

2017 Biosystems Engineering Showcase

April 27, 2017

A.W. Farrall Hall & University Club
Michigan State University

Biosystems Engineering

Graduates of the MSU Biosystems Engineering Undergraduate Program are expected to succeed in diverse careers where they integrate and apply principles of engineering and biology to a wide variety of globally important problems. MSU Biosystems Engineering graduates are expected to attain that 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 components, systems, and processes that involve critical biological components; and
- demonstrating vision, adaptability, creativity, a practical mindset, effective communication skills for technical and non-technical audiences, the ability to work in diverse, cross-disciplinary teams, and a commitment to sustainability, continuing professional growth, and ethical conduct.

MSU Biosystems Engineering graduates are having a positive impact on the world working in the areas of food: food safety and quality; environment: sustainable ecosystems and resource conservation; energy: bioenergy and bioproduct solutions; and health: diagnostics, systems models, and risk-assessment tools to enhance public health.

Schedule

Program

Auditorium - 116 Farrall Hall - 524 S. Shaw Lane, East Lansing, MI

- 2:00 - 2:50 p.m. Senior Student Design Presentations (scheduled at 15 minute increments)
- Spartan Soil-utions - Soil Phosphorus Management Strategy for Food Manufacturer
 - Meat The Spartans - Waste Handling Process Design Considering Food Safety and Volume Reduction
 - The Conveyors - Linear Conveyor Hygienic Design
 - Burkina Faso Friends (BFF) - Irrigation System for Vegetable Production in Burkina Faso
 - Sugar BAE's - Sugar Recovery from Kellogg's Cereal Waste
- 2:50 - 3:00 p.m. Break
- 3:00 - 3:50 p.m. Senior Student Design Presentations (scheduled at 15 minute increments)
- Meijer Energizers - Development and Implementation of Energy Conservation Protocol at a Food Manufacturing Facility
 - Meijer Water Unicorns - Water and Wastewater Reduction at a Food Manufacturing Facility
 - Go Clean - Pharmaceutical Machine Internal Cleaning
 - PNL - Evaluation and Reduction of Hazardous Waste Generated During Pharmaceutical Operations
 - Runoff Rangers - Urban Storm Water Management and Beneficial Reuse in Urban Agriculture
- 3:50 - 4:00 p.m. Break
- 4:00 - 4:40 p.m. Senior Student Design Presentations (scheduled at 15 minute increments)
- Destination Restoration - Red Cedar River: Restoration and Naturalization
 - Eleven - Tractor Seat Modification for Farmer with Leg Injuries
 - Mackinac Biosolids Initiative - Mackinac Island Biosolids Management
 - Team Hope - Development of a Potable Water Treatment System for a Small Farm and Children's Home in Belize

2nd Floor Hallway and Room 208 Farrall Hall - 3535 Forest Road, Lansing, MI

- 5:00 - 6:00 p.m. Reception, Student-Industry Interaction & BE 230 Poster Presentation

University Club Heritage Room

- 6:45 - 8:30 p.m. Banquet Dinner (prior reservation required)



BAE Chair

Darrell W. Donahue, PE

Message from the Chair:

BE Showcase is an annual event to highlight the accomplishments of our students. Showcase success would not be possible without the continued support of our alumni, board members, industry partners, university administration, parents and sponsors. Thanks to everyone who contributes to the continuing BE Showcase success.

Participants

Biosystems Design Project Participants

Hannah Marie Baker
Rachel Marie Baker
Connor David Bartle
Sean Alexander Brown
Daniel Xavier Buhr
Joanna Marie Carroll
Kayla M Cascarilla
Jacob Thomas Cochrane
Lauren Marie Costantini
Carly Elizabeth Daiek
Sarah Helen Dobrenski
Peter Douglas Drogosh
Breanna Nicole Earls
Yara Nidal Fakhoury
Paul Dayton Fowler
Hannah Elizabeth Guyer
Holly Halliwill
Iember Hemben
Hunter William Hoogakker

Hwa Hsiung
Andrew Dillion Juergens
Michael Antonio Kalabat
Patrick Jarrett Keane
Mitchell Warren Kelley
Taylor Elizabeth Koonce
Joseph Jerald Kretowicz
Madeline Shea Labelle
Jiaming Li
Nathan Michael Majeski
Karis Mone Middleton
Megan Lynn Morley
Nicholas David Morlock
Kyle Alfred Nussdorfer
Injoon Oh
Anna Nicole Oslapas
Madison Rose Padilla
Yannis Evangelos Papoulis
Rebecca Colleen Prouty

Dennis Seidl Reaume
Hannah Bridget Robar
Davis Lafayette Roeser
Scott William Schultz
Renee Catherine Schwartz
Danielle Megan Smith
Philip John Steinbrunner
Rachel Kathryn Streufert
Jillian Grace Toaso
Benjamin John Vanzweden
Matthew Kuo Vasher
Zhiheng Wan
Zhe Wang
Madison Brooke Wheeler
Eric Christopher Wiitanen
Justine Claire Williams
Oliva Rose Wodek
Shuman Zhang
Ryan Gene Ziegler

