

ENGINEERING

Design Showcase

Senior Capstone and First-Year Cornerstone Projects

04.26.16



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING



ArcelorMittal

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.

9th 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.

13th 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
- Presentation to Showcase Sponsor
ArcelorMittal
- 3:00 p.m. Showcase Project Winners Presentations**
- 3:30 p.m. Closing Remarks**

13th Annual Fundamentals of Engineering for Honors Research Showcase

Fundamentals of Engineering for Honors Nanotech Cornerstone Projects

- 1** **Students:** Mary Covert, J. Reed McGraw, Kareem Ramadan, Hannah Rettig
 Faculty Advisor(s): Paul Clingan
- 2** **Students:** Colleen Harkins, Aashika Katapadi, Ivan Pires, Cole Stoxen
 Faculty Advisor(s): Paul Clingan
- 3** **Students:** Kathy Guo, Megan Luthie, Alex Lutz, Abbey Waltz
 Faculty Advisor(s): Paul Clingan
- 4** **Students:** Sophia Gielink, Charles Kim, Alex Lutmer, Vanesa Salinas Comuzzi
 Faculty Advisor(s): Paul Clingan
- 5** **Students:** Alexander Furlong, Jillian Krebs, Justin Sikkema, Aniketh Udipi
 Faculty Advisor(s): Paul Clingan
- 6** **Students:** Arnold Lauren, Anna Casto, Daniel Clemens, Andrew Copa
 Faculty Advisor(s): Paul Clingan
- 7** **Students:** Bailey Cadena, Nate Hollis, Hali Midtlien, Brandon Moore
 Faculty Advisor(s): Paul Clingan
- 8** **Students:** Erin Knapton, Emily Fox, Jessica Lee, Caitlyn Harrington
 Faculty Advisor(s): Deb Grzybowski
- 9** **Students:** Dip Patel, Eman Jallaq, Keenan Witmer, Meghan McDuff
 Faculty Advisor(s): Deb Grzybowski
- 10** **Students:** Anson Tran, Josh Reddington, Katie Tyrrell, John Osburn
 Faculty Advisor(s): Deb Grzybowski
- 11** **Students:** Rishika Raj Akula, Savannah Coffey, Katie Richardson
 Faculty Advisor(s): Deb Grzybowski

- 12** **Students:** Brooke Stephens, Nick Urich, Nicole Nassif,
Warren Lee
Faculty Advisor(s): Deb Grzybowski
- 13** **Students:** Justin Iovino, Eric Glowacki, Shane Riddle,
Jack Canaday
Faculty Advisor(s): Deb Grzybowski
- 14** **Students:** V Ehninger, Ryan Bruno, Brennon Shanks,
Kassidy D'Annolfo
Faculty Advisor(s): Deb Grzybowski
- 15** **Students:** Yevgeniy Gladkiy, Tyler Marshall, Chase Wilder,
Andrew Merz
Faculty Advisor(s): Deb Grzybowski
- 16** **Students:** Matthew Lertola, Jon McMahon, Donald Bleasdale
Faculty Advisor(s): Deb Grzybowski

9th Annual Engineering Capstone Design Showcase

Student Major Key

AE	Aerospace Engineering
AG SYS MGMT	Agricultural Systems Management
AIR TRANS	Air Transportation
AVIATN	Aviation
BIOChM	Biochemistry
BME	Biomedical Engineering
BUS	Business
CBE	Chemical & Biomolecular Engineering
CEE	Civil & Environmental Engineering
CIS	Computer Information Systems
COMM	Communications Analysis
CSE	Computer Science & Engineering
ECE	Electrical & Computer Engineering
ECON	Economics
EP	Engineering Physics
FABE	Food, Agricultural & Biological Engineering
FEH	Fundamentals of Engineering for Honors
FIN	Finance
Ind Des	Industrial Design (Columbus College of Art & Design)
IB	International Business
ISE	Industrial & Systems Engineering
LOG	Logistics
LOG MGMT	Logistics Management
ME	Mechanical Engineering
MIS	Management Information Systems
MSE	Materials Science & Engineering
OT	Occupational Therapy
OP MGMT	Operational Management
PA	Public Affairs
PLT PATH	Plant Pathology
POLI-SCI	Political Science
PSY	Psychology
PT	Physical Therapy
WE	Welding Engineering

Aerospace Engineering

- 17 ACTIVE COOLING SYSTEM FOR HEAT SHIELDS ON HYPERSONIC VEHICLES**
Students: Patrick Nienhaus (AE), Samantha Booth (AE), Chelsea Sollenberger (AE), Michael Mastromichalis (AE), Alex Lamberjack (AE), Zach Chambers (AE), Kevin Lawler (AE)
Faculty Advisor(s): Zachary Riley, Cliff Whitfield
Industry Sponsor: The Ohio State University
- 18 DESIGN OF A MODULAR VORTEX TUBE ENGINE AIR PARTICLE SEPARATOR USING ADDITIVE MANUFACTURING TECHNOLOGIES**
Students: Robert Crumpacker (AE), Joey McCormack (AE), Mike Mooibroek (AE), Kellen Seaman (AE), Jake Shoemaker (AE)
Faculty Advisor(s): Jeffrey Bons, Cliff Whitfield
Industry Sponsor: Air Force Research Laboratory (AFRL)
- 19 EINSTEIN AIRFOIL**
Students: Marc Ahlborg (AE), Alex Miller (AE), Chris McClurg (AE), Ben Korobkin (AE), Bryce Dickson (AE)
Faculty Advisor(s): James Gregory, Cliff Whitfield
Industry Sponsor: The Ohio State University
- 20 FLUID INJECTION COOLING SYSTEM (FICS) FOR REENTRY VEHICLES**
Students: Allen Roe (AE), Wes Straw (AE), Nathan Alspach (AE), Zac Pressler (AE), Colin Naulty (AE), Ryan Little (AE)
Faculty Advisor(s): Datta Gaitonde, Cliff Whitfield
Industry Sponsor: The Ohio State University
- 21 INCREASING AERODYNAMIC THRUST OF MODEL ROCKET BOOSTER STAGE ENGINE VIA THE ADDITION OF A DE LAVAL NOZZLE**
Students: Greg Rhodes (AE), Zach Pittenger (AE), Dennis Omari (AE), Kyle Hochevar (AE), Laura Guthrie (AE), Jillian Yuricich (AE)
Faculty Advisor(s): Rick Freuler, Cliff Whitfield
Industry Sponsor: The Ohio State University

22 INVERTED AIRFOIL ANALYSIS
Students: Chris Blair (AE), Max Taylor (AE), Owen Tyndall (AE), Kayleigh Gordon (AE), Ryan Simpson (AE), Chris Daubert (AE)
Faculty Advisor(s): Cliff Whitfield
Industry Sponsor: The Ohio State University

23 JETCAT THERMAL FILM COOLING
Students: Andrew Schermerhorn (AE), Jordan Reinhart (AE), Jordan Kenton (AE), Tyler Lenke (AE), Sara Mahaffey (AE), Dan Meter (AE)
Faculty Advisor(s): Randy Mathison, Cliff Whitfield
Industry Sponsor: United States Air Force

24 MULTI-ROTOR INTERACTION ANALYSIS
Students: Kaitlin Blackburn (AE), Ryan Benecke (AE), Kurt Brezovec (AE), Sarah Keren (AE), Kerwin Sierra (AE), Zachary Secrest (AE)
Faculty Advisor(s): Matt McCrink, Cliff Whitfield
Industry Sponsor: The Ohio State University

25 TRUCK BED DRAG REDUCTION
Students: Jason Wilke (AE), Brett Navratil (AE), Jason Carr (AE), Eric Reynolds (AE), Ryan Deyhle (AE), Nathen Morgan (AE)
Faculty Advisor(s): Jacob Allenstein, Cliff Whitfield
Industry Sponsor: The Ohio State University

26 WING-TO-WING FLOW INTERACTION
Students: Luke Agricola (AE), Evan Hayes (AE), Zach Palmer (AE), Leno Piperi (AE), Joe Sagal (AE), Aaron Southerland (AE), Mark Suszek (AE)
Faculty Advisor(s): Cliff Whitfield
Industry Sponsor: The Ohio State University

Aviation

52 DISPATCH LICENSE PROGRAM AT OSU
Students: Mark Welther (AIR TRANS), Kierra Mercure (BUS), Brandon Perez (AIR TRANS), Joshua Stemen (AIR TRANS), Adam Stiles (AIR TRANS), Michael Wiencek (AIR TRANS)
Faculty Advisor(s): Adam Beckman, Brian Strzempkowski
Industry Sponsor: The Ohio State University

53 OSU CFI INCENTIVES PROGRAM
Students: Adam Dawson (AVIATN), Jess Evans (AVIATN), Griffin Kirk (AIR TRANS), Hannah Burress (AVIATN/LOG), Ryan Zahora (AIR TRANS), Kyle Wilcox (AVIATN)
Faculty Advisor(s): Brian Strzempkowski
Industry Sponsor: The Ohio State University
Industry Contact(s): Christine Zavodnik, Brandon Man

Biomedical Engineering

67 ADAPTIVE KAYAK SEAT: ASSISTING PEOPLE WITH CEREBRAL PALSY IN ADVENTURE
Students: Kaleb Boggs (BME), Tyler Meder (BME), Haylie Nelson (BME), Connor Majstorvic (BME), Michael Curtis (ME), Erin Lopresti (OT)
Faculty Advisor(s): Tanya Nocera, Theresa Berner, Mark Ruegsegger
Industry Sponsor: The Ohio State University

