ENGINNEERING
Design Showcase
Senior Capstone and First-Year Cornerstone Projects
04.25.17
Welcome to the Annual Department of Engineering Education Engineering Design Showcase!

Thank you for joining us at the Engineering Design Showcase sponsored by the Department of Engineering Education (EED) and ArcelorMittal. The showcase is a platform for undergraduate students to display their capstone or fundamentals of engineering cornerstone projects and to answer questions about their research, design methods and project experience.

10th 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 200 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.

14th Annual Fundamentals of Engineering for Honors (FEH) Research Showcase: FEH nanotechnology projects will also be on display during the Showcase. Sixteen first-year Cell Entrapment and Novel Sensing Endeavors (CENSE) teams were challenged to design a lab-on-a-chip device to detect a disease from a blood sample and solve a real-world medical problem. The device must be able to capture and detect a specific biomarker from a single drop of blood and contain nano-sized features. The CENSE teams will present their research findings.

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

12:00 p.m.  **Design Showcase Opens**  
Ohio Union, Archie Griffin Grand Ballroom

Welcome and Introduction  
Bob Rhoads, Multidisciplinary Capstone Design Program Director

Presentation to Showcase Sponsor  
ArcelorMittal

3:00 p.m.  **Showcase Project Winners Presentations**  
Bob Rhoads, Multidisciplinary Capstone Design Program Director

3:30 p.m.  **Closing Remarks**
14th Annual Nanotechnology Fundamentals of Engineering for Honors Research Showcase
Fundamentals of Engineering for Honors Nanotech Cornerstone Projects

X Teams –

1 Students: Adam Benway, Josh Goetze, Lauren Kachurik, Emily McDonel
Faculty Advisor(s): Paul Clingan

2 Students: Rachel Braun, Lindsey Clemmons, Michael Darby, Dennison Min
Faculty Advisor(s): Paul Clingan

3 Students: Justin Hopkins, Jimmy Overmeyer, Anna Phillips, Jeffrey Simon
Faculty Advisor(s): Paul Clingan

4 Students: Sahithee Batchu, Abbey Bush, Hannah Kern, Curtis Pierson
Faculty Advisor(s): Paul Clingan

5 Students: Cassie Boutelle, Ian Gray, Sera Kitchen, Jake Sabia
Faculty Advisor(s): Paul Clingan

6 Students: Joanne Ash, Izzy Benintendi, Max Williams, Gus Workman
Faculty Advisor(s): Paul Clingan

7 Students: Harper Calhoun, Mara Cass, Nathan Smith, Brian Zaborszki
Faculty Advisor(s): Paul Clingan

8 Students: Alex Fan, Waseem Naboulsi, Peter Schmitz, Allison Whitney
Faculty Advisor(s): Paul Clingan
Y Teams –

9  Students: Bryce Bridges, Nicholas Gawry, Shreya Nalluri, Priyanka Tewani  
Faculty Advisor(s): Lauren Corrigan

10 Students: JP Dahms, Jack Eifert, Marissa Ruzga, Anders Sondergaard  
Faculty Advisor(s): Lauren Corrigan

11 Students: Matthew Herkins, Amanda Slager, Morgan Smith, Ashley Venturini  
Faculty Advisor(s): Lauren Corrigan

12 Students: Morgan Hyland, Neel Lachhwani, Monir Moghaddas, Tara Wilson  
Faculty Advisor(s): Lauren Corrigan

13 Students: Christy Caporale, Bethany Clotz, Vincent Eramo, Benjamin Rudzinski  
Faculty Advisor(s): Lauren Corrigan

14 Students: Peter Dent, Andrew Drake, Luis Gomes-Ortega, Jeremy Janota  
Faculty Advisor(s): Lauren Corrigan

15 Students: Katherine Bradshaw, Emily Demmert, Kero Eldeeb, Emily Wollman  
Faculty Advisor(s): Lauren Corrigan
1st Annual Nanotechnology for Standards Research Showcase
Fundamentals of Engineering for Standards Nanotech Cornerstone Projects

16  Group M
Students: Carolyn Croke, Molly Cogan, Matthew Clement
Faculty Advisor(s): Alexis Ortiz-Rosario

17  Group Q
Students: Thomas Porter, Bryan Hagedorn, Kristin Billstrand, Asia Bond
Faculty Advisor(s): Alexis Ortiz-Rosario
10th Annual Engineering Capstone Design Showcase
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Aerospace Engineering

160    AEROSPACE ENGINEERING LAB DEVELOPMENT
Students: Alec Basile (AE), Andrew Goldin (AE), Michael Holaday (AE), Isaac McDermott (AE), Braden Miller (AE), Eric Myeroff (AE)
Faculty Advisor(s): Jim Gregory, Cliff Whitfield
Industry Sponsor: The Ohio State University

161    AERODYNAMIC EFFICIENCY ANALYSIS ON A HYBRID CYCLOIDAL ROTOR
Students: Seth Epstein (AE), Elliot Lee (AE), Jim Ritz (AE), Mitch Boehm (AE), Chris Bowman (AE), Taiyui Hu (AE)
Faculty Advisor(s): Matthew McCrink, Cliff Whitfield
Industry Sponsor: The Ohio State University

162    ANALYSIS OF THE EFFECTS OF FIN CANT ANGLE
Students: Bryce Huber (AE), Ryan McLaughlin (AE), Stephanie Webber (AE), Erich Zahn (AE), Tallin Forshey (AE)
Faculty Advisor(s): Jen-Ping Chen, Cliff Whitfield
Industry Sponsor: Buckeye Space Launch Initiative

163    CUSTOM DESIGNED CONVERGENT-DIVERGENT ROCKET NOZZLE
Students: Bryant Hicks (AE), Ryan Antone (AE), Troy Shilt (AE), Clinton Rosa (AE), Matt Costello (AE)
Faculty Advisor(s): Jen-Ping Chen, Cliff Whitfield
Industry Sponsor: The Ohio State University

164    DESIGN/BUILD/FLY PROPELLER PROPULSION PERFORMANCE
Students: Nicholas Horn (AE), Cameron Aitken (AE), Nick Keegan (AE), Chris Fung (AE), Nate McCoy (AE)
Faculty Advisor(s): Matthew McCrink, Cliff Whitfield
Industry Sponsor: Ohio State Design/Build/Fly
165 HYBRID WING
Students: Ian Shapiro (AE), Cody Brooks (AE), Quinten Henricks (AE), Nick Plewacki (AE), Brennan Behr (AE)
Faculty Advisor(s): Greg Rhodes, Cliff Whitfield
Industry Sponsor: The Ohio State University

166 JETCAT NOZZLE SUPersonic REDESIGN
Faculty Advisor(s): Randall Mathison, Cliff Whitfield
Industry Sponsor: Air Force Research Laboratory

167 PROPULSIVE FUeLAGE CONCEPT
Students: Kevin Williams (AE), Austin Beyers (AE), Blake Reinke (AE), Kevin Chenault (AE), Apoorva Chaubal (AE), Clay Vincent (AE)
Faculty Advisor(s): Jacob Allenstein, Cliff Whitfield
Industry Sponsor: The Ohio State University

168 RACING STAND-UP PAddle BOARD DESIGN IMPROVEMENT
Students: Rodrigo Auza (AE), Aaron Becks (AE), Khalid Blata (AE), Mike Ditzler (AE), Daniel Guillermo (AE), David Januzzi (AE)
Faculty Advisor(s): Zachary Riley, Cliff Whitfield
Industry Sponsor: Project 908

169 RETROFITTING WINGlets TO THE C-130
Students: Bryan Kolpitcke (AE), Matt Aultman (AE), Gabe Fidder (AE), Noor Afifa Mohd Hanafiah (AE), Will Pordash (AE), Sean Owen (AE)
Faculty Advisor(s): Rick Freuler, Jacob Allenstein, Cliff Whitfield
Industry Sponsor: The Ohio State University

170 UAV ENGINE AIR PARTICULAR SEPARATOR
Students: Alex Stankovic (AE), Thor Wolford (AE), Anthony Sarachene (AE), Douglas Fritz (AE), Colton Lapworth (AE)
Faculty Advisor(s): Robin Prenter, Ryan Lundgreen, Cliff Whitfield
Industry Sponsor: The Ohio State University
VENTED SUPERSONIC PROJECTILE

Students: Scott Weiss (AE), Brandon Lundeen (AE), Kaitlin McTague (AE), Gabe Scherer (AE), Jensen Eric (AE)
Faculty Advisor(s): Datta Gaitonde, Cliff Whitfield
Industry Sponsor: The Ohio State University

WING EFFICIENCY FOR SUAS APPLICATIONS

Students: Kegan Buchhop (AE), Matthew Arnott (AE), Michael Strauch (AE), Andrew VanFossen (AE), Vincent Funari (AE)
Faculty Advisor(s): Matthew McCrink, Cliff Whitfield
Industry Sponsor: The Ohio State University

