

Does your company have
potential BE Capstone
Design Projects?

Do you want to support
the BE Capstone Design
Program?

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Support BE Capstone Design Projects for:

- Solutions to industry challenges
- Future employees with experience

Michigan State University
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East Lansing, MI 48824

MSU is an affirmative-action, equal-opportunity employer.

MICHIGAN STATE UNIVERSITY

**Department of Biosystems
& Agricultural Engineering**

Biosystems Engineering Capstone Design Projects

Real world design projects:

- Solved by student teams
- Advised by faculty
- Supported by industry

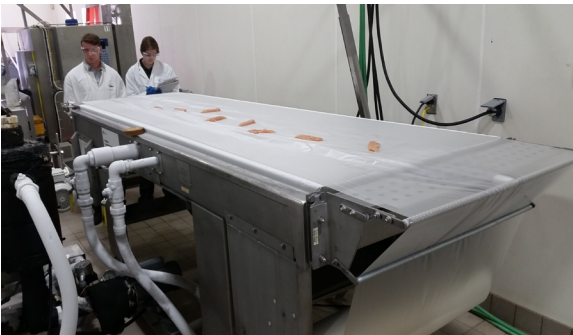


Specialty areas:

- Bioenergy and Bioproduct Engr
- Biomedical Engineering
- Ecosystems Engineering
- Food Engineering

A Capstone Design Project:

- Requires engineering design
- Combines biology and engineering
- Solves a real problem
- Uses a holistic and systems approach
- Interprets data and statistics
- Interprets social and environmental impacts
- Evaluates economic feasibility
- Delivers a comprehensive, professional design report
- Requires team presentations to industry, faculty, general public, and peers



Since 1906, the Department of Biosystems & Agricultural Engineering has responded to the changing needs of society by integrating and applying principles of engineering and biology in a systems context. Today, biosystems engineers at MSU solve complex, rapidly-changing problems related to food production, quality and safety, ecosystems protection, homeland security and health protection, biomass utilization, and renewable energy development.

Recent Project Examples:

■ Bioenergy and Bioproduct Engineering

HVAC Energy Efficiency at Pharmaceutical Manufacturing Plant

Design energy efficiency solutions to reduce energy costs and meet plant wide sustainability goals.
Sponsor: Perrigo (NDA)

Portable Electrocoagulation Unit for Wastewater Treatment on Remote Army Bases

Design a small scale wastewater treatment system for remote U.S. Army bases.
Sponsor: Department of Defense

■ Biomedical Engineering

Dried Blood Storage Device

Filter paper to efficiently dry and store blood samples.
Sponsor: Pfizer, Inc.

Simulation of Thermal Energy Transfer through Neurological Tissue during Electrosurgery.

Design substitute material and testing for electrosurgery equipment.
Sponsor: Stryker (NDA)

■ Ecosystems Engineering

Site Evaluation and Design Plan for a Created Forested Wetland

Designed wetland for US 27 road construction site.
Sponsor: Michigan Department of Transportation

Water Quality Best Management Practices Design for a City of Lansing Re-Development Project

Design of an efficient stormwater runoff treatment system for a parking lot re-development.
Sponsor: Tetra Tech

■ Food Engineering

Ice Cream Inclusion Analysis and Process Optimization

Optimization of inclusion distribution and quality control.
Sponsor: Tillamook Creamery (NDA)

Blake's Hard Cider Apple Pomace Utilization and Optimization

Optimize process and reduce apple pomace waste.
Sponsor: Blake's Hard Cider Co.

Faculty:

Reza Alizadeh, PhD
Evangelyn Alocilja, PhD
Anjin Chang, PhD
Narendra Das, PhD
Dawn Dechand, PhD
Kirk Dolan, PhD
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Xufei Yang, PhD
Jiyoon Yi, PhD



Biosystems Engineering (BE) is an ABET accredited B.S. degree program at MSU that prepares students for success by:

- identifying and solving problems at the interface of biology and engineering, using modern engineering techniques and the systems approach,
- analyzing, designing, and controlling processes and systems that involve critical biological components,
- demonstrating a professional foundation that includes vision, adaptability, creativity, a practical mindset, effective communication skills, continuing professional growth, and ethical conduct, and
- working inclusively and equitably in diverse, cross-disciplinary environments towards sustainable solutions.