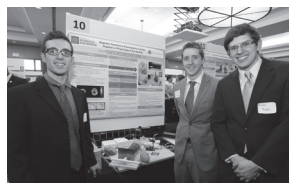
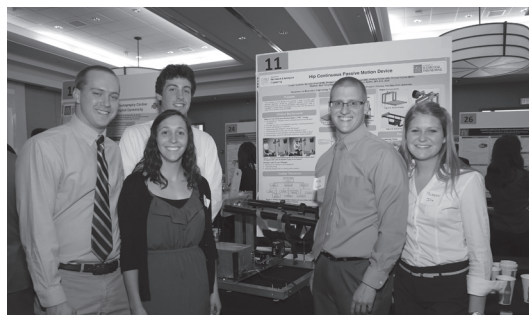
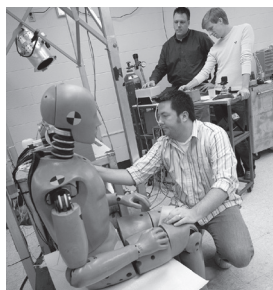
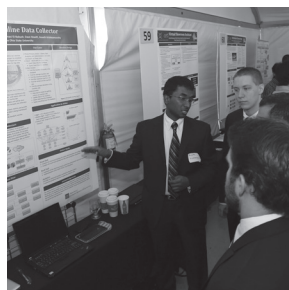


# Engineering Design Showcase

*senior capstone and first-year cornerstone projects*

*Friday, April 18, 2014*



**THE OHIO STATE UNIVERSITY**  
COLLEGE OF ENGINEERING



  
ArcelorMittal

## **Welcome to the Annual Engineering Education Innovation Center (EEIC) Engineering Design Showcase!**

Thank you for joining us at the EEIC Engineering Design Showcase sponsored by the Engineering Education Innovation Center and ArcelorMittal. The showcase is a platform for undergraduate students to display their capstone or first-year cornerstone projects and to answer questions about their research, design methods and project experience.

**7<sup>th</sup> Annual Engineering Capstone Design Showcase:** Senior engineering students spend one to two academic semesters on their capstone projects which culminate their undergraduate academic experience at The Ohio State University. The more than 170 capstone projects displayed are individual, multidisciplinary or industry-sponsored projects. Students will be present to answer questions about their research, design methods and capstone experience.

**11<sup>th</sup> Annual FEH Research Showcase:** First-Year Engineering Honors Nanotech projects will also be on display during the showcase. Twenty first-year engineering student teams were challenged to design and fabricate a silicone polymer microfluidics lab-on-a-chip to analyze surface feature effects on cell adhesion. Teams will present their research findings.

This year we are privileged to have **Dr. DeVon Griffin** as our keynote speaker, presenting ***Medical Hardware Design for Space Exploration***. Dr. Griffin earned a BA in physics from Utah State University and a PhD in optical sciences from the University of Arizona. After graduation he accepted a position at the NASA Glenn Research Center (GRC), where he conducted the first experiments and analysis quantifying the fractal number of soot generated in microgravity. Since 2004, Dr. Griffin has been a project manager supporting NASA's Human Research Program. He initiated an effort developing a reusable lab-on-a-chip device that should become a commercial device this summer. He also began development of a broad band ultrasound detector to quantify bone mineral density in the lumbar spine. Dr. Griffin currently manages computational groups that develop deterministic models of key physiological changes due to microgravity, and quantifies risk associated with human exploration. He has managed the GRC capstone effort since its inception.

We hope you enjoy learning more about our students and their academic research. Please enjoy the showcase!

# Agenda

- 11:00 a.m.**      **Keynote Speaker**  
Dr. DeVon Griffin, *NASA Glenn Research Center*  
Ohio Union, U.S. Bank Conference Theater
- 12:00 p.m.**      **Design Showcase Opens**  
Ohio Union, Archie Griffin Grand Ballroom
- 3:00 p.m.**      **Welcome and Introduction**  
Bob Rhoads, *Capstone Design Program Coordinator*
- 3:05 p.m.**      **Presentation to Showcase Sponsors:**  
ArcelorMittal
- 3:10 p.m.**      **Remarks**  
David B. Williams,  
*Monte Ahuja Endowed Dean's Chair*  
*Executive Dean of the Professional Colleges &*  
*Dean of the College of Engineering*
- 3:20 p.m.**      **Showcase Project Winners Presentations**
- 3:30 p.m.**      **Closing Remarks**  
Bob Rhoads, *Capstone Design Program Coordinator*

# **7<sup>th</sup> Annual Engineering Capstone Design Showcase**

# Student Major Key

ACCT	Accounting
Agri Bus	Agribusiness
Arch	Architecture
Avia	Aviation
BIOE	Biological Engineering
BME	Biomedical Engineering
BUG	Business
CBE	Chemical & Biomolecular Engineering
CE	Civil Engineering
CHEM	Chemistry
CIS	Computer Information Systems
COM	Communications
Comp Neur	Computational Neuroscience
CSE	Computer Science and Engineering
CSM	Constructions Systems Management
ECE	Electrical & Computer Engineering
ECON	Economics
EP	Engineering Physics
FABE	Food, Agricultural and Biological Engineering
FDS	Food Science
FIN	Finance
FPE	Food Processing Engineering
Ind Des (CCAD)	Industrial Design (Columbus College of Art & Design)
Inter Stds	International Studies
ISE	Integrated & Systems Engineering
MAR	Marketing
MBA	Master's Business Administration
ME	Mechanical Engineering
MOLGEN	Molecular Genetics
MSE	Materials Science & Engineering
NUR	Nursing
Plt Path	Plant Pathology
OT	Occupational Therapist
PT	Physical Therapist
WE	Welding Engineering

# Aviation

## 1 **Due North Aviation Project**

Students: Brandon A'hara, Avia; Robert Barnes, Avia; Matthew Ede, Avia; Aaron Kersjes, Avia; Kevin Peddicord, Avia; Jeffrey Cheiky, Avia

Faculty Advisor(s): Brian Strzempkowski

Industry Sponsor: Due North Aviation

Industry Contact(s): Nathan Kayes, David Pytlik

## 2 **Value Measurement of Corporate Shuttle**

Students: Sarah Ferris, Avia; Josh Fisher, Avia; Jackson Gallo, Avia; Courtney Kreis, Avia; Zachery Rooker, Avia; Julie Vanden Bulke, Avia

Faculty Advisor(s): Jim Oppermann

Industry Sponsor: ConocoPhillips

Industry Contact(s): Stan Phipps

# Biomedical Engineering

## **3 Artificial Arm for Imaging and Needle Placement**

Students: Connor Pyles, BME; Laura Caggiano, BME; Laura Henkel, ME; Emily Swingle, BME; Michael Whipple, BME

Faculty Advisor(s): Mark Ruegsegger

Industry Sponsor: The Ohio State University, Clinical Skills Education and Assessment Center

Industry Contact(s): Jeffery Adams

## **4 Center of Gravity**

Students: Brian Eng, BME; Kurt Gildenmeister, ME; Nicholas Holzman, BME; Christian Weber, ME

Faculty Advisor(s): Mark Ruegsegger, Sandra Metzler, Carmen DiGiovine

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

## **5 Device to Detect Footstrike Pattern and Provide Instantaneous Feedback**

Students: John Bartholomew, ME; Michelle Cullen, ME; Michael Guthrie, BME; Eli Brantingham, BME; Matthew Keller, BME; Sarah Levine, PT

Faculty Advisor(s): Sandra Metzler, Carmen DiGiovine

Industry Sponsor: The Ohio State University

Industry Contact(s): Kelly Mueller, Rick Neitzelt

## **6 Extendable Patient Lift**

Students: Michael Baxter, BME; Rachel Bullock, BME; Marissa Gill, ME; Alex Scott, BME; Qiang Zhai, ME

Faculty Advisor(s): Sandra Metzler, Jane Case-Smith, Mark Ruegsegger

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

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### **EZGAS AccuPuncture- Novel Arterial Blood Gas Sampling**

#### **Device**

Students: Alex Autran, BME; Rebecca Bennett, BME; Erin Kosel, BME; Kedryn Marquart, BME

Faculty Advisor(s): Mark Ruegsegger

Industry Sponsor: The Ohio State University

Industry Contact(s): Jim Bott

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### **Frequency Tuner**

Students: Esper Wadih, BME; Josh Brockman, BME; Ryan Reyes, BME; Dan Dressler, BME; Derek Schroeder, ME

Faculty Advisor(s): Mark Ruegsegger, David Lee

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

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### **Hemiwalker**

Students: Chloe Coutts, ME; Tony Harlamert, ME; Jared Bobulski, BME; Elliott Dirr, BME; Yue Liu, ME; Lauren Kolecki, OT

