

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.



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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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