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

8th 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 182 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.

12th Annual Fundamentals of Engineering for Honors (FEH) Research Showcase: FEH nanotechnology projects will also be on display. Thirteen first-year student 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 the collected blood sample and contain nanosized features. The teams will present their research findings.

This year we are privileged to have Gregory S. Moran, SVP and CIO of IT Infrastructure and Operations at Nationwide Mutual Insurance, present the keynote address, Design Thinking for the Future of IT. He joined Nationwide in 2007 and now runs Nationwide’s IT infrastructure and operations, accountable for operations, data centers, network, print and desktop technology. Previously, Greg managed the corporate strategy function for Ford Motor Company and, in an earlier position, managed global application development for Ford. Greg also worked in commercial banking and IT at Bank One (now part of JP Morgan Chase), ultimately reporting to the CEO and designing and implementing the technology components of Bank One’s integration methodology. He started his career at Arthur Andersen, advising clients on strategy and various aspects of information technology. Greg actively supports Junior Achievement, Ohio University College of Business leadership programs and Pelotonia (a cancer research fundraiser in Columbus, OH).

We hope you enjoy learning more about our students and their academic research. Please enjoy the showcase!
11:00 a.m.  Keynote Speaker
Gregory S. Moran  
SVP, CIO IT Infrastructure and Operations  
Nationwide Mutual Insurance  
Ohio Union, U.S. Bank Conference Theater

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

3:00 p.m.  Welcome and Introduction  
Bob Rhoads, Multidisciplinary Capstone Design Program Coordinator

3:05 p.m.  Presentation to Showcase Sponsor  
ArcelorMittal

3:10 p.m.  Remarks  
David L. Tomasko, Associate Dean  
Undergraduate Education & Student Services

3:20 p.m.  Showcase Project Winners Presentations

3:30 p.m.  Closing Remarks  
Bob Rhoads, Multidisciplinary Capstone Design Program Coordinator
12th Annual Fundamentals of Engineering for Honors Research Showcase
Fundamentals of Engineering for Honors Nanotech Cornerstone Projects

1. Students: Luke Brantingham, Justin Han, Gabriella Nicolosi, Michael Petrecca
   Faculty Advisor(s): Paul Clingan

2. Students: Annie Helpling, Jon Jih, Sarah Kearney, Emma Landis-Ashbaugh
   Faculty Advisor(s): Paul Clingan

3. Students: Cary Amling, Alex Balli, Taylor Dittrich, Tyler Young
   Faculty Advisor(s): Paul Clingan

4. Students: Meredith Bailey, Scott Kanta, Kapil Shankaran
   Faculty Advisor(s): Paul Clingan

5. Students: Rohan Casukhela, Danny Flax, Matt Landis, Qinwan Rabbani
   Faculty Advisor(s): Paul Clingan

6. Students: Kaycee Ash, Pearl Chen, Daniel Gardner, Matt Sells
   Faculty Advisor(s): Paul Clingan

7. Students: Glen Hird, Chase Kayrouz, David Kormos, Zach Power
   Faculty Advisor(s): Paul Clingan

8. Students: Matthew Viens, Tony Satroplus, Spandan Shah, Mahnoor Naqvi
   Faculty Advisor(s): Deb Grzybowski

9. Students: Aurko Shaw, Michael Coen, Alexandra Baratucci
   Faculty Advisor(s): Deb Grzybowski

10. Students: Natalie Dalea, Akil Gore, Calvin Schutt, Vyyom Bhooshan Kelkar
    Faculty Advisor(s): Deb Grzybowski

11. Students: Steven Quarin, Nicholas Shirilla, Kathryn Edith Miller, Matt Inniger
    Faculty Advisor(s): Deb Grzybowski

12. Students: Joshua Allen Rawlins, Joseph Adams, Nathaniel Olson
    Faculty Advisor(s): Deb Grzybowski

13. Students: Naman Chamoli, Jayanth Rajan, Yi Wei, Audrey Bezilla
    Faculty Advisor(s): Deb Grzybowski
8th Annual Engineering Capstone Design Showcase
### Student Major Key

<table>
<thead>
<tr>
<th>Code</th>
<th>Major</th>
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<tbody>
<tr>
<td>AE</td>
<td>Aerospace Engineering</td>
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<tr>
<td>ACCT</td>
<td>Accounting</td>
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<td>Agri Bus</td>
<td>Agribusiness</td>
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<td>Arch</td>
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<td>Avia</td>
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<td>BME</td>
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<td>BUG</td>
<td>Business</td>
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<tr>
<td>CBE</td>
<td>Chemical &amp; Biomolecular Engineering</td>
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<td>CEE</td>
<td>Civil &amp; Environmental Engineering</td>
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<td>Chemistry</td>
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<tr>
<td>CIS</td>
<td>Computer Information Systems</td>
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<td>Community Leadership</td>
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<td>CRP</td>
<td>City &amp; Regional Planning</td>
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<td>CSE</td>
<td>Computer Science &amp; Engineering</td>
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<td>CSM</td>
<td>Constructions Systems Management</td>
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<td>ECE</td>
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<td>Food, Agricultural &amp; Biological Engineering</td>
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<td>FDS</td>
<td>Food Science</td>
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<td>FEH</td>
<td>Fundamentals of Engineering for Honors</td>
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<td>FIN</td>
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<td>GES</td>
<td>Geological Sciences</td>
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<td>Industrial Design (Columbus College of Art &amp; Design)</td>
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<tr>
<td>WE</td>
<td>Welding Engineering</td>
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</tbody>
</table>
Computer Science & Engineering

14 Addiction Recovery Support
Students: Suhas Gudhe, CSE; Joseph Hunt, CSE; Gauri Mishra, CSE; Anh-Minh Nguyen, CSE; Jonathan Ruben, CSE
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: The Ohio State University
Industry Contact(s): Brandi Spaulding

15 CameraMD
Students: Colin Allen, CSE; Ashley McPeek, CSE; Brennen Hofecker, CSE; Kyle Shoaf, CSE; Ian Cross, CSE
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: The Ohio State University
Industry Contact(s): Jonathan Barlow

16 ChatZone
Students: Alex Lockhart, CSE; Nicholas Markopoulos, CSE; Nathaniel Lyon, CSE; Joseph Paszczyskowksi, CSE; Cameron Mitchell, CSE
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: Ravi Patel
Industry Contact(s): Ravi Patel

17 Dumbbells and Dragons
Students: Joshua Angelucci, CSE; Blake Williams, CSE; Michael McDonald, CSE; Lisa Lau, CSE; Lizzy Burl, CSE
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: NA
Industry Contact(s): Andrew Yates, Kenneth Rotter, Kyle Trout

18 Foal Score
Students: Priyanka Sadavartia, CSE; Veena Santhoshi Rajasekar, CSE; Paranjay Srivastava, CSE; Vivek Ratnavel Subramanian, CSE
Faculty Advisor(s): Suribabu Jayanti
Industry Sponsor: The Ohio State University College of Veterinary Medicine
Industry Contact(s): Katarzyna Dembek
19 **Helping Women Entrepreneurs**  
Students: Darin Heavilin, CSE; Derek Batey, CSE; Sam Posa, CSE; Protiva Rahman, CSE; Lewis Sandoval, CSE  
Faculty Advisor(s): Suribabu Jayanti  
Industry Sponsor: Marjorie Pugliese  
Industry Contact(s): Marjorie Pugliese

20 **InforMed**  
Students: Tyler Cunnington, CSE; Brindan Jackson, CSE; Wang Bian, CSE; Zak Bowman, CSE  
Faculty Advisor(s): Suribabu Jayanti  
Industry Sponsor: Wellness Forum  
Industry Contact(s): Jay Ramanathan