Faculty Advisor(s): Mark Ruegsegger, Jane Case-Smith

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

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### **Kidology Rehabilitation Game**

Students: Chelsea Bennett, BME; Jackie Stuber, BME; Jacob Larkin, ME; Disha Labhasetwar, ME; Dane Owens, ME

Faculty Advisor(s): Mark Ruegsegger, Jill Heathcock

Industry Sponsor: The Ohio State University

Industry Contact(s): Nicole Gross

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### **MRI Cardiac Phantom**

Students: Patrick England, BME; Michael Geletka, BME; Dennis Lee, BME; Sam Shomper, ME

Faculty Advisor(s): Mark Ruegsegger

Industry Sponsor: The Ohio State University

Industry Contact(s): Arunark Kolipaka



- 12 NASA Advanced Exercise Harness**  
Students: Sean Pisano, BME; Michael Wolfe, BME; Matthew Rudy, BME; Elizabeth Maione, BME; Cecylia Daab-Krzykowski, BME; Elizabeth Good, OT  
Faculty Advisor(s): Mark Ruegsegger  
Industry Sponsor: NASA  
Industry Contact(s): Aaron Weaver
- 13 OncoFilter**  
Students: Bridget Crawford, BME; David Sohutskey, BME; Kinshuk Mitra, BME  
Faculty Advisor(s): Mark Ruegsegger, Michael Tweedle  
Industry Sponsor: The Ohio State University, NCIIA, Wright Center for Molecular Imaging  
Industry Contact(s): Michael Tweedle
- 14 Power Soccer Guards**  
Students: Timothy Sanchez, BME; Samantha Lewis, BME; Cody Smucker, ME; Eric Dennis, ME; Jay Young, BME; Margaret Gauntner, OT  
Faculty Advisor(s): David Lee, Theresa Berner  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Luke Edelbrock
- 15 SMART Material with Pressure Sensor Application**  
Students: Molly Mollica, BME; Matthew Lynch, BME; Benjamin Siderits, BME; Kaitlin DeRussy, BME; Bradley Norval, ME  
Faculty Advisor(s): Sandra Metzler, Carmen DiGiovine  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Halle Stolarsky
- 16 Super Spines**  
Students: Jessica Crofford, OT; Anne Marie Jackson, BME; Anja Brkljacic, BME; Maneesha Sivalingam, BME; Brad Smith, ME; Mike Hehl, ME  
Faculty Advisor(s): David Lee, Theresa Berner  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Heather Schriver

**17 The Adaptive Rower**

Students: Lauren Bruss, BME; Allyson Campbell, ME;  
Nicholas Domicone, BME; Clay McRoberts, BME;  
Sam Tucker, ME; Arin Waechter, OT  
Faculty Advisor(s): Sandra Metzler, Theresa Berner  
Industry Sponsor: The Ohio State University, The Adaptive  
Action Sports Coalition, Greater Columbus Rowing Association  
Industry Contact(s): Arin Waechter, Helmut Berthold, Jody Stahr

**18 The O.S.T.R.I.C.H. Upper Extremity Weight Bearing Device**

Students: Paige Lysaght, ME; Ethan Lange, ME; Jacqueline  
Bono, BME; Trey Divelbiss, BME; John Collins, BME  
Faculty Advisor(s): David Lee, Alexandra Borstad  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Heather Schriver

**19 The Oxygen Supplement Unit**

Students: Lena Sayfee, BME; Yeonsu Ryu, BME; Ben Weekes,  
BME; Amy Cinadr, ME; Jordan Mendenhall, ME  
Faculty Advisor(s): Mark Ruegsegger  
Industry Sponsor: NASA  
Industry Contact(s): Sandra Olsen

**20 Wheelchair to Kayak Transfer Device**

Students: Jared Yeggy, BME; Vincent Auyeung, BME; Collin  
Pittro, ME; Christopher Richardson, ME  
Faculty Advisor(s): Mark Ruegsegger, Carmen Digiovine, Sandra  
Metzler, David Lee  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A

**21 Without a Paddle**

**Best in Capstone Design** Students: Ashley Chiu, BME; Kyle Bodynk, BME; Greg Huffman,  
ME; Ryan Donnelly, BME; Eisman Morales, BME  
Faculty Advisor(s): Sandra Metzler, Mark Ruegsegger, Theresa  
Berner  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Joan Arnold

# Chemical & Biomolecular Engineering

**22**

## **Antibody Conjugation to Fluorescent/Magnetic**

### **Nanoparticles for Pathological Imaging**

Students: Robert Kirian, CBE; John Logue, CBE; Kevin McNulty, CBE; Brian Mog, CBE

Faculty Advisor(s): David Tomasko, Jeevan Baretto, Clayton Deighan

Industry Sponsor: Core Quantum Technologies

Industry Contact(s): Kristie Melnik, Jessica Winter

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## **Bio-Fuel Options for Fuel Cells**

Students: Yuanpeng Ding, CBE; Patrick Halley, CBE; Radhika Madhavan, CBE; Paramee Vanavijitr, CBE; Robert Warburton, CBE

Faculty Advisor(s): David Tomasko

Industry Sponsor: pH Matter, LLC

Industry Contact(s): Paul Matter, Michael Beachy

**24**

## **Characterization of the Extensional Flow Properties of Shampoos; Extensional Rheology and its Influence on Industrial Filling**

Students: Kevin Asper, CBE; Lily Glick, CBE; William Murray, CBE; Mark Villarreal, CBE

Faculty Advisor(s): David Tomasko

Industry Sponsor: Procter & Gamble

Industry Contact(s): Fei Wang

**25**

## **High-Efficiency Heat Transfer Coating for Catalytic Supports**

Students: Olivia Wetta, CBE; Stefan Heglas, CBE; Leland Chandler, CBE; Paige Basinger, CBE

Faculty Advisor(s): David Tomasko

Industry Sponsor: NexTech Materials

Industry Contact(s): Matt Seabaugh, Neil Kidner

**26 Light Responsive Smart Fluids for Drag Reduction Application in District Heating and Cooling System**

Students: Jessica Kam, CBE; Jay Cheng, CBE; Xin Phuah, CBE; Christina Anderson, CBE; Kevin Muenks, CBE

Faculty Advisor(s): Andy Maxson

Industry Sponsor: Dr. Jacques Zakin

Industry Contact(s): Dr. Jacques Zakin

**27 Micellar Particles via Flash Precipitation**

Students: Eric Piening, CBE; Jasmyne Walker, CBE; Zac Coates, CBE; Esther Mutua, CBE

Faculty Advisor(s): Barbara Wyslouzil

Industry Sponsor: The Ohio State University

Industry Contact(s): Barbara Wyslouzil

**28 Optimized Cell Labeling with Fluorescent Magnetic Nanoparticles**

Students: Joseph Ionni, CBE; Matthew Cox, CBE; Casey Flaherty, CBE; Austin Hounshell, CBE

Faculty Advisor(s): Jessica Winter, Qirui Fan

Industry Sponsor: The Ohio State University

Industry Contact(s): Jessica Winter, Qirui Fan

**29 Utica Shale Gas**

**Best in Capstone Design**

Students: Yazen Al-Harazy, CBE; Jason Ezzell, CBE; Matthew Rowley, CBE; Maxwell Roy, CBE

Faculty Advisor(s): David Tomasko

Industry Sponsor: The Ohio State University

Industry Contact(s): David Tomasko

# Integrated & Systems Engineering

## **30 Advance Auto Parts Shipping Dock**

Students: David Wickenheiser, ISE; Andrew Brant, ISE; Nicole Fink, ISE; Veronica Irizarry, ISE

Faculty Advisor(s): Steve Lavender

Industry Sponsor: Advance Auto Parts

Industry Contact(s): Jenny Long, Norman Halverson

## **31 An Ergonomic Analysis of Advance Auto Parts Brake Rotor Picking Process**

Students: Kathleen McManus, ISE; Hendry Tjawinoto, ISE; Jeff Davis, ISE

Faculty Advisor(s): Steve Lavender

Industry Sponsor: Advance Auto Parts

Industry Contact(s): Norman Halverson, Jenny Long, Justin Leeson

## **32 Assessing Ergonomics at Emerson Thermodisc**

Students: Nwachukwu Ezumah, ISE; Jonathan Peshek, ISE; David Holcomb, ISE

Faculty Advisor(s): Steve Lavender

Industry Sponsor: Emerson Thermodisc

Industry Contact(s): Bob Schroer

## **33 Cleaning Up Injuries: The Development of an Ergonomic Lifting Apparatus for Recycled Linen at the OSU Medical Center**