68 ADAPTIVE NECK BRACE
Students: Jason Lauf (BME), Spencer Leckrone (BME), Jaron Lohmeyer (BME), Tyler Bishop (BME), Adam Tavoililla (ME)
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: The Ohio State University

192 AUTOMATIC PUMP FOR CONTROLLED ARTERIAL BLOOD FLOW IN AN ENDONASAL SURGERY MODEL
Students: Raphael Banoub (FABE), Jill Kanney (BME), Alyse Krausz (BME), Eric Salomon (BME), Anirudh Tarimala (BME)
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: The Ohio State University
Industry Contact(s): Sanjeet Rangarajan

69 BIODEGRADABLE STENT
Students: Connor Kenney (BME), Mikayla Lowenkamp (BME), Nguyen Tram (BME), Sam Colachis (BME), Jacob Kresslein (BME), Robert Hebert (ME)
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: Nanofiber Solutions
Industry Contact(s): Jed Johnson

- 70 CHRONIC OBSTRUCTIVE PULMONARY DISEASE VITALS MONITORING DEVICE**
Students: William Carson (BME), Daniel Estadt (ME), Robert Hendricks (ECE), Kareem Rasul (BME), Talha Saif (BME)
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: The Ohio State University
- 71 COMPLIANCE IMPROVING STROKE REHABILITATION MITT**
Students: Katherine Arnold (ME), Colin Brooks (BME), Lindsey Fox (BME), Aashish Katapadi (BME), Michael Young (BME)
Faculty Advisor(s): Mark Ruegsegger, Alexandra Borstad
Industry Sponsor: The Ohio State University
- 72 DATA LOGGING SYSTEM TO MONITOR POWER WHEELCHAIR USAGE**
Students: Sarah Case (ME), Richie Jones (ME), Andrew Karnele (BME), Veronica Kennedy (OT), Yue Pan (BME)
Faculty Advisor(s): Carmen DiGiovine, Sandra Metzler, Mark Ruegsegger
Industry Sponsor: The Ohio State University
- 73 DRUG DISPERSAL DEVICE**
Students: Jillian Hickey (BME), Brandon Moore (BME), Inyoung Oh (BME), Eric Typpi (BME), Curtis Walker (ME)
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: The Ohio State University
- Best in Design**
- 74 EYE INFLATION CHAMBER**
Students: Emily Bodamer (BME), Elizabeth Meurer (BME), Mark Finken (ME), Tim Makkar (BME), Akshar Patel (BME)
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: The Ohio State University
- 75 HELICOPTER ISOLETTE LIFT**
Students: Adam Lehnig (BME), Ben Scandling (BME), Jack Jones (BME), Michael Schmidt (BME), Zac Novak (BME), Kim Zwissler (OT)
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: The Ohio State University
- 76 HIGHLY ADJUSTABLE, LIGHTWEIGHT WHEELCHAIR**
Students: Michelle Murach (BME), Samuel Goldman (BME), Michelle Hurtubise (BME), Jordan Gause (BME), Mark Boranovsky (ME), Arrianna Willis (BME)
Faculty Advisor(s): Sandra Metzler, Carmen DiGiovine
Industry Sponsor: The Ohio State University
- 193 INSTRUMENTED TOY BY DESIGN: TEAM 1**
Students: Derek Hesse (BME), Joshua Javor (ME), Jiang Baowei (BME), Luke Mazzochette (ME), Kunal Gupta (BME)
Faculty Advisor(s): Mark Ruegsegger, Jill Heathcock
Industry Sponsor: The Ohio State University
- 77 KAYAK ASSISTIVE PADDLE DEVICE**
Students: Nehal Patel (BME), Taylor Howard (BME), Herman Stephen (BME), Ian Sunyecz (BME), Andrea Vannoy (ME), Mark Roser (PT)
Faculty Advisor(s): Tanya Nocera, Mark Ruegsegger
Industry Sponsor: The Ohio State University
- 78 LOWER EXTREMITY POSTURAL SUPPORT**
Students: Matt Berno (ME), Kanghyun Kim (BME), Gabrielle Mosiniak (BME), Ian Schwochow (BME), Megan Suman (OT)
Faculty Advisor(s): Sandra Metzler, Carmen DiGiovine, Mark Ruegsegger
Industry Sponsor: The Ohio State University
- 79 MANUAL WHEELCHAIR MOBILITY AUTOMATED EVALUATION SYSTEM**
Students: Yu Liu (ME), Josh Schwieterman (ME), Yu Wu (ME), Alex Bendig (BME)
Faculty Advisor(s): Carmen DiGiovine, Sandra Metzler, Mark Ruegsegger
Industry Sponsor: The Ohio State University
- 80 MOTIVATING APPLICATION DESIGNED FOR AUTISTIC CHILDREN FOR USE ON A DUAL SIDE-BY-SIDE BICYCLE**
Students: Daniel Robinson (BME), Lindsay Seibel (BME), Brad Lewis (BME), Connor Bangs (ME), Deanna Kreider (ME), Noah Thiel (ME), Christie White (PT)
Faculty Advisor(s): Tanya Nocera, Theresa Berner, Mark Ruegsegger
Industry Sponsor: The Ohio State University

81 NRN HARNESS - ENDURO-HANDLE
Students: Steve Parr (ME), Katie Stemmer (BME), Samuel Seelbach (BME), Shelby Willingham (BME), Jared Seidel (BME)
Faculty Advisor(s): Carol Eskay, Mark Ruegsegger
Industry Sponsor: The Ohio State University

82 OCULAR POSITIONING DEVICE
Students: Chris Baehr (BME), Patel Kishan (BME), Aaron Pruitt (BME), Kelly Wang (ME), Jacob Zbinden (BME)
Faculty Advisor(s): Mark Ruegsegger, Jun Liu
Industry Sponsor: The Ohio State University

83 PEDAL SYSTEM FOR ADULT AMPUTEES WITH ABOVE-KNEE PROSTHETICS
Students: Benjamin Albert (BME), Austin Bries (BME), Conor Bruce (ME), Khaled Himed (BME), Karolina Ostapkiewicz (BME)
Faculty Advisor(s): Sandra Metzler, Mark Ruegsegger
Industry Sponsor: The Ohio State University

84 TOY BY DESIGN 2 - INSTRUMENTED TOY OCTOPUS
Students: Brandon Lindrose (ME), Zion Babayemi (ME), Jordan Knerr (ME), Megan Posukonis (BME), Nick Tassos (BME)
Faculty Advisor(s): Mark Ruegsegger, Jill Heathcock
Industry Sponsor: The Ohio State University

Chemical & Biomolecular Engineering

87 ADVANCED BATTERIES FOR ELECTRIC VEHICLES
Students: Jacquelynn Herron (CBE), Lauren Kirian (CBE), Cody Park (CBE), Hyung-uk Kim (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: PHMatter
Industry Contact(s): Paul Matter

88 APPLICATION OF IMPINGING JET MIXER FOR PRODUCTION OF COMPOSITE BLOCK COPOLYMER NANOPARTICLES
Students: Mackenzie Tomlinson (CBE), Julie Bresson (CBE), Nicholas Lee (CBE), Daniel Turkalj (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: The Ohio State University
Industry Contact(s): Barbara Wyslouzil, Jessica Winter

89 CO2 UTILIZATION CHEMISTRY: FEASIBILITY OF ELECTROCHEMICAL REDUCTION
Students: Kyle Goodnow (CBE), Cody Lockhart (CBE), Robert Kriner (CBE), Ray Parr (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: Aravind Asthagiri
Industry Contact(s): Aravind Asthagiri

90 COAL DIRECT CHEMICAL LOOPING
Students: Matthew Sands (CBE), Marshall Pickarts (CBE), Michael Zhang (CBE), Rocky Wang (CBE)
Faculty Advisor(s): David Tomasko, Dan Lamone
Industry Sponsor: The Ohio State University
Industry Contact(s): Andrew Tong

Best in Design

91 COCONUT OIL BASED DEODORANT PRODUCTION
Students: Aniela Lloyd (CBE), Michael Mulcahy (CBE), Alec Sunyecz (CBE), Ryan Dickinson (CBE)
Faculty Advisor(s): David Tomasko, Dan Lamone
Industry Sponsor: Timbre Products
Industry Contact(s): Kyle Edwards, Jeremy Miller

92 CONTAMINATED WATER FILTER FOR HOME USE - LEAD REMOVAL
Students: Andrew Newmyer (CBE), Jacob Martin (CBE), Jordan Cutting (CBE), Panos Kolliopoulos (CBE)
Faculty Advisor(s): David Tomasko, Dan Lamone
Industry Sponsor: The Ohio State University

93 CONVERSION OF FRUCTOSE TO HYDROXYMETHYLFURFURAL PLANT DESIGN
Students: Emily Hoff (CBE), Ian Losey (CBE), Andrea Perrin (CBE), Andrew Short (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: The Ohio State University
Industry Contact(s): Nicholas Brunelli

