

RICHARD J. FASENMYER
ENGINEERING DESIGN CONFERENCE
SATURDAY, APRIL 29, 2017



OUTSTANDING
CAPSTONE
PROJECT
SPONSOR



SCHEDULE OF EVENTS

7:30–11:30 a.m.
Refreshments in Clark Café

8:00–11:30 a.m.
Senior Presentations
Half-hour sessions including Q&A

11:45 a.m.–12:15 p.m.
Keynote Speaker
Tiffany Beers '02
Samuel P. "Pat" Black III Conference Center,
180 Burke

12:15–12:30 p.m.
Student and Sponsor Award Presentations
Samuel P. "Pat" Black III Conference Center,
180 Burke

Class Pictures Immediately Following Awards
Photos will be taken in 180 Burke. Assemble in the hallway outside of 180 Burke and wait to be called to the stage. Class photo times: ME 12:35, IBE 12:40, IE 12:45, MET 12:50, PLET 12:55, CSSE 1:00, ECE 1:05, ECET 1:10.

KEYNOTE SPEAKER



TIFFANY BEERS '02

Tiffany Beers graduated from Penn State Behrend in 2002 with a B.S. in Plastics Engineering Technology. She is a senior innovator at Nike, working in the company's Innovation Kitchen. Using groundbreaking technology, Beers helps designers bring their ideas to reality by seeing concepts through to production. She also partners with designers and engineers to solve problems and evolve concepts into beautiful performance solutions.

Beers joined Nike in 2004 and holds forty utility patents and three design patents for her work there. She was a key innovator for the Hyperadapt 1.0, 2011 and 2016 Nike Mag, and Air Jordan 29, leading the projects from concept to retail sale. Other Nike technology and products she helped to develop include the Nike Flywire, Nike Flyweave, Kobe 7, and Tom Sachs Collection.

ABOUT THE CONFERENCE

The Richard J. Fasenmyer Conference showcases the results of year-long engineering senior capstone projects supervised and managed by students and guided by their faculty and industry advisers. In many cases the projects address applied problems posed by industrial sponsors.

In 2005, the conference was named to honor the legacy of Richard J. Fasenmyer. An Alumni Fellow and Distinguished Alumnus of the University, Fasenmyer was the first alumnus of Penn State Behrend to donate \$1 million to the college.



PennState
Behrend

RICHARD J. FASENMYER ENGINEERING DESIGN CONFERENCE SENIOR PROJECTS

Computer Science and Software Engineering

8:00 a.m. 202 Burke

Intelligent Academic Planner

Penn State Behrend School of Engineering, sponsor
Daria Cook, Krystal Elliott, Xiaoyu Zhou
Dr. Meng Su, faculty adviser

8:30 a.m. 202 Burke

An Open Source Tool for Security Analytics

Penn State Behrend School of Engineering, sponsor
Andy Zheng, Austin Julio, Caleb Rush
Dr. Zhifeng Xiao, faculty adviser

9:00 a.m. 202 Burke

Soccer Mom's All-In-One App

Penn State Behrend School of Engineering, sponsor
Alex Walkowski, Travis Becker, Tyler Lewis
Dr. Jalaa Hoblos, faculty adviser

9:30 a.m. 202 Burke

NPEIV Companion Web Application

Penn State Behrend School of Engineering, sponsor
Clint Motosicky, Hozaiifa Abdalla, Luke Poniatowski
Mrs. Melanie Ford, faculty adviser

10:00 a.m. 105 Burke

Redis Cluster Management

Interactive Intelligence, sponsor
Alex Kiefer, Christopher Bendt, Cory Stonitsch
Dr. Wen Li Wang, faculty adviser

10:00 a.m. 106 Burke

Virtual Reality: Texting and Driving

Erie Insurance Group, sponsor
Jacob Wheeler, Nathan Christiansen, Nicholas Kapyt
Mr. George Dudas, faculty adviser

10:00 a.m. 202 Burke

Gamified Training for Assessment of Child Physical Abuse

Penn State Behrend School of Engineering, sponsor
Adam Meanor, Gregory Louchart, Jordan LaRicca
Dr. Richard Zhao, faculty adviser