21 **Honeycomb Hexertainment ~Firewall**  
Students: Jacob Stokley, CSE; Ross Hays, CSE; Camoran Shover, CSE; Taylor Eedy, CSE; Peter Kearns, CSE; Zachary Atwood, CSE; Matthew Mills, CSE  
Faculty Advisor(s): Matthew Boggus  
Industry Sponsor: The Ohio State University  
Industry Contact(s): NA

22 **Possession**  
Students: Dan Carlozzi, CIS; Kevin Li, CSE; Kelsie Freschour, CSE; Chris Deliz, CSE; Peter Ferguson, CSE; John Chumley  
Faculty Advisor(s): Matthew Boggus  
Industry Sponsor: The Ohio State University  
Industry Contact(s): NA

23 **Quantum**  
Students: Isaac Folzenlogen, CSE; Tyler Wolf Leonhardt, CSE; Derek Murphy, CSE; Alex Radebaugh, CSE; Phillip Stone, CSE; Alex Stopar, CSE  
Faculty Advisor(s): Matthew Boggus  
Industry Sponsor: Redbyte Games  
Industry Contact(s): NA
24  **Snow Day**  
Students: Paul Breuler, CSE; Mitchell Loveall, CSE; RJ Kucia, CSE; Alan Thornburg, CSE; Jacob Edelen, CSE  
Faculty Advisor(s): Matthew Boggus  
Industry Sponsor: The Ohio State University  
Industry Contact(s): NA

25  **Tree Huggers**  
Students: Matthew Tatoczenko, CSE; Marshall Williams, CSE; Darren Ng, CSE; Kevin Miller, CSE; Zachary Ison, CSE; Doug Smith, CSE  
Faculty Advisor(s): Matthew Boggus  
Industry Sponsor: The Ohio State University  
Industry Contact(s): NA

26  **OSUsed**  
Students: Sanchit Sindhwani, CSE; Laxmi Anusha Pasagadugula, CSE; Winfred James Jebasingh, CSE; Virinchi Krishna Jalaparti, CSE; Shayoni Das, CSE  
Faculty Advisor(s): Suribabu Jayanti  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Travis Long, Qicheng Kuang

27  **ShopVote**  
Students: Sean Chen, CSE; Feysal Ibrahim, CSE; Evan Schanz, CSE; James Stock, CSE; Boming Zhang, CSE  
Faculty Advisor(s): Suribabu Jayanti  
Industry Sponsor: ShopVote.US  
Industry Contact(s): Mariam Ballout

28  **Timesules**  
Students: Caitlin Vangundy, CSE; Ryan Hipps, CSE; Paul Nessler, CSE; Brian Scheitlin, CSE  
Faculty Advisor(s): Suribabu Jayanti  
Industry Sponsor: Morris Council III, The Ohio State University  
Industry Contact(s): Morris Council
29 **Data Fusion Interface Capstone**  
Students: Marques Mayoras, CSE; Justin Dano, CSE; Brad Myers, CSE; Ty Kuhn, CIS  
Faculty Advisor(s): Moez Chaabouni  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Satyajeet Raje

30 **Honda CAE**  
Students: Justen Meyer, CSE; Adam McKenzie, CSE; Sean Bonnoitt, CSE; Fangzhou Liu, CSE  
Faculty Advisor(s): Moez Chaabouni  
Industry Sponsor: Honda R&D Americas  
Industry Contact(s): Anthony Smith, Duane Detwiler

31 **Interface for Data Annotation**  
Students: Qi Zhou, CSE; Yanjie Li, CSE; Yucheng Yang, CSE; Hongyuan Lu, CSE  
Faculty Advisor(s): Moez Chaabouni  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Satyajeet Raje

32 **Racecast Streaming Platform**  
Students: Drew Nocton, CSE; Ronit Kumar, CSE; Caleb Zaydak, CSE; Cameron Schmidt, CSE  
Faculty Advisor(s): Moez Chaabouni  
Industry Sponsor: RacerConnect  
Industry Contact(s): Tony Kutlu, Brad Henry

33 **Teacher’s Aid**  
Students: Evan Schaffner, CIS; Tebby Thomas, CSE; Holly Yosua, CSE; Jon Kovacic, CSE  
Faculty Advisor(s): Moez Chaabouni  
Industry Sponsor: Brad Henry  
Industry Contact(s): Brad Henry, Mike Jodon
34. **Zembretta IT Staffing Portal**
   Students: Ryan Chu, CSE; Nathan Wright, CSE; Matthew Kane, CSE; Peter Macdonald, CSE
   Faculty Advisor(s): Moez Chaabouni
   Industry Sponsor: The Ohio State University
   Industry Contact(s): Richard Wagner

35. **Biacore Augmented Reality Trainer**
   Students: Ryan Schneider, CSE; Jiasong Sun, CSE; Fan Jiatao, CIS; Li Yuancheng, CIS/Math; Yuanwei Hou, CSE
   Faculty Advisor(s): Bhuvarahamur Narasimhan
   Industry Sponsor: EduTechnologic, LLC
   Industry Contact(s): Brad Henry

36. **Car Wiki Website Project**
   Students: Joshua Kaltman, CSE; Sam Randolph, CIS; Mitch Keith, CSE; Mark Nguyen, CSE; Phil Keselman, CSE
   Faculty Advisor(s): Bhuvarahamur Narasimhan
   Industry Sponsor: Ryan Seetharaman
   Industry Contact(s): Ryan Seetharaman

37. **COPEDS Blackbelt App - [Android and iOS]**
   Students: Ahuti Patra, ECE; Dinesh Ravikumar, ECE; Govind Syamkumar, CSE; Samarth Savanur, CSE
   Faculty Advisor(s): Bhuvarahamur Narasimhan
   Industry Sponsor: COPEDS
   Industry Contact(s): Jennifer Dyer

38. **My Pharmacist Application**
   Students: George Kvaratskhelia, CSE; Christopher Wallace, CSE; August Heinsen, CIS; Matthew Faluotico, CSE; Bradley Hollander, CSE
   Faculty Advisor(s): Bhuvarahamur Narasimhan
   Industry Sponsor: The Ohio State University College of Pharmacy
   Industry Contact(s): Emily Keeler

39. **OSU Wayfinding**
   Students: Jason Sustar, CSE; James Barker, CSE; Gregg Dent, CSE; Ari Telesman, CSE; Joshua Trick, CSE; Thomas Forte, CSE
   Faculty Advisor(s): Bhuvarahamur Narasimhan
   Industry Sponsor: The Ohio State University
   Industry Contact(s): Mark Ruegsegger
40  **Transition to Online (Esmeer)**
Students: Ron Varghese, CSE; Zack Nagaich, CIS; Ian Kropp, CSE; Neil Madsen, CSE; Matt Ritter, CIS
Faculty Advisor(s): Bhuvarahamur Narasimhan
Industry Sponsor: Rachel Nelson, The Ohio State University
Industry Contact(s): Rachel Nelson, Chris Reynolds

**Best in Capstone Design**

41  **App-sessments**
Students: Jason Bray, CSE; Chris Carlson, CSE; Drew Rochowiak, CSE; Jeff Youm, CSE; Charles Reitz, CSE
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: Stephen Page
Industry Contact(s): Stephen Page

42  **Chemilog**
Students: Paul Tela, CSE; Jessica Fleck, CSE; Max Roseman, CSE; Brandon Mills, CSE; Derek DiCillo, CSE
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: Jordan Wamer
Industry Contact(s): Jordan Wamer

43  **IP Address Management System**
Students: Marc Frenger, CSE; Karen Stassen, CSE; Jeff Kikel, CSE; Jeff Treleaven, CSE; Michael Trotto, CSE
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: ArcelorMittal
Industry Contact(s): Phil Thorman

