

2019 Biosystems Engineering Showcase

April 25, 2019

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

- 2:30 - 3:40 p.m. Senior Student Design Presentations (scheduled at 10 minute increments)
- Team 9 - GEI Consultants - Master Plan for Red Cedar Weir Removal
Matt Champion, Cody Howard, Brittany Macintyre, Sam Rolling
 - Team 8 - Michigan Craft Beverage Council - Adsorption Media Contact System for Michigan Winery Wastewater Treatment
Jessica Hauda, Katelyn Skornia, Thiramet Sotthiyapai, Corrine Zeff
 - Team 12 - Student Organic Farm - SOF Hoophouse Winter Internal Cover Design
Kody Carpenter, David Chickering, Carly Drobny, Jamison Midgley
 - Team 4 - Chestnut Growers, Inc. - Brown Kernel Rot Trtmt System for Post-harvest Chestnuts
Britgit Culkeen, Brandon Dulaney, Rebecca Jones, Matt Kay
 - Team 6 - Grand Pointe Homeowner's Assn - Sediment Management to Support Boat Traffic
Lindsey Defrain, Tyler Lahusky, Sarah Skinner, Elizabeth Walls
 - Team 13 - Dr. Alex Castaneda Sabogal & Dr. Ruben Kenny Briceno - Antibioqram-Biosensor Design to Rapidly Detect Antibiotic Resistant Bacteria
Nathan Dickinson, Carly Gomez, Jeanelle Grosvenor, Cayla Harrison
 - Team 5 - Grobbel's - Trommel Cleaning System Enhancement
Jack Blackhurst, Kennedy Coxon, Kyle Forbush, Chris Rybinski

3:40 - 4:00 p.m. Break

- 4:00 - 5:00 p.m. Senior Student Design Presentations (scheduled at 10 minute increments)
- Team 7 - Kellogg - Sandwich Cookie Process Line Design Improvement
Craig Campbell, Katie Church, Linnea Riddell, Nicole Urrea
 - Team 10 - Duke University Carbon Offsets Initiative - Peer Verification Process for Livestock Anaerobic Digester Carbon Offsets
Maria Barrios Arosemena, Nina Dermody, Amanda Godar, Julia Guzy
 - Team 3 - Perrigo - Manufacturing Chiller Operation Optimization
Brittany Esser, Seung Lee, Karoline Russek, Matthew Schweiss
 - Team 11 - Dr. Larry Walker - Assay Dev. for Evaluation of On-farm Probiotic Application
Jenna Baughman, Tess Cannon, Jill Check, Alex Hernandez
 - Team 1 - Techmark, Inc. - Improving Potato Storage Ventilation with a Computational Fluid Dynamics Model
Jacob Duckworth, Samuel Effa, Christopher Robbe, Jessica Schultz
 - Team 2 - MI DNR- Red Swamp Crayfish Control Plan Using Acoustic Stimuli
Megan Beaver, Douglas Clements, Henry Frost, Xiaojing Ma

2nd Floor Hallway Farrall Hall -

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

MSU University Club - 3535 Forest Road, Lansing, MI

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

Maria Ines Barrios Arosemena
Jenna Baughman
Megan Renee Beaver
Jack Blackhurst
Craig Alan Campbell
Tess Elizabeth Cannon
Kody Michael Carpenter
Matt Champion
Jill Check
David Chickering
Katie Church
Douglas Charles Clements
Kennedy Joyce Coxon
Brigit Culkeen
Lindsey J. Defrain
Nina Yungae Dermody
Nathan Daniel Dickinson
Carly Ann Drobny

Jacob Anthony Duckworth
Brandon M. Dulaney
Sam Effa
Brittany Virginia Esser
Kyle Edwin Forbush
Henry James Frost
Amanda Grace Godar
Carly Blair Gomez
Jeanelle Kira Aisher Grosvenor
Julia M. Guzy
Cayla Jo Harrison
Jessica Kathleen Hauda
Alex Hernandez
Cody Lynn Howard
Rebecca Sarah Jones
Matt Kay
Tyler Michael Lahusky
Seung Jong Lee