Biomedical Engineering (Assistive Devices)

ADAPTIVE KAYAK SEAT FOR SMALL FRAMED INDIVIDUALS WITH QUADRAPARETIC/PLEGIC CEREBRAL PALSY AND SIMILARLY PRESENTING DISABILITIES

Students: Megan Rodewald (ME), Tom Ebner (ME), Regan Roshetko BME), Carolyn Wang (BME), Jordyn Sesock (OT)
Faculty Advisor(s): Tanya Nocera, Theresa Berner
Industry Sponsor: The Ohio State University

ADAPTIVE RUNNING CHAIR

Students: Megan Hughes (ME), Kyler McDonald (ME), Delanie Garman (BME), Lily Lou (BME), Adam Steinle (BME)
Faculty Advisor(s): Mark Ruegsegger, Sandra Metzler
Industry Sponsor: Team Heart and Sole
Industry Contact(s): Georgeann Haviland, Mike Weisenberger

ATTACHABLE EQUIPMENT-CARRYING DEVICE FOR USE WITH MANUAL RIGID WHEELCHAIR

Students: Derrick Lin (BME), Bob Stricko (BME), Jack Harrington (BME), Aashish Kandel (BME), Alec Elder (BME)
Faculty Advisor(s): Tanya Nocera, Theresa Berner
Industry Sponsor: NICHD R25
Industry Contact(s): Mark Ruegsegger
144 AUTOMATED HAND HYGIENE COMPLIANCE SYSTEM
Students: Jonathon Davis (BME), Caroline Lieser (BME), Kathryn Schubauer (BME), Jacob Spiker (BME), Zheng Hong Tan (BME), Josh Tublin (BME)
Faculty Advisor(s): Mark Ruegsegger, Daniel Vazquez
Industry Sponsor: The Ohio State University
Industry Contact(s): Mark Ruegsegger

145 AUTOMATED VOLUMETRIC URINE MEASUREMENT DEVICE
Students: Megan Ireland (BME), Usama Khan (BME), Nathan Lamba (BME), Nick Pelz (BME), Taylor Schriver (BME)
Faculty Advisor(s): Mark Ruegsegger, Daniel Vazquez
Industry Sponsor: The Ohio State University
Industry Contact(s): Mark Ruegsegger

196 BLOOD PUMP DESIGN FOR ENDONASAL SURGERY SIMULATOR
Students: Preethi Chidambaram (BME), Eun-Mae Lee (BME), Benjamin Stocker (BME), Abd Al-Rahman Traboulsi (BME), Angelita Zacharias (BME)
Faculty Advisor(s): Mark Ruegsegger, Sanjeet Rangarajan
Industry Sponsor: The Ohio State University
Industry Contact(s): Mark Ruegsegger

146 CELL IMAGING ADAPTOR FOR OBSERVATION OF PLATELET ADHESION UNDER DYNAMIC FLOW
Students: Tori Barnhouse (BME), Christian Blough (BME), Byron Carper (BME), Stefani Montelone (BME), Jonathan Von Stein (BME)
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: The Ohio State University
Industry Contact(s): Mark Ruegsegger

149 CHAIRISH IT: CHAIRS FOR SPECIAL NEED STUDENTS
Students: Brad Gershkowitz (BME), Patrick Flannery (ME), Jack Mannarino (BME), Meghann Meyer (BME), Jamal Perry (ME)
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: The Ohio State University
Industry Contact(s): Mark Ruegsegger
150  **CHILD STEERING DEVICE**  
**Students:** Katelyn Ricci (ME), Chet Peters (ME) Daniel Simons (BME), Emily Watson (BME), Blian Jones (BME)  
**Faculty Advisor(s):** Mark Ruegsegger  
**Industry Sponsor:** Katelyn’s Kloset  
**Industry Contact(s):** Heather Bennett

151  **COPD MONITOR**  
**Students:** Kelsey Watts (BME), Ben Synder (ME), Lahiru Wimalasena (BME), Grant Schneider (BME), Sansriti Saxena (ME)  
**Faculty Advisor(s):** Mahasti Rittinger, Mark Ruegsegger  
**Industry Sponsor:** The Ohio State University  
**Industry Contact(s):** Mark Ruegsegger

152  **INTERCHANGEABLE PROSTHETIC END EFFECTOR**  
**Students:** Rongsheng Ning (ME), Gabbi Bondra (ME), Emmanuel Babayemi (ME)  
**Faculty Advisor(s):** Sandra Metzler, Carmen DiGiovine  
**Industry Sponsor:** The Ohio State University

197  **LUNG-ON-A-CHIP**  
**Students:** Nina Tang (BME), Jesse Keckler (BME), Ryan Yu (BME), Brianna Marselle (BME), Anthony Mitchell (BME)  
**Faculty Advisor(s):** Mark Ruegsegger, Samir Ghadiali  
**Industry Sponsor:** The Ohio State University

198  **MOTORIZED STAGE FOR IN-PLANE MECHANICAL STRAIN APPLICATION**  
**Students:** Matthew Becker (BME), Derrick Huang (BME), Andrew Piscioneri (BME), Taylor Yeater (BME), Kaden Zachmann (BME)  
**Faculty Advisor(s):** Mark Ruegsegger, Yi Zhao  
**Industry Sponsor:** The Ohio State University

153  **NOVEL DEVICE FOR POWER SEAT INTERFACE WITHIN AN ADAPTIVE VAN**  
**Students:** Justin Bishop (ME), Matt Fuerst (ME), Connor Longworth (ME), Jasveer Sandhu (ME), William Brokaw (ME)  
**Faculty Advisor(s):** Sandra Metzler, Carmen DiGiovine  
**Industry Sponsor:** The Ohio State University
PNEUMATIC VEST AND SUPPORTIVE SEAT BACK TO ASSIST EQUINE THERAPY PARTICIPANTS WITH CEREBRAL PALSY OR SIMILAR PRESENTING SYMPTOMS

Students: Stephen Zenobia (ME), Devon Whitted (BME), Aya Kozono (ME), Lena Schmidt (BME), Kathryn Kaltenmark (BME)
Faculty Advisor(s): Mark Ruegsegger, Tanya Nocera
Industry Sponsor: The Ohio State University and Dreams on Horseback
Industry Contact(s): Mark Ruegsegger, Tanya Nocera, Josie Drushal

PHYSICAL THERAPY SENSORY FEEDBACK MAT

Students: Brian Davidson (BME), Deepti Gupta (BME), Cory Stein (BME), Zack Miglich (ME), Anna Gardiner (ME)
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: The Ohio State University and Dublin City Schools (Physical Therapist)
Industry Contact(s): Brooke Holdgreve

THE PORTABLE PATIENT LIFTING FRAME

Students: Ryan Hutcheson (BME), Leslie Mamula (ME), Amy Schnupp (ME), Jesse Serafin (ME), Brent Weiss (ME), Hailey Booth (OT)
Faculty Advisor(s): Sandra Metzler, Carmen DiGiovine
Industry Sponsor: NICHD R25

VEHICLE CONTROL INTERFACE

Students: Alexander Cetnar (BME), Louis Chua (BME), Michael Donizetti (BME), Jared Grubaugh (ME), William Hendrix (BME), Nathaniel Wood (ME)
Faculty Advisor(s): Sandra Metzler, Carmen DiGiovine
Industry Sponsor: The Ohio State University

VETERINARY HEAD-HOLDING DEVICE FOR ADMINISTERING STEREOTACTIC RADIATION THERAPY

Students: Emily Aulby (BME), Chris Baggott (BME), Danielle Lynd (ME), John Swartzwelder (ME), Tommy Sandwisch (BME)
Faculty Advisor(s): Sandra Metzler, Carmen DiGiovine
Industry Sponsor: NICHD R25 and The Ohio State University
158  **WHEELCHAIR SAFETY SYSTEM**  
*Students:* John Bullock (ME), Bernard Cook (BME), Srisai Medisetti (BME), Tatiana Sedlak (BME), Kerry White (BME)  
*Faculty Advisor(s):* Sandra Metzler, Carmen DiGiovine  
*Industry Sponsor:* The Ohio State University

**Chemical & Biomolecular Engineering**

122  **AERATION OF A SUBDIVISION POND**  
*Students:* Matt Pilsner (CBE), Charles Quallen (CBE), Corey Hickman (CBE), Justin Smith (CBE)  
*Faculty Advisor(s):* David Tomasko  
*Industry Sponsor:* The Ohio State University  
*Industry Contact(s):* Carlo Scaccia

123  **ALTERNATIVE PROCESS FLOW SYNTHESIS OF ABE FERMENTATION**  
*Students:* Jay Thaxton (CBE), Mazie Mandia (CBE), Mitchell Dille (CBE), Lejia Peng (CBE)  
*Faculty Advisor(s):* Mandar Kathe, David Tomasko  
*Industry Sponsor:* The Ohio State University  
*Industry Contact(s):* Mandar Kathe

