

Does your company have potential BE Capstone Design Projects?

Do you want to support the BE Capstone Design Program?

Contact:
Dr. Luke Reese
Industry Liaison / Assoc. Professor
Michigan State University
Biosystems & Agricultural Engineering
524 S. Shaw Lane
103C Farrall Hall
East Lansing, MI 48824
(517) 353-3258
reesel@msu.edu



Support BE Capstone Design Projects for:

- Solutions to industry challenges
- Future employees with experience

Michigan State University
Biosystems & Agricultural Engineering
524 S. Shaw Lane, Room 103C Farrall Hall
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

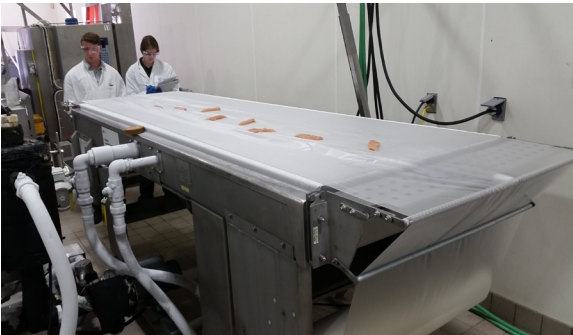


Specialty areas:

- Bioenergy Engineering
- 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 community, 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:

Bahar Aliakbarian, PhD
Evangelyn Alocilja, PhD
Narendra Das, PhD
Dawn Dechand, PhD
Kirk Dolan, PhD
Younsuk Dong, PhD
Ehsan Ghane, PhD
Sanghyup Jeong, PhD, PE
Wei Liao, PhD, PE
Yan "Susie" Liu, PhD
Yuzhen Lu, PhD

Bradley Marks, PhD, PE
Ilce Medina Meza, PhD
Jade Mitchell, PhD
Pouyan Nejadhashemi, PhD
Luke Reese, PhD
Chris Saffron, PhD
Ajit Srivastava, PhD, PE
Truman Surbrook, PhD
Daniel Uyeh, 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.