Staff:



Design Project Instructor
Dana Kirk, PE
BE 485/487



**Design Project Instructor
and Technical Advisor**
Luke Reese
BE 485/487



**Showcase Event
Coordinator**
Barb DeLong

Team Projects

Soil Phosphorus Management Strategy for Food Manufacturer

The Spartan Soil-utions were challenged with remediating a former food manufacturing wastewater spray field irrigation site with elevated soil phosphorus levels. The site was used for more than 30 years before discontinuing. The client desired a solution that would return the soil phosphorus levels to the agronomic range with minimal maintenance and oversight. A hybrid poplar planting strategy was chosen for two of the three fields due to its phosphorus uptake ability and low maintenance requirements. The two varieties of poplar will be harvested after ten years and sold as wood chips. The third field will be leased to a neighboring farmer with a recommended corn-soybean rotation to maximize phosphorus uptake.



Team Members (L to R)

Nicholas Morlock
Daniel Buhr
Sean Brown
Danielle Smith



Faculty Advisor

Steve Safferman, PE

Sponsor

Michigan Milk
Producers Association
(under Non-disclosure)



Waste Handling Process Design Considering Food Safety and Volume Reduction

The project was to design a system for collecting and compacting plastic waste directly from the processing line of a corned beef manufacturer. The primary focus was to reduce the possibility of cross contamination when considering the worker handles both the plastic waste and the food product. Included in the design process was the potential of reducing waste removal costs for the client by increasing the density of the plastic waste. The team delivered the client a detailed analysis of three design alternatives that varied in cost, versatility, and complexity.



Team Members (L to R)

Lauren Costantini
Jillian Toaso
Hannah Baker
Dennis Reaume



Faculty Advisor

Dan Guyer

Sponsor

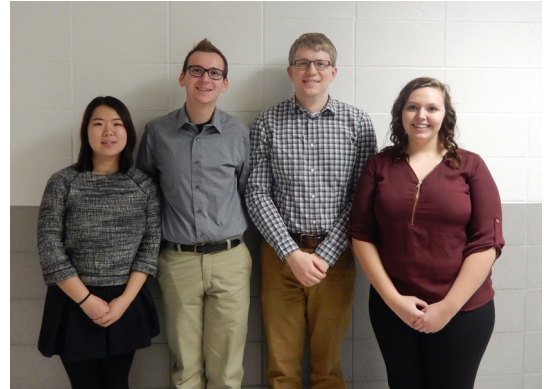
Grobbel
(under Non-disclosure)



Team Projects

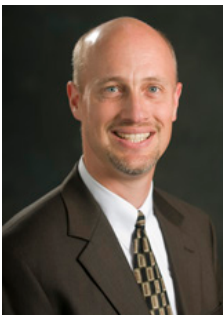
Linear Conveyor Hygienic Design

The objective of this project was to optimize the JBT FoodTech SaniClean conveyor to increase system hygiene and gain certification from NSF International. NSF certification adds value to food processing equipment. NSF is an internationally accepted certification that the equipment has a reduced risk of foodborne illness by microbial contamination. Cleaning the SaniClean is quick, easy, and effective. Modifications further increased the functionality and operational performance of the equipment with regard to sanitary design. The team modified the design to decrease liquid collection, increase material compatibility, and create a cleaning protocol validated by riboflavin and ATP swab testing.



Team Members (L to R)

Shuman Zhang
Joseph Kretowicz
Philip Steinbrunner
Breanna Earls



Faculty Advisor
Brad Marks, PE

Sponsor
JBT FoodTech
(under Non-disclosure)



Irrigation System for Vegetable Production in Burkina Faso

To produce vegetables in Burkina Faso during the dry season, Team BFF designed an irrigation system for a ¼-hectare vegetable farm. The main goals were to improve nutrition, health, and income for smallholder farmers with a local sustainable, appropriate-scale mechanized irrigation system. Combining a modified treadle pump and drip irrigation technology powered by solar energy, the team designed a system that will facilitate vegetable production with better water use efficiency and reduced manual labor compared to current practices. Team BFF collaborated with students at University Polytechnic Bobo-Dioulasso to implement the system with the hope of widespread adoption by farmers through demonstration.



Team Members (L to R)

Iember Hemben
Hannah Robar
Taylor Koonce
Davis Roeser



Faculty Advisor
Ajit Srivastava, PE

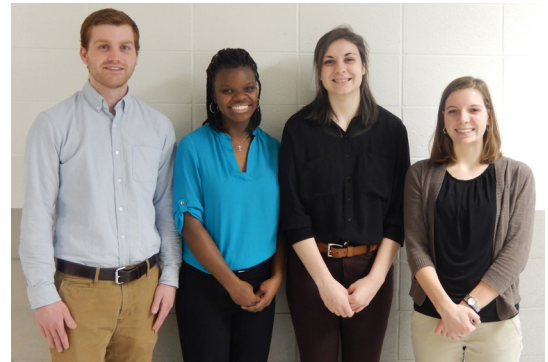
Sponsor
USAID Appropriate-
Scale Mechanization
Consortium (ASMC)



Team Projects

Sugar Recovery from Kellogg's Cereal Waste

The Kellogg Company is increasing their focus on environmental and economic sustainability. The Sugar BAE's were tasked with reclaiming sugar waste from cereal production lines. This waste, called "cereal fines", is a mixture of sugar, starch, vitamins, and other non-sugar impurities, and is currently sold as animal feed. Through a series of separation techniques, sugar is reclaimed from the cereal fines. The reclaimed sugar solution is reinjected into the primary sugar coating stream. The process aims to reduce costs and use of raw materials, while maintaining sugar purity standards.