- 94 DETAILED PROCESS SIMULATION OF A REFORMER AND SOLID OXIDE FUEL CELL FOR RECOVERING ENERGY FROM A DILUTE VOC STREAM**
Students: Kayla Reed (CBE), Vicki Palagiano (CBE), Kyle Qian (CBE), Greg Bulger (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: Honda
Industry Contact(s): Chris Cornelius
- 95 DEVELOPMENT OF NATURAL, HYPOALLERGENIC DEODORANT FOR TIMBRE PRODUCTS**
Students: Elena Blair (CBE), Kyle Hofacre (CBE), Blake Lewis (CBE), Alexis Uber (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: Timbre Products
Industry Contact(s): Kyle Edwards, Josh Trippier
- 96 ENVIRONMENTAL AND ECONOMIC IMPACT ANALYSIS OF PRIVATIZING OHIO STATE UTILITIES**
Students: AJ D'Angelo (CBE), Lauren March (CBE), Damian O'Malley (CBE), Blair Swager (CBE)
Faculty Advisor(s): Bhavik Bakshi, Xinyu Liu
- 97 EVALUATION OF CONTINUOUS DISTILLATION IMPLEMENTATION FOR WATERSHED**
Students: Yunhan Wen (CBE), Bethany Stephens (CBE), Brian Fredman (CBE), Jarrett Forkey (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: Watershed Distillery
Industry Contact(s): Greg Lehman
- 98 EXTENSIONAL RHEOLOGY**
Students: Lavanya Easwaran (CBE), Joshua Colley (CBE), Conor Hughes (CBE), Tiara Maula (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: The Ohio State University
Industry Contact(s): Kurt Koelling
- 99 FULL SCALE A-B-E FERMENTATION SEPARATION TRAIN SIMULATION AND SUSTAINABILITY**
Students: Joon Kim (CBE), Matt Raye (CBE), Laura McGreer (CBE), Regina Gallagher (CBE)
Faculty Advisor(s): Jeffrey Chalmers
- 100 FULL SCALE DESIGN OF A-B-E FERMENTATION FOR BUTANOL FUEL**
Students: Scott Hutt (CBE), Deepthi Koralla (CBE), Monika Patel (CBE), Michelle Snow (CBE)
Faculty Advisor(s): Jeffrey Chalmers
- 101 LIFE CYCLE OF SECONDHAND CLOTHING**
Students: Tyler McCullough (CBE), Ted Carson (CBE), Andong Du (CBE)
Faculty Advisor(s): Tapajyoti Ghosh
Industry Sponsor: The Ohio State University
- Best in Design**
- 102 PRESSURE SWING ADSORPTION FOR RENEWABLE ENERGY APPLICATIONS**
Students: Sarah Drosos (CBE), Natasha Khawaja (CBE), Nicholas Liesen (CBE), Courtney Tolber-Sutton (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: Adsorption Research Inc.
Industry Contact(s): Kent Knaebel
- 103 PROCESS DEVELOPMENT FOR COMPOUNDING RECYCLED A-B-S (ACRYLONITRILE BUTADIENE STYRENE) WITH TOUGHENERS**
Students: Eric Marko (CBE), Travis Jenkins (CBE), Benjamin Whiteman (CBE), Kai Tiew (CBE)
Faculty Advisor(s): Sumant Patankar
Industry Sponsor: Bolon Companies
Industry Contact(s): Tom Bolon
- 104 PROCESS DEVELOPMENT FOR RECYCLED POLYVINYL BUTYRAL (PVB)**
Students: Eric Falascino (CBE), Logan Fisher (CBE), Tom Groseclose (CBE), Scott Reinhart (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: Bolon Companies
Industry Contact(s): Tom Bolon

- 105 RESOURCE STEWARDSHIP**
Students: Max Mantkowski (CBE), Randy Ulinski (CBE), Kyle McLain (CBE), Gabe Peterson (CBE)
Faculty Advisor(s): Dan Lamone, David Tomasko
Industry Sponsor: The Ohio State University
- 106 SIMULATION AND ECONOMIC ANALYSIS OF POLYLACTIC ACID VERSUS POLYMALIC ACID**
Students: Katlyn Ashley (CBE), Jacob Salyer (CBE), Dennis Tran (CBE), Alison Hartnagel (CBE), Michael Homsy (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: The Ohio State University
Industry Contact(s): Chi Cheng
- 107 SIMULATION OF QUASAR ANAEROBIC DIGESTER PROCESS FOR FOOD WASTE**
Students: Aaron Hastings (CBE), Evan Shirin (CBE), Dylan De-Anna (CBE), Connor Wiegand (CBE)
Faculty Advisor(s): David Tomasko, Daniel Lamone
Industry Sponsor: Quasar Energy Group
Industry Contact(s): Mitch Long
- 108 THE EFFECTS OF MICROGRAVITY ON THE INTERACTION BETWEEN HYDROPHOBIC SURFACES AND WATER**
Students: Michael Louis (CBE), Craig Motil (CBE), Ted Liu (CBE), Chris Chang (CBE), Raajan Desai (CBE)
Faculty Advisor(s): David Tomasko
- 109 USE OF DIGESTER BIOGAS FOR ENERGY INTEGRATION IN WATER TREATMENT PLANT**
Students: Rick Bannerman (CBE), Zack Karim (CBE), Chuck Loney (CBE), Arthur Perconti (CBE), Leon Zhang (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: The City of Columbus
Industry Contact(s): Todd Krenelka, Rob VanEvra
- 110 UTILIZATIONS OF FILTER AIDS FOR THE REDUCTION OF PRECIPITATE IN RESIN PRODUCTION**
Students: Austin Wood (CBE), Mary Dickson (CBE), Matt Michalski (CBE), Chloe Franceschini (CBE)
Faculty Advisor(s): David Tomasko, Dan Lamone
Industry Sponsor: Capital Resin Corporation
Industry Contact(s): Ed Toplikar, Michael Denney

- 111 VOC ABATEMENT OF BAKERY OVENS**
Students: Natalie Sample (CBE), Miranda McGrothers (CBE), Sean Crowe (CBE), Yaadata Abdalhalim (CBE)
Faculty Advisor(s): David Tomasko
Industry Sponsor: Nexceris
Industry Contact(s): Steve Cummings
- 112 WATER TREATMENT AND RECYCLE FROM BIO-PRODUCTION OF PROPIONIC ACID**
Students: Brittney Butler (CBE), Cullen Conry (CBE), Erica Brackman (CBE), Sudipto Deb (CBE)
Faculty Advisor(s): David Tomasko

Chemical & Biomolecular Engineering (Sustainability)

- 54 APPLICATION AND CRITICAL EVALUATION OF AICHE SUSTAINABILITY METRICS FOR ENGINEERING DECISIONS**
Students: Nursyaza Leyna Rosley (CBE), Aja Badgeley (CBE), Griffin Jenkins (CBE)
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: The Ohio State University
- 55 BIG 10 SUSTAINABILITY GOALS**
Students: Rebecca Steward (CBE), Rob Ostafi (CBE), Erik Perrot (CBE), Tyler Hacker (CBE)
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: The Ohio State University
- Best in Design**
- 56 BIODIVERSITY MAPPING TOOLS ANALYSIS**
Students: Sal Alshabani (CBE), Josh Borgemenke (FABE), Emily Diersing (CBE), Angela Lawver (CBE)
Faculty Advisor(s): Bhavik Bakshi, Xinyu Liu
Industry Sponsor: American Electric Power (AEP)
Industry Contact(s): Tim Loehner

57 EASTMAN NATURE CENTER EROSION CONTROL
Students: Erin Bailey (CBE), Nora Shaheen (CBE), Ryan Kindell (CBE), Xinwei Bai (CBE)
Faculty Advisor(s): Bhavik Bakshi, Xinyu Liu
Industry Sponsor: Eastman
Industry Contact(s): Michelle Holyfield, Rebecca Glaspie

58 ENVIRONMENTAL IMPACT AND ALTERNATIVES OF STARBUCKS PAPER CUP USE ON THE OHIO STATE UNIVERSITY COLUMBUS CAMPUS
Students: Kathryn Lawson (FABE), Michael Wang (CBE), Kelly Messer (CEG), Aimen Ramahi (CBE)
Faculty Advisor(s): Bhavik Bakshi

59 GREEN EPOXY
Students: Zechariah Nimon (CBE), Rahel Beyene (CEE), Nick Singstock (CBE), Nathan Wise (CBE)
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Hexion
Industry Contact(s): David Evers

60 IMPROVING AEP WATERSHED PRACTICES
Students: Sean Brady (CBE), Sandra Lee (CBE), Scott Johannes (CBE), Cody Fox (CBE)
Faculty Advisor(s): Bhavik Bakshi, Tapajyoti Ghosh
Industry Sponsor: American Electric Power (AEP)
Industry Contact(s): Timothy Lohner

61 INDUSTRIAL SITE MANAGEMENT FOR LOCAL SUSTAINABILITY OF CARBON SEQUESTRATION ECOSYSTEM SERVICE
Students: Haris Malik (CBE), Dylan Bederman (CBE), Kane Fadeley (CBE), Matthew Papiernik (CBE)
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Eastman Chemicals
Industry Contact(s): John Bull

62 IS THERE A BUSINESS CASE FOR REPLACING OLD EQUIPMENT WITH NEWER SOLUTIONS?
Students: Matt Truesdale (CBE), Cheng Han Thong (CBE), Dikshit Bhandary (CBE)
Faculty Advisor(s): Bhavik Bakshi, Priscilla Liu
Industry Sponsor: Eaton
Industry Contact(s): Claire Castleman

63 LIFE CYCLE ANALYSIS OF CONVENTIONAL EPOXY COMPOSITES FOR AUTOMOTIVE USE
Students: Yu Dang (FABE), Brian Fredman (CBE), Jacob Simko (CBE), Muzhapaer Motianlifu (CBE)
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Hexion Inc.
Industry Contact(s): David Evers

64 LIFE CYCLE ASSESSMENT COMPARISON OF CONCEPTUAL PROCESS DESIGNS FOR ENERGY RECOVERY FROM VOC RECLAMATION
Students: Cailin Buchanan (CBE), Robert Battista (CBE), Kendra Jones (CBE), Alexandra Schwertner (CBE)
Faculty Advisor(s): Bhavik Bakshi, Xinyu Liu