Students: Katherine Calvert, ISE; Laura Gurnowski, ISE; Michael Myers, ISE

Faculty Advisor(s): Steve Lavender

Industry Sponsor: The Ohio State University Wexner Medical Center

Industry Contact(s): Rick Mulvaine

- 34 Columbus Zoo Educational Program Overtime Cost Reduction Through Schedule Optimization**  
Students: Robyn Verhoff, ISE; Chaohong Hu, ISE; Jordan Fashner, ISE; Timothy Braden, ISE  
Faculty Advisor(s): Steve Lavender  
Industry Sponsor: Columbus Zoo, The Ohio State University  
Industry Contact(s): Carman Wirtz
- 35 DB Schenker Claims Reduction Effort: Decreasing Customer Claims on Order Shortages and Overages Through Implementation of Revised Standard Operating Procedures**  
Students: Jonathan David, ISE; Kari Deters, ISE; Ryan Lachey, ISE; Rachel Reese, ISE  
Faculty Advisor(s): Steve Lavender  
Industry Sponsor: DB Schenker  
Industry Contact(s): Donald Wharton
- 36 Developing a Layout Solution for the Final Assembly Process at Hendrickson**  
Students: Shannon Casey, ISE; Charles Gordon, ISE; David Rubio, ISE  
Faculty Advisor(s): Steve Lavender  
Industry Sponsor: Hendrickson  
Industry Contact(s): Sam White
- 37 Development of Standardized Testing High Pressure Die Casting Lubricants**  
Students: Daisy Gill, ISE; Nicholas Metsch, ISE; Alyssa Biggs, ISE  
Faculty Advisor(s): Steve Lavender, Jerald Brevick  
Industry Sponsor: Honda Manufacturing of Alabama  
Industry Contact(s): Rob DeNeff, Richard Garnett
- 38 Honda-Reducing CVT Pulley Grinding Oil Waste by Improving Swarf Extraction Process**  
Students: Anthony Allen, ISE; Alexander Betz, ISE  
Faculty Advisor(s): Steve Lavender  
Industry Sponsor: Honda  
Industry Contact(s): Jim McDermott

**39 Identifying Ergonomic Solutions for the Hendrickson Knuckle**

**Best in Capstone Design**

**Assembly**

Students: Eric Rhodes, ISE; Cortney Linard, ISE; Matthew Ames, ISE

Faculty Advisor(s): Steve Lavender

Industry Sponsor: Hendrickson, The Ohio State University

Industry Contact(s): Sam White

**40 Jeni's Warehouse Design to Increase Efficiency**

Students: Kaitlynn Kirchner, ISE; Leah Werner, ISE; Steven Imholt, ISE; Muhammad Basri, ISE

Faculty Advisor(s): Steve Lavender

Industry Sponsor: Jeni's Splendid Ice Creams

Industry Contact(s): Stephanie McBride

**41 Maintaining Part Specifications While Reducing Baking Time and Energy**

Students: William Voellmecke, ISE; Matthew Larsen, ISE; Fatima Kebe, ISE

Faculty Advisor(s): Steve Lavender

Industry Sponsor: Therm-O-Disc

Industry Contact(s): Robert Drane

**42 Recommendations for Improving the Efficiency and Layout of**

**Best in Capstone Design**

**Rod's Western Palace's Distribution Center**

Students: Iko Bako, ISE; Ariel Bouie, ISE; Adam Kahan, ISE; Briana Schultz, ISE

Faculty Advisor(s): Steve Lavender

Industry Sponsor: Rod's Western Palace

Industry Contact(s): Dave Fleming

**43 Reducing Injuries by Improving the Hand Pinting Procedure at Jeni's Splendid Ice Creams**

Students: Adrienne Capotosta, ISE; Crai Hodges, ISE; Renee Leffler, ISE; Ben Korte, ISE

Faculty Advisor(s): Steve Lavender

Industry Sponsor: Jeni's Splendid Ice Creams

Industry Contact(s): Stephanie McBride

- 44 Reducing Overtime Costs by Optimizing Labor Distribution and Scheduling in the North America Exhibit**  
Students: Stav Bendor, ISE; David Winterstein, ISE; Yvette Gambrel, ISE; William Morrison, ISE  
Faculty Advisor(s): Steve Lavender  
Industry Sponsor: Columbus Zoo  
Industry Contact(s): Carrie Pratt
- 45 Turnover Time Reduction and Process Standardization for OSU East Hospital Operating Rooms**  
Students: Kristen Kunkel, ISE; Jordan Wiesner, ISE; Cindy Luu, ISE; Lindsey Kathmann, ISE  
Faculty Advisor(s): Steve Lavender  
Industry Sponsor: The Ohio East Hospital  
Industry Contact(s): Thomas Ellis
- 46 Using Value Stream Mapping to Determine Areas of Process Improvement for Whirlpool Dryer Production**  
Students: Jena Kerner, ISE; Mike Parrella, ISE; Jialong Wu, ISE  
Faculty Advisor(s): Steve Lavender  
Industry Sponsor: Whirlpool  
Industry Contact(s): Brian Beavers
- 47 Warehouse Picking Efficiency Analysis at DB Schenker**  
Students: Kathryn Bucher, ISE; Daniel Hoffman, ISE; Madison Platt, ISE; Guangsi Zhang, ISE  
Faculty Advisor(s): Steve Lavender  
Industry Sponsor: DB Schenker  
Industry Contact(s): Bob Lever



# Integrated & Systems Engineering (6-Sigma)

## **48 Central Sterile Supply Quality Assurance**

Students: Vignesh Gundesha, ISE

Faculty Advisor(s): Scott Sink

Industry Sponsor: The Ohio State University Wexner Medical Center

Industry Contact(s): Armin Rahmanian, Laura Phieffer, Valery Tarver, Tim Nelson

## **49 Decrease Turnaround Time for Portable Surface Echos**

Students: Erica Loughry, ISE

Faculty Advisor(s): Scott Sink

Industry Sponsor: The Ohio State University Wexner Medical Center

Industry Contact(s): Valery Tarver, Julie Comyns

## **50 Donatos Forecast Accuracy Improvement**

**Best in Capstone Design** Students: Trevor Simes, ISE

Faculty Advisor(s): Scott Sink

Industry Sponsor: Donatos Pizzeria LLC.

Industry Contact(s): Travis Howard

## **51 Improvement of Flow and Reduction of Lead Time for Autumn Move-in Day**

Students: Ana Becera, ISE

Faculty Advisor(s): Scott Sink

Industry Sponsor: The Ohio State University

Industry Contact(s): Daren Lehman, Aubrie Smith

## **52 Improving Communication & Alignment in the Client Referral Process**

Students: Jessica Sumner, ISE

Faculty Advisor(s): Scott Sink

Industry Sponsor: National Church Residences

Industry Contact(s): Erica Drewry

- 53 Improving the Integrity of the Resistance Measurement System for Production Line 2**  
Students: Michael Newbern, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Phil Vickers
- 54 Increasing the Throughput of Completed Policies by Decreasing the Percentage of Incoming Misdirected Phone Calls**  
Students: Nathan Rohyans, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Grange Insurance  
Industry Contact(s): Amy Tomaszweski, Phil Blower, Dan Guveiyian, Nikki Welch, Denise Muren
- 55 Internal Component Supply Manufacturing 50% L/T Reduction**  
Students: Nicolas Fujimura, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Diamond Innovations  
Industry Contact(s): Amanda Bowermaster, Samuel Anthony
- 56 Internal Supply Chain Error Proofing - Decreasing the RPN Score**  
Students: Nicholas Stagge, ISE; Joshua Niewiadomshi, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Sutphen Corporation  
Industry Contact(s): Jon Corsetti, Jeff Bonn
- 57 Internal Supply Chain Restructuring and Central Warehouse Design Project**  
Students: Jared Walter, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Sutphen Corporation  
Industry Contact(s): Drew Sutphen, Mike Ulicne, Jeff Bonn, Jon Corsetti

- 58 Janitorial Closet Inventory Program Cost Reduction**  
Students: Matthew Witzman, ISE; Christopher Burton, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: The Ohio State University Purchasing,  
Receiving, Stores, and Mail (PRSM)  
Industry Contact(s): Shawn Jones
- 59 Lead Time Optimization: Reaching the Apex of Distribution**  
Students: Joseph Jeswald, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Royal Building Products  
Industry Contact(s): Shannon Stehman
- 60 Lead Time Reduction Project**  
Students: Jehan DeVitre, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: The Ohio State University Purchasing,  
Receiving, Stores, and Mail (PRSM)  
Industry Contact(s): Mandi Stowers, Nathan Andridge, Michelle  
Tiburzi
- 61 Non-Value Added Time in the Pick, Pack and Ship Operations  
at METTLER-TOLEDO**  
Students: Eleanor Cooper, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: METTLER-TOLEDO  
Industry Contact(s): Stephanie Viehman
- 62 Script Lead Time and Defect Reduction Project**  
**Best in Capstone Design** Students: Andrew Wharton, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Ohio Health  
Industry Contact(s): Dave Partridge, Karina Magaziner-Rubin