44  **Science Olympiad: Write It Do It**
Students: Nick McKinney, CIS; Paul Anderson, CSE; Alan Weide, CSE; John Schroeder, CSE; Daniel Jaung, CSE
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: Science Olympiad
Industry Contact(s): Alan Chalker, Jennifer Kopach

45  **The ARI Chemistry**
Students: Junshi Wang, CSE; Zhiying Xu, CSE; Jimmy Yi, CSE; Xiaobo Zhang, ECE; Rui Yan, ECE
Faculty Advisor(s): Perumal Ramasamy
Industry Sponsor: The Ohio State University
Industry Contact(s): Brad Henry
Aviation

46 Airshow Team Marketing and Sponsorship
Students: John Ginley, Avia; Allison Dennis, Avia; Thomas Harmon, Avia; Gregory Mayer, Avia; Jonathan Skillman, Avia; Kevin Liszkay, Avia; Sebastian Norgaard, Avia
Faculty Advisor(s): Brian Strzempkowski
Industry Sponsor: OSU Center for Aviation Studies
Industry Contact(s): Brian Strzempkowski

Biomedical Engineering

47 A Highly Adjustable Power Wheelchair Back Support That Supports The Main Pressure Points of The Back With Individual Pads
Students: John Buddenberg, BME; Christopher Wasco, BME; Alexander Weber, BME; Zhengdi Wang, ME; Jiahui Liu, ME; Nicholas Hohman, PT
Faculty Advisor(s): Sandra Metzler, Carmen DiGiovine
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

48 Automotive Pregnancy Shell
Students: Jacquelynn Anderson, BME; Anne Shim, BME; Katie Gradert, BME; Allison Yard, BME
Faculty Advisor(s): Tanya Nocera
Industry Sponsor: Laura VanArsdale
Industry Contact(s): Laura VanArsdale

49 Child Tricycle for Children of Short-Stature
Students: Kelli Mohr, BME; Justin Niese, BME; Allie Guettler, BME; Mary Ann Ginier, ME; Sulaiman Alzarooni, ME; Lisa Bonk, OT
Faculty Advisor(s): Sandra Metzler
Industry Sponsor: The Adaptive Adventure Sports Coalition, Ohio State Department of Occupational Therapy
Industry Contact(s): Pat Tietz, Theresa Berner
50 **Drug Dispersal Device (MedCase)**  
Students: Justin Julian, BME; Lisa Miller, BME; Margaret Cron, BME; Kingsley Nwokelo, BME; Alexander Redrow, ME  
Faculty Advisor(s): Mark Ruegsegger, Paul Jensen  
Industry Sponsor: The Ohio State University Wexner Medical Center  
Industry Contact(s): Paul Jensen

51 **ECG Data Acquisition System for EVA Suits**  
Students: Anirudh Damughatla, BME; Advitiya Mahajan, BME; Bryan Wang, BME; Toshiki Tsuchiya, BME; Hinesh Amin, BME  
Faculty Advisor(s): Mark Ruegsegger  
Industry Sponsor: NASA  
Industry Contact(s): DeVon Griffin, Lisa Hicks

52 **EZGAS**  
Students: Rachel Freese, BME; Melissa Lindsey, BME; Daniel Pohlman, BME; Andrew Bazyk, BME; James Stafford, ME  
Faculty Advisor(s): Mark Ruegsegger, Jim Bott  
Industry Sponsor: The Ohio State University Wexner Medical Center  
Industry Contact(s): NA

53 **Manual Muscle Testing Assistive Device**  
Students: Sarah Hetterscheidt, BME; Chris Kanner, BME; Ross Neville, ME; Zach Totten, BME; Stephen Pavelko, BME  
Faculty Advisor(s): Sandra Metzler, Theresa Berner, Adam Spitznagle, Tanya Nocera  
Industry Sponsor: The Ohio State University  
Industry Contact(s): NA

54 **Menisco Raptor**  
Students: Matt Caspers, ME; Nick Farrar, BME; Kyle Hoffman, BME; Zach Jubak, BME; Benjamin Wissel, BME  
Faculty Advisor(s): Mark Ruegsegger  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Tim Miller
55 **Microcontrol System for Ultrasound Nasal Probe**
Students: Rachel Frederick, BME; Tanisha Kashikar, BME; Colleen Mismas, BME; Chirayu Patel, ME; Pavel Sul, BME
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: Hitachi-Aloka
Industry Contact(s): Randy Baraso

56 **Off-Road Wheelchair Device**
Students: Amy Koehler, ME; Christy Michael, BME; Orion Swanson, BME; Chase Smith, BME; Austin Seigneur, PT
Faculty Advisor(s): Mark Ruegsegger, Sandra Metzler
Industry Sponsor: Flying Horse Farms
Industry Contact(s): Barb Galantowicz

57 **One Arm Drive Manual Wheelchair Propulsion Mechanism**
Students: Matthew Clements, BME; Matthew Korey, BME; Kevin Lie, BME; Michael Rencheck, ME; Samantha Yurjevic, ME; Taylor Duncan, PT
Faculty Advisor(s): Sandra Metzler, Carmen DiGiovine
Industry Sponsor: Martha Morehouse Physical Therapy
Industry Contact(s): Carmen DiGiovine

58 **Patient Mitt**
Students: Ryan Eaton, BME; Spencer Gardner, BME; Nicole Ray, ME; Max Tongtae, BME; Tessa Villers, OT
Faculty Advisor(s): Mark Ruegsegger, Alexandra Borstad
Industry Sponsor: NA
Industry Contact(s): NA

59 **Patient Sling**
Students: Garrett Miskell, ME; Justin Fink, ME; Joe Panos, BME; Robert Mulvey, BME; Brent Baertsche, PT
Faculty Advisor(s): Sandra Metzler, Carmen DiGiovine
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

60 **Red Blood Cell Filtration Device**
Students: Kevin Stephenoff, BME; Hunter Le Corgne, BME; Maxim Armstrong, ME; Isaac Nivar, BME; Jae You Kim, BME
Faculty Advisor(s): Mark Ruegsegger
Industry Sponsor: The Ohio State University Wexner Medical Center
Industry Contact(s): Lynn O’Donnell
61 Sensory Prosthesis
Students: Kyle Berry, ME; Andrew Stryker, ME; Austin Morgan, BME; Jyh-haur Hsu, BME; Daniel Thorson, PT
Faculty Advisor(s): Mark Ruegsegger, Alexandra Borstad
Industry Sponsor: The Ohio State University School of Health and Rehabilitation Sciences
Industry Contact(s): Alexandra Borstad

62 SmartHub: A Personal Fitness Tracking Device for Manual Wheelchair Users
Students: Sarah Shaffer, ME; Lee Nishio, ME; Jad Mubaslat, BME; Kyle Eakins, PT
Faculty Advisor(s): Sandra Metzler, Carmen DiGiovine
Industry Sponsor: The Ohio State University
Industry Contact(s): Mark Ruegsegger

63 Two-Rail Boccia Ramp With Extension
Students: Stephanie Telek, BME; Sean Leahy, ME; Matt Wehrle, ME; Nayan Shah, BME; Stephen Doughten, BME; Kensey Schwieterman, OT
Faculty Advisor(s): Tanya Nocera, Theresa Berner
Industry Sponsor: Franklin Park Indoor Adventure Center
Industry Contact(s): Luke Edelbrock

