

# BIOLOGICAL ENGINEERING

Biological engineering focuses on applying engineering principles to living organisms and systems, whether that is plant, animal, human, or their respective environments. In short, biological engineering is “engineering for life.”

## What Do Biological Engineers Do?

Biological engineering is a diverse field that provides opportunities for students to pursue a wide variety of occupations in industries, including pharmaceuticals, healthcare, prosthetics, food processing, environmental consulting, and precision farming. In our degree, students are constantly tasked with adapting to new and dynamic situations, whether they choose to attend professional/graduate school, conduct research, or work in industry.

## Major Program Focus Areas:

**Biomedical Engineering**—The application of engineering principles and design to medicine and biology for healthcare purposes. At LSU, several of our research labs focus on the following specializations: cancer therapeutics, cellular and molecular engineering, nanoparticle-targeted delivery, tissue engineering, and regenerative medicine.

**Bioenvironmental Engineering**—The application of engineering principles and design to natural resources and environmental protection. At LSU, several of our research labs focus on the following specializations in bioagricultural engineering: bioenergy/renewable fuels, water resources, and precision agriculture.

**Bioprocessing Engineering**—The application of engineering principles and design to pharmaceutical processing and food harvesting/processing systems or applications. At LSU, several of our research labs focus on the following specializations: colloidal/nanoparticle systems, food process engineering, and value-added bioprocessing.

**Biomechanical Engineering**—The application of engineering principles and design to assess the forces applied to biological structures. At LSU, several of our research labs focus on understanding the mechanical structure and forces applied to the body and the effect of those forces on the musculoskeletal system.

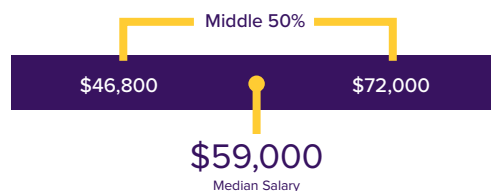
### PROGRAM FACTS

**2020–2021 Enrollment:** 220 students

In BE 1252 *Biology in Engineering*, students collaborate to design and build playgrounds at local schools. After more than 20 years, the Community Playground Project has built numerous playgrounds that now serve 12,000 students per day.

### GRADUATE STARTING SALARIES

Median full-time in field salary info for graduates of the last three years



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### CAREER OPTIONS

- Consulting
- Medical School
- Graduate School
- Technical Sales
- State Government
- Biomedical Firms
- Law School
- Food Processing
- Federal Government

# Biological Engineering CURRICULUM OVERVIEW

YEAR 1	YEAR 2	YEAR 3	YEAR 4	LEGEND
Introduction to Engineering Methods	Quantitative Biology in Engineering	Process Design in Biological Engineering	Mechanical Design for Biological Engineering	Major-specific Engineering
Biology in Engineering	Experimental Methods for Engineers	Transport Phenomena in Biological Engineering	Senior Engineering Design	Other Engineering
Physics I: Particle Mechanics	Mechanics of Materials (Strengths)	Engineering Properties of Biological Materials	Senior Engineering Design Lab	Science
Biology I	Circuits I	Professionalism for Biological Engineers	Engineering Design Elective	Math
Biology II	Statics	Engineering Design Elective	Engineering Design Elective	General Education
Biology I Lab	General Chemistry Lab	Thermodynamics	Dynamics and Vibrations	
Biology II Lab	Organic Chemistry I	Fluid Mechanics	Technical Elective or ROTC	
General Chemistry I	General Microbiology	The Elements of Biochemistry	Elective or ROTC	
General Chemistry II	Physics III: Fields: Gravity, Electricity and Magnetism	Economics	General Ed: Social Sciences	
Calculus I	Elementary Differential Equations	General Ed: Humanities	General Ed: Arts	
Calculus II	General Ed: English Comp II	General Ed: Humanities	General Ed: Humanities	
General Ed: English Comp I				