Team Members (L to R)
Andrew Juergens
Karis Middleton
Joanna Carroll
Renee Schwartz



Faculty Advisor
Yan (Susie) Liu



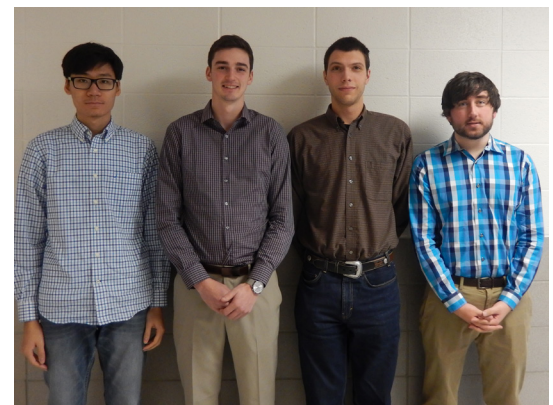
Faculty Advisor
Kirk Dolan

Sponsor
Kellogg
(under Non-disclosure)



Development and Implementation of Energy Conservation Protocol at a Food Manufacturing Facility

This project involves the development of an energy management plan and funding application to support its implementation. Activities included the performance of a certified energy audit on Meijer's largest food manufacturing facility augmented by two professional energy auditors. The facility's energy consumption has been broken down into four major categories: 1) Processes and Controls, 2) HVAC, 3) Lighting, and 4) Weatherization. The audit evaluates recommended energy conservation measures (ECMs) for all the facility's operations that use energy. Our goal was to reduce energy consumption by 36 percent. The funding application will be sent to the USDA Rural Energy for America Program.



Team Members (L to R)
Jiaming Li
Kyle Nussdorfer
Benjamin Vanzweden
Eric Wiitanen



Faculty Advisor
Aluel Go



Faculty Advisor
Truman Surbrook

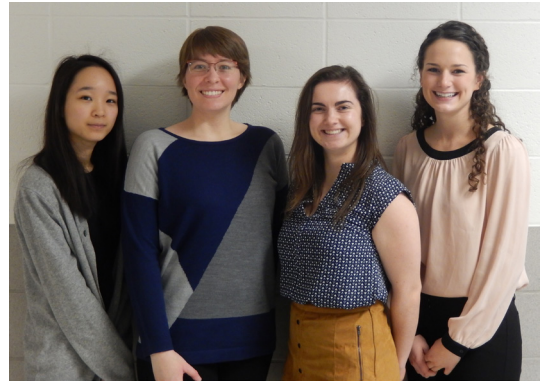
Sponsor
Meijer
(under Non-disclosure)



Team Projects

Water and Wastewater Reduction at a Food Manufacturing Facility

What is the best way to reduce environmental impact and save money? Modify water management strategies! This project aimed to minimize water consumption, reduce wastewater surcharges, and determine efficient water management procedures for Meijer plants. A basic water audit was performed at the Meijer Central Kitchen that focused primarily on the deli processing lines. The audit helped determine areas of high water consumption and high strength wastewater generation. Ultimately, 3 process lines and the facility wastewater system were further examined to determine the greatest potential benefits. Through sample collection, plant observations, and data analysis, it was determined that wastewater system design upgrades will have the largest positive economic and environmental impacts.



Team Members (L to R)

Hwa Hsiung
Sarah Dobrenski
Olivia Wodek
Rebecca Prouty



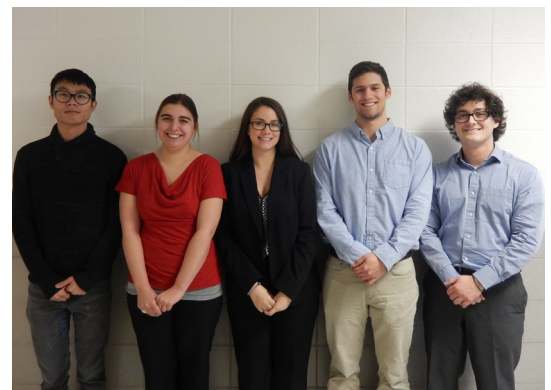
Faculty Advisor
Steve Safferman, PE

Sponsor
Meijer
(under Non-disclosure)



Pharmaceutical Machine Internal Cleaning

Perrigo is a global supplier of over-the-counter pharmaceutical goods. Highly technical equipment is used to bottle and package pharmaceuticals that are in tablet form. Perrigo tasked the GoClean team with reducing labor costs during equipment cleaning while maintaining their same high standard of cleanliness. The current cleaning procedure is a very time intensive process. The team designed a cleaning fixture that adapts to Perrigo's current cleaning tools that reduces cleaning time and provides better ergonomics for their cleaning specialists.