64 Written Communication Assist Device
Students: Molly Baumann, BME; Jeffery Clark, BME; David Kerslake, BME; John Inkrott, BME; Kevin Metka, ME; Jennifer Wharton, OT
Faculty Advisor(s): Tanya Nocera
Industry Sponsor: The Ohio State University Wexner Medical Center
Industry Contact(s): Kevin Stahr, Theresa Berner
Chemical & Biomolecular Engineering

65 Algae for CO2 Utilization
Students: Alex Chen, CBE; Chelsea Thomas, CBE; Hammdy Beydoun, CBE; Mohannad Hamayel, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: American Electric Power (AEP)
Industry Contact(s): Indrajit Bhattacharya, Matthew Usher, Jeffrey Lehman

66 Magnetic Separation of Algae for Bio-diesel Production
Students: Shirley Zhu, CBE; Alexandria Chen, CBE; Charles Xu, CBE; Mohannad Hamayel, CBE
Faculty Advisor(s): Jeffrey Chalmers
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

67 Climate-Related Impacts on Water Availability at AEP’s Western Power Plants
Students: Merideth Cooper, CBE; Esther Chong, CBE; Alejandra Garcia-Fuentes, CBE; Kevin Nowicki, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: American Electric Power (AEP)
Industry Contact(s): Timothy Lohner

68 Economic Analysis of a Reversible Alkaline Fuel Cell
Students: Bryan Brewer, CBE; Caleb Craig, CBE; Niki Kaufman, CBE; Kate Raferty, CBE
Faculty Advisor(s): David Tomasko
Industry Sponsor: phMatter
Industry Contact(s): Paul Matter

69 Hydrogen Fuel Cell Life Cycle Analysis
Students: Matthew Sands, CBE; Marisa McCaffrey, CBE; Kate Raftery, CBE; Wenhan Jia, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: phMatter
Industry Contact(s): Paul Matter
70  **Ecosystem Services Provided by Forest Land Owned by Eastman Chemical Company**
Students: Jesse Sims, CBE; Michael Denney, CBE; Kevin Stewart, CBE; Xinyu Liu, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Eastman Chemical Company
Industry Contact(s): Rebecca Glaspie

71  **Ecosystem Services: Water**
Students: Mark Zemanek, CBE; Mackenzie Carlson, CBE; Paul Hudson, CBE; Kevin Lin, ME
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Eastman Chemical Company
Industry Contact(s): Rebecca Glaspie

72  **Electrochemical CO2 Reduction**
Students: Mitchell Gower, CBE; Mitchell Anderskow, CBE; Nathan Fischer, CBE
Faculty Advisor(s): Aravind Asthagiri, Bhavik Bakshi
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

73  **Entrotech Adhesive Technology Sustainability Analysis**
Students: Faith Carver, CBE; Josh Brown, CBE; Mark Brooks, CBE; Yitao Zhang, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Entrotech
Industry Contact(s): Dan Lamone

74  **Future Transportation Scenarios**
Students: Yoni Eckmann, CEE; Sam Phillips, CBE; Jonathan Ruffley, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Ford Motor Company
Industry Contact(s): H. Chul Kim

75  **Living Wall System Life Cycle Impact Assessment**
Students: Matthew Ezzo, CBE; Donald Irby, CBE; Steven Miraglia, CBE; Hannah Zierden, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Urban Blooms
Industry Contact(s): Tyler Wolf
76  **Pressure Swing Adsorption for Renewable Energy Applications**  
Students: Jacquelyn Daugherty, CBE; Matthew Ezzo, CBE; Sashi Fernando, CBE; Vince Miller, CBE; Hannah Zierden, CBE  
Faculty Advisor(s): David Tomasko  
Industry Sponsor: Adsorption Research Inc.  
Industry Contact(s): Kent Knaebel

77  **PVB Recycling Using CO2 Based Extraction**  
Students: Victoria Wilson, CBE; Austin Thees, CBE; Frances Lin, CBE; Elise Trachsel, CBE; Deep Shah, CBE  
Faculty Advisor(s): David Tomasko  
Industry Sponsor: The Ohio State University  
Industry Contact(s): Sumant Patankar

78  **Sustainability Assessment of Polyvinyl Butyral Recycling Via CO2-Based Extraction**  
Students: Carl Zanatian, CBE; Tori Wilson, CBE; Bill Cohen, CBE; Abdullah Abahussain, CBE  
Faculty Advisor(s): Bhavik Bakshi  
Industry Sponsor: The Ohio State University  
Industry Contact(s): David Tomasko

79  **Recovery and Purification of Poly Malic Acid**  
Students: Alison Logan, CBE; Jasmine Peters, CBE; Varun Bhuyan, CBE; Michael Betts, CBE  
Faculty Advisor(s): David Tomasko, Chi Cheng  
Industry Sponsor: Dr. Shang-Tian Yang  
Industry Contact(s): NA

80  **Strategies For Extracting Value From Water Use in Photovoltaic Panels**  
Students: Jackelyn Miozzi, CBE; Stephen Salmans, CBE; Jonathan Zinn, CBE; Tapajyoti Ghosh, CBE  
Faculty Advisor(s): Bhavik Bakshi  
Industry Sponsor: The Ohio State University  
Industry Contact(s): NA
81  **Sustainability Assessment and Economic Analysis of a Process for Converting Carbon Dioxide into Methanol**
Students: Jacob Whited, CBE; Andrew Whitman, CBE; Boxiao Zhang, CBE; Stephen Wozniak, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: The Ohio State University
Industry Contact(s): Aravind Asthagiri

82  **Sustainability of Nanocomposite Use in Automobile Lightweighting**
Students: Eric Farell, CBE; Storm Huffaker, CBE; Radhika Madhavan, CBE; Ibrahim Musa, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Ford Motor Company
Industry Contact(s): Hyung Chul Kim

83  **Sustainability Review of Dow Chemical Propionic Acid Fermentation Processes**
Students: Jacob A. Buszek, CBE; Eric Mescher, CBE; Nicholas White, CEE; Xiaoying Zhao, FABE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Dow Chemical Company
Industry Contact(s): Rich Helling, Chris Stowers, Tammy Fukuoka

84  **Sustainability Strategies for Eastman Company**
Students: Liza Dias, CBE; John Applegate, CBE; Shaista Mallik, CBE; Mohammad Hamid, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: Eastman Chemical Company
Industry Contact(s): Rebecca Glaspie

85  **Tesla Gigafactory**
Students: Alison Logan, CBE; Stephanie Kraemer, CBE; Robert Hildebrand, CBE; Bethany Stephens, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: The Ohio State University
Industry Contact(s): Jeffery Chalmers
86 Transmission Right-of-Way (ROW) Vegetation Control
Students: Johnathan Shininger, CBE; Bradley Jordan, CBE; Jasmine Freeman, CBE; Nathaniel Czebatul, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: American Electric Power (AEP)
Industry Contact(s): Tim Lohner

87 Ultra vs. Supercritical Combustion
Students: Stephanie Christel, CBE; Ryan Chesser, CBE; Edmund Hatala, CBE; Keenan McNamara, CBE
Faculty Advisor(s): Bhavik Bakshi
Industry Sponsor: American Electric Power (AEP)
Industry Contact(s): Matthew Usher, Indrajit Bhattacharya, Jeffrey Lehman
Civil & Environmental Engineering

88 CE 4000.02 Capstone Project
Students: Zac Balhorn, CEE; John Baucco, CEE; Anne Carter, FEH; Kevin Chonko, FEH; John O’Neill, FEH
Faculty Advisor(s): John George
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

89 Structural Engineering Capstone/Cornerstone - Covelli Arena Design
Students: Audrey Jennings, CEE; Robyn Marowitz, FEH; Htet Nay, FEH; Collin Paich, FEH; Nick Robison, CEE
Faculty Advisor(s): John George
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