124  **ANALYSIS OF GLUCOSE TO FRUCTOSE ISOMERIZATION FOR BIOMASS CONVERSION**  
*Students:* Anjelica Kucinic (CBE), Jordan Ward (CBE), Corey Kane (CBE), Jacob Simko (CBE)  
*Faculty Advisor(s):* David Tomasko  
*Industry Sponsor:* The Ohio State University  
*Industry Contact(s):* Nicholas Brunelli

125  **CALCIUM PROPIONATE FERMENTATION FROM WHEAT AND RICE FLOUR**  
*Students:* Donny Kusuma (CBE), Zack Newell (CBE), Seth Niemi (CBE), Gabrielle Nogueira Meza (CBE)  
*Faculty Advisor(s):* Mandar Kathe, David Tomasko  
*Industry Sponsor:* OSU Bioprocess and Tissue Engineering Research Group  
*Industry Contact(s):* Shang-Tian Yang
126  CHEMICAL LOOPING SYNGAS GENERATION  
Students: Connor Barber (CBE), Nick Singstock (CBE), Keaton Greeley (CBE), Leo Chen (CBE)  
Faculty Advisor(s): Andrew Tong, David Tomasko  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Andrew Tong

127  CO2 SELECTIVE MEMBRANES  
Students: Sal Alshabani (CBE), Shannon Kopcha (CBE), Rachael Campo (CBE), John Coffey (CBE)  
Faculty Advisor(s): Winston Ho, David Tomasko  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Dongzhu Wu

128  COMPUTER SIMULATION AND EXPERIMENTAL STUDIES TO DEVELOP A MIXING EXPERIMENT FOR UNIT OPERATIONS LAB  
Students: David Socha (CBE), Geoffrey Ashburn (CBE), Jason Rubin (CBE), Piotr Szablicki (CBE)  
Faculty Advisor(s): Mandar Kathe, David Tomasko  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Jeffrey Chalmers

129  DEVELOPING A SCALABLE DISSOLVED OXYGEN FILTER MODEL USING THE OXYRASE® ENZYME SYSTEM  
Students: Athanasios Burlotos (CBE), Joshua Fouasnon (CBE), Jana Kise (CBE), Emily Nevoraski (CBE)  
Faculty Advisor(s): Jeffrey Chalmers  
Industry Sponsor: Oxyrase  
Industry Contact(s): Casey Zace

130  ECONOMIC MODELING OF NEXT-GENERATION AUTOMOTIVE FUEL CELLS  
Students: Entela Duka (CBE), Joe Flaherty (CBE), Sabrina Horsham (CBE), Matthew Rees (CBE)  
Faculty Advisor(s): David Tomasko, Bhavik Bakshi  
Industry Sponsor: phMatters  
Industry Contact(s): Paul Matter, Mike Beachy
131 ENERGY RECOVERY FROM VOC RECLAMATION
Students: Gabrielle Young (CBE), Colin Giacalone (CBE), Katie Gustafson (CBE), Rachel Littman (CBE)
Faculty Advisor(s): David Tomasko

132 ENTRAINER BASED DISTILLATION OF ACYLANITRILE-ACETONITRILE
Students: Lynn Bakes (CBE), Cynthia Sanchez (CBE), Nick Lee (CBE), Drew Connally (CBE), Lexi Cantu (CBE)
Faculty Advisor(s): David Tomasko, Mandar Kathe
Industry Sponsor: The Ohio State University
Industry Contact(s): Mandar Kathe

133 EVALUATION AND OPTIMIZATION OF A CONTINUOUS DISTILLATION COLUMN
Students: Edward Sieradzki (CBE), Zach James (CBE), Jessica Villagran (CBE), Mary-Kate Wintz (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: Watershed Distillery
Industry Contact(s): Greg Lehman

137 IMPLEMENTING PUMP CURRICULA IN THE UNIT OPERATIONS LABORATORY
Students: Savannah Moses (CBE), Rasha Rashid (CBE), Sarah Halmi (CBE), Benjamin Crum (CBE)
Faculty Advisor(s): Jeffery Chalmers, David Tomasko
Industry Sponsor: The Ohio State University

134 OPTIMIZATION OF RECOVERY FOR SUPERCRITICAL EXTRACTION OF CANNABIS
Students: Kory Sherman (CBE), Andrew Kelo (CBE), Austin Lavy (CBE), Kurt Jacobs (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: Apeks Supercritical
Industry Contact(s): Jeremy Sexton

135 OXIDATIVE COUPLING OF METHANE
Students: Claire Basham (CBE), Kyle Miller (CBE), Madison Hammerberg (CBE), William Drees (CBE)
Faculty Advisor(s): Andrew Tong, Deven Baser
Industry Sponsor: The Ohio State University
136  PLATE & FRAME FILTRATION  
**Students:** Anthony Hoover (CBE), Alan Babinec (CBE), Joe Geers (CBE), Lane Flora (CBE)  
**Faculty Advisor(s):** David Tomasko  
**Industry Sponsor:** Capital Resin Corporation  
**Industry Contact(s):** Michael Denney

138  PROCESS OPTIMIZATION FOR ORGANIC TECHNOLOGIES  
**Students:** Jane Whitten (CBE), Lauren Wilhelm (CBE), Enrico Cahyadi (CBE), Richard Pawlowski (CBE)  
**Faculty Advisor(s):** Jeffrey Chalmers  
**Industry Sponsor:** Organic Technologies  
**Industry Contact(s):** Tyler Hacker

139  PRODUCTION OF BUTANOL FROM CELLULOSIC BIOMASS BY CLOSTRIDIAL FERMENTATION  
**Students:** Mohammad Hashmi (CBE), Michael Stenta (CBE), Caleb Colvin (CBE), Joel Matthews (CBE)  
**Faculty Advisor(s):** Shang-Tian Yang  
**Industry Sponsor:** The Ohio State University  
**Industry Contact(s):** Shang-Tian Yang

140  PRODUCTION OF DIMETHYL CARBONATE THROUGH CARBON DIOXIDE  
**Students:** Chris Garrison (CBE), Vincent Mazzone (CBE), Jay Mota (CBE), Alex Miller (CBE)  
**Faculty Advisor(s):** David Tomasko  
**Industry Sponsor:** The Ohio State University  
**Industry Contact(s):** Nicholas Brunelli

141  SCALE-UP PROCESS FOR THE SYNTHESIS OF 5-HYDROXYMETHYLFURFURAL  
**Students:** Marissa Schroeder (CBE), Yihang Wu (CBE), Jeremy Smith (CBE), Eileen Elliot (CBE)  
**Faculty Advisor(s):** David Tomasko  
**Industry Sponsor:** The Ohio State University  
**Industry Contact(s):** Nicholas Brunelli
142  **TSA FOR RECOVERING ENERGY FROM LANDFILL GAS**  
**Students:** Zehan Yu (CBE), Sania Khan (CBE), Matt Pyo (CBE), Lauren Biggs (CBE)  
**Faculty Advisor(s):** David Tomasko  
**Industry Sponsor:** Adsorption Research, Inc  
**Industry Contact(s):** Kent Knaebe

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**Civil & Environmental Engineering**

36  **CITY OF COLUMBUS HAP CREMEAN WATER PLANT (HCWP) & DUBLIN ROAD WP (DRWP) UV DISINFECTION UPGRADES**  
**Students:** TBA  
**Faculty Advisor(s):** Linda Weavers, Timothy Wolfe  
**Industry Sponsor:** City of Columbus  
**Industry Contact(s):** Rick Westerfield, Mark Eppich

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**Computer Science & Engineering**

19  **AIRLINE SIMULATOR**  
**Students:** Dongjo Ban (CIS), Gregory Bomkamp (CSE), Joe Call (CSE), Kyle Justice (CIS), Andrew McSurley (CSE)  
**Faculty Advisor(s):** Moez Chaabouni  
**Industry Sponsor:** Center for Aviation Studies  
**Industry Contact(s):** Adam Beckman

20  **AMAZON ECHO**  
**Students:** Weicheng Huang (CIS), Haifan Ou (CIS), Wen Gu (CIS), Huichen Yuan (CIS)  
**Faculty Advisor(s):** Murthy Narasimhan  
**Industry Sponsor:** Cloudnbeyond LLC  
**Industry Contact(s):** Chakravarthy Balaji

28  **AULD CORPORATION FINGERPRINTER**  
**Students:** Brae Baumgartner (CSE), Jamie Silva (CIS), Catie Talbot (CSE), Alex Vavra (CSE)  
**Faculty Advisor(s):** Alan Cline  
**Industry Sponsor:** Auld Corporation  
**Industry Contact(s):** Dan Auld
29 AUTOMATIC ANALYSIS OF POTENTIAL RISKS IN UNDERWRITING USING MACHINE LEARNING
Students: Jimmy Chau (CSE), Tyler Prince (CIS), Stephen Ross (CSE), Gregg Schoen (CSE)
Faculty Advisor(s): Murthy Narasimhan
Industry Sponsor: Nationwide Insurance
Industry Contact(s): Jawahar Talluri