65 TRADE-OFF ANALYSIS OF HDA PROCESS
Students: Brian Diep (CBE), Daniel Keck (CBE), Jing Na (CBE)
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: The Ohio State University

66 WATER FOOTPRINT OF PROPIONIC ACID FROM BIOMASS
Students: Nicholas Davis (CBE), Max Brouman (CBE), Kyuha Lee (CBE), Alex Marsalek (CBE)
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Dow AgroSciences, LLC
Industry Contact(s): Chris Stowers, Jonathan Jones

Civil & Environmental Engineering

Best in Design

- 85 DUBLIN ROAD WATER PLANT OZONE/BAC FILTRATION UPGRADES**
Students: TBD
Faculty Advisor(s): Linda Weavers
Industry Sponsor: The Ohio State University

Best in Design

- 86 OLENTANGY WATER TREATMENT PLANT CAPACITY UPGRADE**
Students: Sidney Hoover (CEE), Anton Rosi (CEE), Supreya Kesavan (CEE), Cody Chandler (CEE)
Faculty Advisor(s): Linda Weavers
Industry Sponsor: The Ohio State University

Computer Science & Engineering

- 186 ARBITER**
Students: Glen Gainer (CSE), Ian Kirchner (CSE), Branden Tenbrink (CSE), Ryan Wachowski (CSE), Daniel White (CSE)
Faculty Advisor(s): Matt Boggus
Industry Sponsor: Placeholder Games
- 187 ARDINA MEMBER PORTAL**
Students: Edward Momot (CSE), Grant Stenroos (CSE), Matthew Conrad (CSE), Jazmin Brooks (CSE), Josh Laney (CSE), Zak Bainazarov (CSE)
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: Ardina
Industry Contact(s): Shaun Young, Stephanie Murnen
- 27 AR INTERFACE**
Students: Daniel Jiang (CSE), Jordan Tillman (CSE), Alexander Bahas (CSE), Brian Fintel (CSE), Aaron Jenkins (CIS)
Faculty Advisor(s): Moez Chaabouni
Industry Sponsor: EduTechnologic
Industry Contact(s): Brad Henry

- 28 CONSIDER**
Students: Andrew Clinton (CSE), Don Herre (CSE), Dustin Stanley (CSE), Tyler Rasor (CSE)
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: The Ohio State University
Industry Contact(s): Swaroop Joshi, Neelam Soundarajan
- 29 COPEDS BLACKBELT GAME**
Students: Karl Ahlqvist (CSE), David Margolis (CSE), Ziqian Ming (CSE), Andrew Motika (CSE), Austin Palmer (CSE)
Faculty Advisor(s): Murthy Narasimhan
Industry Contact(s): Dr. Jennifer Dyer
- 30 DOCFINGERPRINTER**
Students: Thomas Tedrow (CSE), Chaz Gordish (CSE), David Kohn (CSE), Greg Rogers (CSE)
Faculty Advisor(s): Alan Cline
Industry Sponsor: Auld Technologies
Industry Contact(s): Daniel Auld
- Best in Design
- 31 DOES NOT COMPUTE**
Students: Nathan Wakefield (CSE), Qing Liu (CSE), Alex Losego (CSE), Christian Winterhalter (CSE), David Wright (CSE)
Faculty Advisor(s): Matt Boggus
- 32 ECOLOGICAL FITNESS APPLICATION**
Students: Trevor Stockert (CSE), Joseph Dye (CSE), Tyler Schultz (CSE), Corey Ferris (CSE)
Faculty Advisor(s): Moez Chaabouni
Industry Sponsor: EduTechnologic
Industry Contact(s): Brad Henry
- 188 EDUSOURCED RESOURCE TRACKING**
Students: Joseph Brunner (CIS), Jesse Cover (CSE), Xinye Chen (CSE), Chenjian Jia (CIS)
Faculty Advisor(s): Alan Cline
Industry Sponsor: EduSourced
Industry Contact(s): Dan Thiery

- 33 EMG ANDROID APP**
Students: David Kerns (CIS), Michael McGaha (CSE), Ryan Faulhaber (CSE), Tom Carlin (CSE), Nebras Alnemer (CSE), Matt Yohman (CSE)
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: Stephen Page
Industry Contact(s): Stephen Page, Joe D'Angelo, Maurissa D'Angelo
- 34 FAMINE TOMORROW**
Students: Mike Alquist (CSE), Jared Headings (CSE), Chris Makepeace (CSE), Nikit Malkan (CSE), Caleb Underwood (CSE), Hiroki Witt (CSE)
Faculty Advisor(s): Matt Boggus
Industry Sponsor: Deep Manatee Studios
- 35 FOALSCORE - iOS APPLICATION**
Students: Daniel Schlitt (CSE), Di Li (CSE), Dongren Zhang (CSE), Jun Wang (CSE), Broden Kelly (CSE)
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: The Ohio State School of Veterinary Medicine
Industry Contact(s): Katarzyna Dembek
- 36 HARENA IS FALLING**
Students: Mark DiVelbiss (CSE), Glen Giffey (CSE), Selena Grant (CSE), Kevin Kesicki (CSE), Logan McCamish (CSE)
Faculty Advisor(s): Matt Boggus
- 189 HUMANS VS. ALIENS: MEDIEVAL EDITION**
Students: John Jackson (CSE), Samuel Litowitz (CSE), Michael Matonis (CSE), Austin Neidert (CSE), Justin Neidert (CSE)
Faculty Advisor(s): Matt Boggus
Industry Sponsor: Team A
Industry Contact(s): John Jackson
- 37 IMR2.01**
Students: Austin Gilliam (CSE), Joe Kay (CIS), Taewoo Kim (CSE), Congrong Guan (CSE)
Faculty Advisor(s): Moez Chaabouni
Industry Sponsor: EduTechnologic
Industry Contact(s): Brad Henry
- 38 iREHAB WEB APPLICATION**
Students: Chao Tong (CSE), Gan Fang (CSE), Xiaochi Weng (CSE), Kaiwen Hu (CSE), Yuzhen Liu (CSE), Yifei Zhang (ISE)
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: The Ohio State University
Industry Contact(s): Stephen Page
- 39 JADETRACK PROJECT ADMINISTRATION**
Students: Zachary Spieler (CSE), William Madley (CSE), Garrett Kelling (CSE), Brian Parks (CSE), Abby Haseley (CSE)
Faculty Advisor(s): Murthy Narasimhan
Industry Sponsor: JadeTrack
Industry Contact(s): Dan Garro, Susan Terry
- 190 KATY'S CARE: DAIRY CALF HEALTH AND WELLNESS TRACKING**
Students: Max Buck (CIS), Leah Duello (CSE), Yifan Gu (CSE), Zheng Liu (CSE), Allen Yu (CSE)
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: The Ohio State School of Veterinary Medicine
Industry Contact(s): Katy Proudfoot
- 40 LIFECARE ALLIANCE WELLNESS AUTOMATION**
Students: Paul Williams (CIS), Sam Donnellon (CSE), Jimmy Mei (CSE), Ben Purple (CIS), Kelsey McHenry (CSE)
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: LifeCare Alliance
Industry Contact(s): Melinda Rowe, Julie Palmer
- 41 NEUROASPIRE EEG APP**
Students: Alex Neal (CSE), Alexander Moen (CSE), Tatsumi Suenaga (CSE), Andy Kim (CSE), Chris Radebaugh (CIS), Jimmy Kang (CIS)
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: Stephen Page
Industry Contact(s): Stephen Page, Joe D'Angelo, Maurissa D'Angelo

42 PERSONAL ASSISTANT

Students: John Haviland (CSE), Colin Kalnasy (CSE), Nicholas Ramage (CSE), Umang Sharaf (CSE), Scott Weddendorf (CSE)

Faculty Advisor(s): Murthy Narasimhan

Industry Sponsor: Purecloud

Industry Contact(s): Sanjay Rao

191 PESTILENCE

Students: Ted Zhu (CSE), Christopher Menart (CSE), Christopher Phillips (CSE), Johnny Mercado (CIS), Brandon Dahl (CSE)

Faculty Advisor(s): Matt Boggus

Industry Sponsor: The Ohio State University

Industry Contact(s): Matt Boggus

43 PROJECT CURIA

Students: Xu Zhang (CSE), Yanjie Li (CSE), Jian Jin (CSE), Zicong Zheng (CSE), Junwei Xu (ECE)

Faculty Advisor(s): Alan Cline

Industry Contact(s): Nick Badman

44 PURECLOUD KIOSK

Students: Jonathan Krammer (CSE), Ayush Kalani (CSE), Nicholas Todd (CSE), James Pan (CSE), Jeffrey Lin (CSE)

Faculty Advisor(s): Murthy Narasimhan

Industry Sponsor: Interactive Intelligence

Industry Contact(s): Justin Ray

45 REHAB ON THE GO SOFTWARE ENGINEERING CAPSTONE

Students: Connor Clark (CSE), Ben Imwalle (CSE), Curtis Holton (CSE), Joan Lemaster (CSE), Jeff Casavant (CSE), Andrew Pavlosky (CSE)

Faculty Advisor(s): Perumal Ramasamy

Industry Sponsor: Nationwide Children's Hospital

Industry Contact(s): Tracy Mehan, Katrina Boylan

46 SEEMETRAIN

Students: Joseph Donnelly (CSE), Zijiang Yang (CSE), Ramya Ravishankar (CSE), Soumyashree Gad (CSE)

