113	Elements of Environmental Science (N)	
BIOC 2344	Chemistry and Applications of Biomolecules	
BIOC 3713	Biochemistry I	
LA 1013	Introduction to Landscape Architecture	
Written and Oral Communication		
Select one of the following:		3
AGCM 3103	Written Communications in Agricultural Sciences and Natural Resources	
BCOM 3113	Written Communication	
ENGL 3323	Technical Writing [2]	
Select one of the following:		3
AGCM 3203	Oral Communications in Agricultural Sciences & Natural Resources (S) [3]	
SPCH 2713	Introduction to Speech Communication (S) [3]	
SPCH 3733	Elements of Persuasion (S) [3]	
Hours Subtotal		**13**
Major Requirements		
BIOC 1990	Freshman Research in Biochemistry and Molecular Biology [4]	1
BIOC 2352	Fundamental Biochemistry	2
BIOC 3723	Biochemistry and Molecular Biology Laboratory	3
BIOC 3813	Biochemistry II	3
BIOC 4990	Undergraduate Research [4]	2
BIOC 4113	Molecular Biology	3
BIOC 3153	Synthetic Biology	3
BIOC 4013	Biotechnology Development and Implementation	3
CHEM 1515	Chemistry II (LN) [1]	5
CHEM 2113	Principles of Analytical Chemistry	3
CHEM 3053	Organic Chemistry I	3
CHEM 3112	Organic Chemistry Laboratory	2
CHEM 3153	Organic Chemistry II	3

Select one of the following:		3
MATH 2123	Calculus for Technology Programs I (Q)	
STAT 2013	Elementary Statistics (Q)	
STAT 4013	Statistical Methods I (Q)	
MICR 2123	Introduction to Microbiology	3
MICR 2132	Introduction to Microbiology Laboratory	2
PHYS 1114	College Physics I (LN)	4
or PHYS 2014	University Physics I (LN)	
BIOL 1113 & BIOL 1111	Introductory Biology (N) and Introductory Biology Laboratory (LN)	4
or BIOL 1114	Introductory Biology (LN)	
BIOL 1604	Animal Biology	4
or PBIO 1404	Plant Biology (LN)	
Select one of the following:		3
ANSI 3423	Animal Genetics	
BIOL 3023	General Genetics	
PLNT 3554	Plant Genetics and Biotechnology	
Related Courses		
Select a minimum of 8 hours of BIOC or courses related to BIOC, subject to Advisor approval, of the following:		8
BIOC 2202	Medicine and Molecules	
BIOC 3003	Hypothesis-Driven Undergraduate Research	
BIOC 4023	Molecular Biology and Stress Response of Plants	
BIOC 4213	Disease and Metabolism	
BIOC 3523	Biochemistry of Disease at the Cellular Level	
BIOC 4723	Introduction to Bioinformatics	
BIOC 3223	Physical Chemistry for Biologists	
or CHEM 3433	Physical Chemistry I	
BIOC 4883	Senior Seminar in Biochemistry	
BIOC 4990	Undergraduate Research [4]	
MICR 3033	Cell and Molecular Biology	
PHYS 1214	College Physics II (LN)	
or PHYS 2114	University Physics II (LN)	
PLNT 4933	Gene Editing and Genetically Modified Crops	
Hours Subtotal		**67**
Electives		
Select 0 hours to complete required total for degree		0
Hours Subtotal		**0**
Total Hours		**120**

1

College & Departmental requirements that may be used to meet General Education requirements.

2

If ENGL 3323 Technical Writing is substituted for ENGL 1213 Composition above; hours in this block are reduced by 3.

3

If used as (S) course above, hours in this block are reduced by 3.

4

Total hours of BIOC 1990 Freshman Research in Biochemistry and Molecular Biology and BIOC 4990 Undergraduate Research may not exceed 10 hours.

Other Requirements

- A minimum of 40 semester credit hours and 100 grade points must be earned in courses numbered 3000 or above.
- A 2.00 GPA or higher in upper-division hours.

Additional State/OSU Requirements

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 and 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; one-fourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2031.