- 63 Test Flow Request Lead Time Reduction**  
Students: Scott Zelle, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Nationwide Insurance  
Industry Contact(s): Stephanie McIntyre, April Verchot
- 64 Tint Stock Quality Management System Project**  
Students: George Shapiro, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Akzo Nobel  
Industry Contact(s): Mike Froman, Gavin Miller
- 65 Transportation System Optimization**  
Students: Benjamin Demers, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: National Church Residences  
Industry Contact(s): N/A
- 66 Worthington Industries Scrap Reduction Project**  
Students: Ethan Ragouzis, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Worthington Industries  
Industry Contact(s): Brad Kern

# Materials Science & Engineering

- 67     A Study of Deformation Behavior of Metallic Multilayer Composites during Nanoindentation**  
Students: Dadi Zhang, MSE  
Faculty Advisor(s): Peter Anderson  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A
- 68     Analysis of Polycaprolactone Bilayer Scaffolds for use in Tendon/Ligament Repair**  
Students: Adam Opryszko, MSE; Joe Benedetto, MSE; Evin Hatch, MSE  
Faculty Advisor(s): Heather Powell  
Industry Sponsor: The Ohio State University, National Institutes of Health, University of Cincinnati Medical  
Industry Contact(s): Heather Powell
- 69     Characterization of the HEA TiFeCrNiX**  
Students: W. Connor Moorman, MSE  
Faculty Advisor(s): Brian Welk, Fraser Hamish  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A
- 70     Design & Finite Element Analysis of a Cryocooled MgB<sub>2</sub> Superconducting Ring Magnet for MRI**  
Students: Rob Grote, MSE; Michael Tita, MSE  
Faculty Advisor(s): Michael Sumption  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A
- 71     Directed Deposition of Sacrificial Fibers Effect on Shrinkage**  
Students: Colin Bevis, MSE; Clare Otcasek, MSE; David Weber, MSE  
Faculty Advisor(s): John Lannutti  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A

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**Gas-Sensing Properties of Nano-Structured Metal Oxide**

**Best in Capstone Design**

**Heterojunctions**

Students: Marc Doran, MSE; Robert Brese, MSE

Faculty Advisor(s): Patricia Morris, Sheikh Akbar

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

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**Graded Chemistry Click on Aligned Nanofibers**

Students: Chelsea Wells, MSE; Jen Keller, MSE; Chen Ge, MSE

Faculty Advisor(s): John Lannutti

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

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**Growth of Nano-Structures on Metal Substrates via Metal Powder Suspension**

Students: Stuart Lambert, MSE; Lyndsey Hanzlik, MSE

Faculty Advisor(s): Suliman Dregia, Sheikh Akbar, Enam Chowdhury

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

**75**

**High Temperature Steel Development for the Ultrasupercritical Steam Turbines**

Students: Janelle Becker, MSE; John Rhoades, MSE; Janelle Middleton, MSE

Faculty Advisor(s): Ji-Cheng Zhao

Industry Sponsor: U.S. Department of Energy

Industry Contact(s): N/A

**76**

**Honeycomb Composites for Improved Automobile**

**Best in Capstone Design**

**Crashworthiness**

Students: Kit James, MSE; You Li, MSE; Connor Slone, MSE

Faculty Advisor(s): Peter Anderson

Industry Sponsor: Honda R & D

Industry Contact(s): Allen Sheldon

- 77 Hydrogel Based Stem Cells for Heart Muscle Regeneration**  
Students: Eduardo Calzadilla-Kolodziej, MSE; Wilson Lo, MSE  
Faculty Advisor(s): Jianjun Guan  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A
- 78 InGaN Nanowire Photocatalytic Electrolysis for Hydrogen Mass Production**  
Students: John Lok, MSE; Sarwar Golam, MSE  
Faculty Advisor(s): Roberto Myers  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A
- 79 Investigation in Vaporizing Foil Actuator Welding of Dissimilar Metals**  
Students: Jake Benzing, MSE; Mei He, MSE  
Faculty Advisor(s): Anupam Vivek, Glenn Daehn, Mike Mills  
Industry Sponsor: The Ohio State University, CEMAS, Honda, ALCOA  
Industry Contact(s): N/A
- 80 Modeling and Structure of 5T Superconducting Racetrack Magnet**  
Students: Ryan Sink, MSE; Bryan Buckosh, MSE; Tyler Sahlin, MSE  
Faculty Advisor(s): Michael Sumption, Milan Majoros  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A
- 81 Persistent Superconducting Joint of MgB<sub>2</sub> Wire**  
Students: John Schultz, MSE  
Faculty Advisor(s): Michael Sumption  
Industry Sponsor: Hyper Tech  
Industry Contact(s): N/A

**82 PINLED Gas Sensor**

Students: Ethan Courtad, MSE; Walter Riker, MSE

Faculty Advisor(s): Roberto Myers

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

**83 Predicting Metastatic Potential In Vitro for Personalized Cancer Treatment**

Students: Megan Malara, MSE; Jackson Thomas, MSE;

Qiuwan Wang, MSE

Faculty Advisor(s): Heather Powell

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

**84 Sensor Enhanced and Model Validated Life Extension of Batteries for Energy Storage**

Students: Sanghyun Suh, MSE

Faculty Advisor(s): Gerald Frankel

Industry Sponsor: DNV-GL

Industry Contact(s): Davion Hill, Arun Argarwal



# Mechanical Engineering

**85      Analysis of Dayton Superior's C49 Bridge Overhang Bracket**

Students: Katherine Waidelich, ME; Jacob Hempfling, ME;  
Stephanie Kuruc, ME

Faculty Advisor(s): Anthony Luscher

Industry Sponsor: Dayton Superior

Industry Contact(s): Hunter Everett

**86      Analysis of Front Disc Brake Dynamics using Modern  
Simulation Tools and Experimental Methods**

Students: John Beischel, ME; John Boone, ME; Drew Vince, ME;  
Yangyang Shao, ME; Peiyu Yang, ME

Faculty Advisor(s): Jason Dreyer, Rajendra Singh

Industry Sponsor: GM Foundation

Industry Contact(s): Steven Shi

**87      Analysis of Rear Disc Brake Dynamics using Modern  
Simulation Tools and Experimental Methods**

Students: Mohd Atala, ME; Michael Kurth, ME; Kevin Lehoe, ME;  
Chi Zhang, ME

Faculty Advisor(s): Jason Dreyer, Rajendra Singh

Industry Sponsor: GM Foundation

Industry Contact(s): Steven Shi

**88      Analysis of Steering Wheel Dynamics and Vibration Using  
Modern Simulation and Experimental Methods**

Students: Scott Koch, ME; Andy Gomez, ME; Will Estep, ME;  
Patrick Bruns, ME

Faculty Advisor(s): Scott Noll, Rajendra Singh

Industry Sponsor: GM Foundation

Industry Contact(s): Rene Kreis

- 89 Multi-Node, Open System Sensor Array for Building Energy Conditioning**  
Students: Nathan Alexander, ME; Collin Greywitt, ME; Justin Kamlowsky, ME; Andrew Hile, ME; Cassandra Carr, ME  
Faculty Advisor(s): Mark Walter, James Rowland, Matt O’Kelly  
Industry Sponsor: Max Tech and Beyond Competition (Berkeley National Laboratory and US Department of Energy)  
Industry Contact(s): Stacy Pratt
- 90 Novel Device to Characterize the Dynamic Properties of a Ball Bearing: Application to Steering Wheel “Shake” Phenomenon**  
Students: Nathan Cho, ME; Richard Eckenrode, ME; Kyle Hann, ME; Brent Koch, ME; Bowen Wang, ME  
Faculty Advisor(s): Scott Noll, Rajendra Singh  
Industry Sponsor: GM Foundation  
Industry Contact(s): Rene Kreis

# Mechanical Engineering (Product Design)

## **91 Auto-Extend & Retract Wheel**

Students: William Hoover, ME; Dina Tayim, ME; Anahita Ameri, ME

Faculty Advisor(s): Blaine Lilly

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

## **92 Electric Bike Conversion Kit**

Students: Matthew Hawk, ISE; Aleksander Lapshin, ISE; Rao

Abhishek, ME; Collin Davis, ME

Faculty Advisor(s): Blaine Lilly, Steve Lavender

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

## **93 Foam Filled Car Door Feasibility Study**

Students: Brian Horn, ME; Zach Lutmer, ME; Derik Burkholder, ME; Luke Cardinale, ME