Team Members (L to R)

Zhe Wang
Rachel Streufert
Madison Wheeler
Hunter Hoogakker
Yannis Papoulis



Faculty Advisor
Evangelyn Alocilja



Faculty Advisor
Timothy Whitehead

Sponsor
Perrigo
(under Non-disclosure)



Team Projects

Evaluation and Reduction of Hazardous Waste Generated During Pharmaceutical Operations

Perrigo Company is a world leader in the manufacture and distribution of nicotine replacement therapy (“NRT”) products. The Perrigo facility in Holland, Michigan manufactures a portion of the nicotine lozenge product line. EPA classifies nicotine as a hazardous waste. Normal losses, associated with manufacturing and packaging, contribute to a hazardous waste stream. Perrigo desires to minimize this waste stream to reduce their social and environmental impacts. The team designed and implemented a plan to reduce the generation of nicotine hazardous waste by 15% in the packaging process.



Faculty Advisor

Darrell Donahue, PE



Faculty Advisor

Jade Mitchell

Sponsor

Perrigo
(under Non-disclosure)



Team Members (L to R)

Kayla Cascarilla
Nathan Majeski
Rachel Baker
Michael Kalabat



Urban Storm Water Management and Beneficial Reuse in Urban Agriculture

The Detroit Water and Sewage Department (DWSD) has introduced an initiative that charges all Detroit property owners \$750 per impervious acre per month to combat stormwater management expenses. Milton Manufacturing is comprised of 9.96 impervious acres, which would amount to a \$7,500 monthly bill. Our team created a low impact development (LID) design to reduce their drainage bill by reducing their impervious footprint. The team developed a combined LID design to effectively collect stormwater and then reroute it to urban farmland at Pingree Farms. This design will be comprised of downspout disconnection, capture reuse tanks and permeable pavers. After review and approval by a professional engineer and any required permitting, the implementation of this optimal design would generate green infrastructure credits, which will reduce the client’s DWSD bill.



Faculty Advisor

Fei Pan



Faculty Advisor

Matthew Herman

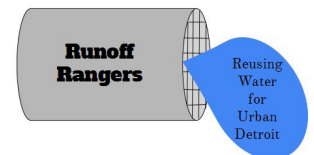
Sponsor

Milton Manufacturing



Team Members (L to R)

Mitchell Kelley
Justine Williams
Megan Morley
Peter Drogosh



Team Projects

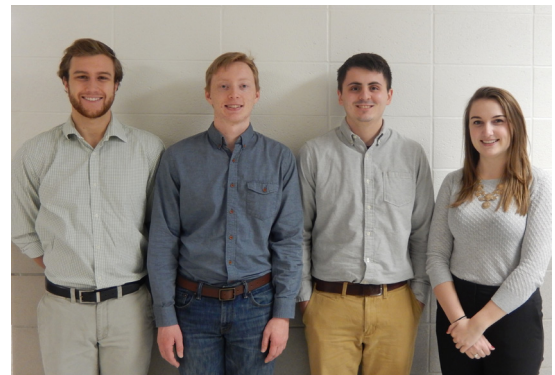
Red Cedar River: Restoration and Naturalization

The Michigan Department of Natural Resources has consulted with the Ingham County Drain Commissioner to restore the portion of the Red Cedar River between Harrison Road and Kalamazoo Street. The project objective is to design a plan to restore the natural physical features of the river. These features include bankfull dimensions, average river velocity, stream bank stability, and an equal inflow and outflow of sediment. The team used the hydraulic modeling software, HEC-RAS, along with Rosgen's Natural Channel Design to develop a river restoration plan.



Faculty Advisor
Pouyan Nejadhashemi

Sponsor
Michigan Department
of Natural Resources



Team Members (L to R)
Connor Bartle
Paul Fowler
Jacob Cochran
Hannah Guyer



Tractor Seat Modification for Farmer with Leg Injuries

This project was to design a seat suspension system to assist a farmer with leg injuries who has difficulty getting on and off his tractor seat while stepping over a gearshift. The team designed and installed an electric-powered seat that can raise and lower him, thus reducing the stress on his legs to cross the gearshift. The seat was attached to a bracket base held to the original tractor seat by clamps, making it a semi-permanent solution. The clamps can be modified in different shapes and sizes to allow the base to be attached to other tractor seats, adding adaptability to the design. This modified seat allows our client to continue his farm work and enjoy his lifestyle.