30 AUTOMOTIVE ENGLISH PROGRAM
Students: Joey Chagnon (Math & CIS), Winnie Li (CSE), Sabrinah Halkiu (ENG), Ryan Bates (CSE)
Faculty Advisor(s): Alan Cline
Industry Sponsor: Jackie Gishbaugher

31 CAPITALIZE
Students: Josh Nieman (CSE), Derek Plautz (CSE), Joe Van Gundy (CSE)
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: NetJets, Inc.
Industry Contact(s): Karthik Muthusamy

32 CONFUCIUS
Students: Joe Pappas (CSE), Tyler Li (CSE), Sayeed Siddiqui (CSE), William Zhang (CSE), Soren Goyal (CSE)
Faculty Advisor(s): Stephen Boxwell
Industry Sponsor: IBM
Industry Contact(s): Stephen Boxwell

183 CONQUERED COMMAND
Students: Nick Curto (CIS), Brett Arthur (CSE), Bryan Arnold (CSE), Josh Clark (CSE), Andrew Petrilla (CSE), Claudia Moeller (CSE)
Faculty Advisor(s): Roger Crawfis
Industry Sponsor: The Ohio State University
Industry Contact(s): Roger Crawfis

33 CONSIDER - STUDENT INTERFACE
Students: Daniel Stelson (CSE), Alan Zeigler (CSE), Pavle Coric (CSE), Edrienne Co (CSE)
Faculty Advisor(s): Alan Cline
Industry Sponsor: The Ohio State University
Industry Contact(s): Swaroop Joshi, Neelam Soundarajan
CONSIDER - INSTRUCTOR INTERFACE
Students: Frederick Gu (CSE), Alex Thomas (CSE), Jordan Wurth (CSE), Mike Yamada (CSE)
Faculty Advisor(s): Alan Cline
Industry Sponsor: The Ohio State University
Industry Contact(s): Swaroop Joshi, Neelam Soundarajan

COUCH PARTY RACING
Students: Matt Bartholomew (CSE), John Butts (CSE), John Cramer (CSE), Kyle Powers (CSE), Connor Swick (CSE)
Faculty Advisor(s): Roger Crawfis
Industry Sponsor: The Ohio State University
Industry Contact(s): Roger Crawfis

DIGICLIPS
Students: Kevin Payravi (CSE), Asad Iqbal (CSE), Austin Alexander (CSE), Eunjai Kim (CSE)
Faculty Advisor(s): Moez Chaabouni
Industry Sponsor: DigiClips Broadcast Monitoring
Industry Contact(s): Robert Shapiro, Henry Bremers

DEPENDENCY ANALYSIS WITH DATA VISUALIZATION
Students: Sam Shutt (CSE), Eric Olson (CSE), Andrew Lee (CSE), Nick Carroll (CSE)
Faculty Advisor(s): Murthy Narasimhan
Industry Sponsor: Nationwide Insurance
Industry Contact(s): Jawahar Talluri

EDUSOURCED – GRAPHICAL REPORTING AND ANALYTICS
Students: Bryon Foltz (CSE), Emily McIntyre (CSE), Anthony Weston (CIS), Jessica Gillespie (CSE)
Faculty Advisor(s): Moez Chaabouni
Industry Sponsor: EduSourced
Industry Contact(s): Dan Thiery

FEEDSIGHTS: SOCIAL MEDIA RESEARCH APPLICATION
Students: Dalton Mankin (CSE), Reece Holl (CSE), Jack Manzler (CSE)
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: NetJets, Inc.
Industry Contact(s): Karthik Muthusamy
40  FRUGAL: IMPLEMENTING IBM’S WATSON TO ANALYZE CURRENT STOCK SENTIMENT  
**Students:** Aaron Benson (CSE), Daniel Cunningham (CSE), Margaret Gilbert (CSE), Evan Kozliner (CSE), Josh Thomas (CSE)  
**Faculty Advisor(s):** Stephen Boxwell  
**Industry Sponsor:** IBM  
**Industry Contact(s):** Stephen Boxwell

185  GOLDEN FORCE: TACTICS  
**Students:** Cam McCuen (CSE), Sage Pearson (CIS), Kevin Spiers (CSE), Parth Thaker (CSE), Clint Yoos (CSE)  
**Faculty Advisor(s):** Roger Crawfis  
**Industry Sponsor:** The Ohio State University  
**Industry Contact(s):** Roger Crawfis

41  HANDS-ON DASHBOARD  
**Students:** Adam Tyler (CSE), Jennifer Barry (CSE), Matt Weiss (CSE), Tadas Varaneckas (CSE)  
**Faculty Advisor(s):** Suribabu Jayanti,  
**Industry Sponsor:** HandsOn Central Ohio  
**Industry Contact(s):** Beth Lonn, Carl Konopka, Krishna Manda

182  HEY MAVIC  
**Students:** Zhuoer Wang (CSE), Zhichao Yang (CSE), Keao Xu (CSE), Chen Cai (CSE), Zhiyue Yang (CSE)  
**Faculty Advisor(s):** Stephen Boxwell  
**Industry Sponsor:** IBM  
**Industry Contact(s):** Stephen Boxwell

42  iBOT VIRTUAL ASSISTANT  
**Students:** Xiao Liang (CIS), Yang Liu (CSE), Yun Ma (CIS), Xuzhou Yin (CSE)  
**Faculty Advisor(s):** Perumal Ramasamy  
**Industry Sponsor:** NetJets, Inc.  
**Industry Contact(s):** Branden Bellanca

43  INTELLIGENT MIXED REALITY 2.02  
**Students:** Patrick Veith (CSE), Kyla Bouldin (CSE), Jennifer Hong (CSE), Cameron Toben (CSE)  
**Faculty Advisor(s):** Moez Chaabouni  
**Industry Sponsor:** EduTechnologic  
**Industry Contact(s):** Brad Henry, Austin Gilliam
44 IMR FRONT END  
Students: Benjamin Stammen (CSE), Viral Patel (CSE), Leonard Yang (CSE)  
Faculty Advisor(s): Alan Cline  
Industry Sponsor: EduTechnologic  
Industry Contact(s): Brad Henry, Austin Gilliam

45 LIFE INSURANCE CHAT WITH WATSON  
Students: Bernie Skubak (CSE), Thomas Dail (CSE), Tony Tenuta (CSE)  
Faculty Advisor(s): Murthy Narasimhan  
Industry Sponsor: Nationwide Insurance  
Industry Contact(s): Jawahar Talluri

46 LOXI  
Students: Mark Naderer (CIS), Amber Harriger (CSE), Samuel Maddox (CSE), Michael Johnston (CSE)  
Faculty Advisor(s): Murthy Narasimhan  
Industry Sponsor: Lantrasoft  
Industry Contact(s): Kavi Nithyanandam

47 MIGR8  
Students: Sam Farren (CSE), Cameron Long (CSE), Daniele Bellutta (CIS), Kamari Wright (CSE)  
Faculty Advisor(s): Stephen Boxwell  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Stephen Boxwell

48 MYARDINA  
Students: Matthew Cramblett (CIS), Drew Gallagher (CSE), Crystal Ceballos (CIS), Charles Green (CIS)  
Faculty Advisor(s): Alan Cline  
Industry Sponsor: Ardina  
Industry Contact(s): Shaun Young

49 NETJETS LINE STATION MAINTENANCE  
Students: Daniel Miller (CSE), Blake Howard (CSE), Kyle Hutchinson (CSE), Chad Schnipke (CSE)  
Faculty Advisor(s): Perumal Ramasamy  
Industry Sponsor: NetJets, Inc.  
Industry Contact(s): Karthik Muthusamy, Jason Gregory
50 **NODE WALKER**
**Students:** Julie Green (CIS), Matias Grotewold (CSE), Jake Haynes (CSE), Eva Naumoff (CSE)
**Faculty Advisor(s):** Murthy Narasimhan
**Industry Sponsor:** Peruse Labs
**Industry Contact(s):** Velusamy Velu

51 **OUTLOOK 2.1**
**Students:** Matt Migdal (CSE), Chris McManamon (CSE), Illifilza Rusli (CSE)
**Faculty Advisor(s):** Moez Chaabouni
**Industry Sponsor:** Outlook
**Industry Contact(s):** Brad Henry

52 **OUTLOOK ASSISTANT CHAT BOT**
**Students:** William Van Der Laar (CSE), Daniel da Rosa (CSE), Tammy Joseph (CSE)
**Faculty Advisor(s):** Perumal Ramasamy
**Industry Sponsor:** NetJets, Inc.
**Industry Contact(s):** Vladimir Tkachenko