Faculty Advisor(s): Blaine Lilly

Industry Sponsor: Honda

Industry Contact(s): N/A

## **94 INTAC BReaching Practice Equipment**

Students: Jim Kaser, ME; Hank Van Der Laar, ME; Nicole Pascucci, ME

Faculty Advisor(s): Blaine Lilly

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

## **95 MC - Music Controller**

Students: Andy Huffman, ME; Nate Seamans, ME; Mingle Tong, ME; Michelle Yung, ME

Faculty Advisor(s): Blaine Lilly

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

**96**

**Non-invasive Glucometer**

Students: Ricki Cohen, ME; Aaron Jansson, ME; Nathan Lieberman, ME; Jordan Nader, ME

Faculty Advisor(s): Blaine Lilly

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

**97**

**Portable Beehive Scale**

**Best in Capstone Design** Students: Kyle Culek, ME; Benjamin Musci, ME; Joseph Ryan, ME; Peter Worley, ME

Faculty Advisor(s): Blaine Lilly

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

**98**

**Sherwin-Williams Design Project**

Students: Brian Riley, ME; Andrew Stanton, ME; Josh Shook, ME; Anthony Feller, ME

Faculty Advisor(s): Blaine Lilly

Industry Sponsor: Sherwin-Williams

Industry Contact(s): Chuck Kletrovets

**99**

**Special Forces Rucksack Design**

Students: Samuel Almeida, ME; Abhishek Kakkar, ME; Audrey Parent, ME; Patrick Roman, ME

Faculty Advisor(s): Blaine Lilly

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

**100**

**Spraymaster**

Students: Colin King, ME; Joshua Zeigler, ME

Faculty Advisor(s): Blaine Lilly

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

**101     The Design of Fishing Made Safer**

Students: Kara Kenzora, ME; Adam Meyer, ME; Jared Neidhard, ME; Aaron Szabo, ME

Faculty Advisor(s): Blaine Lilly

Industry Sponsor: The Ohio State University

Industry Contact(s): N/A

**102     Whirlpool Alpha Dryer Door Hinge Reversibility Study**

Students: Matthew Bogue, ME; Robert Demarchi, ME; Gerold Haumschild, ME; Christopher Paluf, ME; Chase Violetta, ME

Faculty Advisor(s): Blaine Lilly

Industry Sponsor: The Whirlpool Corporation

Industry Contact(s): Ronald Patrick, Chris Craycraft

# Motorsports Capstone Projects

## 103 Baja SAE Data Acquisition Capstone

Students: Ryan Joyce, ME; David Highman, ME; Kyle Kreutz, ME; Andrew Taggart, ME

Faculty Advisor(s): Shawn Midlam-Mohler

Industry Sponsor: OSU Center for Automotive Research

Industry Contact(s): N/A

## 104 Buckeye Bullet III Body Panel Attachment System

Students: Matthew Buzza, ME; Cameron Hodge, ME; Ryan Van Fossen, ME

Faculty Advisor(s): Shawn Midlam-Mohler

Industry Sponsor: OSU Center for Automotive Research

Industry Contact(s): N/A

## 105 Buckeye Current Electric Motorcycle Lift Device

Students: William Irwin, ME; Daniel Kroger, ME; Brooke Norval, ME; Chukwunyere Ofoegbu, ME

Faculty Advisor(s): Shawn Midlam-Mohler

Industry Sponsor: OSU Center for Automotive Research

Industry Contact(s): N/A

## 106 EcoCAR 2 Advanced Battery Management

Students: Andrew Huster, ECE; Derek Moore, ME; Justin Finks, ME; John Hertel, ME

Faculty Advisor(s): Shawn Midlam-Mohler

Industry Sponsor: OSU Center for Automotive Research

Industry Contact(s): N/A

## 107 EcoCAR 2 Hood Lightweighting

Best in Capstone Design

Students: M.J. Yatsko, ME; Adam Mcjunkin, ME; Robert Tsao, ME; Doug Reed, ME; Sarah Jadwin, ACCT

Faculty Advisor(s): Shawn Midlam-Mohler

Industry Sponsor: OSU Center for Automotive Research

Industry Contact(s): N/A

**108 EcoCAR Exhaust**

Students: Greg Jankord, ME; Greg Payne, ME; Ya Xing He, ME

Faculty Advisor(s): Shawn Midlam-Mohler

Industry Sponsor: OSU Center for Automotive Research

Industry Contact(s): N/A

**109 Formula SAE Wings**

Students: Glenn Arnett, ME; Andrew Belega, ME; Mike Behan, ME; Collin Mocas, ME

Faculty Advisor(s): Shawn Midlam-Mohler

Industry Sponsor: OSU Center for Automotive Research

Industry Contact(s): N/A

**110 Magic CAN Node**

Students: Aaron Bonnell-Kangas, ECE; Julia Cline, ECE; Nathan Lord, ECE; Anil Ozyalcin, ECE

Faculty Advisor(s): Shawn Midlam-Mohler

Industry Sponsor: OSU Center for Automotive Research

Industry Contact(s): N/A

**111 OSU EcoCAR 2 Composite Trunk Lid**

Students: Ben Stumpf, ME; Chris Miller, ME; Zack Wake, ME

Faculty Advisor(s): Shawn Midlam-Mohler

Industry Sponsor: OSU Center for Automotive Research

Industry Contact(s): N/A

# Multidisciplinary Engineering

## 112 **Automobile Bumper Storage**

Students: David Young, ISE; Mariya Kim, ISE; Max Tongtae, BME;  
Zack Sanborn, CSM; Brandon Letcher, ME  
Faculty Advisor(s): Jerald Brevick, Robert Rhoads  
Industry Sponsor: Honda of America Manufacturing  
Industry Contact(s): Diana Bush

## 113 **Burden Aircraft Factory**

Students: Jonathan Tung, ME; Ran Li, ME; Ray Tan, ME; Emily De  
Yarman, Inter Stds; Koh Schooley, Comp Neur  
Faculty Advisor(s): Robert Rhoads  
Industry Sponsor: Chris Burden  
Industry Contact(s): Nigel Briand

## 114 **CampusParc Solar Structure**

Students: Ben Jaworski, Arch; Zac Dolch, ME; Nick Weaver,  
CSM; Patrick Bosch, CE; David Kolakowski, ME; Ryan O'Donnell,  
ME; Mohammed Misbah, MBA  
Faculty Advisor(s): Scott Potter, Peter Rogers, Paul Laurent  
Industry Sponsor: CampusParc  
Industry Contact(s): Sarah Blouch

## 115 **Cardinal Health Inbound Processing Mobile Cart**

Students: Carla Garver, MBA; Sara Villafior, FIN; Brett Babin, ME;  
Nicholas McKeen, ME; Amy Strenk, ISE; Naomi Alula, ISE  
Faculty Advisor(s): Gary Allread, Robert Rhoads  
Industry Sponsor: Cardinal Health NLC  
Industry Contact(s): Juan Jiminez, Jerry Searls

## 116 **Coltene Project**

Best in Capstone Design

Students: Rahnuma Chowdhury, MSE; Kristin Good, ME; Brad  
Homyak, BME; Marty Spang, BME; Matthew Wheeler, MSE  
Faculty Advisor(s): Clifford Whitfield, William Clark  
Industry Sponsor: Coltene  
Industry Contact(s): Robert Priest, Amy Tuttle, Angela Roman



**117 Dairy Plant Water Conservation by CIP System Redesign and**

**Best in Capstone Design Loadout of Cow Drinkable High BOD Water**

Students: Emma Schroder, FPE; Amanda Peterson, BIOE; Anna Ameser, ME; Emily Mendel, Agri Bus

Faculty Advisor(s): Robert Rhoads

Industry Sponsor: Snowville Creamery

Industry Contact(s): Warren Taylor

**118 Design and Development of Optimal Pill Crusher and Pill Storage System**

Students: Courtney Scherer, ME; Simon Kalouche, ME; Joseph Armand, BME; Jeremy Hitchcock, Ind. Design (CCAD); Ty Bustamante, Ind. Design (CCAD)

Faculty Advisor(s): Peter Rogers, Greg Thune

Industry Sponsor: eNNOVEA

Industry Contact(s): Chris O'Keefe, Chris Gardner

**119 Design of a Distribution System from a Bulk Container to Various Smaller Containers for a Viscous Medium**

Students: Sam Perozek, ME; Zach Brand, ME; Whitney Kennie, CBE; Luis Peraza, Ind. Design (CCAD); Sean Pettiford, Ind. Design (CCAD)