Faculty Advisor
Phil Hill

Sponsor
AgrAbility



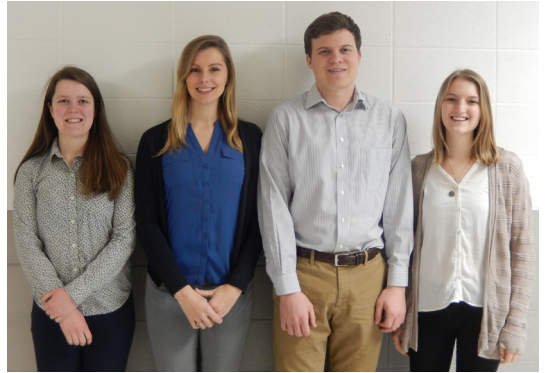
Team Members (L to R)
Matthew Vasher
Patrick Keane
Yara Fakhoury
Zhiheng Wan



Team Projects

Mackinac Island Biosolids Management

Mackinac Island is spending approximately \$50,000 annually to transport and landfill biosolids from the Wastewater Treatment Plant in the Upper Peninsula. The Mackinac Public Works challenged MBI with finding an alternate use for the biosolids that is more cost effective, provides for a better beneficial reuse and reduces environmental risk associated with transport. Through research and discussion with the client, aerated static pile composting was found to be the most economical and environmentally friendly solution. Composting converts the material into a Class A Biosolid that is safe for use on lawns and gardens as a carbon rich fertilizer. Utilizing the Class A compost on the Island will reduce costs and enhance environmental sustainability.



Team Members (L to R)

Holly Halliwill
Anna Oslapas
Scott Schultz
Madison Padilla



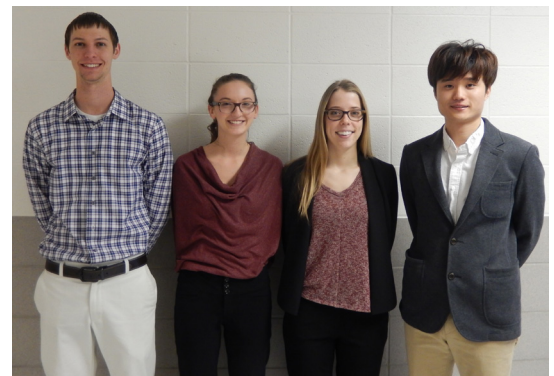
Faculty Advisor
Dana Kirk, PE

Sponsor
Mackinac Island
Department of Public
Works



Development of a Potable Water Treatment System for a Small Farm and Children's Home in Belize

Hopewell is a small children's home and farm in rural Belize operated by Harvest Expeditions, a US-based 501(c)(3) nonprofit. Due to a contaminated well, the facility had to purchase city water at a significant cost to their operating account. Hopewell relies heavily on donations to operate, so the added water cost has added pressure to the facility's financial stability. The team designed a water treatment system featuring hollow fiber filtration to provide Hopewell with clean potable water from the original on-site well. This design provides the client with a safe, cost effective, low maintenance and sustainable solution.



Team Members (L to R)

Ryan Ziegler
Carly Daiek
Madeline Labelle
Injoon Oh



Faculty Advisor
Wei Liao, PE

Sponsor
Hopewell, Belize



Industry Advisory Board 2016-2017

Kevin Blue (Chair-Elect) is Director, Manufacturing Engineering with Meijer®. Meijer® is a family-owned company that began during the Great Depression when Hendrik Meijer, and his 14-year-old son, Fred, fulfilled a need in the community. Together, they evolved the small grocery store into a one-stop shopping experience for customers. Meijer® employs 65,000 team members in six states. Kevin holds a B.S. in Engineering, a M.S. in Engineering Management and is working on a M.S. in Business.

Holly Bowers is Executive Director of Geospatial and Gas Asset Management at Consumers Energy. Holly is responsible for the engineering, system improvements, enhancements, and integrity for over 27,000 miles of distribution lines and 2,467 miles of transmission pipelines that serve 1.6 million customers in Michigan. Holly holds a B.S. in Biosystems Engineering and a M.A. in Business Administration.

Lisa Buchholz is Global Leader of Analytical Regulatory Sciences with Dow AgroSciences®. Dow AgroSciences® LLC, based in Indianapolis, Indiana, USA, is a global leader in providing pest management and biotechnology products that improve the quality and quantity of the earth's food supply and contribute to the health and quality of life of the world's growing population. Lisa holds a B.S. in Biological Sciences.

Michelle Crook, PE, is Senior Project Engineer for the Michigan Department of Natural Resources. She provides engineering project management and oversight for DNR projects. Michelle holds a B.S. in Environmental Engineering.

Cassandra Edwards is Production Manager for Bimbo Bakeries, USA® in Beaverton, OR. Prior to Bimbo Bakeries®, she was the Research and Development Manager at ConAgra Foods®. Cassandra holds a B.S. in Food Engineering and a M.S. in Mechanical Engineering.

Bryce Feighner, PE, is Chief of the Office of Waste Management and Radiological Protection in the Michigan Department of Environmental Quality (DEQ). He has a broad range of education and experience across DEQ programs. Bryce holds a B.S. in Agricultural Engineering and a M.S. degree in Environmental Engineering.

Gene Ford is Vice President R&D, Head of PTC Fremont, at Nestlé Nutrition® in Fremont, Michigan. He has more than 25 years of experience in domestic and international product development, manufacturing, logistics, and sales within the consumer food industry. Gene holds B.S. and M.S. degrees in Agricultural Engineering and an Executive M.S. degree.