Faculty Advisor(s): Alan Cline

Industry Sponsor: Vicki Saunders

Industry Contact(s): Vicki Saunders

47 SOBERTOOL

Students: Chen Linhu (CSE), Cao Fang (CSE), Li Shuang (CSE), Hu Shenyang (CSE), Li Xia (CSE)

Faculty Advisor(s): Alan Cline

Industry Sponsor: Paul Caimi

Industry Contact(s): Paul Caimi

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48 SQUIRREL RECOVERY

Students: William Osler (CSE), Hani Ewais (CSE), John Feerick (CSE), Zhaoyu Duan (CSE)

Faculty Advisor(s): Suribabu Jayanti

Industry Sponsor: The Ohio State University Wexner Medical Center

Industry Contact(s): Brandi Spaulding

49 THE VIRTUAL CHEMISTRY LAB

Students: Devin Patel (CSE), Diwen Hu (CSE), Xin Huang (CIS), Yuxin Ouyang (CSE), Manlin Song (CSE)

Faculty Advisor(s): Murthy Narasimhan

Industry Sponsor: Brad Henry

Industry Contact(s): Brad Henry

50 VIRTUAL CHEMISTRY LAB

Students: Seung Jun (CSE), Ben Obringer (CIS), Melissa Trykowski (CIS), Christine Walsh (CSE)

Faculty Advisor(s): Moez Chaabouni

Industry Sponsor: EduTechnologic

Industry Contact(s): Brad Henry

51 ZEMBRETTA RESUME PARSER

Students: Matt Hilty (CSE), Negash Negash (CSE), Robert Steele (CIS)

Faculty Advisor(s): Moez Chaabouni

Industry Sponsor: Richard Wagner

Industry Contact(s): Richard Wagner

194 20 QUESTIONS WITH WATSON: GEOGRAPHY EDITION

Students: Joshua Byrne (CSE), Wilfred Denton (CSE), Alane Suhr (CSE), Michael Wenger (CSE), Michael Zoller (CSE)

Faculty Advisor(s): Eric Fosler-Lussier

Industry Sponsor: IBM Academic Initiative

195 BUILDING A VIRTUAL BARTENDER WITH QA TECHNOLOGY

Students: Alex Beigel (CSE), Morgan Gende (CSE), Joseph Hayden, Kaitlyn Spehr (CSE), Matthew Swisher (CSE), Xuanlin Yang (CSE)

Faculty Advisor(s): Eric Fosler-Lussier

Industry Sponsor: IBM Academic Initiative

196 CLASS ADVISING USING A Q/A SYSTEM

Students: Jay Lorenz (CSE), Amber Lott (CSE), Drew Cooksey (CSE)

Faculty Advisor(s): Eric Fosler-Lussier

Industry Sponsor: IBM Academic Initiative

226 COACH WATSON: YOUR ARTIFICIALLY INTELLIGENT PERSONAL TRAINER AND NUTRITIONIST

Students: Olivia Whitman (CSE), Rob LaTour (CSE), Ian Weber (CSE), Brian Kelley (CSE), Tyler Pedelose (CSE)

Faculty Advisor(s): Stephen Boxwell

227 COLLEGE ADMISSION Q&A SYSTEM

Students: Shengjie Quan (CSE), Yihan Yang (CSE), Huizhong Zhao (CSE)

Faculty Advisor(s): Stephen Boxwell

Industry Sponsor: IBM Academic Initiative

228 DIETARY CONSULTANT APPLICATION BASED ON THE KNOWLEDGE SYSTEM

Students: Jinjin Shao (CSE), Te Zhang (CSE), Xiaojin Lin (CSE), Yaying Zhao (CSE), Yubin He (CSE)

Faculty Advisor(s): Stephen Boxwell

229 FOOD-4-THOUGHT: USING NUTRIENT-BASED QUERIES IN A WEB APPLICATION TO FIND FOODS FOR A HEALTHY LIFESTYLE

Students: Anna Baglione (CSE), Shane Clark (CSE), Parker Kurtz (CSE), Zachary Schuller (CSE), Timothy Taylor (CSE)

Faculty Advisor(s): Eric Fosler-Lussier

Industry Sponsor: IBM Academic Initiative

230 KA-BASH'D: A NATURAL LANGUAGE GAME FRAMEWORK

Students: Mary Alula (CSE), Alex Berger (CSE), Dominic DiBlasio (CSE), Sydney Hodge (CSE), Ariane Krumel (CSE), Sonny Shi (CSE)

Faculty Advisor(s): Stephen Boxwell

Industry Sponsor: IBM Academic Initiative

231 LAWSON: A COGNITIVE SYSTEM TO SEARCH THE OHIO REVISED CODE

Students: John Cyphert (CSE), Nick Darby (CSE), Ted Hu (CSE), Bryan Zake (CSE)

Faculty Advisor(s): Stephen Boxwell

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232 NAVI

Students: Richard Kochert (CSE), Michael Chen (CSE), Clement Lu (CSE), Ishmeet Grewal (CSE), Ankai Lou (CSE), Matthew Kujawinski (CSE)

Faculty Advisor(s): Eric Fosler-Lussier

Industry Sponsor: IBM Academic Initiative

233 OFFICIAL WATSON SOCCER RULEBOOK

Students: Kelly Hill (CSE), Jayson Perkins (CSE), Johns Gresham (CSE), Sam Rosenstein (CSE)

Faculty Advisor(s): Eric Fosler-Lussier

Industry Sponsor: IBM Academic Initiative

Food, Agricultural & Biological Engineering

220 DESIGN OF A ROOT HARVESTING MECHANISM FOR AEROPONICALLY GROWN DANDELIONS

Students: Zack Casparro (FABE), Kevin Gruscinski (FABE), Kaitlyn Mullins (FABE), Anna Ralph (FABE), Nick Scarpelli (FABE)

Faculty Advisor(s): Jane Fife

Industry Sponsor: The Ohio State University

Industry Contact(s): Katrina Cornish

- 221 ECOLOTIGER 875 REDESIGN AND INDEPENDENT HYDRAULIC CONTROL**
Students: Reed Poling (FABE), Clay Mesnard (FABE), Jack Langenkamp (FABE), David Bednarski (FABE)
Faculty Advisor(s): Scott Shearer, Jane Fife
Industry Sponsor: Case New Holland Industrial
- 222 ENHANCING YIELD MONITOR RESOLUTION THROUGH THE USE OF NORAC ULTRASONIC SENSORS**
Students: Ryan Schwyn (FABE), Molly Roup (FABE), Jamier Tascoe-Davis (FABE), Benjamin Gerhardt (FABE), Bryce McDaniel (FABE)
Faculty Advisor(s): Andrew Klopfenstein, Scott Shearer
Industry Sponsor: The Ohio State University
- 223 NON-MOTORIZED MECHANICAL LIFT DESIGN FOR HANDICAP ACCESSIBLE ZERO TURN MOWER**
Students: Sean Carpenter (FABE), Cara Parrish (FABE), Jesse Kulewsky (FABE), Anndrae Dysart (FABE), Bret Schroeder (FABE)
Faculty Advisor(s): Dee Jepsen, Jane Fife
Industry Sponsor: Fussnecker and Sons Tractor Sales, Ohio AgrAbility
Industry Contact(s): Brandon Fussnecker
- 224 OPTIMIZATION AND SCALE-UP OF A PSEUDOMONAS FLUORESCENS LIQUID STARTER INOCULANT SYSTEM**
Students: Andrew Brzeczowski (FABE), Abigail Ghitman (FABE), Ryan Knight (FABE), Erica McGriff (FABE), Erika Paguirigan (FABE)
Faculty Advisor(s): Jane Fife
Industry Sponsor: 3Bar Biologics
Industry Contact(s): Bruce Caldwell
- 225 PHOSPHOROUS REMOVAL FROM COW MANURE**
Students: Adriana Calderin (FABE), Dylan Eltzroth (FABE), Justin White (FABE)
Faculty Advisor(s): Jane Fife
- 185 SUSTAINABLE ENVIRONMENTAL CONTROL SYSTEM FOR BASEMENTS AND CRAWLSPACES USING SOLAR ENERGY**
Students: Alex Spektor (FABE), Joseph Belgrad (FABE), Akram Jabeer (FABE), Abby Waidelich (FABE),
Faculty Advisor(s): Lingying Zhao, Jane Fife
Industry Sponsor: Ohio State Outreach and Engagement Office

Industrial & Systems Engineering

- 113 ADDRESSING ERGONOMIC ISSUES AT KONECRANES**
Students: Xingyi Zhou (ISE), Heath Minger (ISE), Joshua Flick (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Konecranes
Industry Contact(s): Jay Edwards
- 114 ALLIED MINERAL PRODUCTS INVENTORY OPTIMIZATION**
Students: John Gruenbacher (ISE), Raymond Swetlin (ISE)
Faculty Advisor(s): Ted Allen
Industry Sponsor: Allied Mineral Products
Industry Contact(s): Ashley Jeffris
- 115 ANOMATIC WAREHOUSE OPTIMIZATION PROJECT**
Students: Jenna Bailey (ISE), Alex Mate (ISE)
Faculty Advisor(s): Dave Benson, Ted Allen
Industry Sponsor: Anomatic Inc.
Industry Contact(s): Steve Noth, John Kinser
- 116 ARC WELDING PARAMETER OPTIMIZATION**
Students: Taarika Hegde (ISE), Nick Asadorian (ISE)
Faculty Advisor(s): Ted Allen
Industry Sponsor: EWI
Industry Contact(s): Randall Dull
- 117 BMW FINANCIAL SERVICES - PAYMENT AND BILLING ERROR IDENTIFICATION**
Students: Benjamin Sims (ISE), Morgan Walker (ISE)
Faculty Advisor(s): Ted Allen, David Benson
Industry Sponsor: BMW Financial Services
Industry Contact(s): Ryan Miller, Mike Gossett, Ann Dimmerling, Adam Stout
- 118 CITY OF GAHANNA**
Students: David Voelker (ISE), Lauren Renaud (ISE)
Faculty Advisor(s): Ted Allen
Industry Sponsor: City of Gahanna
Industry Contact(s): Jennifer Teal

