



# BIOMEDICAL ENGINEERING (BME)

Biomedical Engineering at Michigan State University engages faculty across disciplines, departments, and colleges to explore the intersection of medicine, human biology with engineering research, design, and practice. Through collaboration and interdisciplinary research, we aim to develop new methods for understanding, diagnosing, and treating medical conditions, and translating discoveries from the laboratory to the classroom and the clinic.

## ACADEMICS PROGRAM

- Biomedical Engineering Ph.D.
- Biomedical Engineering M.S.

## STUDENTS

**39**

Ph.D. Students  
(Fall 2025)

**11**

Degrees Granted  
(AY 2024-2025)

## FACULTY

The Department of Biomedical Engineering consists of core faculty and adjunct faculty with interdisciplinary interests ranging from bioinformatics to nano-robotics to neural engineering to molecular imaging.

## RESEARCH EXPENDITURES

**\$6.7 M**

(Fall 2025)

## FACILITIES

The department is growing rapidly and is located in a new 130,000 square-foot facility outfitted with state-of-the-art research tools and infrastructure. Our department is closely aligned with MSU's Institute for Quantitative Health Science & Engineering. Research and training opportunities are available through multiple new initiatives including investment in novel imaging systems, new partnerships with healthcare organizations McLaren Health and Henry Ford Health, and the MSU Facility for Rare Isotope Beams (FRIB), allowing for exploration of rare isotopes in medical diagnostics and treatment.



## RESEARCH AREAS

### Biomedical Devices

Envisioning vast improvements in human health through the design, development, and utilization of new tools that generate better health information more quickly, thus changing prognosis, diagnosis, and therapy paradigms.

### Biomedical Imaging

Creating and deploying innovative imaging technologies to reveal cellular and molecular features of mammalian biology in complex living systems.

### Developmental and Stem Cell Biology

Increasing our understanding of mammalian development from conception to birth, with a focus on stem cells and the environmental factors that can skew these processes, and working to redesign and reengineer living systems.

### Synthetic Biology

Developing a deeper understanding of biological systems in order to reengineer the natural cellular machinery and utilize it to develop innovative therapeutic strategies and rebuild biological systems.

### Chemical Biology

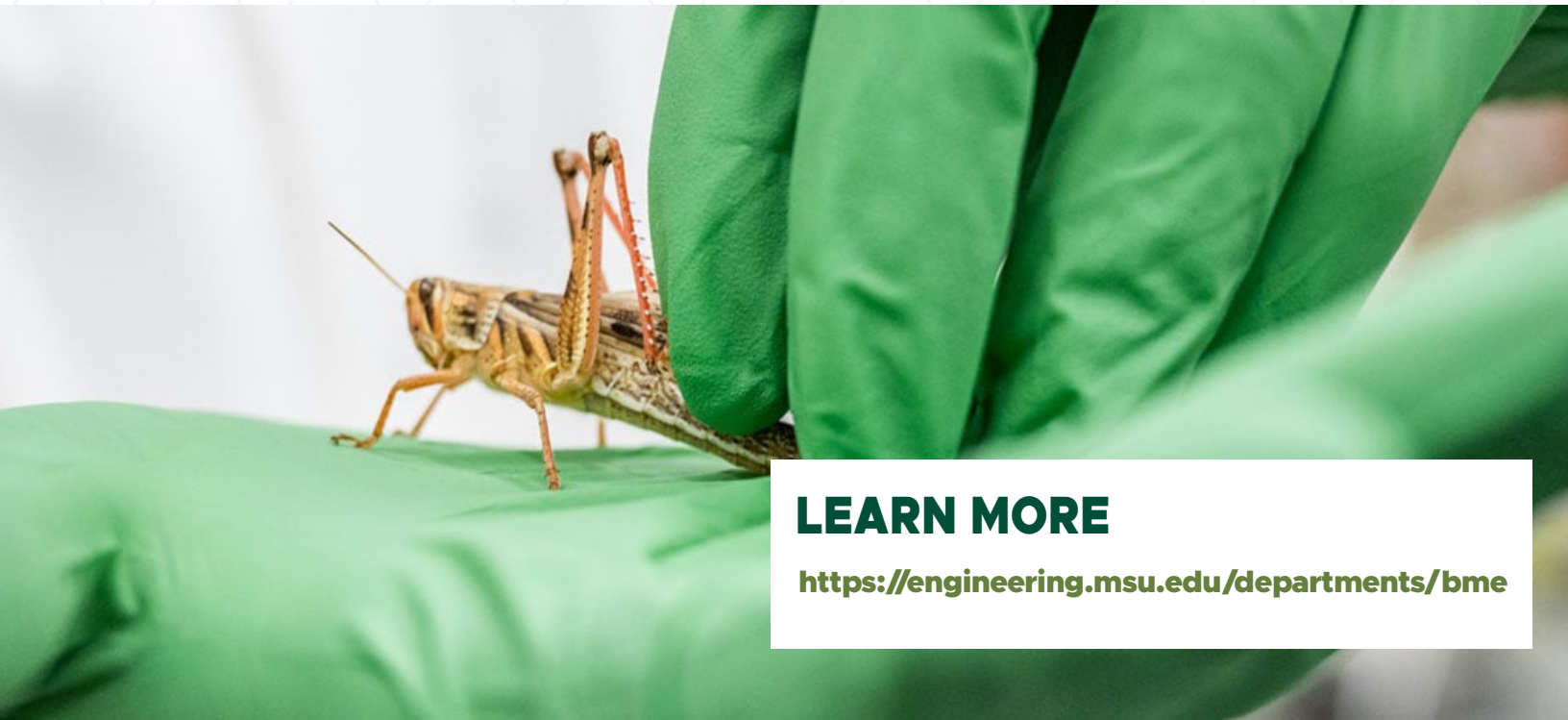
Redefining our understanding of biology through the development and use of chemicals that interact with biological functions and integrated systems.

### Systems Biology

Gaining a systems-level knowledge of biological systems to understand organization of life, from molecular to micro to macroscopic, assess dynamic interactions and identify signaling pathways, and implement a systems approach to translational and clinical applications.

### Neuroengineering

Working towards discovering fundamental principles of brain function and developing innovative diagnostic and therapeutic technologies using molecular, biological, and computational engineering.



**LEARN MORE**

<https://engineering.msu.edu/departments/bme>