Xiaojing Ma
Brittany Lilian Macintyre
Jamison Veronica Midgley
Linnea Marie Riddell
Christopher Matthew Robbe
Sam Rolling
Karoline Ilse Russek
Christopher R. Rybinski
Jessica Elizabeth Schultz
Matthew Daniel Schweiss
Sarah Anne Skinner
Katelyn Marie Skornia
Thiramet Sotthiyapai
Nicole Urrea
Elizabeth May Walls
Corrine Jamesen Zeeff

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

Master Plan for Red Cedar Weir Removal - (2:30 pm)

MSU is interested in preparing a master plan for the restoration of the Red Cedar River. As part of the preparation, "Get Out Of Weir" developed a plan for the weir located south of the Administration building. The recommended design improves the environmental quality and diversity of the river, decreases the chances of flooding, protects threatened species, and opens the river for recreational enjoyment. The final design replaces the weir with rock arch rapids. The report includes a feasibility study, a HEC-RAS hydrologic model, cost analysis, permits required, and potential funding sources.



Team Members (L to R)
Cody Howard
Brittany Macintyre
Sam Rolling
Matt Champion



Faculty Advisor
Steve Safferman, PE

Sponsor
GEI Consultants

Adsorption Media Contact System for Michigan Winery Wastewater Treatment - (2:40 pm)

Michigan winery wastewater has high concentrations of ammonia and soluble phosphorus. Treatment of this wastewater prior to discharge is required to meet state regulations defined under Rule 22, Groundwater Quality. Traditional treatment approaches for winery wastewater are often land intensive. Partners in Wine designed additions and modifications to a gravel vertical flow contactor to achieve regulatory treatment levels of ammonia and soluble phosphorus in winery wastewater for facilities producing between 5,000 and 25,000 cases per year. The final design was a compact constructed wetland system that reduces land required for treatment by 80% when compared to common land application methods.



Team Members (L to R)
Thiramet Sotthiyapai
Jessica Hauda
Katelyn Skornia
Corrine Zeeff



Faculty Advisor
Steve Safferman, PE

Sponsor
Michigan Craft
Beverage Council

Team Projects

Student Organic Farm Hoophouse Winter Internal Cover Design - (2:50 pm)

To extend the Michigan growing season into the winter months, MSU's Student Organic Farm uses an internal cover system within their hoophouses to create a favorable microclimate for winter production. An internal cover maintains a temperature buffer against radiative heat loss. Cold Hardy Greens designed a more efficient internal cover system reducing labor and heat loss, and extending equipment life. The design's updated extension and retraction system improved worker ergonomics.



Team Members (L to R)
Carly Drobny
Jamison Midgley
David Chickering
Kody Carpenter

Sponsor
MSU Student Organic Farm



Faculty Advisor
Ajit Srivastava, PE



Brown Kernel Rot Treatment Systems for Post-harvest Chestnuts - (3:00 pm)

In the chestnut industry, emerging pathogens that cause nut rot are becoming a problem. The Rot Roasters designed a continuous-flow heat treatment system to reduce the incidence of one specific pathogen, *Gnomoniopsis Castaneae*, which causes brown kernel rot. The team performed an experimental study to validate the treatment efficacy and designed a 5,000 lb/hr throughput hot water blanching system. This system will reduce the growth of rot during cold storage, maintaining the quality of Chestnut Growers, Inc.'s fresh chestnut product.



Team Members (L to R)
Matt Kay
Brigit Culkeen
Brandon Dulaney
Rebecca Jones

Sponsor
Chestnut Growers, Inc.



Faculty Advisor
Daniel Guyer



Team Projects

Sediment Management to Support Boat Traffic - (3:10 pm)

The Grand Point Subdivision in Dimondale, MI consists of 87 homes, surrounding 5 man-made canals. Sediment build up in the canals has restricted access of large boats to the Grand River through the canal entrances. The Canal Pals were tasked with finding a long-term solution for reducing the rate of sediment accumulation in the canals. The team designed a sediment trap as a local solution and recommended agricultural Best Management Practices as upstream solutions to reduce sediment load depositing in the canals.