Faculty Advisor(s): Peter Rogers, Greg Thune

Industry Sponsor: Elmer's

Industry Contact(s): Shawn Heipp

**120 Educational Game for Children in partnership with COSI and Auld**

**Best in Capstone Design**

Students: Kaleb Reed, ME; Shawn Wang, ME; Alyssa Geraldts, ISE; Katie Young, Ind. Design (CCAD); Himanshu Ahuja, MBA

Faculty Advisor(s): Peter Rogers, Greg Thune

Industry Sponsor: Auld Technologies

Industry Contact(s): Elizabeth Jutte

- 121 Effect of Debris on Position Sensor**  
Students: Bo (Matt) Bao, EP; Jack White, ME; Taylor Cramer, ECE;  
Joel Doherty, Inter Stds  
Faculty Advisor(s): Joanne Degroat, Robert Rhoads  
Industry Sponsor: John Deere  
Industry Contact(s): Jacob Lin
- 122 Honda Fuel Level**  
Students: Achal Singhal, ME; Qian Zhang, ME; Maxwell Layman,  
ME; Saeid Loghavi, ME  
Faculty Advisor(s): Michael Hoffmann, Robert Rhoads  
Industry Sponsor: Honda R&D  
Industry Contact(s): Kellen Beauchesne
- 123 Honda R&D CAE Material Database**  
Students: Jacob Nassau, ME; Jonathan Darrah, ME; Sean  
LeFever, MSE; Shantanu Khemani, CSE; Nicholas Sauber, CSE;  
Kislaya Kanan, CSE  
Faculty Advisor(s): Alan Luo, Robert Rhoads  
Industry Sponsor: Honda R&D  
Industry Contact(s): Duane Detwiler
- 124 Humanitarian Engineering- Aquaponics**  
Students: Jeremy Shechter, FABE; Jeff Thaler, Agri Bus; Liz Roche,  
Plt Path; Peter Boyer, Grad. BME; Nate Roberto, FIN; Kat Dickey,  
ACCT; Brandy Alexander, ACCT  
Faculty Advisor(s): Howard Greene, Robert Rhoads  
Industry Sponsor: GE- Humanitarian Engineering  
Industry Contact(s): N/A
- 125 Investigation of Automated Hole-Checking Technologies for  
Honda Manufacturing**  
Students: Eric Kimmet, ISE; Austin Shafer, ME; Ryan Snodgrass,  
ME; Olivia Tunney, ME  
Faculty Advisor(s): Jerald Brevick, Robert Rhoads  
Industry Sponsor: Honda of America Manufacturing  
Industry Contact(s): Dave Gourley, Fred Braun

- 126 Mechanical Lift Assist for Lake Shore Cryotronics THz Characterization System**  
Students: Logan Gingery, ME; Paul Gilmore, ME; Connor Weisent, ISE; Cassandra Douglas, Ind. Design (CCAD); Zijin Li, ECE; Ria Chakravorty, MBA  
Faculty Advisor(s): Peter Rogers, Greg Thune  
Industry Sponsor: Lake Shore Cryotronics  
Industry Contact(s): Dave Ghioldi
- 127 Oil Pumping Capacity Through Clutch Friction Disks**  
Students: Chris Stanislovaitis, ME; Laura Matacia, ME; Allick Olive, ME; Phil Claes, ME  
Faculty Advisor(s): Brian Harper, Robert Rhoads  
Industry Sponsor: John Deere  
Industry Contact(s): Matt Kiser, Jacob Lin
- 128 Oven Skin Temperature Reduction**  
Students: Nathan Fisher, ISE; Andrei Iacob, ME; Yakun Li, ME; Yidong Zhu, ME  
Faculty Advisor(s): Robert Rhoads  
Industry Sponsor: Manitowoc  
Industry Contact(s): Derek Walz, Ryan Stickle
- 129 Rapid Gas Decompression (Explosive Decompression) of Polymers**  
Students: Andrew Ondrejcek, ME; Adam Gilbertson, MSE; Adam Pridgen, CBE; Logan Van Der Molan, ME  
Faculty Advisor(s): David Tomasko, Sumont Patankar, John Lannutti, Robert Rhoads  
Industry Sponsor: Cameron  
Industry Contact(s): Chen Xuming, Hamid Salem

**130     The Gripper Glove**

Students: Nicholas DiGiulio, BME; Michael Gersman, MSE;  
Matthew Hinzman, MSE; Xiaodi Hu, BME; Laurence Lenoir, CBE;  
Alan Scheanwald, ME

Faculty Advisor(s): Paul Clingan, Robert Rhoads

Industry Sponsor: The Gripper Glove, Inc.

Industry Contact(s): Robert Sajovic, John Sajovic

**131     TS Tech Seat Noise Analysis**

Students: Kyle Streetz, ME; Mark Mulka, ME; Dulith Hewa  
-Waladanage, ISE; Jing Xu, ECE; Brett Gieger, BME

Faculty Advisor(s): Clifford Whitfield

Industry Sponsor: TS Tech

Industry Contact(s): Bill Swick, Brendan Daun, Jonathan Vince

**132     US Steel Multidisciplinary Capstone Project**

Students: Greg Colvin, ME; Andrew Gil, ME; Kyle Phillips, ME;  
Brian Grzybowski-Cuff, ECE; Frank Simmons, ECON

Faculty Advisor(s): Clifford Whitfield

Industry Sponsor: U. S. Steel

Industry Contact(s): Mike Kurko

**133     VMAX Energy**

Students: Vandan Chokshi, ME; Ryan Petitti, ME; Anthony  
Zingale, EP; Alexis Thomas, ISE; Keeron Ghose, MOLGEN

Faculty Advisor(s): Clifford Whitfield

Industry Sponsor: VMax Energy

Industry Contact(s): Brian Gould

# Welding Engineering

## **134 Comparing DCEP and AC Polarity GMA Welding of Aluminum**

**Best in Capstone Design** Students: Andrew DeLong, WE; Kevin Girard, WE

Faculty Advisor(s): Avraham Benatar

Industry Sponsor: Lincoln Electric

Industry Contact(s): Mike Barrett

## **135 Effect of Light Cleaning on Electrode Life During Resistance Spot Welding of Aluminum**

Students: James Beaver, WE; James Rayo, WE; Benjamin Harris, WE

Faculty Advisor(s): Kimchi Menachem

Industry Sponsor: Honda of America Manufacturing

Industry Contact(s): Kevin Schnipke

## **136 Impact of Light Dressing Electrodes for Aluminum Resistance Spot Welding**

Students: James Rayo, WE; James Beaver, WE; Ben Harris, WE

Faculty Advisor(s): Kimchi Menachem

Industry Sponsor: Honda of America Manufacturing

Industry Contact(s): Kevin Schnipke

# Computer Science and Engineering

## **137 iPad Application for Therapy and Practice of Fine Motor Skills**

Students: Andrew Klimczak, CSE; Michael McNamara, CSE;  
Christopher Meek, CIS; Tien Ngo, CSE  
Faculty Advisor(s): Suribabu Jayanti  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Jill Heathcock

## **138 OSC Information App**

Students: Anurag Kalra, CSE; Justin Edge, CSE; Obinna Ngini,  
CSE; Matthew Kershaw, CSE; Kaushik Velidandla, CSE  
Faculty Advisor(s): Suribabu Jayanti  
Industry Sponsor: Ohio Supercomputer Center  
Industry Contact(s): Brian Guilfoos

## **139 Brief Kinesthesia Test**

Students: Kyle Voisard, CSE; Mitch Humke, CSE; Hongyuan  
Lu, CSE  
Faculty Advisor(s): Perumal Ramasamy, Mark Ruegsegger  
Industry Sponsor: The Ohio State University Wexner Medical  
Center  
Industry Contact(s): Alexandra Borstad

## **140 Analyzing Employment Data**

Students: Nicholas Kefauver, CSE; Gautham Vemulapalli, CSE;  
Tracy Parsons, CSE; Mohamed Hussein, CSE  
Faculty Advisor(s): Moez Chaabouni  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Phillip Hill