- 119 CLOTH HEATING JACKET PROCESS**
Students: Rakia Levesque (ISE), Joseph Burger (ISE)
Faculty Advisor(s): Ted Allen, Dave Benson
Industry Sponsor: Briskheat Corporation
Industry Contact(s): Mike Bertelson
- 120 COLUMBUS FOOD PANTRY SUSTAINABILITY OPTIMIZATION**
Students: David Hummel (ISE), Carolyn Kapaku (ISE)
Faculty Advisor(s): Ted Allen
Industry Sponsor: Neighborhood Services, Inc.
Industry Contact(s): Martin Butler, Matt Austin
- Best in Design**
- 197 COMMERCIAL VEHICLE GROUP - VALUE STREAM MAPPING**
Students: Andrew Min (ISE), Eric Spencley (ISE), Jimmy Judson (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Commercial Vehicle Group
Industry Contact(s): Jack Feng
- 121 COMMERCIAL VEHICLE GROUP - STANDARDIZED DATA COLLECTION**
Students: Christopher Luke (ISE), Zihe Liu (ISE), John Marko (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Commercial Vehicle Group
Industry Contact(s): Jack Feng, Kerry Howery
- 122 EQUIPMENT USE & STORAGE IN THE WEXNER MEDICAL CENTER**
Students: Michael Ricke (ISE), Kees Preston (ISE)
Faculty Advisor(s): Ted Allen
Industry Sponsor: The Ohio State University Wexner Medical Center
Industry Contact(s): Satomi Abe
- 123 ERGONOMIC IMPROVEMENT OF AXLE SHAFT TRANSFER - NAVISTAR INTERNATIONAL**
Students: Nathan Uhlenhake (ISE), Karim Derawan (ISE), Christian Nielsen (ISE)
Faculty Advisor(s): Steven Lavender
Industry Sponsor: Navistar International
Industry Contact(s): Bill Reed, Rachael Uebel, Tim McDaniel

- 124 HAND TOOL REPLENISHMENT PROJECT**
Students: Sarah Schmidt (ISE), CJ Howitt (ISE)
Faculty Advisor(s): Ted Allen
Industry Sponsor: Roxane Labs/West-Ward Pharmaceuticals
Industry Contact(s): Maria Cosenza

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- 125 IMPROVING INPATIENT THROUGHPUT IN THE ENDOSCOPY DEPARTMENT AT THE OHIO STATE'S WEXNER MEDICAL CENTER**
Students: Katie David (ISE), Jeremiah Ross (ISE), Emily Lance (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: The Ohio State University Wexner Medical Center
Industry Contact(s): Richards Osborn
- 126 IMPROVING PRODUCTION CAPACITY THROUGH 5S AND FACILITY LAYOUT**
Students: Alex Hill (ISE), David Milam (ISE), Daron Prater (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Windsor Cabinet Company
Industry Contact(s): John Edmonds
- 127 IMPROVING SECRETARY UTILIZATION WITHIN THE NEUROSURGERY DEPARTMENT**
Students: Chelsea Carle (ISE), Eric Kunze (ISE)
Faculty Advisor(s): David Benson, Ted Allen
Industry Sponsor: The Ohio State University Wexner Medical Center
Industry Contact(s): Mendy Hollingshead, Valerie Tarver
- 128 IMPROVING THE INSPECTION PROCESS FOR VSPONE'S LENS MANUFACTURING LINE**
Students: Melissa Brooks (ISE), Yuchen Dong (ISE)
Faculty Advisor(s): Ted Allen
Industry Sponsor: VSPOne
Industry Contact(s): Ryan Boldrin, Richard Stokes

129 IMPROVING THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER - NEURO UNIT WITH INVENTORY CONTROL METHODS
Students: Estifanos Mewael (ISE), Natasha Yeboah (ISE)
Faculty Advisor(s): Dave Benson, Ted Allen
Industry Sponsor: The Ohio State University Wexner Medical Center
Industry Contact(s): Patricia Hoch

130 IMPROVING WAIT TIMES AT THE FRANKLIN COUNTY BOE EARLY VOTE CENTER
Students: Kirk Cherep (ISE), Kelly Parriman (ISE)
Faculty Advisor(s): Ted Allen
Industry Sponsor: Franklin County Board of Elections
Industry Contact(s): Zach Manifold

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131 JENI'S: INCREASE ICE CREAM PRODUCTION
Students: Judy Chen (ISE), Rachel Ratnasingham (ISE)
Faculty Advisor(s): Ted Allen
Industry Sponsor: Jeni's Splendid Ice Creams
Industry Contact(s): Robin Walker

132 LEAN ANALYTICS FOR REQUALIFICATION OF ALUMINUM CYLINDERS
Students: Brian Sterle (ISE), Michael Nimmo (ISE)
Faculty Advisor(s): Dave Benson, Ted Allen
Industry Sponsor: Worthington Industries
Industry Contact(s): Bill Wertz

133 MATERIAL HANDLING AT NAVISTAR INTERNATIONAL
Students: Nicholas Goodge (ISE), Emily Miller (ISE), Basil DeJong (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Navistar International
Industry Contact(s): Shane Stierley

134 MEASURING AND IMPROVING THE EFFICIENCY OF A PLASMA CUTTING PROCESS
Students: Jake Allen (ISE), Brett Blackwell (ISE), Craig Niekamp (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Hendrickson Lift Axles
Industry Contact(s): Julie Bowles, Brian French

135 NATIONWIDE WORKFORCE MANAGEMENT PROJECT
Students: Adam Kaminski (ISE), Luke Hayes (ISE)
Faculty Advisor(s): Ted Allen, Dave Benson
Industry Sponsor: Nationwide Insurance
Industry Contact(s): Michael McCaslin, Craig Maas

136 OPTIMIZATION OF FLIGHTSAFETY INTERNATIONAL'S PILOT TRAINING SCHEDULING SYSTEM FOR NETJETS PILOTS
Students: Andrew Parmenter (ISE), Rehgan Avon (ISE)
Faculty Advisor(s): Dave Benson
Industry Sponsor: NetJets
Industry Contact(s): Dave Benson

137 OPTIMIZING ROD'S WESTERN PALACE
Students: Brian Roth (ISE), Spencer Barrett (ISE), David Cusack (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: Rod's Western Palace
Industry Contact(s): Terry Frakes

138 PRIVATE PRACTICE WORK FLOW OPTIMIZATION
Students: Katherine Snyder (ISE), Sam Cohen (ISE)
Faculty Advisor(s): Ted Allen
Industry Sponsor: Kanodia, MD
Industry Contact(s): Anup Kanodia

139 REDUCING GENERAL SURGERY OPERATING ROOM TURNOVER TIME
Students: David Aspery (ISE), Benjamin Ghosh (ISE), Luay Mokhtar (ISE)
Faculty Advisor(s): Steve Lavender
Industry Sponsor: The Ohio State University Wexner Medical Center
Industry Contact(s): Richards Osborn

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140 ROSS AMBULATORY CARE CLINIC (ACC) HEART FAILURE PATIENT ROOMING OPTIMIZATION AND STANDARDIZATION
Students: Andrea Rollert (ISE), Samara Weerasuriya (ISE)
Faculty Advisor(s): Ted Allen
Industry Sponsor: The Ohio State University Wexner Medical Center
Industry Contact(s): Sara Stevenson, Valery Tarver

141 SHIFTING PROCESS LOCATIONS TO RELIEVE CONGESTION IN MCDOWELL ASSEMBLY PLANT

Students: Grant Savage (ISE), Rebecca Kinzeler (ISE), Neil Chimi (ISE)

Faculty Advisor(s): Steve Lavender

Industry Sponsor: Horton Emergency Vehicles

Industry Contact(s): Deven Suthar

201 PILOT VACATION MANAGEMENT TO SUPPORT UNION NEGOTIATIONS

Students: Matthew Pekarek (ISE), Brandon Stein (ISE)

Faculty Advisor(s): Ted Allen

Industry Sponsor: NetJets

Industry Contact(s): Dave Benson

Industrial & Systems Engineering (Lean Sigma)

142 “AVOIDING THE MACK TRUCK” AT THE TARRIER STEEL COMPANY

Students: Joshua Schwegler (ISE)

Faculty Advisor(s): Scott Sink

Industry Sponsor: The Tarrier Steel Company

Industry Contact(s): Ben Tarrier, Todd Tarrier

143 CORN OIL STANDARDIZATION: KROGER BAKERY TORTILLA CHIP PRODUCTION

Students: Jessica Grela (ISE)

Faculty Advisor(s): Scott Sink

Industry Sponsor: Kroger Bakery Columbus

Industry Contact(s): Travis Ross

144 DATA OVERAGE ALERTING IMPROVEMENTS FOR THE REDUCTION OF MONTHLY CREDITS

Students: Vanessa Serrano (ISE)