Ashley Julien, PE, is an Environmental Engineer in the Michigan Department of Agriculture and Rural Development Environmental Stewardship Division. She supports the MAEAP program with determining appropriate solutions for engineering challenges including wastewater management, manure and fuel storage, and chemical safety. Ashley holds a B.S. in Civil Engineering and M.S. in Biosystems Engineering.

Andrew Knowles (Chair) is Stein & Freezer Applications/Sales Support Manager at JBT FoodTech®, a leading supplier of integrated food processing solutions. Andrew holds a B.S. in Biosystems Engineering and a Masters in Applied Statistics.

Jeffrey Mathews, PhD, is Research and Development Director for PepsiCo® Beverages. Pepsi Beverages Company (PBC) handles approximately 75 percent of PepsiCo's North America beverage volume. Its diverse portfolio includes some of the world's most widely recognized beverage brands, including Pepsi®, Mountain Dew®, Sierra Mist®, Aquafina®, Gatorade®, SoBe®, Lipton®, and Amp Energy®. Jeffrey holds B.S., M.S. and Ph.D. degrees in Chemical Engineering/Paper Science and Engineering.

Mitch Miller (Past Chair) is the Senior Processing System Engineer for the General Mills®-Yoplait® Plant, Reed City, Michigan. General Mills® is among the world's largest food companies with U.S. shoppers on average placing at least one General Mills® product into their shopping cart each time they visit the grocery store. Mitch holds B.S. and M.S. degrees in Agricultural & Biosystems Engineering.

Industry Advisory Board 2016-2017

Steve Richey is Director, Morning Foods, Process Engineering at Kellogg Company, the world's leading producer of cereal and a leading producer of convenience foods. Steve holds B.S. and M.S. degrees in Agricultural Engineering.

Larry Stephens, PE, is owner of Stephens Consulting Services, P.C., a 30+ year old engineering firm located in Haslett, MI. Larry holds a B.S. degree in Civil Engineering and a M.S. in Environmental Engineering. Larry has been very active in the decentralized wastewater treatment industry in Michigan on both the regulatory and the private sides for nearly his entire career.

Kirk Walter is Senior Operations Director at Perrigo® Company PLC, a leading global healthcare supplier that develops, manufactures and distributes over-the-counter (OTC) and prescription (Rx) pharmaceuticals, nutritional products, and active pharmaceutical ingredients (API). Kirk holds a B.S. degree in Manufacturing Administration and a M.S. in Business Administration.

Richard (Rick) Woodford, PE is State Conservation Engineer for USDA - Natural Resources Conservation Service. He provides technical assistance in the field of soil and water conservation, implements NRCS' engineering policy and procedures for establishing technical engineering standards throughout Michigan. Rick holds B.S. and M.S. degrees in Civil Engineering.

Rob Yoder, CFPS, is Southeast Region Fluid Power Specialist for BDI, Inc. a large industrial Distribution Company based in Cleveland, OH. Rob provides Fluid Power technical solutions to BDI customers, and Fluid Power product sales support to all local branch sales personnel in the southeast region of the U.S. Rob holds a B.S. degree in Agricultural Engineering Technology.

Ex-officio

Hannah Brodhead, Undergraduate Advisor, Biosystems & Agricultural Engineering

Alexandra Darrow, Undergraduate Student Representative

Darrell W. Donahue, PE, Professor and Chair, Biosystems & Agricultural Engineering

Ron Hendrick, Dean, College of Agriculture and Natural Resources

Leo Kempel, Dean, College of Engineering

Luke Reese, Industry Liaison, Biosystems & Agricultural Engineering

Jason Smith, Graduate Student Representative

Larry Walker, CANR Alumni Association

Industry Evaluators

Gasper Calandrino, MMPA

Steven Brown, Milton Manufacturing

Dylan Comer, JBT FoodTech

Shelly Crawford, Kellogg

Laura Doud, PE, MDARD

Patrick Ertel, MDNR

David Filipiak, FTCH

Jim Green, Jr., Milton Manufacturing

Phillip Horsager, Cargill

Norm Lenhart, Perrigo

Amber Mostiller, Grobbel

Kevin Muckey, Perrigo

Bob Olinger, Milton Manufacturing

Michael Olson, Public Works - Mackinac Island

Ned Stoller, Easter Seals Michigan - AgrAbility

Kevin Ullrey, Kellogg

Eric VanMiddendorp, Spectrum Health Innovations

Chad Volkman, Covance

Biosystems Engineering 2017 Distinguished Alumni Award

Danielle Bellmer

Dr. Danielle (Dani) Bellmer is a native of northern Michigan who completed her B.S. degree in Food Engineering from MSU in 1992. She then received a USDA Fellowship for graduate study at Purdue University and completed a Ph.D. in Agricultural and Biological Engineering in 1996. In 1997, she joined the faculty at Oklahoma State University (OSU) in the Biosystems and Agricultural Engineering Department and the newly developed Food and Agricultural Products Research Center.