- 141 CAE Material Property Database Application – Honda of America**  
Students: Shantanu Khemani, CSE; Kislaya Kanan, CSE; Nicholas Sauber, CSE  
Faculty Advisor(s): Moez Chaabouni  
Industry Sponsor: Honda R&D  
Industry Contact(s): Duane Detwiler
- 142 Demographic / Psychographic Data Analysis**  
Students: Harsh Shah, CSE; Aakanksha Agnani, CSE; Kaustubha Amaravadi, CSE; Nikhita Bahuguna, CSE  
Faculty Advisor(s): Moez Chaabouni  
Industry Sponsor: Astute Solutions  
Industry Contact(s): Luke Molnar
- 143 Pinpoint Growth**  
Students: Elias Franz, CIS; Xiaoran Hu, CSE; Sheng Lu, CSE; Boyu Liu, CSE  
Faculty Advisor(s): Moez Chaabouni  
Industry Sponsor: Mark Yoho  
Industry Contact(s): Mark Yoho
- 144 Zembretta**  
Students: Ariana Fridrich, CSE; Aneeth Krishnamoorthy, CSE; Cole Fennel, CSE; Krishna Achanta, CSE; George Moussi, CSE; Nick Darrel, CSE; Anna Lin, CSE  
Faculty Advisor(s): Moez Chaabouni, Rick Wagner  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Moez Chaabouni
- 145 Zembretta**  
**Best in Capstone Design** Students: Matt Daley, CSE; Barry Robinson, CSE; Nick Ditmer, CSE; Andrew Krieger, CSE; Cajetan Dsilva, CSE; Alex Xu, CSE; Himanshu Shivhare, CSE  
Faculty Advisor(s): Moez Chaabouni, Rick Wagner  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Moez Chaabouni

- 146 AWISCO Website Redesign**  
Students: Abigail Hahn, CSE; Angel Pay, CSE; Alexa McIlrath, CIS; Siddarth Gowda, CSE; Samuel Okin, CIS  
Faculty Advisor(s): John Thomas  
Industry Sponsor: AWIS, Central Ohio  
Industry Contact(s): Komal Rambani
- 147 Clean and Sober Toolbox**  
Students: Jeffrey Schobelock, CSE; Maxim Kim, CSE; Tyler Hugenberg, CSE; Vikram Wakade, CSE; Nitish Jindal, CSE  
Faculty Advisor(s): John Thomas  
Industry Sponsor: Paul Caimi, Attorney At Law  
Industry Contact(s): Paul Caimi
- 148 DPART: Disaster Preparedness Analysis and Reporting Tool**  
Students: Chelsea Gross, CSE; Maxwell Henry, CSE; Mariel Penkowski, CSE; Mark Porter, CSE; Matthew Koczwara, CSE  
Faculty Advisor(s): John Thomas  
Industry Sponsor: Readiness Analytics, LLC  
Industry Contact(s): David Lindstedt
- 149 Medical Platform Dashboard Mobile App**  
Students: Nicholas Joodi, CSE; Summer Cui, CSE; Steven Kim, CSE; Isaac Post, CSE; Bharat Gogineni, CSE  
Faculty Advisor(s): John Thomas  
Industry Sponsor: Cardinal Health  
Industry Contact(s): Tom Cliff, Carlo Vedovado
- 150 Mouseville**  
Students: Curtis Wilson, CSE; Nayan Khodke, CSE; Neha Choudhari, CSE; Abhang Sonawane, CSE; Benjamin Ng, CSE  
Faculty Advisor(s): John Thomas  
Industry Sponsor: David Taffany  
Industry Contact(s): David Taffany



**151**

**New Motion Robotics**

**Best in Capstone Design**

Students: Matthew Demarest, CSE; Santosh Kantharaj, CSE; Ratul Khosla, CSE; Matthew Radosavljevic, CSE; Chenghan Zou, CSE

Faculty Advisor(s): John Thomas

Industry Sponsor: The Ohio State University Wexner Medical Center

Industry Contact(s): Stephen Page

**152**

**The Future of Newspapers**

Students: Seth Darbyshire, CSE; Trevion Henderson, CSE; Richard Gullo, CSE; Kyle Brake, CSE; Brad Lybarger, CSE

Faculty Advisor(s): John Thomas

Industry Sponsor: The Columbus Dispatch

Industry Contact(s): Bob LeBoeuf, Jax Zachariah, Manirupa Das

**153**

**Kinect Physical Therapy Rehabilitation**

**Best in Capstone Design**

Students: Stephen Bedell, CIS; Blake Offord, CIS; Tien Le, CSE; Vineeta Singh, M.S. CSE; Vignesh Rangaishenvi, M.S. CSE

Faculty Advisor(s): Perumal Ramasamy

Industry Sponsor: The Ohio State University Wexner Medical Center

Industry Contact(s): Lise Worthen-Chaudhari

**154**

**Nationwide Children's Hospital Mobile Safety Application**

Students: Michael Rauh, CSE; Brandon Seich, CSE; Andrew Djin, CSE; Sebastian Thimmig, CSE; Linus Falck-Ytter, CIS; Andy Shaw, CIS; Peter Dy, M.S. NUR; Meg Kane, M.S. NUR

Faculty Advisor(s): Perumal Ramasamy

Industry Sponsor: John and FloAnn Easton, Nationwide Children's Hospital

Industry Contact(s): Lara McKenzie, Kristin Roberts, Lucas Dixon

- 155 OSU Traumatic Brain Injury Identification Method**  
Students: Franklin Sun, CIS; Nick Krisfalusy, CSE; Alcir David, CSE; Ahmad Farag, CSE  
Faculty Advisor(s): Perumal Ramasamy  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Lise Worthen-Chaudhari, John Corrigan
- 156 Recreational Rehab Coach Mobile App**  
Students: Michael Boker, CSE; Ryan Gibson, CIS; Charles King, CIS; Frank Fulajtar, CSE  
Faculty Advisor(s): Perumal Ramasamy  
Industry Sponsor: The Ohio State University Dodd Rehabilitation Center  
Industry Contact(s): Marcie Bockbrader, Lise Worthen-Chaudhari
- 157 Saving Hearts**  
Students: Eric Kane, CIS; Bobby Rohweder, CSE; James Balata, CSE; Maya Sugembong, CSE  
Faculty Advisor(s): Perumal Ramasamy  
Industry Sponsor: The Ohio State University Wexner Medical Center  
Industry Contact(s): Martha Gulati, Lise Worthen-Chaudhari
- 158 Trail Making: Stroke Therapy**  
Students: Feng Hong, CSE; Hsien-Ming Lee, CSE; Phil King, CSE; Kevin Bhasin, CSE; Richard Hutcheson, CSE  
Faculty Advisor(s): Perumal Ramasamy  
Industry Sponsor: The Ohio State University Wexner Medical Center  
Industry Contact(s): Lise Worthen-Chaudhari, Jodelle Jones, Melanie Swan

**159 Get Away**

Students: Quentin Bloomfield, CSE; Keegan Donnelly, CSE; Jacob Grealy, CSE; Zachary Knickerbocker, CSE; Nathaniel Niederkorn, CIS; Sean Peck, CSE  
Faculty Advisor(s): Roger Crawfis  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A

**160 Infinite Legions**

**Best in Capstone Design** Students: Rocky Forehand, CSE; Ben Bricker, CSE; Tom Wallace, CSE; Mitch Cooley, CIS; Garrett Davis, CIS  
Faculty Advisor(s): Roger Crawfis  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A

**161 Mine the Gap**

Students: William Ruck, CSE; Erik Schilling, CSE; David Householder, CSE; Michael McCarrick, CSE & EP; Brett Mugglin, CSE; Geoffrey McGinnis, CSE  
Faculty Advisor(s): Roger Crawfis  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A

**162 Mission Impawsible**

Students: Kim Boydston, CSE; David Hazlett, CSE; Ian Freshwater, CSE; Michael Filliater, CSE  
Faculty Advisor(s): Roger Crawfis  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A

**163 Squirrival**

Students: Stephen Erickson, CSE; Daniel Frecka, CSE; Brandon Patridge, CSE; Jared Hagans, CSE; Cameron Hopkins, CSE; Thomas Allenbaugh, CSE  
Faculty Advisor(s): Roger Crawfis  
Industry Sponsor: The Ohio State University  
Industry Contact(s): N/A

# Computer Science and Engineering

**A**

## **O.T.A.A.C. (Ohio Technology, Aerospace, and Aviation Committee)**

**Best in Capstone Design**

Students: Kelsey Fritschie, CSE; Michael Steger, CSE; Christian Mavripis, CIS; Derek Visner, CSE

Faculty Advisor(s): Suribabu Jayanti

Industry Sponsor: Tridec Technologies

Industry Contact(s): Dave London, Brad Pfefferle

**B**

## **ENtraining**

Students: Gerrit Kitts, CSE; Zach Serafini, CSE; Daniel Keiger, CSE

Faculty Advisor(s): Suribabu Jayanti

Industry Sponsor: Emergency Networking

Industry Contact(s): Chris Schulthesis, Kris Lanning

**C**

## **Intelligent Mixed Reality**

Students: Ting Wang, CSE; Jiaqi Liu, CSE; Xiaoting Li, CIS; Yi Peng, CIS

Faculty Advisor(s): Suribabu Jayanti

Industry Sponsor: EduTechnologic

Industry Contact(s): Brad Henry, Micheal Jodon

**D**

## **Fisher Orientation App**

Students: Nate Rabold, CSE; Chris King, CSE; Chaitanya Krishna, CSE; Xiaokai Sun, CSE