53 **POWERSAGE INSTALLER ANDROID APPLICATION**
**Students:** Saad Asim (CSE), Christian Deiderich (CSE), Lana Yusuf (CSE), Zachary Schroeder (CSE)
**Faculty Advisor(s):** Alan Cline
**Industry Sponsor:** PowerSage
**Industry Contact(s):** Tom Roberts

54 **POWERSAGE PROPERTY MANAGER APP**
**Students:** Arron Christie (CSE), Pallavi Kalva (CSE), Monish Sangtani (CSE)
**Faculty Advisor(s):** Alan Cline
**Industry Sponsor:** PowerSage
**Industry Contact(s):** Tom Roberts

55 **POWERSAGE PROPERTY MANAGER DASHBOARD**
**Students:** Trenton Gibson (CSE), Braden Polly (CSE), Vincent Young (CSE), Rubin Zhang (CIS)
**Faculty Advisor(s):** Alan Cline
**Industry Sponsor:** PowerSage
**Industry Contact(s):** Tom Roberts
56  POWERSAGE RESIDENT APPLICATION
Students: Dustin Dieker (CSE), Daniel Lambert (CSE), Kenny Schmitt (CSE), Chaoqun Guo (CSE)
Faculty Advisor(s): Alan Cline
Industry Sponsor: PowerSage
Industry Contact(s): Tom Roberts

186  PROJECT HOSTAGE NEGOTIATION
Students: Alexander Sarrouh (CSE), Connor Wood (CSE), Gerard Puhalla (CSE), Nate Borak (CSE), Brandon Moore (CSE)
Faculty Advisor(s): Steve Boxwell
Industry Sponsor: IBM
Industry Contact(s): Steve Boxwell

57  REALWEAR AR
Students: Kelly McCleese (CIS), Yuze Chen (CSE), Alec Workman (CSE), Wesley Pettit (CSE), Howell McCullough (CSE)
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: EduTechnologic
Industry Contact(s): Brad Henry

58  REALWEAR MOBILE APP
Students: Kellen Anker (CSE), Kyle Williams (CSE), Adam Wolfe (CSE)
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: EduTechnologic
Industry Contact(s): Brad Henry

59  REALWEAR VOICE-TO-TEXT AND COGNITIVE SERVICES INTEGRATION
Students: Lauren Miller (CSE), Jacob Smiddy (CSE), Thomas Pendley (CSE), Nolan Rudolph (CSE)
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: EduTechnologic
Industry Contact(s): Brad Henry
60 ROCK CLIMBING GAME
Students: Eric Soppi (CSE), Ryan Niemocienski (CSE), Nathan Krebs (CSE), Landon Grim (CSE)
Faculty Advisor(s): Alan Cline
Industry Sponsor: The Ohio State University
Industry Contact(s): Roger Crawfis

187 SHADES OF XENDALIA: ABOLITION
Students: Liam Montmorency (CSE), Ken Hayes (CSE), Sandeep Battula (CSE), Alex Schilling (CSE)
Faculty Advisor(s): Roger Crawfis

188 SHURGKEN
Students: Adam Kimble (CSE), Chris Leight (CSE), Albert Maah (CSE), Nicolas Re (CSE), Kristopher Wenger (CSE)
Faculty Advisor(s): Roger Crawfis

61 SKWEEZE: COGNITIVE JOB SEARCH
Students: Nick Chehade (CIS), Logan Patino Middaugh (CSE), Yashvardhan Gusani (CSE), Reid Fu (CSE)
Faculty Advisor(s): Stephen Boxwell
Industry Sponsor: The Ohio State University
Industry Contact(s): Stephen Boxwell

62 SNUPR
Students: Alec Haas (CSE), Eric Singh (CSE), Mason Bender (CSE), Jimmy Baker (CSE)
Faculty Advisor(s): Moez Chaabouni, Paul Carlson
Industry Sponsor: SNUPR
Industry Contact(s): Jim Mazotas

189 STRATEGIC OPERATIONS CENTER
Students: Daniel Bedich (CSE), Shantanu Bhardwaj (CSE), Cyriac Domini Thundathil (CSE), Asanka Nanayakkara (CIS)
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: NetJets, Inc.
Industry Contact(s): Umesh Vaswani, Perumal Ramasamy

63 TOP TIER TRENDS
Students: Kelly Helmreich (CSE), Ben Oberhaus (CIS), Griffin Solimini (CSE), Alex Winchell (CSE)
Faculty Advisor(s): Stephen Boxwell
64  TRIVIA TRAINER
Students: Michael Schulz (CSE), Evan Danish (CSE), Ross Vasko (CSE), Will Sloan (CSE)
Faculty Advisor(s): Stephen Boxwell

65  VIRTUAL CHEMISTRY ASSISTANT
Students: Prithvi Krishna Muntimadugu (CSE), Kalyan Khandrika (CSE), Thomas Centa (CSE), Ajit Kumar Sahoo (CSE)
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: EduTechnologic
Industry Contact(s): Brad Henry

66  WATSON TA
Students: Bill Varcho (CSE), Tyler Zeller (CSE), Livia Stanley (CSE), David Soller (CSE), Dalton Flanagan (CSE)
Faculty Advisor(s): Stephen Boxwell
Industry Sponsor: IBM Watson
Industry Contact(s): Stephen Boxwell

67  WL SYSTEM UPDATE
Students: Connor Hall (CIS), Arinov Marinov (CIS), Chris Hall (CSE), Eric Purvis (CSE)
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: Our Lady of Bethlehem Daycare
Industry Contact(s): Lauren Harrington

68  XAMARIN MOBILE
Students: Anthony Pietrantozzi (CSE), Max Pettit (CSE), Tyler Degen (CSE), Eric Yu (CSE)
Faculty Advisor(s): Alan Cline
Industry Sponsor: EduTechnologic, LLC.
Industry Contact(s): Brad Henry, Michael Jodon

190  ZEIVOM
Students: Evyatar Ben-Asher (CSE), William Greer (CSE), Henok Weldemicael (CSE), Michael Cristina (CSE), Christina Hummel (CIS), Allison Subtelny (CSE)
Faculty Advisor(s): Stephen Boxwell
Industry Sponsor: IBM
Industry Contact(s): Stephen Boxwell
Electrical & Computer Engineering

178 CONTROLLING HEART RATE THROUGH WEARABLE ELECTRONICS
Students: Tim Heaton (ECE), Tyler Heaton (ECE), Amber Silvaggio (ECE)
Faculty Advisor(s): Ryan McPherson

179 SMART WEARABLE BODY SENSORS FOR PORTABLE KINEMATICS MONITORING
Students: Ryan Mattei (ECE), Zia Mohammad (ECE and Cog-Neuro), Mike Sidrys (ECE)
Faculty Advisor(s): Asimina Kiourti

Food, Agricultural & Biological Engineering

21 GLOVE DURABILITY TESTING USING GAS FLOW GRADIENTS
Students: Mallory Rowan (FABE), Harsh Patel (FABE), Jerry Xu (FABE), Amelia Pierson (FABE)
Faculty Advisor(s): Jane Fife, Chris Gecik, Katrina Cornish
Industry Sponsor: EnergyENE
Industry Contact(s): Katrina Cornish

22 NASA X-HAB RECYCLING OF INEDIBLE PLANT BIOMASS
Students: Tayo Pedro (FABE), John Capuano (FABE), Jamie Heidel (FABE), Ryan Joen (FABE)
Faculty Advisor(s): Peter Ling
Industry Sponsor: National Aeronautics and Space Administration (NASA)
Industry Contact(s): Kim Simpson, Giola Massa, Eirik Holbert

224 HIGH RESOLUTION YIELD MAPPING
Students: Troy Steiger (FABE), Jimmy Graham (FABE), Trent Fagrell (FABE), Howard Wang (FABE)
Faculty Advisor(s): Jane Fife, Scott Shearer
Industry Sponsor: Case International Harvester
Industry Contact(s): Scott Shearer

Industry Sponsor: National Aeronautics and Space Administration (NASA)
23 PLANT WATER DELIVERY SYSTEM FOR MICROGRAVITY AND DEEP SPACE ENVIRONMENTS
Students: Joshua Abraham (FABE), Usoshi Chatterjee (FABE), Brennan Cordova (FABE), Owen Meehl (FABE)
Faculty Advisor(s): Peter Ling, Jane Fife
Industry Sponsor: National Aeronautics and Space Administration (NASA), Physical and Life Sciences Division
Industry Contact(s): Kim Simpson, Giola Massa, Tracy Gill, Morgan Simpson, John McQuillen

24 REEF SYSTEMS
Students: John Paulson (FABE), Mike O’Connell (FABE), Floyd Wang (FABE), Bobby Greer (FABE), Erin Maher (FABE)
Faculty Advisor(s): Mike Rowan
Industry Sponsor: Reef Systems Coral Farm Inc.
Industry Contact(s): Todd Melman