Team Members (L to R)
Sarah Skinner
Lindsey Defrain
Elizabeth Walls
Tyler Lahusky



Faculty Advisor
Ehsan Ghane, PE

Sponsor
Grand Pointe
Homeowner's Association

Antibiogram-Biosensor Design to Rapidly Detect Antibiotic Resistant Bacteria - (3:20 pm)

Carbapenem resistant Enterobacteriaceae (CRE) are an emerging threat to patients in healthcare settings. Currently, physicians in Peru do not have an efficient method to test if bacteria strains isolated from patients in their hospitals are antibiotic resistant, so they potentially over prescribe multiple antibiotics while awaiting test results. This can lead to progression of infection, proliferation of antibiotic resistant bacteria, and expensive treatments for low-income patients. Peru Crew developed a low-cost biosensor to rapidly detect antibiotic resistance in *K. pneumoniae*, a type of CRE often isolated from patients in the clients' hospitals.



Team Members (L to R)
Carly Gomez
Nathan Dickinson
Jeanelle Grosvenor
Cayla Harrison



Faculty Advisor
Evangelyn Alocilja

Sponsor
Dr. Alex Castaneda Sabogal
& Dr. Ruben Kenny Briceno

Team Projects

Trommel Cleaning System Enhancement - (3:30 pm)

Clean processing equipment is critical in the food industry to ensure a safe, quality product to the consumer. Large industrial sized trommels are essential for corned beef production; however, they are labor-intensive to clean. To reduce cost and improve ergonomics, it is essential that Grobbel's cleaning process is fast, efficient, and effective. Trommel Cleaners was tasked with enhancing the trommel cleaning system to reduce the resources required for cleaning. With the team's design, yearly operating costs for trommel cleaning are reduced by over 30%.



Team Members (L to R)
Chris Rybinski
Kyle Forbush
Kennedy Coxon
Jack Blackhurst



Faculty Advisor
Susie Liu

Sponsor
Grobbel's

Sandwich Cookie Process Line Design Improvement - (4:00 pm)

Kellogg's production of sandwich-style cookies and crackers is the cause of significant downtime and lost product resulting in economic loss. Ernie's Engineers examined the process line to determine the areas of highest product loss. The design improvement recommendations, based on this data collection, will enhance the system with upgraded technology while maintaining production rates and complying with food safety regulations.



Team Members (L to R)
Craig Campbell
Nicole Urrea
Linnea Riddell
Katie Church



Faculty Advisor
Ilce Medina Meza



Faculty Advisor
Kirk Dolan

Sponsor
Kellogg
(under Non-disclosure)



Team Projects

Peer Verification Process for Livestock Anaerobic Digester Carbon Offsets - (4:10 pm)

Carbon offsets are an important part of carbon neutrality. Duke University's goal to be carbon neutral by 2024 requires a diverse portfolio of verified carbon offsets. Anaerobic digestion of manure generates carbon offsets; however, these cannot be used in carbon accounting unless verified by an unbiased third party at a significant cost. Peer verification is an affordable alternative allowing students from partnering universities to calculate and verify carbon offsets, adhering to the requirements created by the Duke University Carbon Offsets Initiative. Peer Energy created a data collection tool with user guide materials that was piloted with a full 2-year verification of the Loyd Ray Farm.



Team Members (L to R)
Amanda Godar
Maria Barrios Arosemena
Julia Guzy
(Not pictured Nina Dermody)



Faculty Advisor
Dana Kirk, PE

Sponsor
Duke University Carbon
Offsets Initiative

Manufacturing Chiller Operation Optimization - (4:20 pm)

The Energy Efficientados partnered with Perrigo's Plant 4, a pharmaceutical manufacturing facility in Allegan, MI. The team was tasked with developing a chiller staging scheme in hopes of reducing the plant's energy consumption and environmental footprint in conjunction with the corporate goal of reducing greenhouse gas emissions, water and energy usage by 15% in 2020. The team utilized a variety of tools such as MatLab and Excel to develop the chiller staging scheme. The staging scheme takes advantage of higher chiller efficiency at partial load as compared with full load and insures chillers are operated in a manner that leads to reliability and a long life.