Faculty Advisor(s): Suribabu Jayanti

Industry Sponsor: The Ohio State University Fisher College of Business

Industry Contact(s): Katelin Ahern, Christopher Bartos, Carol Sharp, Perumal Krishnasamy

**E**

## **OSC OnDemand Mobile Version**

Students: Achanta Satya Ramakrishna, CSE; Anirudh Mohan, CSE; Asvin Vaidyanath Ganesh, CSE; Gajendra Varadhan

Mahadevan, CSE; Tebby Thomas, CSE

Faculty Advisor(s): Suribabu Jayanti

Industry Sponsor: Ohio Supercomputer Center

Industry Contact(s): Brian Guilfoos

# Civil Engineering

## **F Covelli Arena Schematic Design**

Students: Emily Miller, CE; Brandon Muschlitz, CE; Olivia Krebs, CE; Nathan Sparks, CE; Jimmy Deter, CE

Faculty Advisor(s): John George

Industry Sponsor: The Ohio State University

## **G Covelli Arena Schematic Design**

Students: Austin Guker, CE; Andrew Murray, CE; David Wang, CE; Alex Ring, CE; James Axson, CE

Faculty Advisor(s): John George

Industry Sponsor: The Ohio State University

## **H Covelli Arena Schematic Design**

Students: Ben Vandermeiden, CE; Andrew Macpherson, CE; Michael Haemmerle, CE; Greg Gaus, CE

Faculty Advisor(s): John George

Industry Sponsor: The Ohio State University

## **I Covelli Arena Schematic Design**

Students: Ray Roll, CE; Joe Horton, CE; Mark Hartman, CE; Greg Conroy, CE; Ryan Ferrante, CE

Faculty Advisor(s): John George

Industry Sponsor: The Ohio State University

## **J Covelli Arena Schematic Design**

**Best in Capstone Design**

Students: Connor Himes, CE; David Aquino, CE; Chengwei Mao, CE; James Gaiten, CE; Qingxilou Yu, CE

Faculty Advisor(s): John George

Industry Sponsor: The Ohio State University

## **K Covelli Arena Schematic Design**

Students: James Axson, CE; Dan McKeon, CE; Mike Ott, CE; Matt Rotar, CE

Faculty Advisor(s): John George

Industry Sponsor: The Ohio State University

# **11<sup>th</sup> Annual FEH Research Showcase**

## First-Year Engineering Honors Nanotech Projects

- X1** Students: Matthew Becker, Yuriy Partyka, Carolyn Wang, Taylor Yeater  
Faculty Advisor(s): Paul Clingan
- X2** Students: Patrick Hamad, Leila Mansour, Brent Weiss, Tyler Zeller  
Faculty Advisor(s): Paul Clingan
- X3** Students: Frederick Gu, Deepti Gupta, Usama Khan, Zane Smith  
Faculty Advisor(s): Paul Clingan
- X4** Students: Craig Bennett, Jonathon Davis, Andrew Kelo, Culver McWhirter  
Faculty Advisor(s): Paul Clingan
- X5** Students: Lauren Braswell, Kathryn Gustafson, Sabrina Horsham, Kacper Wardega  
Faculty Advisor(s): Paul Clingan
- X6** Students: Turner Adornetto, Usoshi Chatterjee, Luke Forshey, Ryan Schoell  
Faculty Advisor(s): Paul Clingan
- Y1** Students: Victoria Barnhouse, Samantha Peterson, Nicholas Riedell, Evan Wilker  
Faculty Advisor(s): Deb Grzybowski
- Y2** Students: Celene Gielink, Taylor Schriver, Joshua Tublin  
Faculty Advisor(s): Deb Grzybowski
- Y3** Students: Matthew Feck, Daniel Glauser, Jill Kanney, Justin Lun  
Faculty Advisor(s): Deb Grzybowski
- Y4** Students: Nana Anim, Will Ennis, Mitchell Steindler, John Twist  
Faculty Advisor(s): Deb Grzybowski

- Y5** Students: Nate Hang, Eric Hlinomaz, John Jamieson, Jonathan Lawson  
Faculty Advisor(s): Deb Grzybowski
- Y6** Students: Preethi Chidambaram, Brad Gershkowitz, Tyler Krupp, Kelsey Watts  
Faculty Advisor(s): Deb Grzybowski
- Y7** Students: Jack Harrington, Gabe Nogueira Meza, Stuart Ruck, Zheng Hang Tan  
Faculty Advisor(s): Deb Grzybowski
- Z1** Students: Bernard Cook, Jesse Keckler, Lagnajit Pattanaik, Patrick Stinson  
Faculty Advisor(s): Deb Grzybowski
- Z2** Students: Joshua Harris, Eric Hoffman, Pallavi Keole, Blaise Kimmel  
Faculty Advisor(s): Deb Grzybowski
- Z3** Students: Kelsey Crawford, Michellie Dando, Anthony Mitchell, Jeremiah Ulm  
Faculty Advisor(s): Deb Grzybowski
- Z4** Students: Ryan Hutcheson, Mary Lenk, Lauren March, Evan Martindale  
Faculty Advisor(s): Deb Grzybowski
- Z5** Students: Amjad Akif, Ronald Estridge, Stefani Montelone, Jonah Targosz  
Faculty Advisor(s): Deb Grzybowski
- Z6** Students: Athanasios Burlotos, Dylan Bederman, Entela Duka, Lily Lou  
Faculty Advisor(s): Deb Grzybowski
- Z7** Students: Lianna Brown, Shuming Chan, Matthew Pyo, Daniel Simons  
Faculty Advisor(s): Deb Grzybowski



# Engineering Capstone Design Program

The College of Engineering at The Ohio State University is a leader in creating and implementing substantive industry experiences for undergraduate engineering students. Our engineering programs have a rich history of using projects developed and sponsored by industry for student capstone design courses. All programs within the College of Engineering require a capstone design experience for graduation. The capstone design course integrates design skills and engineering practice with a focus on authentic design challenges presented and supported by industry partners and faculty. The EEIC fosters industry partnerships with The Ohio State University through the EEIC Multidisciplinary Capstone Design program and through all engineering departments by connecting companies with appropriate programs.

For more information, visit <http://eeic.osu.edu/capstone> or contact:

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# Engineering Education Innovation Center

The College of Engineering is recognized nationally for its commitment to outstanding undergraduate education through our First-Year Engineering Program; providing practical, hands-on engineering experience through project-based design courses; providing opportunities for undergraduate research experiences; and our individualized attention to undergraduate students to facilitate their academic and professional success. To further enhance efforts in providing the highest quality engineering education, Ohio State established the Engineering Education Innovation Center in May 2007 with the mission of enriching the student experience and strengthening the academic credentials of our undergraduates. Simultaneously, the Honda Professorship for Engineering Education was established to supply leadership to the new center.

The EEIC is the focal point for the college's innovative instructional programs, building upon our outstanding reputation for and commitment to innovative undergraduate education. The EEIC provides academic, personal, and professional activities, enriching the undergraduate experience inside and beyond the classrooms. The EEIC also created new courses and programs, and strengthened existing ones to empower students for an ever-expanding range of career and entrepreneurship opportunities.

The performance goals of the EEIC include:

- Promotion, innovation and creativity in all of our undergraduate programs
- Offering multidisciplinary courses and opportunities for students that enhance experience
- Fostering scholarship of teaching and learning across the college

For more information, visit <http://eeic.osu.edu> or contact:

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# Acknowledgements

The Engineering Design Showcase Committee would like to thank:

**ArcelorMittal**

**Capstone Project Faculty Advisors**

**Capstone Project Judges**

**Engineering Design Showcase Volunteers**

**Engineering Education Innovation Center (EEIC)**

**First-Year Engineering Honors Nanotech Faculty and Staff**

**Industry Partners**

**Ohio Union**

The committee would also like to show its appreciation for the students who are involved with the projects displayed today.

## Engineering Design Showcase Committee

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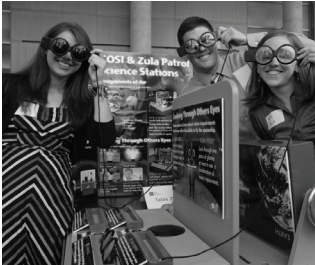
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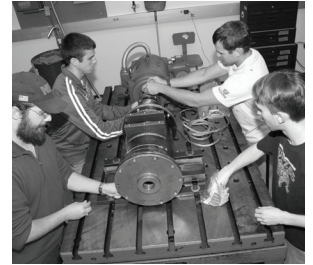
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