25 RESTORING SLOOPY SWALE TO IMPROVE WATER QUALITY IN THE LOWER OLENTANGY WATERSHED
Students: Chris Goodwin (ECO), Megan Levine (ECO), Kerri Rogers (ECO), Michelle Rysavy (ECO)
Faculty Advisor(s): Margaret Kalcic
Industry Sponsor: Friends of the Lower Olentangy Watershed
Industry Contact(s): Laura Fay

26 UNVERFERTH STRIP-TILLAGE GRANULAR FERTILIZER INJECTION SYSTEM
Students: Caleb Bale (FABE), Allison Noonan (FABE), Remington King (FABE), Brian Klever (FABE), Rhine Chow (FABE)
Faculty Advisor(s): Andrew Klopfenstein, John Fulton
Industry Sponsor: Unverferth
Industry Contact(s): Shawn Gerdeman

27 USING MEMBRANE TECHNOLOGY TO FILTER CIP CLEANING SOLUTION
Students: Brian Magorien (ECON), Jenny Sanderson (FABE), Kevin Martin (FABE), Daniel Cleveland (FABE), Micheal Jarrell (FABE)
Faculty Advisor(s): Dennis Heldman, David Phinny
Industry Sponsor: Meijer Dairy
Industry Contact(s): Terry Madden, Ted Johannssen
Industrial & Systems Engineering

94  ALENE CANDLES – GLASS CENTRALIZATION
Students: Arron Alexander (ISE), Meredith Joseph (ISE), Casey Sutherland (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: Alene Candles
Industry Contact(s): Brad Colclasure

95  ALENE CANDLES – PACK-OUT LABOR ANALYSIS AND WORKSPACE DESIGN
Students: Casey Belknap-Summers (ISE), Dan Centa (ISE), Aaron Buskirk (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Alene Candles
Industry Contact(s): Brad Colclasure, Todd Baran, Rodney Harl

96  AMERICAN RED CROSS LOGISTICS VISUALIZATION MODEL
Students: Tim Rettig (ISE), Nick Tomczak (ISE), Chris Wrobel (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: American Red Cross
Industry Contact(s): Shawn Gardner, Leo DeBandi

97  COLUMBUS CREW SC
Students: Matt Glasgow (ISE), Robert Gomez (ISE), Austin Wirtz (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: Columbus Crew SC
Industry Contact(s): Jordan Enke

98  CREW PAIRING NETJETS
Students: Jared Brinn (ISE), Claire Deegan (ISE), Ryan Helm (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: NetJets, Inc.
Industry Contact(s): Steve Dennett, Ryan Riesbeck
99  CROSSMARK: EMPLOYEE UTILIZATION
Students: Damon Schneider (ISE), Jaime Gonzalez Brana (ISE), McCay Lloyd (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: CrossMark
Industry Contact(s): Brent Smith

100  DEVELOPING A PREDICTIVE SPACE ALLOCATION MODEL FOR ALENE CANDLES
Students: Tom Barrett (ISE), Annie Greer (ISE), Karam Tatla (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Alene Candles
Industry Contact(s): Brad Colclasure, Todd Baran

101  DEVELOPING A TIRE UNLOADING TOOL THAT IMPROVES DELIVERY DRIVER ERGONOMICS AT DHL
Students: Michelle Ghitman (ISE), Janesz Ethan (ISE), Tolbert Carolyn (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: DHL Supply Chain
Industry Contact(s): April Lowery

102  EFFICIENCY STREAMLINING AND PRODUCT CONTROL
Students: Seth Bearjar (ISE), Patrick Gallagher (ISE), Wilson Lin (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: Commercial Vehicle Group
Industry Contact(s): Jack Feng, Greg Moore

103  EXACTER
Students: Salaheddine Elfakir (ISE), Derek Sasthav (ISE), Nicole Drozdowicz (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: Exacter
Industry Contact(s): Steve Engle
104 FRANKLIN COUNTY BOARD OF ELECTIONS
Students: Grace Dolan (ISE), Vincent Hardin (ISE), Jeremiah Lawson (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: Franklin County Board of Elections
Industry Contact(s): Zach Manifold

105 FSI INSTRUCTOR SCHEDULING OPTIMIZATION
Students: Matt Alic (ISE), Faye Xiong (ISE), Max Basheda (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: FlightSafety International
Industry Contact(s): Fabio Miguez, Chad Garvin

106 HANDS-ON CENTRAL OHIO
Students: Madie Aichholz (ISE), Maliha Masood (ISE), Dan McKeon (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: HandsOn Central Ohio
Industry Contact(s): Joey Schulte

107 IMPLEMENTATION OF PRODUCTION AUTOMATION
Students: Aaron Vaughn (ISE), Andres Mendoza (ISE), Greg Fette (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: CVG
Industry Contact(s): Omar Lieves

108 IMPROVEMENT OF MAINTENANCE CYCLES IN AUTOMOTIVE BODY STAMPING
Students: Sarah Fisher (ISE), Andrei Morosky (ISE), Andrew Lenzo (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Ford Motor Company
Industry Contact(s): Christina Lee, Roger James

109 JENI’S PROCESS IMPROVEMENT
Students: Brad Acord (ISE), Yuhan Jiang (ISE), Michael George (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: Jeni’s Ice Cream
Industry Contact(s): Michael Hilty
110 KEEPING THE KIBBLE ON THE PALLET: A WALMART STORY
Students: Pete Arnold (ISE), Chloe Handelman (ISE), Shauna Hartman (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Walmart
Industry Contact(s): Dana Bergman, Spencer Hidy, Brian Roth

111 LINE BALANCING AT HORTON AMBULANCE
Students: Alex Schroeder (ISE), Jordan Scharf (ISE), AJ Jones (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Horton Ambulance
Industry Contact(s): Josh Niewiadomski

112 LOW COST AGILE TOOLING FOR INJECTION MOLDING
Students: Leah Bartlett (ISE)
Faculty Advisor(s): Steve Lavender, Jose Castro
Industry Sponsor: Honda R&D Americas, Center for Design and Manufacturing Excellence
Industry Contact(s): Ben Hoffman

113 NETJETS ERGONOMIC SEAT DEVELOPMENT PROJECT
Students: Lauren Buck (ISE), James Axson (ISE), Marissa Fernandez (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: NetJets, Inc.
Industry Contact(s): Candy Dudik, Sophia Mohr

114 NETJETS INVENTORY LEVEL & DISTRIBUTION PROJECT
Students: Patrick Campbell (ISE), Alex Pires (ISE), Terence Chen (ISE)
Faculty Advisor(s): Krista Trigg
Industry Sponsor: NetJets, Inc.
Industry Contact(s): Edward Perry, David Benson, Ram Cherukuri, Typhon Kronk, Ryan O’Connor

115 NORTH MARKET IMPROVEMENT PROJECT
Students: Tatyana Shapiro (ISE), Jaclyn Thomason (ISE), Brandon LeScoezec (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: North Market
Industry Contact(s): Rick Wolfe
116  **OPTIMIZING INVENTORY LAYOUTS AND HANDLER UTILIZATION**  
*Students:* Corey Hunn (ISE), Josh Klaus (ISE), James Birchak (ISE)  
*Faculty Advisor(s):* Steve Lavender  
*Industry Sponsor:* Navistar International  
*Industry Contact(s):* Shane Stierley, Ryan Warfield, Sneha Vaghela, Stephen Herr, Matt Strayer

117  **OPTIMIZING INVENTORY PLACEMENT AND WAREHOUSE EFFICIENCY**  
*Students:* Chris Brajdic (ISE), Emily Caudle (ISE), Jack McCauley (ISE)  
*Faculty Advisor(s):* Steve Lavender  
*Industry Sponsor:* Rod's Western Palace  
*Industry Contact(s):* Eric Seaman, Brad Woodruff

118  **OHIO STATE UNIVERSITY MEDICAL TRANSPORTATION**  
*Students:* Ryan Gurney (ISE), Sarah Colasanti (ISE), Mollie Ruffing (ISE)  
*Faculty Advisor(s):* David Benson  
*Industry Sponsor:* The Ohio State University Wexner Medical Center  
*Industry Contact(s):* Sara Stevenson

119  **RETOOLING THE BOCCHI LABS SCRAP MEASUREMENT SYSTEM**  
*Students:* Fendi Tjoa (ISE), Daniel Hottois (ISE), Mark McCullough (ISE)  
*Faculty Advisor(s):* Steve Lavender  
*Industry Sponsor:* Bocchi Laboratories  
*Industry Contact(s):* Jeff Stouffer, Ed De Veau