Team Members (L to R)
Matthew Schweiss
Brittany Esser
Karoline Russek
Seung Lee



Faculty Advisor
Aluel Go



Faculty Advisor
Truman Surbrook

Sponsor
Perrigo
(under Non-disclosure)



Team Projects

Assay Development for Evaluation of On-farm Probiotic Application - (4:30 pm)

Probiotic Pros has developed an assay to quantify viable *Bacillus subtilis* in agricultural soils after probiotic application. Quantification is necessary for farmers to observe the presence of *B. subtilis* pre- or post- application and after extreme weather events. First, a screening for *B. subtilis* DNA using a colorimetric gold nanoparticle assay was performed. Then, *B. subtilis* was quantified using viability PCR (vPCR), which involved the removal of non-viable DNA from the sample before quantitative PCR is performed. The team designed a kit with guidelines and materials for farmers to sample their soil for the assay.



Faculty Advisor
Darrell W Donahue, PE



Faculty Advisor
Timothy Harrigan

Sponsor
Dr. Larry Walker

Team Members (L to R)
Alex Hernandez
Jill Check
Tess Cannon
Jenna Baughman



Improving Potato Storage Ventilation with a Computational Fluid Dynamics Model - (4:40 pm)

Super Modelers developed a computational fluid dynamics (CFD) model to study airflow characteristics in Techmark's Riverdale potato storage facility. This model was used to identify the cause of non-uniform aeration to the facility's potato pile, and recommend improvements to the air distribution systems. Uniform air flow to the potatoes is critical to ensure optimal temperature and humidity during storage. Upon completion of this project, Techmark will have an airflow model they can apply to future storage facility design work, and design recommendations supported by the model.



Faculty Advisor
Wei Liao, PE

Sponsor
Techmark, Inc.

Team Members (L to R)
Samuel Effa
Christopher Robbe
Jacob Duckworth
Jessica Schultz



Team Projects

Red Swamp Crayfish Control Plan Using Acoustic Stimuli - (4:50 pm)

An infestation of Red Swamp Crayfish (*Procambarus clarkii*) was reported in 2015 in southeast Michigan. The invasive species has since spread. Invasive Crustacean Eradication was tasked to find an engineering solution to contribute to the MDNR's population control plan. Auditory stimuli were found to influence crayfish motility through experimental trials. Pure tones, white noise, and pink noise were tested to determine the most effective stimuli. A trap was retrofitted to utilize a sound system resulting in increased trapping rates.



Faculty Advisor
Wei Liao, PE

Sponsor
Michigan Department
of Natural Resources



Team Members (L to R)
Xiaojing Ma
Douglas Clements
Henry Frost
Megan Beaver

2019 Alumni Awards

Biosystems Engineering 2019 Distinguished Alumni Award

Scott Millsap

Scott Millsap is a Corporate IT Project Manager for JBT Corporation, headquartered in Chicago, IL. He holds a bachelor's degree in Biological and Agricultural Engineering from the University of Arkansas (2000), a master's degree in Biosystems Engineering from Michigan State University (2002), and a MBA from Bowling Green State University (2008).

Scott has worked for JBT Corporation for 17 years in roles that span the business including: Technical Sales Support, Account Management, International Project Management, Operations Management, Aftermarket Business Management, and IT Project Management. Scott attributes his success and flexibility in such diverse functional areas to a strong work ethic instilled through working on his parent's dairy farm, and a solid "problem solving" focus instilled by his Biosystems Engineering degrees.

Scott served on the MSU BAE Industry Advisory board until 2014 when he took an International Expatriate position in Bangkok Thailand. JBT has frequently hired a handful of MSU BAE graduates per year to JBT which has earned a great reputation providing top talent with problem solving skills. He is very proud of the "Spartan Army" within JBT.

Today (as of 2019), Scott resides in Roseville, California where he spends his free time with his wife Stephanie, and two children: Aaron (12) and Katherine (10). They enjoy camping, hiking, traveling, and attending the kid's soccer & basketball games.



Biosystems Engineering 2019 Outstanding Alumni Award

Bridget Bednark

Bridget Bednark is a Sales Consultant for Depuy Synthes Spine, Companies of Johnson & Johnson. She holds Bachelor of Science degrees in Biosystems Engineering (2012) and Human Biology (2012). She specializes in advancing sales and clinical value for Johnson & Johnson's spine product portfolio of products, designed to improve patient care during spinal surgery. Bridget serves hospitals and clinical staff in the city of Knoxville, TN providing on-site consulting, clinical support, and product education.

