

BS in Chemical Engineering with Emphasis in Biochemical

Degree Program Description

The biochemical emphasis builds on the core Chemical Engineering curriculum (<https://catalog.missouri.edu/collegeofengineering/chemicalengineering/bs-chemical-engineering/>) to create expertise in chemical reactions associated with biological processes. Students achieving this emphasis area will be exposed to basic concepts of living systems, metabolism, biological polymers, hormones, and basic genetics through courses in biology and biochemistry, as well as biomass, enzyme, yeast, and other biochemical processes, including the associated industrial operations. Students completing this emphasis will be well-poised for careers in biomedical engineering, human or veterinary medicine, pharmaceuticals, and agricultural/food engineering. Students will also be in a strong position to pursue graduate degrees in biological or biomedical engineering, dentistry, or human or veterinary medicine.

Major Program Requirements

Students must complete all BSChE requirements (<https://catalog.missouri.edu/collegeofengineering/chemicalengineering/bs-chemical-engineering/>), including the emphasis area requirements below.

Emphasis Area Requirements

BIO_SC 1500	Introduction to Biological Systems with Laboratory	5
BIOCHM 4270	Biochemistry (I) *	3
BIOCHM 4272	Biochemistry (II)	3

Two courses from the following list

BIOL_EN 3330	Fermentation for Food, Fuel and Beverages
BIOL_EN 4470	Biomolecular Engineering and Nanobiotechnology
CH_ENG 4315	Principles of Biochemical Engineering
CH_ENG 4316	Biomass Refinery Operations
CH_ENG 4160	Food Process Engineering
CH_ENG 4360	Biomanufacturing Technologies

* Satisfies the chemistry elective

Semester Plan

Below is a sample plan of study, semester by semester. A student's actual plan may vary based on course choices where options are available.

First Year			
Fall	CR	Spring	CR
MATH 1500		5 MATH 1700	5
CHEM 1400		3 CHEM 1410	3
CHEM 1401		1 CHEM 1411	1
CH_ENG 1000		2 PHYSCS 2750	5
ENGLSH 1000		3 CH_ENG 2225	3

Approved history/poli. sci. elective		3	
		17	17

Second Year			
Fall	CR	Spring	CR
MATH 2300		3 MATH 4100	3
CHEM 2100		3 CHEM 2110	3
PHYSCS 2760		5 CHEM 2130	2
CH_ENG 2226		3 CH_ENG 3262	3
CH_ENG 3261		3 Humanities/fine arts or social/behavioral sciences	3
		17	14

Third Year			
Fall	CR	Spring	CR
STAT 4710		3 CH_ENG 3234	3
CH_ENG 3233		3 CH_ENG 3235	3
BIO_SC 1500		5 CH_ENG 4370	3
BIOCHM 4270		3 BIOCHM 4272	3
Economics elective		3 Humanities/fine arts or social/behavioral sciences	3
		17	15

Fourth Year			
Fall	CR	Spring	CR
CH_ENG 3243W		3 CH_ENG 4315	3
CH_ENG 4360		3 CH_ENG 4980W	3
CH_ENG 4363		3 Chemical engineering elective	3
CH_ENG 4385		3 Engineering technical elective	3
Humanities/fine arts or social/behavioral sciences		3 Humanities/fine arts or social/behavioral sciences	3
		15	15

Total Credits: 127