Faculty Advisor(s): Scott Sink

Industry Sponsor: Verizon Wireless

Industry Contact(s): Freddie Matson

145 FACILITY LAYOUT DESIGN FOR 3-YEAR DEVELOPMENT STRATEGY

Students: Qichen Liang (ISE)

Faculty Advisor(s): Scott Sink

Industry Sponsor: Coalescence LLC

Industry Contact(s): Ian Blount

146 FORMS FILING PROCESS IMPROVEMENT THROUGH THE REDUCTION OF REWORK

Students: David Huddle (ISE)

Faculty Advisor(s): Scott Sink

Industry Sponsor: Grange Insurance

Industry Contact(s): Amy Tomaszewski, Mary Beth Sammartino

147 GO WITH THE FLOW!

Students: Macy Monnin (ISE)

Faculty Advisor(s): Scott Sink

Industry Sponsor: Walmart

Industry Contact(s): Herman Funderburk, Carolyn Bryant, Michael Herdman

148 HOME HEALTH AIDE TURNOVER REDUCTION PROJECT

Students: Scott Owen (ISE)

Faculty Advisor(s): Scott Sink

Industry Sponsor: Salo Solutions

Industry Contact(s): Laura Czuba

149 IMPROVING COMPLIANCE PERFORMANCE THROUGH REDUCTION IN PAPER DOCUMENTATION ERRORS

Students: Chris Lontoh (ISE)

Faculty Advisor(s): Scott Sink

Industry Sponsor: Abbott Nutrition

Industry Contact(s): Dhuey Cronk

150 INCREASING FIRE TRUCK THROUGHPUT AND ON TIME DELIVERIES

Students: Samuel Wanstrath (ISE)

Faculty Advisor(s): Scott Sink

Industry Sponsor: Sutphen

Industry Contact(s): Jon Corsetti

151 INCREASING LAMINATION THROUGHPUT

Students: Patrick Daprile (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: Royal Building Products
Industry Contact(s): Shannon Stehman

152 KIPP COLUMBUS TECHNOLOGY INVENTORY MANAGEMENT PROCESS PROJECT

Students: David Friedhoff (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: KIPP Columbus
Industry Contact(s): Caitlyn Dunn

153 LABOR SCHEDULING AND OPTIMIZATION

Students: Sarah Schaefer (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: Donatos
Industry Contact(s): Cheryl Bergsman

154 MFM WAIT TIME REDUCTION PROJECT

Students: Hin Cheung (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: The Ohio State University Wexner Medical Center
Industry Contact(s): Kristine Hertl

155 OSU SURPLUS: SOFTWARE INTERFACE IMPROVEMENT

Students: Chynna Hartmann (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: The Ohio State University
Industry Contact(s): Shawn Jones, Mike Swick

156 OSU WEXNER MEDICAL CENTER: BLOOD AND BODY FLUID EXPOSURE PROTOCOL IMPROVEMENT PROJECT

Students: Amy Levey (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: The Ohio State University Wexner Medical Center
Industry Contact(s): Linda Wellington

157 PEERLESS GRINDING THROUGHPUT OPTIMIZATION

Students: Brad Watson (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: Peerless Saw Company
Industry Contact(s): Tim Gase

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158 PEERLESS SAW LASER CUTTING DEPARTMENT THROUGHPUT CAPACITY IMPROVEMENT

Students: Shaun Mallory (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: Peerless Saw Company
Industry Contact(s): Tim Gase

159 SCRAP MEASUREMENT IMPROVEMENT & CHANGEOVER STRATEGY DEVELOPMENT

Students: Maxwell Conover (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: Smiths Medical
Industry Contact(s): Dave Clute

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160 THROUGHPUT INCREASE AND OPTIMIZATION OF BLENDING SYSTEM

Students: Mary Thornton (ISE)
Faculty Advisor(s): Scott Sink
Industry Sponsor: Royal Building Products
Industry Contact(s): Shannon Stehman

161 WORKPLACE SAFETY MANAGEMENT SYSTEM & RISK MITIGATION OF OPERATIONAL KNOWLEDGE LOSS AT TARRIER STEEL, INC

Students: Chang Liu (ISE)
Faculty Advisor(s): Scott Sink, Steve Lavender
Industry Sponsor: TARRIER Steel, Inc
Industry Contact(s): Ben TARRIER

Materials Science & Engineering

- 162 BISMUTH BASED NERNST EFFECT THERMOELECTRIC GENERATOR**
Students: Austin Utendorf (MSE), Eric Clevenger (MSE)
Faculty Advisor(s): Roberto Myers
Industry Sponsor: The Ohio State University
Industry Contact(s): Roberto Myers
- 163 CHARACTERIZATION OF LASER HOT WIRE DEPOSITED Ti-6Al-4V**
Students: Denise George (MSE), Lauren Gerber (MSE), Lauren Reitz (MSE)
Faculty Advisor(s): Michael Mills
Industry Sponsor: Lincoln Electric
Industry Contact(s): Badri Narayanan
- 164 COMPUTATIONAL DESIGN OF A BULK METALLIC GLASS COMPOSITE**
Students: Richard Blocher (MSE), Paul Christodoulou (MSE), Smith Fedako (MSE)
Faculty Advisor(s): Stephen Niezgodra, Wolfgang Windl
Industry Sponsor: The Ohio State University
Industry Contact(s): Mei Wang
- 165 EFFECT OF DILUTION ON CORROSION RESISTANCE IN AUSTENITIC STAINLESS STEEL AND Ni-BASE ALLOY WELD OVERLAYS ON LOW ALLOY STEEL COMPONENTS FOR DOWNSTREAM APPLICATION**
Students: Daniel Sabo (MSE), Kelli Williams (MSE)
Faculty Advisor(s): Gerald Frankel
Industry Sponsor: Shell, The Ohio State University
Industry Contact(s): Jorge Penso
- 166 EFFECTS OF STRAIN ON VERTICALLY POLARIZED NANOWIRES**
Students: Shengchen Xue (MSE)
Faculty Advisor(s): Roberto Myers
- 167 ELECTRONIC AND GAS SENSING PROPERTIES OF SOLUTION DEPOSITED SEMICONDUCTING METAL OXIDE NANO-HETEROSTRUCTURES**
Students: Ashton Egan (MSE), Alan Curran (MSE), Mohamad Al-Hashem (MSE)
Faculty Advisor(s): Sheikh Akbar, Patricia Morris
Industry Sponsor: The Ohio State University
- 168 IMPROVED WHITE ENAMEL FOR GLASS DECORATION**
Students: Patrick Hawthorne (MSE), Os'Sad Shaheer (MSE)
Faculty Advisor(s): Hendrik Verweij
Industry Sponsor: Fusion Ceramics
Industry Contact(s): Wes King
- 169 MICROSTRUCTURE AND STRENGTH OF TITANIUM ALLOYS AFTER HEAT TREATMENT AT DIFFERENT TEMPERATURES IN THE RANGE OF 680-1000°C**
Students: Abigail Sutliff (MSE), Zach Mospens (MSE), Michael Surplus (MSE)
Faculty Advisor(s): Steve Niezgodra
Industry Sponsor: Titanium Brazing, Inc.
Industry Contact(s): Alex Shapiro
- 170 MODELING OF DISLOCATIONS IN TWO-DIMENSIONAL MATERIALS**
Students: Zhiyuan Feng (MSE), Runnan Jiang (MSE)
Faculty Advisor(s): Maryam Ghazisaeidi, Wolfgang Windl
Industry Sponsor: The Ohio State University
- 171 SPRINGBACK RELIEF USING A VAPORIZING FOIL ACTUATOR**
Students: Eric Magnuson (MSE), Yu Mao (MSE)
Faculty Advisor(s): Glenn Daehn, Stephen Niezgodra
Industry Sponsor: The Ohio State University
- 172 TRANSLATING MATERIALS SCIENCE AND ENGINEERING CURRICULUM TO HIGH SCHOOL**
Students: Samuel Jones (MSE), Nick Dorman (MSE), Michele Pachiano (MSE), Rachel Sylvester (MSE)
Faculty Advisor(s): Alison Polasik
Industry Sponsor: The Ohio State University

- 173** **Industry Contact(s):** Mei Wang
VFAW - ALTERNATIVE JOINING METHOD FOR LIGHT WEIGHT VEHICLE CONSTRUCTION
Students: Scott Wright (MSE), Yu Zou (MSE)
Faculty Advisor(s): Geoff Taber, Anupam Vivek, Glenn Daehn
Industry Sponsor: The Ohio State University
- 202** **HIGH PRESSURE DIE CASTING AND MICROSTRUCTURE ANALYSIS OF MAGNESIUM ALLOYS (AM50, AT72, AND ATS)**
Students: Steven Linde (MSE), Dalton Schulenberg (MSE), Chris Ritner (MSE)
Faculty Advisor(s): Alan Luo
Industry Sponsor: General Motors and Department of Energy
Industry Contact(s): John Carter
- 203** **DEVELOPMENT AND FEASIBILITY PHOTOCATALYTIC NANOWIRE STRUCTURES**
Students: Henrick Harwood (MSE), Michael Kemp (MSE)
Faculty Advisor(s): Tyler Grassman

Mechanical Engineering

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- 213** **BUCKEYE CURRENT COOLING SYSTEM**
Students: Adam Mattmuller (ME), Polina Brodsky (ME), Joel Bruns (ME), Dan Arch (ME)
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: The Ohio State University
- 214** **BUCKEYE CURRENT MOTORCYCLE TRACTION CONTROL**
Students: Sean Harrington (ECE), Kim Concillado (ECE), Nate Derry (ECE), Ian Zierdt (ME)
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: The Ohio State University
- 215** **DEVELOPMENT OF A PERFORMANCE SUSPENSION FOR THE ECOCAR 3 COMPETITION**
Students: Brielle Reiff (ME), Eric Ritchie (ME), Vrishank Shah (ME), Chad Whetstone (ME)
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: The Ohio State University