120  **STANDARDIZING PROCESSES AND REDUCING INVENTORY DISCREPANCIES AT BOCCHI LABS**  
*Students:* Grace Zhang (ISE), Brett Durborow (ISE), Kacey Turk (ISE)  
*Faculty Advisor(s):* Steve Lavender  
*Industry Sponsor:* Bocchi Laboratories  
*Industry Contact(s):* Jeff Stouffer, Kevin Lee
121 UNIVERSITY HOSPITAL EAST EMERGENCY DEPARTMENT FLOW COORDINATOR
Students: Jeffrey Jagger (ISE), Tommy Reighard (ISE), Zach Warchol (ISE)
Faculty Advisor(s): David Benson
Industry Sponsor: The Ohio State University Wexner Medical Center
Industry Contact(s): Sara Stevenson, Satomi Abe

Industrial & Systems Engineering (Lean Sigma)

69 BOB EVANS REPAIR AND MAINTENANCE MANAGEMENT PROJECT
Students: Andrew Johnson (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: Bob Evans
Industry Contact(s): N/A

70 COMMUNICATION AND KPI IMPROVEMENT FOR THE NETWORK ASSURANCE GROUP
Students: Emily Rumford (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: Verizon Wireless
Industry Contact(s): Freddie Matson

71 FOAM WASTE COST REDUCTION
Students: Devante Muldrow (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: Avnet
Industry Contact(s): Lynne Waldron

72 FOOD WASTE REDUCTION PROJECT
Students: Luis Visoso (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: Dublin City Schools
Industry Contact(s): Nathan Rohyans
73  **INCREASING RATE REVISION SPEED TO MARKET**  
Students: Harsh Patel (ISE)  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Grange Insurance  
Industry Contact(s): Amy Tomaszewski, Aaron Nartker

74  **MAKE/BUY STRATEGY IMPLEMENTATION PROJECT**  
Students: Michael Beardsley (ISE)  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Peerless Saw Company  
Industry Contact(s): Tim Gase

75  **REDESIGNING CPA LAB SPECIMEN HANDLING (FRONT END)**  
Students: Gianni Bunawan (ISE)  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: The Ohio State University Wexner Medical Center  
Industry Contact(s): Valery Tarver

76  **MEMBERS VALUE EXCHANGE OPTIMIZATION**  
Students: Kevin Budiman (ISE)  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: IISE Columbus Chapter  
Industry Contact(s): Scott Sink

77  **REDUCING COOKIE OVER-PACK AT COLUMBUS BAKERY**  
Students: Daniel Low-Pitroff (MIS)  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Kroger Manufacturing  
Industry Contact(s): Travis Ross

78  **REDUCTION OF NON-VALUE ADD IN RETURNS PROCESS**  
Students: Vinay Bobba (ISE)  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Startech.com  
Industry Contact(s): Ted Wenger, Dana Garvey
79  **TARRIER STEEL QUALITY MANAGEMENT SYSTEM**  
**Students:** Peter Shapiro (ISE)  
**Faculty Advisor(s):** Scott Sink  
**Industry Sponsor:** Tarrier Steel  
**Industry Contact(s):** Ben Tarrier

80  **TIME IS MONEY: INITIATIVES INTERNAL PROCESS IMPROVEMENT AT UNITED WAY OF CENTRAL OHIO**  
**Students:** Christina Steiner (ISE)  
**Faculty Advisor(s):** Scott Sink  
**Industry Sponsor:** United Way of Central Ohio  
**Industry Contact(s):** Matt Kosanovich

81  **TURNOVER REDUCTION - EMPLOYEE VALUE EXCHANGE OPTIMIZATION IN HEALTH CARE**  
**Students:** Katie Monaghan (ISE)  
**Faculty Advisor(s):** Scott Sink  
**Industry Sponsor:** Salo Solutions  
**Industry Contact(s):** Laura Czuba

82  **VERIZON REVENUE ASSURANCE VALUE CONTRIBUTION MODEL DEVELOPMENT**  
**Students:** Samuel Powers (ACCT)  
**Faculty Advisor(s):** Scott Sink  
**Industry Sponsor:** Verizon  
**Industry Contact(s):** Peter Romanoski, Freddie Matson

83  **WIP RACKING SYSTEM REDESIGN**  
**Students:** Jennifer Surface (ISE)  
**Faculty Advisor(s):** Scott Sink  
**Industry Sponsor:** Ometek  
**Industry Contact(s):** Paul Siders

84  **ZINC SHOT MATERIAL INVENTORY OPTIMIZATION**  
**Students:** Robert Seitz (ISE and ECON)  
**Faculty Advisor(s):** Scott Sink  
**Industry Sponsor:** Transmet Corporation  
**Industry Contact(s):** Justin Clarke, Robin Gates
Integrated Business & Engineering

219  **AUXI (HYPERPERSONALIZATION SERVICE)**  
**Students:** Brian Kulp (CBE), Michelle Li (FIN), Alisa Noll (ISE), Jack Schroder (ISE), Rafael Fernandez (Ind Des), Kevin Ikeda (CBE)  
**Faculty Advisor(s):** Peter Rogers  
**Industry Sponsor:** Procter and Gamble  
**Industry Contact(s):** Russ Speiller, Reg Crutchinald

220  **FLOCEL - TBI DIAGNOSIS**  
**Students:** Paul d’Hyver (FIN), Aaron Dadas (BME), Thomas Krajnak (AE), Jordan Lucki (CBE), Joe Kowardy (Ind Des), Melody Liu (FIN)  
**Faculty Advisor(s):** Peter Rogers, Greg Thune  
**Industry Sponsor:** Flocel  
**Industry Contact(s):** Damir Janigro

221  **MILLENNIAL LAUNDRY**  
**Students:** Amara Barakat (BUS), Bryan Barrett (ISE), Ben Bloom (CSE), Stephanie McLaughlin (Ind Des), Andrew Topinka (BUS)  
**Faculty Advisor(s):** Peter Rogers  
**Industry Sponsor:** Procter and Gamble  
**Industry Contact(s):** Michael Fontaine

222  **SOLVING THE JUNK DRAWER**  
**Students:** Steven Back (CBE), Collin Stipe (ECE), Eric Vinson (FIN), Rachael Leonard (IS), Evan Painter (Ind Des)  
**Faculty Advisor(s):** Peter Rogers  
**Industry Sponsor:** Stanley Black and Decker  
**Industry Contact(s):** Craig Steinfels

223  **VESCO MEDICAL**  
**Students:** Laura Duncan (FIN), Brandon Kramer (ME), Kyle Hardin (ME), Bryan Gemler (CBE), Aura Escobar (Ind Des)  
**Faculty Advisor(s):** Peter Rogers, Greg Thune  
**Industry Sponsor:** Vesco Medical

Best in Design
Materials Science & Engineering

201 CONTROLLED BURST RELEASE OF CONTRACEPTIVE DRUGS FROM PCL BLEND ELECTROSPUN CAPSULES
Students: Brandon Borja (MSE), Frank Jin (MSE), Michael Posner (MSE)
Faculty Advisor(s): John Lannutti
Industry Sponsor: Bureau of Land Management

202 GALVANIC CORROSION PREDICTION
Students: Michael Ong (MSE), Tao Yi (MSE)
Faculty Advisor(s): Gerald Frankel
Industry Sponsor: The Ohio State University

203 HEAT TREATMENT AND MICROSTRUCTURE INVESTIGATION OF Ti-Al-Fe-Mn ALLOY
Students: Patrick Kudo (MSE), David Wagner (MSE), Yekai Yu (MSE)
Faculty Advisor(s): Alan Luo
Industry Sponsor: U.S. Department of Energy in collaboration with General Motors

204 HOT ISOSTATIC PRESSING OF THIN WALLED COMPONENTS OF Ti-6-4
Students: Devan Allen (MSE), Alex Severson (MSE), Brandon Brush (MSE)
Faculty Advisor(s): Hamish Fraser
Industry Sponsor: Synertech PM

205 INJECTABLE HYDROGELS FOR STEM CELL-BASED HEART TISSUE REGENERATION
Students: Lauren Braswell (MSE), Dylan Wynne (MSE)
Faculty Advisor(s): Jianjun Guan
Industry Sponsor: The Ohio State University

206 MELT 5B - THIN-WALL ALUMINUM DIE CASTING DEVELOPMENT
Students: Andrew Davis (MSE), Logan Little (MSE), Nicolette Voltaggio (MSE)
Faculty Advisor(s): Alan Luo
Industry Sponsor: LIFT Lightweight Innovations, Alcoa
207  MICROSTRUCTURE AND STRENGTH OF 304 STAINLESS STEEL AFTER HEAT TREATMENT AT DIFFERENT TEMPERATURES IN THE RANGE OF 680-1000°C
Students: Aaron Suchanek (MSE), Daniel Spiker (MSE), Maggie Van Keuls (MSE)
Faculty Advisor(s): Steve Niezgoda
Industry Sponsor: Titanium Brazing Inc.
Industry Contact(s): Alexander Shapiro

208  PHOTOCATALYTIC REDUCTION OF CO2 USING SEMICONDUCTING NANOWIRES
Students: Alex Landis (MSE), Nathan Bratcher (MSE), Dianze Liu (MSE)
Faculty Advisor(s): Tyler Grassman, Patricia Morris, Derek Miller, Mohamad Al-Hashem
Industry Sponsor: The Ohio State University