90 Structural Capstone Group B
Students: John Smolarski, CEE; Benjamin Vera Brown, CEE; Jason Morter, CEE; Cole Mertz, CEE; Jonathan Wegener, CEE
Faculty Advisor(s): Mary Ross
Industry Sponsor: The Ohio State University
Industry Contact(s): John George

91 Hap Cremean Water Plant--Ozone and Biologically Active Carbon Upgrades
Students: TBD
Faculty Advisor(s): Linda Weavers
Industry Sponsor: City of Columbus, MWH
Industry Contact(s): Tim Wolfe, Mark Eppich

Best in Capstone Design
Food, Agricultural & Biological Engineering

92 Agricultural Sprayer Nozzle Blockage Detection
Students: Kaley Core, FABE; John Huffman, FABE; Ira Kuenzli, FABE; Ethan Ward, FABE
Faculty Advisor(s): Gonul Kaletunc, David Brumbaugh
Industry Sponsor: Case New Holland Industrial
Industry Contact(s): Scott Shearer, Kevin Richman

93 Aquaponics System for Middle and High School Education
Students: Lianna Costantini, FABE; Benjamin Galun, FABE; Elizabeth Horton, FABE; Ujesh Vora, FABE
Faculty Advisor(s): Gonul Kaletunc
Industry Sponsor: Metro Early College High School
Industry Contact(s): Dorothy Sutton, Andrew Bruening

94 Biomatrix Media Filter for Water Quality Enhancement
Students: Bryce Visnick, FABE; Zac Gillespie, FABE; Laura Lee, FABE; Amir Yousif, FABE
Faculty Advisor(s): Gonul Kaletunc, David Brumbaugh
Industry Sponsor: Franklin Soil and Water Conservation District
Industry Contact(s): Kurt Keljo

95 Ecological Cookstove
Students: Chelsea Dailey, FABE; Steven Hager, ME; Alexandria Dillhoff, FABE; Lindsey Fester, FABE
Faculty Advisor(s): Gonul Kaletunc
Industry Sponsor: El Porvenir/Hamilton Parker/Fortin Ironworks
Industry Contact(s): Rob Bell, Andy Ward, Larry Brown, Clotts Mark, Fortin Dan

96 Floating Islands for Water Quality Improvement
Students: Layne Connolly, FABE; Nicole Cabell, FABE; Danielle Hery, FABE; David Snyder, FABE
Faculty Advisor(s): Gonul Kaletunc, David Brumbaugh
Industry Sponsor: Franklin Soil and Water Conservation District
Industry Contact(s): Kurt Keljo
97 **Mechanical Impedance Sensing for Quantification of Subsoil Compaction**
Students: Shawn Mellor, FABE; Aaron Sollars, FABE; Gary Parriman, FABE; John Rausch, FABE; Garrick Schroeder, FABE
Faculty Advisor(s): Gonul Kaletunc, David Brumbaugh
Industry Sponsor: CNHi
Industry Contact(s): Scott Shearer

98 **Tailgate Design**
Students: Erich Widmer, FABE; John Walter, FABE; Adam Andrews, FABE; Nieto Mauricio, FABE
Faculty Advisor(s): Gonul Kaletunc, David Brumbaugh, Lauren DeCoy
Industry Sponsor: Lochard, Inc.
Industry Contact(s): Tim Kleptz, Austin Black, Lance William, Jeff Mann, Mike Swafford

99 **Yield Monitoring Capstone**
Students: Matthew Karhoff, FABE; Mark Lasch, FABE; Connor McCurren, FABE; Scott Schwieterman, FABE; Christopher Wiegman, FABE
Faculty Advisor(s): Gonul Kaletunc, David Brumbaugh
Industry Sponsor: The Ohio State University
Industry Contact(s): Scott Shearer

100 **Z-Folding of Hemostatic Gauze**
Students: Nicole Hird, FABE; Nicholas Kar, FABE; Julian Orr, FABE
Faculty Advisor(s): Gonul Kaletunc
Industry Sponsor: GenPak Solutions, LLC
Industry Contact(s): Todd Paul, Rob McLaughlin
Industrial & Systems Engineering

101  **Addressing Inpatient Admission Process Times**  
Students: Kartik Malhotra, ISE; Caroline Wallace, ISE; Samone Banks, ISE  
Faculty Advisor(s): Theodore Allen  
Industry Sponsor: The Ohio State University Wexner Medical Center  
Industry Contact(s): Sara Stevenson

102  **E-filing Process Improvement at a Bankruptcy Law Firm**  
Students: Curtis Generous, ISE; Galen Bartlett, ISE; Daniel Livshin, ISE  
Faculty Advisor(s): Theodore Allen  
Industry Sponsor: Manley Deas Kochalski LLC.  
Industry Contact(s): Courtney Olah, Ted Manley

103  **Foreclosure Affidavit Process Improvement Project**  
Students: Katie Strickland, ISE; Thomas Bittlemann, ISE; Kurubel Belay, ISE  
Faculty Advisor(s): Theodore Allen  
Industry Sponsor: Manley Deas Kochalski LLC.  
Industry Contact(s): Ted Manley, Beth Nieman

104  **Improving Campus Event Parking**  
Students: Christina Ochs, ISE; Sarah Jacobsen, ISE; Kiara Eichelberger, ISE  
Faculty Advisor(s): Theodore Allen  
Industry Sponsor: Campus Parc  
Industry Contact(s): Sarah Blouch, Jake Trochelman, Richelle Simonson

105  **Improving Ergonomic Functioning in a Warehouse Environment**  
Students: Samuel Besozzi, ISE; Alex Bartsch, ISE; Matt Hagmeyer, ISE  
Faculty Advisor(s): Theodore Allen  
Industry Sponsor: Columbus Fitness Consultants  
Industry Contact(s): Jerry Greenspan
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<th>Industry Sponsor</th>
<th>Industry Contact(s)</th>
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<td>106</td>
<td>Improving Material Handling and Layout Design</td>
<td>Corey Turner, ISE; Lindsey Twarog, ISE; Jing Yu, ISE</td>
<td>Theodore Allen</td>
<td>Arc Industries</td>
<td>Kurt Schmitter, John DiPietro, Pat Davis</td>
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<td>Improving Queue Time Using Simulation</td>
<td>Maggie Helmreich, ISE; Emily Holloway, ISE; Colleen O’Brien, ISE</td>
<td>Theodore Allen</td>
<td>Jeni’s Splendid Ice Cream</td>
<td>Kinsey Oganowski</td>
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<td>Improving the Conference Room Experience</td>
<td>Bethany Lam, ISE; Aaron Pfeffer, ISE; Ian Smith, ISE</td>
<td>Theodore Allen</td>
<td>Nationwide Insurance</td>
<td>Michael McCaslin</td>
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<td>Improving the Human Resources Onboarding Process</td>
<td>Katherine Keller, ISE; Lauren Malone, ISE; Helen Becker-Smotzer, ISE</td>
<td>Theodore Allen</td>
<td>The Ohio State University Office of the CIO</td>
<td>Laura Palko, Anne Helms, Carissa Moran, Helen Patton</td>
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<td>110</td>
<td>Insurance Call Center Simulation</td>
<td>Joshua Robison, ISE; Logan Johnson, ISE; Sami Taha, ISE</td>
<td>Theodore Allen</td>
<td>Nationwide Insurance</td>
<td>Craig Maas, Michael McCaslm</td>
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<td>111</td>
<td>Process Improvement in Machine Assisted Bagging Procedure</td>
<td>Mary Sours, ISE; Joseph Davis, ISE; Nicholas Bournigal, ISE</td>
<td>Theodore Allen</td>
<td>Arc Industries</td>
<td>Kurt Schmitter</td>
</tr>
</tbody>
</table>
112 Reducing Uncertainty in Pilot Preferential Bidding System
Students: Danielle Zuercher, ISE; Aubrey O’Connell, ISE; Patrick McAllister, ISE
Faculty Advisor(s): Theodore Allen
Industry Sponsor: NetJets, Inc.
Industry Contact(s): Dave Benson