During her time at MSU, Ms. Bednark worked as a research technician for the Sakamoto Laboratory where she had the opportunity to work on research focused on nerve guidance scaffolds for spinal cord repair. After graduation, she started as an Engineer for Terumo Cardiovascular systems. She became subject matter expert for blood gas monitoring sensors designed for cardiovascular surgery. In 2015, Bridget relocated with BrainLab Inc. as a Clinical Specialist supporting clinical staff with products for image guided neurosurgery. Through interacting and networking with Johnson & Johnson corporate partners, Bridget changed her career path to medical device sales for J&J.

Bridget has been a continuous and enthusiastic participant in the BE 101 alumni speaker panels since graduation. She has enjoyed mentoring others and helping them progress along their career paths particularly in the biomedical concentration area. In her spare time, Bridget loves hiking the Smokey Mountain National Park, skiing, traveling, and cheering on the MSU men's basketball team. Go Green!



Industry Advisory Board 2018-2019

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 MBA in Business Administration.

Lisa Buchholz is Global Leader of Analytical Regulatory Sciences with Corteva Agriscience™. Corteva Agriscience™, the agriculture division of DowDuPont™, 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.

Matthew Burt is Assistant Director Clinical Quality Assurance with AbbVie®. AbbVie's 29,000 employees are scientists, researchers, communicators, manufacturing specialists and regulatory experts located around the globe. Matt holds a B.S. in Biosystems Engineering and a MBA.

Shelley Crawford is Group Engineering Manager for Global Pringles® and Pop-tarts® at Kellogg® Company, the world's leading producer of cereal and a leading producer of convenience foods. Shelly holds a B.S. in Biosystems Engineering and a MBA in Marketing.

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.

Laura Doud, PE, is an Environmental Engineer Specialist in the Michigan Department of Agriculture and Rural Development. She works with waste storage facilities, fuel storage, drinking water and irrigation wells, concrete and soils investigations, aquaculture, food processor waste water issues, and the siting of livestock production facilities under the Michigan Right to Farm program. Laura holds a B.S. in Biosystems Engineering.

Cassandra Edwards (Chair-Elect) is Supplier Quality Engineer for Tillamook® in Tillamook, OR. Prior to Tillamook®, she was the Production Manager at Bimbo Bakeries®. Cassandra holds a B.S. in Food Engineering and a M.S. in Mechanical 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.

Jeremy Hoeh, PE, is Environmental Health Programs Unit Supervisor in the Department of Environmental Quality (DEQ) Drinking Water and Municipal Assistance Division. He has a broad range of education and experience across DEQ programs. Jeremy holds a B.S. in Chemical Engineering.

Eric Iversen, PE, is Senior Project Manager with LSG Engineers and Surveyors in Lansing, MI. Eric is well versed in local and state regulatory agency procedures regarding site planning, permitting, SRF public financing, floodplain and wetland permits, storm water management and treatment, ground and surface water discharge permits, sanitary sewers, water, onsite wastewater (drainfields), wastewater lagoons and well systems, etc. including the standards and requirements of MDOT, MDEQ, MDTMB, and MDLARA. Eric holds a B.S. in Civil Engineering.

Andrew Knowles 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 M.S. in Applied Statistics.

Kevin Kowalk, PE, (MI and WI), is a Project Manager and Senior Engineer for Water and Natural Resources and Site Characterization and Remediation Divisions for EA Engineering, Science and Technology, Inc., PLC. Kevin holds B.S. and M.S. degrees in Biosystems Engineering.

Industry Advisory Board 2018-2019

Jeffrey Mathews, PhD, is the R & D 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 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.

Eric Van Middendorp is a Biomedical Engineer at Spectrum Health Innovations where he leads the design and development of FDA Class I and II medical devices. Eric works with the 25,000+ physicians and staff members across the Spectrum Health system to drive development of healthcare products and technologies. Eric holds a B.S. Product Design and Manufacturing Engineering and a M.S. in Mechanical Engineering.

Chad Volkmann is Laboratory Manager – PPD Laboratories in Middleton, WI. PPD provides analytical services for all phases of the drug development process and for all dosage forms. Chad manages the Inhalation Services and Small Molecule laboratory, and holds a B.A. in Biology.