Professor Bellmer's research efforts have covered a diverse range of topics, including both food and biofuels. In the area of value-added food processing, she has worked on development of new processes and products such as "Peanut Butter Slices." Her biofuels research has involved conversion of lignocellulosic materials to fuels, with a specific focus on the use of sweet sorghum as a feedstock. A founding member of the Sweet Sorghum Ethanol Association, she represented the U.S. in a global summit sponsored by the United Nations involving biofuels. She received the 2003 Halliburton Outstanding Young Faculty Award in the College of Engineering at OSU.

Dr. Bellmer is highly engaged in the OSU teaching program. She has taught courses involving food and bioprocessing, microbial applications in engineering, food rheology, and introductory biosystems engineering courses. She serves as the advising coordinator, chairs the scholarship and curriculum committees, and mentored more than 20 graduate students. She truly enjoys interaction with students, and was named the 2016 OSU Student Organization Advisor of the Year.

In addition to teaching and research, Dr. Bellmer also enjoys many activities with her husband, Jeff, and two kids, Collin and Ali. They love most sports, including soccer, basketball, dance, and swimming, and they really enjoy outdoor activities such as camping, hiking, and fishing.



Biosystems Engineering 2017 Outstanding Alumni Award

Matthew Burt

Matthew (Matt) Burt received his B.S. in Biosystems Engineering from MSU with a Biomedical Concentration in 2009 and in 2016 received his MBA from Loyola University of Chicago. Matt interned in the pharma industry at Abbott in North Chicago, IL over the summer of 2008, which he credits for launching his career.

After he completed his degree with a biomedical engineering focus, Matt went to work at Abbott full-time as a Quality Engineer trainee. This program gave him the opportunity to experience several different business units, including pharma, medical device, and nutritional products. In 2011, Matt completed the rotational development program and transitioned into Research and Development Quality Assurance (RDQA). His start in the internal services and process improvement group gave Matt exposure across a diverse set of highly specialized Quality Units supporting all phases of the drug development lifecycle. Through the planned separation of the Abbott pharma business unit from the broader healthcare business units and part of becoming AbbVie, Matt also saw a personal transition into the ever-changing world of clinical research. He quickly gained expertise and training as a Program Manager and eventually took on responsibility for the Quality Assurance oversight of Good Clinical Practice (GCP) for all Oncology studies in late 2013.

As part of his personal development Matt completed his Master of Business Administration at Loyola University of Chicago's Quinlan School of Business, as part of an Executive MBA program designed for high-potential, working professionals. Throughout his career Matt has built a unique and strong network both internally and externally and has leveraged this to achieve positive results along the way, including two Research and Development President's Awards for teams he participated on.

Matt is an avid sports fan with a passion for MSU football and basketball, but when there is not a game on he can be found on the water wakeboarding or on a mountain snowboarding! He has been married for five years to his wife, Renee, who is a fellow Spartan he met as an undergrad. They have been driving career growth for themselves since graduation. They both travel frequently for work and use travel points to take long weekends away and family vacations whenever possible!



Scholarship Descriptions

Undergraduate Scholarships

F. W. Bakker-Arkema Endowed

F.W. Bakker-Arkema was a professor of Agricultural Engineering at MSU for over thirty years. His scholarship recognizes students that contribute to the cultural and intellectual diversity of Biosystems Engineering through their leadership experiences.

Deboer Family

The DeBoer Family scholarship is awarded to students that excel academically while demonstrating a passion for Biosystems Engineering.

A.W. Farrall

The Farrall Scholarship, named in honor of A.W. “Doc” Farrall, is the most prestigious undergraduate scholarship awarded by the department. Dr. Farrall chaired the department during its pivotal years from 1945 -1964, which included establishment of the first Agricultural Engineering Ph.D. program in the nation. Farrall Scholars have excelled both academically and professionally, demonstrating leadership within Biosystems Engineering.

Clarence and Thelma Hansen

The Clarence and Thelma Hansen scholarship is awarded to Michigan natives and U.S. students who have demonstrated academic achievement , leadership, and experience working in agriculture.

George E. and Betty L. Merva Endowed

Dr. George Merva was a faculty member in the department for 30 years. This endowment, named in his and his wife’s honor, recognizes upperclassman who have demonstrated leadership and academic success.

John and Julianna Merva Endowed

Dr. George Merva’s father, John, was an immigrant from Slovakia, who, despite of receiving no formal schooling and working full time in ore mines, was able to teach himself three languages. In this spirit the John and Julianna Merva Scholarship is awarded to an undergraduate student who has balanced leadership and academic success while also working to cover their educational expenses.

Howard F. and Esther L. McColly

The Howard F. and Esther L. McColly Scholarship honors Dr. Howard McColly who served on the faculty of the Department of Agricultural Engineering for more than 21 years and his wife, Esther. The scholarship is awarded to students who have demonstrated academic achievement, leadership, and service to the profession.

Scholarship Descriptions

Freshman Scholarships

Departmental

The BAE Departmental scholarship is awarded to students with a high academic ability and potential.