10:30 a.m. 105 Burke

Organizational Efficiency with Artificial Intelligence

Interactive Intelligence, sponsor
Allison Steinmetz, Joshua Dickey, Manan Patel
Dr. Xiaocong Fan, faculty adviser

10:30 a.m. 106 Burke

Mixed Reality Training

Erie Insurance Group, sponsor
Mason Toy, Rachel Rattay, William Emmel
Mr. Ronald Del Porto, faculty adviser

10:30 a.m. 201 Burke

UML Web Designer for Teams

Penn State Behrend School of Engineering, sponsor
Brian Ristau, Matthew Downey
Dr. Naseem Ibrahim, faculty adviser

11:00 a.m. 106 Burke

Security Communication Platform

Erie Insurance Group, sponsor
Brendan Burger, Devon Smith, Tyler Mosakowski
Dr. Naseem Ibrahim, faculty adviser

Electrical and Computer Engineering

8:00 a.m. 105 Burke

Pulse Input Processor and Logger

FMC Technologies, sponsor
Daphne Cruz Hidalgo, Kevin Brenneman, Michael Stumpf
Dr. Sudarshan Nelatury, faculty adviser

8:00 a.m. 205 Burke

Dry Ingredient Machine Optimization

Process and Data Automation, sponsor
Christina McNeal, Austin Sosnowski
Dr. George Walters, faculty adviser

8:30 a.m. 205 Burke

Wireless Recipe System Evaluation and Development

Process and Data Automation, sponsor
Aron Barker, Oluwatimilehin Areola, Jonathan Schaub
Dr. George Walters, faculty adviser

9:00 a.m. 207 Burke

Capacitive Touch Sensor Programming

Philips Respironics, sponsor
Luke Aaron, Nicholas Korzi, Xue Zheng Saw
Dr. Thomas Hemminger, faculty adviser

9:30 a.m. 102 Burke

ECE: Remote Control and Autonomous Mobile 4x4 Robotic Platform

Chad Hensley, sponsor
Matthew Cauvel, Ryan Kelley
Mr. Robin Panda, faculty adviser

9:30 a.m. 105 Burke

HMI Touch Panel

Imperial Systems, sponsor
Seigi Yokota, Thomas Hildreth, James Lei
Dr. George Walters, faculty adviser

10:00 a.m. 101 Burke

High Speed Data Collection and Analysis

Webco Industries Inc., sponsor
William Dunn, Ryan Kelly, Zachary Miller
Dr. Mohammad Rasouli, faculty adviser

10:00 a.m. 102 Burke

Hybrid VTOL Drone/Aircraft with Pivoting Wing and Advanced Avionics

General Anomaly Design LLC, sponsor
Vance Farren, Bradley Cypher, Ian LoVerde
Mr. Robin Panda, faculty adviser

10:00 a.m. 206 Burke

Part Tracking in Manufacturing

SKF Aerospace, sponsor
Jacob Foglia, Zachary Neudorfer, Dylan Kube
Dr. Sudarshan Nelatury, faculty adviser

10:30 a.m. 204 Burke

K-12 Outreach Design Project

Penn State Behrend K-12 Outreach, sponsor
Kenneth Haylett, Matthew Smearcheck,
Alexander Lee
Dr. Thomas Hemminger, faculty adviser

10:30 a.m. 205 Burke

A Universal Human-Machine-Interface and an Expansion I/O Board for Various Power Converters

Power Conversion Technologies Inc., sponsor
Maria Chis, Matthew Cefali, Eric Holman, Joseph Tomasko
Dr. Kyeiwaa Asare-Yeboah, faculty adviser

11:00 a.m. 105 Burke

Utility Solar Project

Jamestown BPU, sponsor
Anthony Leithner, Evan Sherrieb, Burhaan Farah
Dr. Mohammad Rasouli, faculty adviser

11:00 a.m. 201 Burke

System to Assist Fork Truck Cargo Loading in Unimproved Terrain

Penn State Applied Research Laboratory, sponsor
Alyson Dybowski, Garrett Proctor, Richard Lucas
Mr. Robin Panda, faculty adviser

11:00 a.m. 205 Burke

License Plate Recognition Device

Pove X Edu Inc., sponsor
Chunlei Xing, Steven Frangione
Dr. Tarek Elarabi, faculty adviser