113 Response to Cyber Vulnerabilities
Students: Kelsy Burnette, ISE; Emily Liptow, ISE; Michael Dilenschneider, ISE
Faculty Advisor(s): Theodore Allen
Industry Sponsor: The Ohio State University
Industry Contact(s): Ryan Treptow, Daniel StrUBLE, Joshua Fox

114 Seniority Based Vacation Day Allocation
Students: Megan Cubberley, ISE; Nick Tedesco, ISE; Kyle Woodward, ISE
Faculty Advisor(s): Theodore Allen
Industry Sponsor: NetJets, Inc.
Industry Contact(s): David Benson

115 The Value Proposition of Medical Center Valet Parking
Students: Samantha Strawser, ISE; Christian Lehman, ISE; Kathryn Savako, ISE
Faculty Advisor(s): Theodore Allen
Industry Sponsor: CampusParc
Industry Contact(s): Sarah Blouch

116 Addressing the Ergonomic Risks Experienced by ATM Technicians
Students: Anna McNeeley, ISE; Katherine Kelley, ISE
Faculty Advisor(s): Steven Lavender
Industry Sponsor: Risk International, Diebold Inc.
Industry Contact(s): Philip Renaud, David Willings, William Fletcher, Amy Ransom

117 Design Outreach LifePump Packaging Solutions
Students: Matthew Duplin, ISE; Daniel Reinbolt, ISE; Taylor Luke, ISE
Faculty Advisor(s): Steven Lavender
Industry Sponsor: Design Outreach
Industry Contact(s): Rich Arthur, Greg Bixler
118  **Ergonomic Exploration with Aldi**  
Students: Garry Kupfner, ISE; Spencer Hidy, ISE; Anthony Petrilla, ISE  
Faculty Advisor(s): Steven Lavender  
Industry Sponsor: Aldi  
Industry Contact(s): John Bryant, Lisa Cantrell

119  **Hoisting Human Factors Standards for the Festoon Assembly Work Center**  
Students: Andy Henrich, ISE; Kevin Bolan, ISE; Robbie Schram, ISE  
Faculty Advisor(s): Steven Lavender  
Industry Sponsor: Konecranes  
Industry Contact(s): Mark Muse, John Baxla

120  **Horton Emergency Vehicles Fab/Weld Layout Improvement**  
Students: Bradley Stahl, ISE; Eric Wadlington, ISE; Stephen Eifert, ISE  
Faculty Advisor(s): Steven Lavender  
Industry Sponsor: Horton Emergency Vehicles  
Industry Contact(s): Deven Suthar

121  **Increasing PDQ Process Efficiency**  
Students: Brian Henning, ISE; Madeline Hying, ISE; Philip Wilson, ISE  
Faculty Advisor(s): Steven Lavender  
Industry Sponsor: Advance Auto  
Industry Contact(s): Jenny Long, Amanda Waddle, David Sheffield

122  **Kanban Racking System - Optimizing Parts Storage and Transportation within a Plant**  
Students: Alex Vidziunas, ISE; Daniel George, ISE; Diana Bevington, ISE;  
Faculty Advisor(s): Steven Lavender  
Industry Sponsor: Whirlpool  
Industry Contact(s): Josh Holderman
123  **Optimization of Production Scheduling**  
Students: Taylor Goddard, ISE; Abigail Riley, ISE; Chelsea Shepherd, ISE  
Faculty Advisor(s): Steven Lavender  
Industry Sponsor: Jeni’s Splendid Ice Cream  
Industry Contact(s): Stephanie McBride

124  **Optimizing the Integration of the New Hot-Prep Equipment Used in Making Jeni’s Splendid Ice Cream**  
Students: Daniel Graeff, ISE; William Schumacher, ISE  
Faculty Advisor(s): Steven Lavender  
Industry Sponsor: Jeni’s Splendid Ice Cream  
Industry Contact(s): Stephanie McBride

125  **Redesign of the Konecranes Chain Hoist Assembly Process**  
Students: Matthew Dorrington, ISE; Jason Linger, ISE; Nicholas Miller, ISE  
Faculty Advisor(s): Steven Lavender  
Industry Sponsor: Konecranes  
Industry Contact(s): Martin Egan

126  **Value Stream Mapping of the ECO Process**  
Students: Nathan Hartley, ISE; Matthew Bauman, ISE; Robert Samaniego, ISE  
Faculty Advisor(s): Steven Lavender  
Industry Sponsor: Hendrickson  
Industry Contact(s): Sam Sather, Sam White, Melissa Meddles
Industrial & Systems Engineering (Lean Sigma)

127  (Part 1) Increasing the Monthly Billed Amount & (Part 2) Re-engineering the Closure Process to be at Least 70%
Students: Samuel Sugara, ISE
Faculty Advisor(s): Scott Sink
Industry Sponsor: Amethyst Inc.
Industry Contact(s): Amy Tomaszewski, Terry Moore

128  Accurate Data Capture of Hospitalization and ER Events to Implement Interventions
Students: Tori Carpenter, ISE
Faculty Advisor(s): Scott Sink
Industry Sponsor: National Church Residences
Industry Contact(s): Erica Drewry

129  DENSO Quality Improvement for Honda North American Business
Students: Patrick O’Dougherty, ISE
Faculty Advisor(s): Scott Sink
Industry Sponsor: DENSO International America, Inc
Industry Contact(s): Michael Beuerlein

130  Developing a Process to Improve Sutphen’s Inventory Management
Students: Jordan Casteel, ISE
Faculty Advisor(s): Scott Sink
Industry Sponsor: Sutphen Corporation
Industry Contact(s): Jon Corsetti

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131  Development and Deployment of a Measurement and Analysis System and Improved P-D-S-A Principles
Students: Nils Petersen, ISE
Faculty Advisor(s): Scott Sink
Industry Sponsor: Verizon
Industry Contact(s): Freddie Matson
132 Engineering Happiness Hours in Healthcare  
Students: Weston Kondik, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: The Ohio State University Wexner Medical Center  
Industry Contact(s): Valery Tarver, Linda Wellington

133 Grange Insurance: Increasing Work Efficiency Within the Personal Lines UDS Edit Processes  
Students: Nicholas Woo, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Grange Insurance  
Industry Contact(s): Amy Tomaszewski

134 Improving Flow & Productivity in Walmart’s DC Pick Module  
Students: Nathan Boucher, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Walmart  
Industry Contact(s): Herman Funderburk, Theresa Simpson, Carolyn Bryant, Richard George, Nick Zychowicz

135 Improving OEE Through Waste Reduction at Abbott Nutrition  
Students: Cody McCullough, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Abbott Nutrition  
Industry Contact(s): Dhuey Cronk

136 Improving the Performance of Rod’s Order Fulfillment Business Process  
Students: Kristin Bruggeman, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Rod’s Western Wear  
Industry Contact(s): Scott Hartle

137 Improving the Resolution Process  
Students: Harrison Zucker, ISE  
Faculty Advisor(s): Scott Sink  
Industry Sponsor: Huntington National Bank  
Industry Contact(s): Jeannie Raymond, Bill Michael
Increasing Mettler Toledo Technician Utilization in Order to Ensure Customer Satisfaction with Service Order Fulfillment Time and Quality
Students: Ortega Aldo, ISE
Faculty Advisor(s): Scott Sink
Industry Sponsor: Mettler Toledo
Industry Contact(s): Stephanie Viehman, Matt Wilson, Eric Miller

