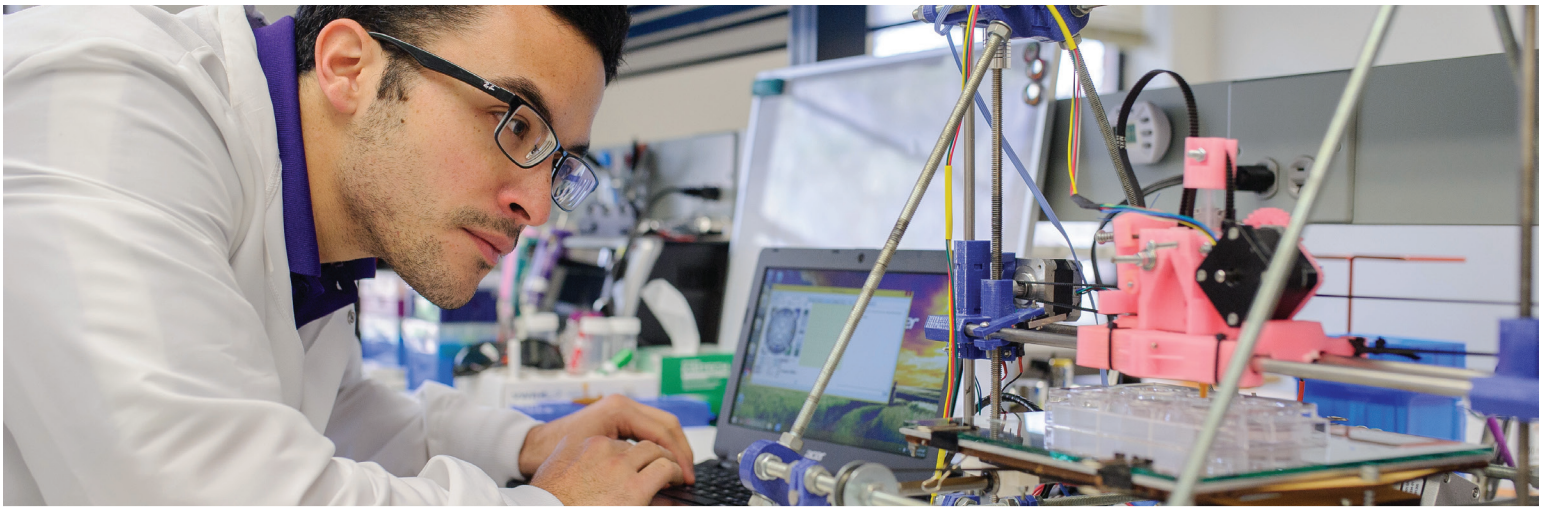

BIOLOGICAL ENGINEERING

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.

Our Program Has Four Major 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 skeletal structure.

PROGRAM FACTS

Size: 333 Students

In BE 1252 *Engineering Properties of Biological Materials*, 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

Full-time in field at May 2019 graduation

Middle 50%

$32,500 — $73,000

$ 55,000

Average Salary

Undergraduate Program Coordinator:
Nicholas Totaro, Instructor
Email: ntotar1@lsu.edu
Phone: 225-578-1083

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
Introduction to Engineering Methods	Quantitative Biology in Engineering	Process Design in Biological Engineers	Mechanical Design for Biological Engineering
Biology in Engineering	Experimental Methods for Engineers	Transport Phenomena in Biological Engineering	Senior Engineering Design
Physics I: Particle Mechanics	Mechanics of Materials (Strengths)	Engineering Properties of Biological Materials	Senior Engineering Design Lab
Biology I	Circuits I	Professionalism for Biological Engineers	Engineering Design Elective
Biology II	Statics	Engineering Design Elective	Engineering Design Elective
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			

LEGEND

- Major-specific Engineering
- Other Engineering
- Science
- Math
- General Education

Detailed curriculum flow-charts: https://www.lsu.edu/eng/current/resources/flowcharts.php