Electrical and Computer Engineering Technology

8:00 a.m. 201 Burke

ECET: Acceptance Test Machine for Stiffness Sensing System

LORD Corporation, sponsor
Eric Matteson, Samantha Muhhuku
Mr. David Loker, faculty adviser

8:30 a.m. 105 Burke

Commercialize Ultrasonic Level Sensor

FMC Technologies, sponsor
Amy Dewoody, Travis Roney
Mr. Stephen Strom, faculty adviser

9:00 a.m. 205 Burke

Mobile Training System Design and Commission

Process and Data Automation, sponsor
William Hoover, Nikolay Otroda
Mr. Roger Kuntz, faculty adviser

9:30 a.m. 205 Burke

Mold Cooling Machine Restart

Process and Data Automation, sponsor
Monte Defrances, David Gibbons
Mr. Roger Kuntz, faculty adviser

Interdisciplinary Business with Engineering Studies

8:00 a.m. 106 Burke

B2B2Me

Nolan Carll, sponsor
Stephen Denny, Oluseyi Petinrin, Joseph Schack
Dr. Diane Parente, faculty adviser

8:00 a.m. 107 Burke

Insurance Implications and Opportunities for 3D Printing

Erie Insurance Group, sponsor
Seth Swasy, Nathan Ropelewski, Michael Rabb
Dr. Diane Parente, faculty adviser

8:30 a.m. 106 Burke

Phase II - Building a Technology Demonstrator That Will Assist Engagement of Fork Truck with Cargo Loads in Unimproved Terrain

Penn State Applied Research Laboratory, sponsor
Martin Long, McKenna Aleksivich, Zachary Smith
Dr. Diane Parente, faculty adviser

8:30 a.m. 107 Burke

Commercial Insurability and Medical Marijuana

Erie Insurance Group, sponsor
Alexander Lyon, Robert Gorka, Kirk Dillen
Dr. Diane Parente, faculty adviser

9:00 a.m. 106 Burke

Edwin the Duck

Pi Lab, sponsor
Sean Seavy, Matthew Shepherd, Mitchell Eberle, Joel Coppella,
Dr. Diane Parente, faculty adviser

9:00 a.m. 107 Burke

The Sand Sherpa

Matthew Parente, sponsor
Raghad Ali, John Hill, Alex Bailey
Dr. Diane Parente, faculty adviser

9:30 a.m. 106 Burke

New Polyethylene Inventions

Shell Global Solutions International, sponsor
Patrick Stough, Brandon Yandrick, Kiley Ransbury
Dr. Diane Parente, faculty adviser

9:30 a.m. 107 Burke

Put A Ring On It!

Matthew Parente, sponsor
Todd Zandier, Erica Cimato, Brock Wagner
Dr. Diane Parente, faculty adviser

10:00 a.m. 107 Burke

Pultruded Carbon Fiber Products

Lawrie Technology Inc., sponsor
Mitchell Buchna, Alexander Krysiak, Austin Montevecchio
Dr. Diane Parente, faculty adviser

10:30 a.m. 107 Burke

Peanut Shell Press Board

Metalcraft, sponsor
William Staniszewski, Sean Stocy, Ryan Puchak, Benjamin Ropelewski
Dr. Diane Parente, faculty adviser

11:00 a.m. 107 Burke

Markets for Spinelect

Modern Industries, sponsor
John Anderson, Samantha Winrick, Liam Duffy
Dr. Diane Parente, faculty adviser

Industrial Engineering

8:00 a.m. 103 Burke

Machine Setup Time Reduction

Acutec Precision Machining, sponsor
Jessica Hocsman, Daniel Obernauer, Garrett Webster
Dr. Yuan-Han Huang, faculty adviser

8:30 a.m. 103 Burke

Shop Floor Scheduling Optimization

Acutec Precision Machining, sponsor
Mohamed Badawy, Zachary Puhala, Daniel Smith
Dr. Faisal Aqlan, faculty adviser

8:30 a.m. 206 Burke

Commutator Commercial Operations Optimization

The Electric Materials Company (TEMCO), sponsor
Kyle Beckett, Brian Gerstel, Timothee Paluku
Dr. Omar Ashour, faculty adviser