Janitorial Inventory & Process Optimization
Students: Yifan Chen, ISE
Faculty Advisor(s): Scott Sink
Industry Sponsor: The Ohio State University Purchasing, Receiving, Storage and Mailing
Industry Contact(s): Shawn Jones

Order Fulfillment Satisfaction Assurance
Students: Michelle Jamil, ISE
Faculty Advisor(s): Scott Sink
Industry Sponsor: Donatos
Industry Contact(s): Cheryl Bergsman, Bryan Mangerchine

Shoe Bronzing Process Improvement Project
Students: Pin Shang, ISE
Faculty Advisor(s): Scott Sink
Industry Sponsor: The Bron Shoe Company
Industry Contact(s): NA

Target FDC GPM and RR Optimization
Students: Bret Mayer, ISE
Faculty Advisor(s): Scott Sink
Industry Sponsor: Target
Industry Contact(s): Greg Miller
Materials Science & Engineering

143  **Aluminum Alloy Design for Enhanced Ductility**  
Students: Kelsey Scherer, MSE; Patrick McSharar, MSE  
Faculty Advisor(s): Patricia Morris, Alan Luo  
Industry Sponsor: The Ohio State University  
Industry Contact(s): NA

144  **Computational Microstructure Sensitive Design of Dendrite Reinforced Bulk Metallic Glass Composites**  
Students: Chuanzhe Hu, MSE; Xuejun Huang, MSE; Fang Wan, MSE  
Faculty Advisor(s): Patricia Morris, Wolfgang Windl, Stephen Niezgoda  
Industry Sponsor: Air Force Office of Scientific Research  
Industry Contact(s): NA

145  **Dual Phase Nano-Composite Pt-GDC Membrane for O2 Separation on Flat Support**  
Students: Yi Zhou, MSE  
Faculty Advisor(s): Patricia Morris, Hendrik Verweij  
Industry Sponsor: The Ohio State University  
Industry Contact(s): NA

146  **Dynamic C-Ring or U-Bend Apparatus for SCC Testing**  
Students: Jake Phlipot, MSE; Sarah Tomecko, MSE; Kyle Van Krevel, MSE  
Faculty Advisor(s): Patricia Morris, Gerald Frankel  
Industry Sponsor: DNV GL  
Industry Contact(s): Sandeep Chawla

*Best in Capstone Design*

147  **Evaluation of Intergranular Corrosion of Stainless Steel Atomizer Nozzles**  
Students: Colin Ridgeway, MSE; Ryan Surface, MSE; Zi Yang, MSE  
Faculty Advisor(s): Patricia Morris, Gerald Frankel  
Industry Sponsor: Parker-Hannifin  
Industry Contact(s): Peter Ditzel
148  Gas-Sensing Properties of Metal Oxide Nanostructured Heterojunctions
Students: Chengzhi Jin, MSE
Faculty Advisor(s): Patricia Morris, Sheikh Akbar
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

149  Hydroxyapatite (HA) Coating on TiO2 Nanofibrous Surface Leading to Adhesive Mechanical Testing
Students: Bryce Mikol, MSE; Richard Chiang, MSE; Brandon Gregoire, MSE
Faculty Advisor(s): Patricia Morris, Sheikh Akbar, Michael Mills
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

150  Investigation of Photocatalysis on InGaN Nanowires
Students: Jacob Boyer, MSE; Chao Yang, MSE
Faculty Advisor(s): Patricia Morris, Tyler Grassman
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

151  Mechanical Testing and Characterization of Single Crystals and Polycrystals of Ni Base Superalloys
Students: Kevin Hardesty, MSE; Xinmiao Du, MSE
Faculty Advisor(s): Patricia Morris, Michael Mills
Industry Sponsor: GE Aviation
Industry Contact(s): Timothy Smith (GRA)

152  Nernst Effect Thermoelectric Generator
Students: Kevin Krymowski, MSE; Nicholas Sulewski, MSE
Faculty Advisor(s): Patricia Morris, Roberto Myers
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

153  New Inoculation Technique and Biaxial Strain Device
Students: Stephanie Jue, MSE; Kimberly Lachell, MSE; Devan Ohst, MSE; Holly Wendell, MSE
Faculty Advisor(s): Patricia Morris, Heather Powell
Industry Sponsor: The Ohio State University
Industry Contact(s): NA
154 Shape Memory Alloys and Architecture: An Active-Passive Shelter
Students: Edwin Cross, MSE; Mark Maltese, MSE; James Snyder, MSE; Sarah Montague, Arch; Cameron Lucas, Arch; Corey Phelps, Arch
Faculty Advisor(s): Patricia Morris, Peter Anderson, Justin Diles
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

155 Surface Coating of Hydroxyapatite on TiO2 Nanofibrous Surfaces for Orthopaedic Implants
Students: Benson Jung, MSE; Frank Ryan, MSE; Kaveh Sanaei, MSE
Faculty Advisor(s): Patricia Morris, Sheikh Akbar
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

156 The Viability of Nanofiber Capsules as a Long-Term Contraceptive in Feral Animal Populations
Students: Cameron Reese, MSE; Sarah Fuchs, MSE
Faculty Advisor(s): Patricia Morris, John Lannutti, Francisco Chaparro
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

157 Thermal Design of a Cryocooled Superconducting MgB2 Persistent Switch
Students: Michael Oswald, MSE; John Fleming, MSE; Jacob Archer, MSE
Faculty Advisor(s): Patricia Morris, Michael Sumption
Industry Sponsor: The Ohio State University
Industry Contact(s): NA

158 Weld Overlay Dilution Estimation Vs. Corrosion Resistance
Students: Branden Houck, MSE; Jeremy Isler, MSE; Yixing Shen, MSE; Emeric Suma, WE; Evan O'Brien, WE
Faculty Advisor(s): Patricia Morris, Boian Alexandrov, Gerald Frankel
Industry Sponsor: Shell/AZZ
Industry Contact(s): Jorge Penso, Darren Barborak
Mechanical Engineering (Industry)

159  **Design of Dynamically ‘Tuned’ Elastomeric Components for Road Noise Mitigation**
Students: Jason Jia, ME; Benjamin Kee, ME; Chao Xu, ME; Cody Marcantonio, ME
Faculty Advisor(s): Scott Noll, Rajendra Singh
Industry Sponsor: Honda R&D Americas
Industry Contact(s): Allen Sheldon

160  **Development of a Novel Method to Monitor the ‘In-Situ’ Accessory Belt Drive Tension**
Students: Nicholas Morris, ME; Dane Powell, ME; Ross Powell, ME; Kyle Sherman, ME; Tyler Woolard, ME
Faculty Advisor(s): Scott Noll, Rajendra Singh
Industry Sponsor: Honda R&D Americas
Industry Contact(s): Allen Sheldon

161  **Elastomeric Bushing and Suspension Layout Tuning for Improved Ride and Handling Performance**
Students: Clayton Gergel, ME; Nathan Hankins, ME; Carolyn Johnson, ME; Thomas Kyer, ME; Sijie Yu, ME
Faculty Advisor(s): Jason Dreyer
Industry Sponsor: Honda R&D Americas, Inc./NSF I/UCRC Smart Vehicle Concepts Center
Industry Contact(s): Allen Sheldon, Charlie Gagliano

162  **Shock Absorber Design for Improved Vehicle Ride and Handling Performance**
Students: Matthew Gold, ME; Ali Jamali, ME; Nathan LeVay, ME; Adam Saleh, ME; Kyle Wellmerling, ME
Faculty Advisor(s): Jason Dreyer
Industry Sponsor: Honda R&D Americas, Inc./NSF I/UCRC Smart Vehicle Concepts Center
Industry Contact(s): Allen Sheldon, Charlie Gagliano
Mechanical Engineering (Product Design)