- 218** **ECOCAR DRIVELINE**
Students: Brandon Bishop (ME), Doug Briner (ME), Ryan Kraft (ME), Sean Penner (ME)
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: The Ohio State University
- 217** **FORMULA SAE TIRE MODEL**
Students: Justin Thompson (ME), Mike McGuire (ME), Ranjiv Velliyur (ME), Mike McKenna (ME)
Faculty Advisor(s): Shawn Midlam-Mohler, Jeff Christos
Industry Sponsor: The Ohio State University
- 216** **HUMAN BATTERY CHARGER**
Students: Alex Kosich (ME), Ricky Zapora (ME), Nathan Smith (ME), Nadeera Waduvara (ME)
Faculty Advisor(s): Anthony Luscher, Joe West, Christopher Adams
Industry Sponsor: The Ohio State University
- 219** **SUPERMILEGE TEAM EFI ENGINE MODIFICATION**
Students: Duo Ding (ME), Cong Ding (ME), Muzhi Zhu (ME), Shuhan Li (ME), Tong Lin (ME)
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: Honda
Industry Contact(s): Dan Nagashima

Mechanical Engineering (Product Design)

- 206** **2-IN-1 BIKE HANDLEBAR**
Students: Ryan Letcher (ME), Badal Moradia (ME), Alex Pax (ME), Nick Peterson (ME)
Faculty Advisor(s): Blaine Lilly
- 207** **ADJUSTABLE DECELERATION MECHANISM**
Students: Amanda Klosowski (ME), Bryce Blake (ME), William Gable (ME), Tyler Turnwald (ME)

- 208** **CUSTOMIZABLE BACKPACK**
Faculty Advisor(s): Blaine Lilly
Students: Luke Moore (ME), Bryan Martin (ME), Quanqi Dai (ME), Reuben Miller-Davis (ME)
Faculty Advisor(s): Blaine Lilly
- 209** **GOT WATER?**
Students: Mitch Eichler (ME), Frederick Lab (ME), Jason Vieira (ME), Paul DiYanni (ME)
Faculty Advisor(s): Blaine Lilly
Industry Sponsor: Mid-Ohio Foodbank
Industry Contact(s): Dana Hilfinger
- 210** **HUMAN POWER GENERATION**
Students: Joshua Levine (ME), Jacob Maddox (ME), Brian Raderstorf (ME), Hugo Van Der Walt (ME)
Faculty Advisor(s): Blaine Lilly
- 211** **IMPROVING THE FUTURE OF MEDICINE DISPENSION**
Students: Anna Bilas (ME), Colleen Moloney (ME), Jacob Thiel (ME), Zihui Zhang (ME)
Faculty Advisor(s): Blaine Lilly
- 212** **THE ARTFOLIO**
Students: Alexander Jones (ME), Clare Cui (ME), Kassandra Oxendale (ME), Andrea Valera (ME)
Faculty Advisor(s): Blaine Lilly

Multidisciplinary Design

- 198** **COOPER TIRE - LINEAR TRIBOMETER**
Students: Tyler Kreinbrink (ME), Ericka Lynn (ME), Sam Finley (ME), John Thornton (ME), Vishank Talesara (ECE), Kaian Chen (ECE)
Faculty Advisor(s): Brian Harper, Bob Rhoads, Cliff Whitfield
Industry Sponsor: Cooper Tire
Industry Contact(s): Alex Trzakovich, Pat Majors

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- 174** **ELECTROSTATIC BUMPER PAINTING ANALYSIS**
Students: Yucheng Guo (ECE), Stephanie Keller (ISE), Miles Reagans (ME), John Menke (ME), Brian Anichowski (ME)
Faculty Advisor(s): Jose Castro, Rachmat Mulyana, Bob Rhoads, Cliff Whitfield
Industry Contact(s): Jody Johnson
- 175** **eNNOVEA: THE PERSONAL CULER**
Students: Will Sorokas (FIN), Victor Magdaleno (ME), Brian Kammer (ME), Michael Khale (ME), Joseph Pisauro (Ind Des)
Faculty Advisor(s): Peter Rogers, Rich Teynor, Greg Thune
Industry Sponsor: eNNOVEA
Industry Contact(s): Chris Gardner
- 176** **GOLF DRIVER SHAFT DESIGN CAPSTONE PROJECT**
Students: Shane Austin (ME), Trent Baptiste (ME), Evan Stein (ME), Jacob Sutton (ME), Nate Longest (LOG MGMT), Drew Nankivell (ECON/BUS), Annie Platten (PA), Jordan Cappola (ECON/BUS), Kevin Mulh (FIN/BUS), Ben Zake (IB)
Faculty Advisor(s): Brian Harper, Bob Rhoads, Cliff Whitfield
- 177** **HIGH TEMPERATURE HIGH PRESSURE ELASTOMER APPLICATION**
Students: Max Rouse (ME), Hannah Williams (BUS), Nathan Schmidlin (MSE), Abang Ossen (Plt Path)
Faculty Advisor(s): David Tomasko, Bob Rhoads, Cliff Whitfield
Industry Sponsor: Cameron
Industry Contact(s): Xuming Chen, Hamid Salem

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- 178** **JOHN DEERE TRANSMISSION SPEED SENSOR**
Students: Jaron Waite (ME), Hank Rumpke (ME), Jim Andrews (ME), Jack Wilbur (ME), Adam Doklovic (AE)
Faculty Advisor(s): Paul Clingan, Bob Rhoads, Cliff Whitfield
Industry Sponsor: John Deere
Industry Contact(s): Matthew Kiser, Richard Timm, Jacob Lin

179 MEDICAL ADHERENCE WEARABLE DEVICE
Students: Joel Watson (BME), Nick Clark (ME/BUS), Alex Bugajski (PSY), Steve Anderson (ECE MS), Xinuo (John) Zhao (ECE MS), Nick Lo (Ind Des), Haofei Lui (ECE)
Faculty Advisor(s): Peter Rogers, Rich Teynor
Industry Sponsor: Cardinal Health-Fuse, The Ohio State University
Industry Contact(s): Tim Heller, Derrick Pena, Brian Lichtle

180 MINI-FRIDGE DOOR OF THE FUTURE
Students: Scott Snarr (ME), Ted Schoen (ME), Mike Kolb (ME), Hank Bair (BUS), Ryan Monahan (BUS), Xiang Tang (ECE), Clay Ungashick (Ind Des)
Faculty Advisor(s): Peter Rogers, Greg Thune, Rich Teynor
Industry Sponsor: FirstBuild
Industry Contact(s): Symon Harrah, Ryan Prince

181 SIAC: TOY ADAPTATION SWITCH
Students: Murphy Amber (COMM), Paul Arters (ME), Jared Artz (BME), Russell Kittel (Ind Des), Eddie Svoboda (ME)
Faculty Advisor(s): Peter Rogers, Richard Teynor
Industry Sponsor: Tony Wells Foundation, Katelyn's Klostet
Industry Contact(s): Tony Wells, Heather Bennett

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182 SPACEX HYPERLOOP COMPETITION
Students: Amanda Belding (EP), Jon Hoge (ME), Hannah Sparks (ME), Sammuel Jennings (MSE), Adam Hodges (MSE), Stephanie Weichel (MSE), Thomas Altic (MSE), Thomas Liu (AE), Adam Davidson (AE), Alex Dorcik (AE), Adam Snow (AE), Jack Toth (AE), Chad Walker (AE)
Faculty Advisor(s): Bob Rhoads, Cliff Whitfield, Allison Polasik
Industry Sponsor: The Ohio State University

183 SUBSEA PIPING MODULE FOR STEM OUTREACH
Students: Aviral Gupta (ME), Danielle Meyer (ECE), Shane Popson (ME), Joshua Robinson (WE), Logan Rohaley (WE), Disha Shah (MIS), Mike Tufts (AG SYS MGMT), Tom Ziebro (ME)
Faculty Advisor(s): Menachem Kimchi, Bob Rhoads, Cliff Whitfield
Industry Sponsor: Subsea Tieback Foundation

184 TORQUE VECTORING IN AGRICULTURAL TRACTORS
Students: Daniel Kleinhenz (ME), Lauren Alman (ECE), Johnny Tang (ECE), Connor Foster (ME), Austin Davis (ME), Michael Twyman, (OP MGMT), Matt Elder (ME)
Faculty Advisor(s): Jerald Brevick, Bob Rhoads, Cliff Whitfield
Industry Sponsor: John Deere
Industry Contact(s): Jacob Lin, Andy Rekow

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199 VESCO ENTERAL FEEDING TUBE PUMP
Students: Nick Martin (ME, ECON, Grad ISE), Shelby Newsad (BIOChM), Nik Shay (ME BS/MS), Carlos Mendez (BME), Roberto Rivera-Colindres (FABE), Nolan Farrell (BME), Jillian Warburton (Ind Des)
Faculty Advisor(s): Richard Teynor, Peter Rogers
Industry Sponsor: Vesco Medical
Industry Contact(s): Chris O'Keefe

200 VOC RECLAMATION
Students: Christine Hennel (ME), Abhisek Rath (ME), Lauren Harris (POLI-SCI), Alex Strayer (ME)
Faculty Advisor(s): David Tomasko, Bob Rhoads, Cliff Whitfield

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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.

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

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