CHEMICAL ENGINEERING: BIOMEDICAL/BIOCHEMICAL, BSCH

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: 127

Code	Title	Hours
General Education Requirements		
All General Education coursework requirements are satisfied upon completion of this degree plan		
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	
Select one of the following:		3
ENGL 1213	Composition II	
ENGL 1413	Critical Analysis and Writing II	
ENGL 3323	Technical Writing	
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
Analytical & Quantitative Thought (A)		
MATH 2144	Calculus I (Q)	4
MATH 2153	Calculus II (Q)	3
MATH 2163	Calculus III	3
Humanities (H)		
PHIL 3833	Biomedical Ethics (H) (or equivalent with Chemical Engineering Advisor approval)	3
Select 3 hour course designated (H)		3
Natural Sciences (N)		
Must include one Laboratory Science (L) course		
CHEM 1515	Chemistry II (LN)	5
BIOL 1113 & BIOL 1111	Introductory Biology (N) and Introductory Biology Laboratory (LN)	4
or BIOL 1114	Introductory Biology (LN)	
Social & Behavioral Sciences (S)		*3*
Select 3 hours of any course designated (S)		
Hours Subtotal		**40**
Diversity (D) & International Dimension (I)		
May be completed in any part of the degree plan		
Select at least one Diversity (D) course		
Select at least one International Dimension (I) course		
College/Departmental Requirements		
UNIV 1111	First Year Seminar (or other approved first year seminar course)	1
Basic Science		
PHYS 2014	University Physics I (LN)	4
CHEM 1314	Chemistry I (LN)	4
Engineering		
ENGR 1412	Introductory Engineering Computer Programming	2
ENGR 2421	Engineering Data Acquisition Controls Lab	1
Engineering Science		
ENSC 2113	Statics	3
ENSC 2613	Introduction to Electrical Science	3
ENSC 3231	Fluids and Hydraulics Lab	1
ENSC 3233	Fluid Mechanics	3
ENSC 3313	Materials Science	3
CHEM 3053	Organic Chemistry I	3
Select one of the following:		5
CHEM 3153 & CHEM 3112	Organic Chemistry II and Organic Chemistry Laboratory	
BIOC 3653 & BIOC 3723	Survey of Biochemistry and Biochemistry and Molecular Biology Laboratory	
Hours Subtotal		**33**
Major Requirements		
Mathematics		
MATH 2233	Differential Equations	3
or MATH 3263	Linear Algebra and Differential Equations	
Chemical Engineering		
CHE 2023	Introduction to Chemical Engineering Thermodynamics	3
CHE 2033	Introduction to Chemical Process Engineering	3
CHE 2581	Chemical Engineering Seminar I	1
CHE 3013	Rate Operations I	3
CHE 3113	Rate Operations II	3
CHE 3123	Chemical Reaction Engineering	3
CHE 3333	Introduction to Transport Phenomena	3
CHE 3473	Chemical Engineering Thermodynamics	3
CHE 3543	Introduction to Chemical Process Analytics	3
CHE 3581	Chemical Engineering Seminar II	1
CHE 4002	Chemical Engineering Laboratory I	2
CHE 4112	Chemical Engineering Laboratory II	2
CHE 4124	Chemical Engineering Design I	4
CHE 4224	Chemical Engineering Design II	4
CHE 4581	Chemical Engineering Seminar III	1
CHE 4843	Chemical Process Instrumentation and Control	3
Hours Subtotal		**45**
Controlled Electives		
Advanced Chemical Engineering		
Select 3 hours from the following:		3

CHE 3202	Interdisciplinary Design and Build for Chemical Systems I	
or CHE 3211	Interdisciplinary Design and Build for Chemical Systems II	
CHE 4073	Introduction to Tissue Engineering	
CHE 4133	Introduction to Catalysis and Photocatalysis	
CHE 4183	Drug Delivery	
CHE 4283	Bioprocess Engineering	
CHE 4293	Biomedical Engineering	
CHE 4323	Electrochemical Engineering	
CHE 4343	Environmental Engineering	
CHE 4493	Introduction to Molecular Modeling and Simulation	
CHE 4523	Introduction to Colloid Processing	
CHE 4543	Machine Learning for Chemical Processes	
CHE 4603	Introduction to Membrane Separations	
CHE 4753	Introduction to Applied Numerical Computing for Scientists and Engineers	
CHE 4773	Introduction to Computational Fluid-Particle Dynamics	
Bioengineering/Bioscience Electives		
Select 6 hours of the following:		6
BAE 3113	Biological Applications in Engineering	
BAE 4413	Food Engineering	
BIOC 3223	Physical Chemistry for Biologists	
BIOC 3653	Survey of Biochemistry [1]	
BIOC 3713	Biochemistry I [1]	
BIOC 3723	Biochemistry and Molecular Biology Laboratory	
BIOC 4113	Molecular Biology	
BIOC 5824	Biochemical Laboratory Methods	
BIOL 1604	Animal Biology	
BIOL 3023	General Genetics	
CHE 4283	Bioprocess Engineering	
CHE 4293	Biomedical Engineering	
CHE 5283	Advanced Bioprocess Engineering	
CHE 5293	Advanced Biomedical Engineering	
MICR 2123 & MICR 2132	Introduction to Microbiology and Introduction to Microbiology Laboratory	
MICR 3033	Cell and Molecular Biology	
Hours Subtotal		**9**
Total Hours		**127**

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Cannot use both ANSI 3423 Animal Genetics & BIOL 3023 General Genetics or BIOC 3653 Survey of Biochemistry & BIOC 3713 Biochemistry I.

Graduation Requirements

1. A minimum GPA of 2.00 is required in all CHE coursework.
2. Must Receive a "C" or better in the following CHE courses: CHE 2023, CHE 2033, CHE 3013, CHE 3113, CHE 3123, CHE 3333, CHE 3473, CHE 3543 and CHE 4002.
3. The major engineering design experience, capstone course, is satisfied by CHE 4124 Chemical Engineering Design I and CHE 4224 Chemical Engineering Design II.

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.