CHEMICAL ENGINEERING: BIOMEDICAL/BIOCHEMICAL, BSCH

Requirements for Students Matriculating in or before Academic Year 2019-2020. 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: 134

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 [1]	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 (A) [1]	4
MATH 2153	Calculus II (A) [1]	3
MATH 2163	Calculus III [1]	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) [1]	5
BIOL 1114	Introductory Biology (LN) [1]	4
Social & Behavioral Sciences (S)		
Any course designated (S)		6
Hours Subtotal		43
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		
Basic Science		
PHYS 2014	University Physics I (LN) [1]	4
PHYS 2114	University Physics II (LN) [1]	4
Engineering		
ENGR 1111	Introduction to Engineering	1
ENGR 1412	Introductory Engineering Computer Programming [1]	2
Engineering Science		
ENSC 2113	Statics	3
ENSC 2143	Strength of Materials	3
ENSC 2613	Introduction to Electrical Science	3
ENSC 2213	Thermodynamics [1]	3
ENSC 3233	Fluid Mechanics [1]	3
ENSC 3313	Materials Science	3
Mathematics		
Select one of the following:		3
STAT 2013	Elementary Statistics (A)	
STAT 2023	Elementary Statistics for Business and Economics (A)	
STAT 2053	Elementary Statistics for the Social Sciences (A)	
STAT 4013	Statistical Methods I (A)	
STAT 4033	Engineering Statistics	
STAT 4053	Statistical Methods I for the Social Sciences (A)	
STAT 4073	Engineering Statistics with Design of Experiments	
Chemistry		
CHEM 3053	Organic Chemistry I [1]	3
Select one of the following:		5
CHEM 3153 & CHEM 3112	Organic Chemistry II and Organic Chemistry Laboratory [1]	
BIOC 3653 & BIOC 3723	Survey of Biochemistry and Biochemistry and Molecular Biology Laboratory [1]	
Hours Subtotal		40
Major Requirements		
Mathematics		
MATH 2233	Differential Equations [1]	3
or MATH 3263	Linear Algebra and Differential Equations	
Chemistry		
CHEM 3433	Physical Chemistry I	3
Chemical Engineering		
CHE 2033	Introduction to Chemical Process Engineering [1]	3
CHE 2581	Chemical Engineering Seminar I [1]	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 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		42
Controlled Electives		
Advanced Chemical Science		
Select 3 hours of the following or similar advanced chemical transformation of matter courses approved by advisors:		3
ANSI 3423	Animal Genetics [2]	
BIOC 3653	Survey of Biochemistry [2]	
BIOC 3723	Biochemistry and Molecular Biology Laboratory	
BIOC 4113	Molecular Biology	
BIOL 3023	General Genetics [2]	
CHEM 3153	Organic Chemistry II	
CHEM 3353	Descriptive Inorganic Chemistry	
CHEM 3553	Physical Chemistry II	
CHEM 4023	Modern Methods of Chemical Analysis	
FDSC 3373	Food Chemistry I	
FDSC 4373	Food Chemistry II	
GEOL 4403	Geochemistry	
MICR 3033	Cell and Molecular Biology	
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	
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		134

[1] Courses that must be completed prior to admission to professional school.

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

Other Requirements

Admission to Professional School (required)

- Refer to the OSU Catalog corresponding to your matriculation date for detailed admissions requirements.

Graduation Requirements

1. A minimum GPA of 2.00 is required in all CHE, CHEM, ENGR, and ENSC coursework.
2. 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 or 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 2025.