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, (Chair) 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
Darrell W. Donahue, PE, Professor and Chair,
Biosystems & Agricultural Engineering
Saad Sharief, Graduate Student Representative
Ron Hendrick, Dean, College of Agriculture and
Natural Resources
Leo Kempel, Dean, College of Engineering
Kieron Moller, Undergraduate Student
Representative
Luke Reese, Industry Liaison, Biosystems &
Agricultural Engineering
Larry Walker, CANR Alumni Association
Michael Wozniak, PE, ASABE Michigan Section
Representative

Industry Evaluators

Matthew Bailey, IPF Campus Services
Carlos Becho, Kellogg
Roger Blackwell, Chestnut Growers, Inc.
Ruben Kenny Briceno, Hospital de Alta Complejidad
Virgen de la Puerta, Trujillo, Peru
Karel Bush, Michigan Craft Beverage Council
Brad Day, PhD, - Dept of Plant, Soil & Microbial Sciences
Scott Dierks, PE, GEI Consultants, Inc.
Todd Forbush, Techmark, Inc.
Sarah Geurkink, Student Organic Farm
Seth Herbst, PhD, MDNR
Sharon Hiller, Grand Pointe Homeowner's Assn
Norm Lenhart, Perrigo
Celee Marchek, Grand Pointe Homeowner's Assn
Amber Mostiller, Grobbel's
Alex Castaneda Sabogal, Hospital Victor Lazarte
Echegaray, Trujillo, Peru
Greg White, Grand Pointe Homeowner's Assn
Nate Wood, Perrigo

Scholarship Descriptions

Undergraduate Scholarships

F. W. Bakker-Arkema Endowed

F.W. Bakker-Arkema was a professor of Agricultural Engineering at MSU for over 30 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.

Michigan ASABE Section Scholarship

One award for a freshman and one for a sophomore student registered as an Agricultural Engineering or Biological Systems Engineering student at a University or College. The student must be a registered as a Pre-Professional member of the American Society of Agricultural and Biological Engineers, ASABE.

Scholarship Descriptions

Freshman Scholarships

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.

2019-2020 Scholarship Recipients

Undergraduate Awards

F.W. Bakker-Arkema Endowed Scholarship

Megan Curtin
Kasey Nelson
Alayna Peterson

DeBoer Family Scholarship/Fellowship Fund

Sydney Burtovoy
Ian Chesla
Alec Christy
Natalie Coaster
Emma Dester
Aleah Hahn
Miriam Kaburu
Kieron Moller
Sophie Nowak
Nick Saba
Rachel Shapin
Aryn Thomas

A.W. Farrall Scholarship

Rachelle Crow

Clarence & Thelma Hansen Scholarship

Taryn Hanses
Aaron Newberry
Alex Seybold
Alicia Ziegler

Howard & Esther McColly Scholarship

Nama Naseem
Anna Raschke

George E. and Betty L. Merva Endowed Scholarship

Jacob Duckworth

John & Julianna Merva Undergraduate Excellence Fund

Erica Peer

Michigan ASABE Section Scholarship

Alicia Ziegler

Graduate Awards

*Biosystems Engineering and College of
Engineering Outstanding
Graduate Student Fellowship*
Juan Sebastian Hernandez Suarez

*Outstanding BE Research Fellowship &
Fitch H. Beach Award*
Kaitlyn Casulli

Galen & Ann Brown Scholarship
Saad Sharief

Merle & Catherine Esmay Scholarship
Oznur Caliskan-Aydogan

2018-2019 Freshman Awards

Alfred and Mary Murray Scholarship


Zachary Gentry
Sydney Janssen
Ian Klug
Annaliese Marks
Erica Peer
Nicholas Saba

Robert J. Gustafson Scholarship

Quincy Manson
Aaron Newberry



"Spring"
A.P. Farrell, 1881



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College of Agriculture and Natural Resources
www.canr.msu.edu

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

Mr. Scott Millsap (MS, BE, 2002)
Ms. Bridget Bednark (BS, BE, 2012)

Graduate Scholarship Awards
Dr. Darrell W. Donahue

Undergraduate Scholarship Awards
Dr. Darrell W. Donahue

Recognition of Senior Design Students
Dr. Dana Kirk
Dr. Luke Reese

Closing Remarks
Dr. Darrell W. Donahue