9:00 a.m. 206 Burke

Improving Operating Rooms Turnover Time at UPMC Hamot

UPMC Hamot, sponsor
Anton Benedikt, Amanda Sayko, Bradley Tylenda
Dr. Omar Ashour, faculty adviser

10:30 a.m. 202 Burke

Organization of Furnace Build Components in Regards to Building Space Reduction

Onex Inc., sponsor
Nicolas Cortes Mendoza, Corey Flesik, Ryan Markle
Dr. Paul Lynch, faculty adviser

11:00 a.m. 202 Burke

Achieving Lean Manufacturing Through TPM and 5S

U.S. Bronze Foundry and Machine, sponsor
Adam Riddle, Howie Setyono, Amanda Vanbuskirk,
Luke Sabljak
Dr. Paul Lynch, faculty adviser

Mechanical Engineering

8:00 a.m. 102 Burke

Small Scale Inhibition of Potato Sprouting

1,4GROUP, sponsor
Ivan Erway, Brian Habas, Joseph Helbing, Cody Thomas
Ms. Jill Johnson, faculty adviser

8:00 a.m. 104 Burke

Novel Impeller Design

Dresser-Rand, A Siemens Business, sponsor
Ben Tilley, Michael Abata, Collin Randall
Dr. William Lasher, faculty adviser

8:00 a.m. 203 Burke

Continuous Bending Under Tension Fixture

Penn State Behrend School of Engineering, sponsor
Evan Boben, Kyle Johnston, Joshua Harrison,
Adam Reay
Mr. Dean Lewis, faculty adviser

8:00 a.m. 206 Burke

Part Feeder

Tonnard Manufacturing Corp., sponsor
Bradley Abrahamson, Brian Byrge, Anthony Frazzini
Dr. Chetan Nikhare, faculty adviser

8:30 a.m. 102 Burke

Automated Defect Detection on 316 Stainless Steel Ferrules

Parker Hannifin Corp., sponsor
Dylan Hascher, Kevin Freeman, Anthony Minneci,
Joshua Werner
Dr. John T. Roth, faculty adviser

8:30 a.m. 104 Burke

Centrifugal Compressor Assembly

Dresser-Rand, A Siemens Business, sponsor
Jerome Geibel, Alexandra Laffey, John Lippert,
Brian Etzel
Dr. Adam Hollinger, faculty adviser

8:30 a.m. 203 Burke

Design a Disability Simulation Glove

Penn State Behrend School of Engineering, sponsor
Christian Goodhue, Justin Rohrer, Scott Repenning,
Zachary Truitt
Dr. Barukyah Shaparenko, faculty adviser

9:00 a.m. 103 Burke

5 Axis Mill Lights Out Machining

Acutec Precision Machining, sponsor
Jessica Wachowiak, Ryan Dombrosky, Dylan Cimbala,
Tyler Kasunich
Dr. John T. Roth, faculty adviser

9:00 a.m. 105 Burke

Crank Shaft PD Meter

FMC Technologies, sponsor
Denis Lang, Colin Dalrymple, Jacob Wyllie, Alex Russell
Dr. Jun Zhou, faculty adviser

9:00 a.m. 201 Burke

LORD Corporation Elastomeric Rod End Demonstrator

LORD Corporation, sponsor
Zack Leicht, Rob Prokop, Sam Olearchick, Nathan Law
Dr. David Beevers, faculty adviser

9:30 a.m. 103 Burke

ME1: Chainsaw Multi-tool Attachments and Jig

Advanced Testing Services, sponsor
Tyler Katich, Robert Kean, Andrew Litzinger
Dr. Yustianto Tjiptowidjojo, faculty adviser

9:30 a.m. 104 Burke

Evaluate Stainless Steel Spring Bolts on the 76 Feeder Line

Eriez Magnetics, sponsor
Gabriel Laurent, William Schmid, Scott Romanko
Dr. Chetan Nikhare, faculty adviser

9:30 a.m. 201 Burke

Magnetic Helicopter Lead-lag Damper

LORD Corporation, sponsor
Laurentiu Petrut, Lucas Mattson, Hayden Seibert,
Brandon Bachner
Dr. Yi (Elisa) Wu, faculty adviser