209  THE EFFECT OF ABUTMENT MATERIAL ON WEAR OF INTERNAL ENGAGING FEATURES OF IMPLANTS UNDER CYCLIC LOADING
Students: Christopher Irwin (MSE), Justin Helton (MSE)
Faculty Advisor(s): Jinwoo Hwang
Industry Sponsor: The Ohio State University

210  UNDERSTANDING AND QUANTIFYING THE CORROSION SUSCEPTIBILITY OF UNS C18150
Students: Alexander Herzog (MSE), Spencer Fries (MSE), Anthony Ulman (MSE)
Faculty Advisor(s): Jennifer Locke
Industry Sponsor: US Navy
Industry Contact(s): Elissa Trueman

211  UPCONVERSION AND PHOTOSTABILITY OF OXYGEN-SENSING NANOFIBERS
Students: Alex Cochran (MSE), Mallory Hutton (MSE), Elana Spiegler (MSE), Maria Stang (MSE)
Faculty Advisor(s): John Lannutti
Industry Sponsor: The Ohio State University
212 VFA SPOT WELDING OF ALUMINUM 5056 AND DP590
Students: Clare Gu (MSE), William Wei (MSE)
Faculty Advisor(s): Glenn Daehn
Industry Sponsor: Development of Energy

Mechanical Engineering (Student Design Competition)

85 BUCKEYE CURRENT SUSPENSION CHARACTERIZATION AND CONTROL
Students: Hashem Alsharif (ME), Arnez Franklin (ECE), Mengze Niu (ME), John Poland (ME), James Walsh (ME)
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: Center for Automotive Research, The Ohio State University

86 ECOCAR LV POWER REDUCTION
Students: Colston Pollard (ME), Adam Honious (ME), Greg Chiste (ME), Marshall Winterbotham (ME), Mohammad Fahad (ME)
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: Center for Automotive Research, The Ohio State University

87 ECOCAR 3 WEIGHT DISTRIBUTION
Students: Hashem Alsharif (ME), Arnez Franklin (ECE), Mengze Niu (ME), John Poland (ME), James Walsh (ME)
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: Center for Automotive Research, The Ohio State University

88 FSAE ENGINE SIMULATION
Students: Min Ma (ME), Erin McNally (ME), Thomas Smith (ME), Ben Hart (ME)
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: Center for Automotive Research, The Ohio State University
89  **FSAE STEERING COLUMN**
**Students:** Andrew Beckerich (ME), Zachary Gordon (ME), Isaac Ost (ME), Jacob Schroeder (ME)
**Faculty Advisor(s):** Shawn Midlam-Mohler
**Industry Sponsor:** Center for Automotive Research, The Ohio State University

90  **TESTING PROCESS DESIGN OF A FSAE VEHICLE**
**Students:** Kevin Dammeyer (ME), Ryan Walton (ME), Daniel Hall (ME)
**Faculty Advisor(s):** Shawn Midlam-Mohler
**Industry Sponsor:** Center for Automotive Research, The Ohio State University

### Mechanical Engineering (General)

91  **HOOD WELDING RESEARCH**
**Students:** Emma Tsao (ME), Carter Hurd (ME), Daniel Miller (ME), Tyler Geise (ME)
**Faculty Advisor(s):** Anthony Luscher, Russell Marzette
**Industry Sponsor:** Center for Design and Manufacturing Excellence, The Ohio State University

### Multidisciplinary Design

171  **ARCELORMITTAL CLEVELAND STEAM PROCESSING**
**Students:** Cody Fox (CBE), Jillian Zhang (ME), Cheng Meng (ME), Ben Unruh (ECON), Peter Zwyth (ECE), Abdallah Feras (LA)
**Faculty Advisor(s):** Jerald Brevick, Bob Rhoads
**Industry Sponsor:** ArcelorMittal
**Industry Contact(s):** Sean Osburn, Jim Cornell
172 COOPER TIRES - AN EVALUATION OF THE FEASIBILITY OF GUAYULE AGRONOMICS AS AN ALTERNATIVE RUBBER SOURCE

Students: Whitney Smelly (POLI-SCI), Kevin Fisher (SEN), Amjad Chowdhury (CBE), John Beech (AGBUS and ApECON), Kimberly Bonner (OP MGMT), Soni Nischay (CEE and PH)

Faculty Advisor(s): Bob Rhoads, Gonul Kaletunc

Industry Sponsor: Cooper Tires

Industry Contact(s): Zachary Walters

173 COOPER TIRES - AN EVALUATION OF THE ECONOMIC POTENTIAL OF GUAYULE RESIN AND BAGASSE IN THE MARKETPLACE

Students: Christopher Martin (ME), Alexandria Morton (FABE), Hunter Schraer (FABE), Yesharge Abrha (FABE), Amanda Broseus (CBE)

Faculty Advisor(s): Bob Rhoads, Gonul Kaletunc

Industry Sponsor: Cooper Tires

Industry Contact(s): Zachary Walters

174 FUTURE AUTOMOTIVE AIR OUTLETS AND VENTS

Students: James Bruno (AE), David Downey (ACCT), Tejaswini Gautham (AE), Daniel Ooi (AE), Fred Ouimet (ME), Sturgeon Annie (AE), Lavanya Uthaman (AE), Victoria Yee (AE)

Faculty Advisor(s): Clifford Whitfield, Bob Rhoads, Jacob Allenstein

Industry Sponsor: Honda R&D Americas

Industry Contact(s): Christian Kearney

175 HONDA HEALTH MONITORING

Students: Giuseppe Di Biase Troccoli (ME), Grant Oehler (ME), Ben Canty (ECE), Josia McNulty (ECE), David Youssef (ECE/BME), Aaron Rajasuriyar (BME), Spencer Uram (MSE), Lucas Williams (MSE), Geoff Green (NEURO), Michelle Noethen (ACCT)

Faculty Advisor(s): Paul Clingan, Bob Rhoads

Industry Sponsor: Honda R&D Americas

Industry Contact(s): Joan Smith
176  JOHN DEERE 7R IVT POWER REVERSER
Students: Nicole Guo (EP), Jackson Heinz (ME), Gina Papas (ME), Bin Sun (ME), Christopher Williams (ECON)
Faculty Advisor(s): Brian Harper, Bob Rhoads
Industry Sponsor: John Deere
Industry Contact(s): Craig Foster, Jacob Lin

177  TOY ADAPTATION PROGRAM (TAP) DEVELOPMENT PROJECT
Students: Jed Abumeri (ENG), Joshua Tovour (GIS), Thomas Yankush (LOG MGMT), Declan Duckworth (LOG MGMT), Harsh Patel (BUS)
Faculty Advisor(s): Rachel Kajfez, Elizabeth Riter, Bob Rhoads
Industry Sponsor: The Toy Adaptation Program

200  VARIABLE HARDNESS OF MOTOR VEHICLE SEATS
Students: Luke Hopkins (CSE), Kaylee Hoffner (MSE), Kaylie Schimming (MSE), Mark Schreck (ME), Hariz Mohdradzi (ECON), Nicolozakes Athan (BME), Raven Edwards (ECE), George Hoeferlin (BME), Stefan Subich (IB)
Faculty Advisor(s): Allison Polasik, Carolyn Sommerich, Bob Rhoads
Industry Sponsor: Honda R&D Americas
Industry Contact(s): Yousef Riad
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 Department of Engineering Education (EED) fosters industry partnerships with The Ohio State University through EED’s Multidisciplinary Capstone Design program and through all engineering departments by connecting companies with appropriate programs.

For more information, visit go.osu.edu/multicap or contact:

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Department of Engineering Education (EED)

The EED advances the engineering profession and enables student success by developing and delivering state-of-the-art, innovative, multidisciplinary engineering courses and programs; by modeling and advocating scholarly, evidence-based teaching within the College of Engineering; and by integrating pedagogical discovery, practice, and dissemination through world-class engineering education research.

The Ohio State University College of Engineering is nationally recognized for its commitment to undergraduate education. Our teaching methods—including practical, hands-on experience through project-based design courses; a focus on providing opportunities for undergraduate research experiences; and individualized attention to students—have proven to effectively facilitate students’ academic and, ultimately, career success.

Serving as the focal point for the College of Engineering’s innovative instructional programs, the Engineering Education Innovation Center (EEIC) was established in May 2007 with a mission to enrich the student experience, strengthen the academic credentials of our undergraduates, and foster leadership through the Honda Professorship in Engineering Education. In November 2015, the EEIC was transitioned into the present Department of Engineering Education.

The EED provides academic, personal, and professional activities that are designed to supplement the undergraduate experience both inside and outside the classroom. In addition, the EED creates new courses and strengthens existing ones to ensure that students are well prepared for the ever-changing global employment environment.

For more information, visit eed.osu.edu or contact:

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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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