Robert J. Gustafson

The Gustafson scholarship is awarded to students with a high academic ability and/or financial need with a first preference for incoming freshman students.

Alfred & Mary Murray

The Murray scholarship is awarded to students with a high academic ability and/or financial need with a first preference for incoming freshman students.

Graduate Scholarships

Outstanding BE Research Fellowship & Fitch H. Beach Award

Presented to one of the top PhD students in the BE graduate program who has excelled in research productivity and who's work suggests a high-level of direct impact on society. Awardee presents at the college level against similar nominees in other College of Engineering disciplines. Funding is based on placement in the competition at the college level and is funded by the College of Engineering and the BAE Endowment for Graduate Studies.

Most Outstanding BE Graduate Student Fellowship

Presented to top students in the Biosystems Engineering (BE) graduate program to recognize their breadth of excellence and direct and indirect contributions to the Biosystems and Ag. Engineering (BAE) Department through professional productivity, service to the department and university, and contributions to the extended community. Funded by the BAE Endowment for Graduate Studies established and funded by past and current BAE faculty and other donors wishing to support graduate education.

Galen & Ann Brown

To support graduate students working in the domain of engineering related or applied to the fruit and/or vegetable industries; a field to which Dr. Galen Brown dedicated his career to provide many improvements and advancements. Funded by the family of Galen and Ann Brown and others who respected and/or worked with Galen.

Merle & Catherine Esmay

To support international graduate students with a clear passion and plan to return to their home country to implement their knowledge gained through their MSU BAE degree. Funded by the family of Merle and Catherine Esmay and others who have the passion, as did Merle, to make a difference around the globe.

2017-2018 Scholarship Recipients

Undergraduate Awards

F.W. Bakker-Arkema Endowed Scholarship
Courteney Roberts

DeBoer Family Scholarship/Fellowship Fund

Emily Banach
Weihong Chou
Natalie Coaster
Kennedy Coxon
Rachelle Crow
Jacob Duckworth
Linnea Riddell
Joshua Shah
Sydney Shellhouse
Courtney Vanderhoof

A.W. Farrall Scholarship
Emma Heckelsmiller

Clarence & Thelma Hansen Scholarship
Alexis Kontorousis
Anna Raschke
Katelyn Skornia
Aryn Thomas

Howard & Esther McColly Scholarship
Lindsey DeFrain
Carly Gomez
Andrew Kovach
Anna Nelson

George E. and Betty L. Merva
Endowed Scholarship
Carly Gomez

John & Julianna Merva Undergraduate
Excellence Fund
Kyle Forbush

Graduate Awards

College of Engineering Outstanding
BE Graduate Student Fellowship
Fariborz Daneshvar

Outstanding BE Research Fellowship &
Fitch H. Beach Award
Francisco Garces-Vega

Galen & Ann Brown Scholarship
Yuzhen Lu

Merle & Catherine Esmay Scholarship
Juan Sebastian Hernandez Suarez

2016-2017 Freshman Awards

Alfred and Mary Murray Scholarship
Kelsey Blatchford
Jessica Mehall
Adam Smerigan

Robert J. Gustafson Scholarship
Weihong Chou
Natalie McQuade

Departmental Freshman Scholarship
Natalie Coaster



"Spring"
A.W. Farrall Hall

Notes



Showcase Sponsor



Thank you to John Bean Technologies (JBT) Corporation, a leading supplier of integrated food processing solutions, for support of a 2016/17 Senior Design project and the BE Showcase. From single machines to complete processing lines, the JBT FoodTech division enhances value and captures quality, nutrition and taste in food products.

The JBT FoodTech offering includes:

- Freezer solutions for the freezing and chilling of meat, seafood, poultry, ready-to-eat meals, fruit, vegetable and bakery products
- Protein-processing solutions that portion, coat and cook poultry, meat, seafood, vegetable and bakery products
- Shelf-stable sterilization solutions for fruits, vegetables, soups, sauces, dairy and pet food products, as well as ready-to-eat meals in a wide variety of modern packages
- Fruit and juice processing solutions that extract, concentrate and aseptically process citrus, tomato and other fruits

For more information, visit the JBT FoodTech website at: <http://www.jbtfoodtech.com/>

Biosystems & Agricultural Engineering
524 S. Shaw Lane, Room 216
East Lansing, MI 48824
517-355-4720
www.egr.msu.edu/bae

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College of Engineering
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Dinner Program

Welcome

Mr. Jonathan Althouse

Dinner

Distinguished and Outstanding Alumni Awards

Presentation by Dr. Darrell W. Donahue

Dr. Danielle Bellmer (BS, FE, MSU, 1992; PhD, ABE, Purdue, 1996)

Mr. Matthew Burt (BS, BE, MSU, 2009; MBA, Loyola-Chicago, 2016)

Graduate Scholarship Awards

Dr. Daniel Guyer

Undergraduate Scholarship Awards

Dr. Dawn Reinhold

Recognition of Senior Design Students

Dr. Dana Kirk

Dr. Luke Reese

Closing Remarks

Dr. Darrell W. Donahue