9:30 a.m. 206 Burke

Torque Limiting Device

Swanson-Erie Corp., sponsor
Jonathan Watson, Mitchell Gahr, Jamen Harter,
Matthew Williams
Dr. Shraddha Sangelkar, faculty adviser

10:00 a.m. 103 Burke

ME2: Chainsaw Multi-tool Attachments and Jig

Advanced Testing Services, sponsor
Nicholas Kost, Tyler Milko, Nathan Miller,
Sean Sehman
Dr. Yi (Elisa) Wu, faculty adviser

10:00 a.m. 104 Burke

Optimize Hanger Plate Locations and Shaft Deflections on Wet Drum Magnet Circuits

Eriez Magnetics, sponsor
Jacob Wolf, Austin Slupe, Zachary Krivda
Dr. Amir Khalilollahi, faculty adviser

10:00 a.m. 201 Burke

Furnace Flue Model

Onex Inc., sponsor
Maura Costa, Julia Davis, Joseph Lombardi,
Tyler Loughran
Ms. Jill Johnson, faculty adviser

Mechanical Engineering, CONTINUED

10:30 a.m. 102 Burke
Hybrid VTOL Drone/Aircraft with Pivoting Propellers

General Anomaly Design LLC, sponsor
Mitchel Meszaros, Aaron Ray, Aaron Peters,
Aaron Graham
Mr. Brian Lani, faculty adviser

10:30 a.m. 103 Burke

Stress Relief EAM Machine

Anderal Technologies, sponsor
Trey Loomis, Lourdez Medina, Michael Rahe,
Kenneth Rihel
Mr. Dean Lewis, faculty adviser

10:30 a.m. 206 Burke
Polymer Cage Pocket Fatigue Test Equipment

SKF Aerospace, sponsor
James Tomcho, Timothy Jesteadt, Rachael Sheridan,
Seth Beatty
Dr. Charlotte de Vries, faculty adviser

11:00 a.m. 102 Burke

Fixture Lift Mechanism

Tech Cast LLC, sponsor
Tyler Rigby, Joshua Faust, Joshua Hugo, James Jacobs
Mr. Brian Lani, faculty adviser

11:00 a.m. 103 Burke

EAM Stamping Demonstrator

Anderal Technologies, sponsor
Anthony Catalano, Daniel Brooks, Matthew Cottage,
Sean Pishcke
Dr. Shraddha Sangelkar, faculty adviser

11:00 a.m. 204 Burke
Supermileage Drivetrain Optimization

Penn State Behrend SAE Club, sponsor
Seth Tau, Mary Beth Burbules, Rachel Gorski, Jacob Elder
Dr. Amir Danesh-Yazdi, faculty adviser

11:00 a.m. 206 Burke
Wear Test Equipment for Polymer Cages

SKF Aerospace, sponsor
Patrick Trumbetta, Douglas Metcalfe, Jordan Yost,
Jonathan Brennan
Dr. Amir Khalilollahi, faculty adviser

Mechanical Engineering Technology

8:30 a.m. 201 Burke
MET: Acceptance Test Machine for Stiffness Sensing System

LORD Corporation, sponsor
Brian Lowery, Wesley Rea, Bikash Subba
Mr. Fred Nitterright, faculty adviser

9:00 a.m. 102 Burke
MET: Mobile 4x4 Robotic Platform Controlled by R/C, Mobile and Autonomous Mode

Chad Hensley, sponsor
Jacob Golias, Sarah Green
Mr. Michael Lobaugh, faculty adviser

9:00 a.m. 104 Burke
Advanced Fillet Welding System for Large Diameter Low-flow Coefficient Impellers

Dresser-Rand, A Siemens Business, sponsor
Ryan Ciuca, Brad Dranko, William Edwards
Dr. Nancy Study, faculty adviser

9:00 a.m. 203 Burke
Wood-fired Oven for Guatemala Roof Panels

Penn State Behrend School of Engineering, sponsor
Ryan Boarts, Joseph Shoop, Justin Sommers
Mr. Robert Edwards, faculty adviser

