

Biological Engineering

University of Missouri - Columbia

Johnson County Community College Transfer Program to the University of Missouri - Columbia	Engineering Advising Office
Engineering	(573) 884-6961
Biological Engineering, BSBE	muengradvising@missouri.edu
Academic Year 2025-2026	https://engineering.missouri.edu/degree/bachelorof-science-in-biological-engineering/

Program Description

Biological Engineering is a science-based engineering curriculum that integrates engineering and biological sciences in the areas of health, sustainability and environmental stewardship. Students are prepared in three engineering areas: biomedical, bioprocess, and bioenvironmental engineering. In addition to the core program courses, the program includes courses in basic sciences; social, behavioral and engineering sciences; and humanities and fine arts. In a capstone design course, each student completes a design project under the direction of a faculty advisor. Graduates are hired by biotechnology, medical, pharmaceutical, food and agricultural companies and government agencies, or opt to further their education in graduate, medical or veterinary medical school. Graduates are well prepared to take the Fundamentals of Engineering exam during their senior year, which is the first step toward obtaining a Professional Engineer license. The BS in Biological Engineering is accredited by the Engineering Accreditation Commission of ABET.

Admission Requirements

Major Program Requirements - The curriculum encompasses basic sciences, social and behavioral sciences, humanities and fine arts, engineering sciences and topics, and program core courses. The core courses cover topics of biological engineering principles and design. In a capstone design course, each student completes a design project under the direction of a faculty advisor. Technical electives allow students to place emphasis on biomedical, bioprocess or bioenvironmental engineering.

All requirements listed below are in addition to University graduation requirements (<https://catalog.missouri.edu/academicdegree/requirements/universityrequirements/>), including University general education (<https://catalog.missouri.edu/academicdegree/requirements/generaleducationrequirements/>) and College of Engineering requirements. All pre-requisites required for Basic Engineering, Biological Engineering, and Technical Elective courses must be completed with a grade of "C-" or better.

Visit the JCCC/MU General Education (<https://www.jccc.edu/student-resources/transfer/files/transfer-guides/mu-gen-ed-reqs.pdf>) guide for equivalent courses.

Transfer Students - Students wishing to transfer to MU from an accredited college or university are subject to University regulations described in this catalog. The College of Engineering cooperates with many colleges through articulation agreements that help students transfer to MU with maximum ease and minimum loss of credits. A student may contact the College of Engineering Admissions Office to determine if their home institution participates in an agreement with the College of Engineering. Students who have completed all courses specified in the articulation agreement will be admitted into their desired degree program. All other transfer students are admitted on program discretion. Typically, transfer students with freshmen status must satisfy the same requirements as students entering college for the first time. Other students are admitted only after review of their transcript.

To be recommended for a BS degree from the College of Engineering, a student transferring from an accredited institution must complete at least 30 upper-level credits in the degree program at a UM System campus. At least 21 of the 30 credits must be upper-level engineering courses approved by the department awarding the degree. A student transferring with senior standing from another UM System campus must complete the last 15 credits in residence on the campus where the degree program is located. Twelve of these 15 credits must be in engineering and approved by the department awarding the degree.

Any student whose enrollment in any college-level academic program resulted in dismissal, departure or who is on probation will not be admitted to the College of Engineering.

International Admission - International undergraduate students interested in studying in the College of Engineering can visit the MU Office of International Admissions (<https://admissions.missouri.edu/international-students/>) for information on academic and English language admission requirements. Any questions regarding international student admissions can be directed to that office at inter@missouri.edu.

GPA Requirements for Graduation from the College of Engineering:

- GPA of record of at least 2.0
- GPA of at least 2.0 in all engineering courses offered by one of the four campuses of the UM System. "Engineering courses" include all courses that are offered through the College of Engineering or its equivalent on the four campuses, or that have "Engineering" in the curricular designator. Only the last grade in a repeated course will be used in the calculation.

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	Title		Hours		
Mathematics and Statistics – 19 hours					
MATH 241	Calculus I*	5	MATH 1500 & MATH 1500H	Analytic Geometry/ Calculus I and Analytic Geometry Calc I	5
MATH 242	Calculus II*	5	MATH 1700	Calculus II	5
MATH 243	Calculus III*	5	MATH 2300	Calculus III	
MATH 254	Differential Equations*	4	MATH 4100	Differential Equations	
Basic Sciences – 28 hours					
BIOL 135	Principles of Cell and Molecular Biology	4	BIO_SC 1500	Introduction to Biological Systems with Laboratory	
CHEM 124 & CHEM 125	General Chemistry I Lecture* and General Chemistry I Lab*	4	CHEM 1400 & CHEM 1401	College Chemistry I and College Chemistry I Lab	1
CHEM 220	Organic Chemistry I*	5	CHEM 2100	Organic Chemistry I	
PHYS 220	Engineering Physics I*	5	PHYSICS 2750	University Physics I	5

PHYS 221	Engineering Physics II*	5	PHYSICS 2760	University Physics	5
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Biological Sciences Electives – 6 hours

BIOL 205	General Genetics*	4	BIO_SC 2200	General Genetics	4
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Select one of the following:

HORT 214	Woody Plants, Deciduous	3	PLNT_SCI 2110 Who Runs the World? Plants.
HORT 215	Woody Plants, Evergreens	3	PLNT_SCI 2110 Who Runs the World? Plants.
HORT 260	Horticulture Soils	3	SOIL 2100 Introduction to Soils

Basic Engineering – 18 hours

ENGR 121	Engineering Orientation	2	ENGINR 1000 Introduction to Engineering
ENGR 251	Statics*	3	ENGINR 1200 Statics and Elementary Strength of Materials
ENGR 284	Thermodynamics*	4	ENGINR 2300 Engineering Thermodynamics

Additional Requirements

ECON 231	Principles of Microeconomics (recommended as it meets the requirement for a cultural awareness course)	3	ECONOM 1014 Principles of Microeconomics
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* JCCC course has a prerequisite or corequisite.

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