10:00 a.m. 205 Burke
Soaking Pit Furnace Heating Time

SECO/Warwick, sponsor
Luke Gigliotti, Aaron Gibbs, Ian Sweeney
Dr. Liyong Sun, faculty adviser

10:30 a.m. 104 Burke
Design a Bolt-on Mounting Bar for Vibratory Feeder Trays

Eriez Magnetics, sponsor
Casey Getic, Brandon Goss, Michael Pisciotano
Mr. Shannon Sweeney, faculty adviser

11:00 a.m. 104 Burke
Evaluate Critical Speed of Eddy Current Rotor Based on Manufacturing Tolerance Allowances and Assembly Methods

Eriez Magnetics, sponsor
Benjamin Babcock, Philip Currier, Tyler Raco
Mr. David Johnson, faculty adviser

Plastics Engineering Technology

8:00 a.m. 101 Burke
Design and Development of Modular Tooling for Shrinkage and Warpage Studies

Penn State Behrend School of Engineering, sponsor
Carson Lewis, Myles Mike
Mr. Bradley Johnson, faculty adviser

8:00 a.m. 204 Burke
Effect of Melt Blending vs. Single Molecular Resins on Material Properties

Penn State Behrend School of Engineering, sponsor
Patricia Bogniak, Rachel Oelbracht
Dr. Gary Smith, faculty adviser

8:30 a.m. 101 Burke
Crystallinity Modification of PE and PP

ExxonMobil Chemical Co., sponsor
Michael Morando, Matthew Grafton
Dr. Gary Smith, faculty adviser

8:30 a.m. 204 Burke
24" High Capacity Trench Design

Zurn Industries LLC, sponsor
Jeremy Gray, Lindsey Gatesman
Mr. Jason Williams, faculty adviser

9:00 a.m. 101 Burke
Mold Rheometer Design and Development

Penn State Behrend School of Engineering, sponsor
Benjamin March, Eric Santini
Mr. Bradley Johnson, faculty adviser

9:00 a.m. 204 Burke
Evaluation of the Interaction Between Filler Particle Size and Specific Gravity

PolyOne, sponsor
Lucas McMurtrie, Jason Suess
Mr. Brian Young, faculty adviser

9:30 a.m. 101 Burke
Mechanical Characterization of Molded Morphologies

Penn State Behrend School of Engineering, sponsor
Matthew Oravec, Nikki Morganstern
Mr. Jason Williams, faculty adviser

9:30 a.m. 203 Burke
Evaluation and Characterization of Ski Binding Release

Penn State Behrend School of Engineering, sponsor
Rachel Kaschauer, Zachary May
Mr. Jonathan Meckley, faculty adviser

9:30 a.m. 204 Burke
Evaluation of Breakage in Long Glass Fiber-filled Material Based on Core Geometry

PolyOne, sponsor
Aaron Matta, Matthew Vrana
Mr. Brian Young, faculty adviser

10:00 a.m. 203 Burke
Design of Process Setting Tool for New 3D Printer

Penn State Behrend School of Engineering, sponsor
Nicholas Sheasley, Ciara Cox
Mr. Jason Williams, faculty adviser

10:00 a.m. 204 Burke
Evaluating Infill Ratio in Printed Molds to Optimize Wall Thickness Variation

Penn State Behrend School of Engineering, sponsor
Matthew Boyer, Jesse Schneider
Mr. Brian Young, faculty adviser

10:30 a.m. 101 Burke
Conformal Cooling in Aluminum Tooling

Penn State Behrend School of Engineering, sponsor
Sara Allgeier, Beau Bacho
Mr. Jonathan Meckley, faculty adviser

10:30 a.m. 203 Burke
3D Printed Ski Tips

Penn State Behrend School of Engineering, sponsor
Kyle Radack, Carl Shaw
Dr. Alicyn Rhoades, faculty adviser

11:00 a.m. 101 Burke
Blow Molding Die Verification of Parison Sag and Swell

Penn State Behrend School of Engineering, sponsor
Jonathan Turfitt, Steven Roll
Mr. Jonathan Meckley, faculty adviser

11:00 a.m. 203 Burke
Illumination Studies with LED Lighting

Whirley DrinkWorks, sponsor
Garrett Vanderhoof, Brayden Cyphert
Dr. Alicyn Rhoades, faculty adviser

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