163 Assistive Walking Device
Students: Allison Hamilton, ME; Katherine Jastal, ME; Amanda McLaughlin, ME; L’Nard Tufts, ME
Faculty Advisor(s): Blaine Lilly, Annie Abell
Industry Sponsor: NA
Industry Contact(s): NA

164 Food Preparation
Students: Molly Bennett, ME; Netsanet Chevers, ME; Colleen Croyle, ME; Nate Duxbury, ME
Faculty Advisor(s): Blaine Lilly, Annie Abell
Industry Sponsor: Mid-Ohio Foodbank
Industry Contact(s): Amy Headings, Kerry McCarthy

165 Pivot Pedal - Bicycle Attachment
Students: Bradley Barber, ME; William Moore, ME; Andrew Dressler, ME
Faculty Advisor(s): Blaine Lilly, Annie Abell
Industry Sponsor: NA
Industry Contact(s): NA

166 Simply Elegant Disposal
Students: Alexandra Claytor, CBE; Patriya Wiesmann, ME; Leah Milosh, ME; Christine Bromley, ME
Faculty Advisor(s): Blaine Lilly, Annie Abell
Industry Sponsor: NA
Industry Contact(s): NA

167 Southwest Cargo Hold Assistance
Students: Joseph Wilson, ME; James Bossart III, ME; Joseph Stanley, ME; Stephen Alaimo, ME
Faculty Advisor(s): Blaine Lilly, Annie Abell
Industry Sponsor: The Ohio State University
Industry Contact(s): NA
168  **Temporary Food Storage**  
Students: Christopher Metzler, ME; Kate Franks, ME; Matt Brant, ME; Joey McEnery, ME  
Faculty Advisor(s): Blaine Lilly, Annie Abell  
Industry Sponsor: Mid-Ohio Foodbank  
Industry Contact(s): Amy Headings, Kerry McCarthy

169  **Wheelchair Ramp Accessory**  
Students: Phillip Dakhnovets, ME; Aweis Hassan, ME; Jonny Moshiri, ME; Hamed AlGendy, ME  
Faculty Advisor(s): Blaine Lilly, Annie Abell  
Industry Sponsor: The Ohio State University  
Industry Contact(s): NA
Mechanical Engineering (Student Design Competition)

170 Advanced Powertrain Development
Students: Zach Bringman, ME; Parker Cole, ME; Bob Sadinski, ME; Derek Riddle, ME
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: Motorsports Capstone
Industry Contact(s): NA

171 got daq?
Students: Cameron Titus, ME; William Hoile, ME; Ryan Ebstein, ME
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: Motorsports Capstone
Industry Contact(s): NA

172 Ohio State EcoCAR 3 Energy Storage System Design
Students: Thomas Brown, ME; Jonathan Grace, ME; Adam Hipp, ME
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: Motorsports Capstone
Industry Contact(s): NA

173 Variable Stiffness Sway Bar System
Students: Logan Gardner, ME; Eric Frantz, ME; Kevin Dale, ME
Faculty Advisor(s): Shawn Midlam-Mohler
Industry Sponsor: Motorsports Capstone
Industry Contact(s): NA
Multidisciplinary Design

174  **Auld Technology Capstone Project**  
Students: Claire McCormick, ISE; Michael Sawka, ME; Eliab Moore, ME; Cecilia Rodriguez, ISE; Jenna Galleta, CBE  
Faculty Advisor(s): Peter Rogers  
Industry Sponsor: Auld Technology  
Industry Contact(s): Elizabeth Jutte

175  **Car Seat Sound Measurement and Analysis**  
Students: Matthew Smyke, BME; Hannah Borton, SpHr; Evan Hucek, ME; Eric Barbe, ME; Abdulrahman Awadi, ECE  
Faculty Advisor(s): Clifford Whitfield  
Industry Sponsor: TS Tech Americas  
Industry Contact(s): Eric Dennis

176  **Coltene: Bulk Fill Composite**  
Students: Nick Stephans, BME; Caitlin Kiracofe, BME; Sarah Bushman, MSE; Alaine Wetli, MSE; Hayden Boehlefeld, MSE; Rajani Dummermuth, SOC  
Faculty Advisor(s): Scott Shricker, John Lannutti, Bob Rhoads  
Industry Sponsor: Coltene  
Industry Contact(s): Mark Anderson

177  **Cooper Tires Friction Tester**  
Students: Brian Neilon, ME; Nick Voyzey, EP; Eric Sessler, ME  
Faculty Advisor(s): Brian Harper, Clifford Whitfield  
Industry Sponsor: Cooper Tires  
Industry Contact(s): Alex Trazkovich

178  **Ergonomic Improvements for the Distribution of Nuclear Pharmaceuticals**  
Students: Daniel Bland, ME; Benjamin Wetzel, ME; Divya Mahadevan, PSY; Hillary Hall, FDS; Tom Wheeler, Ind Des (CCAD); Jessica Salazar, ISE  
Faculty Advisor(s): Gary Allread, Peter Rogers  
Industry Sponsor: Cardinal Health  
Industry Contact(s): Randy Kuhner
179 Exito Labs
Students: Courtney Carraher, ME; Bill Chuirazzi, EP; Gabriella Ciccola, PSY; Nick Johnson, ME; Aakrit Sanghera, ME
Faculty Advisor(s): Bob Rhoads
Industry Sponsor: The Ohio State University
Industry Contact(s): Kevin Passino, Betty Lise Anderson

180 Fiberglass Rebar Splices
Students: Sirui Li, CHEM; Allison Marcotte, MSE; Chelsea Thomas, CBE; William Myers, MSE
Faculty Advisor(s): Alison Polasik, Bob Rhoads
Industry Sponsor: Dayton Superior
Industry Contact(s): Kevin Zhang

181 Front Axle Baffle Tank Design
Students: Mike Gertz, MSE; Zak Kloenne, MSE; Chad Kroplin, ME; Chase Sanders, ME; Stephanie Treiss, ME
Faculty Advisor(s): Bob Rhoads
Industry Sponsor: John Deere
Industry Contact(s): Jacob Lin, Matthew Kiser

182 GM Foundation - Car Top Carrier Design
Students: Abigayle Boslett, ACCT; Nicklaus Connor, ME; Brian Karns, ME; Steven Scherer, AE; Ben Wagner, AE;
Pengkai Xia, ECON
Faculty Advisor(s): Clifford Whitfield
Industry Sponsor: The General Motors Foundation/TotalSim USA
Industry Contact(s): Greg Padgett

183 High Pressure and High Temperature Applications of Elastomers - Interdisciplinary Capstone Project
Students: Prashanth Peketi, MSE; Taylor Angle, CBE; Alejandra Garcia-Fuentes, CBE; Dustin Lee, MSE
Faculty Advisor(s): David Tomasko, Clifford Whitfield
Industry Sponsor: Cameron
Industry Contact(s): Xuming Chen, Hamid Salem
184 Honda CAE Materials Database Phase 2
Students: Randall Languis, MSE; Kevin Principi, MSE; Nick Schweickart, MSE; Jake Harris, EP
Faculty Advisor(s): Alan Luo, Clifford Whitfield
Industry Sponsor: Honda R&D Americas
Industry Contact(s): Anthony Smith, Duane Detwiler

185 Honda Fuel Tank, Phase III
Students: Heather Hemker, ME; McClaskey Elisabeth, ME; Markus Miller, ME; Zachary Newell, ME
Faculty Advisor(s): Paul Clingan, Clifford Whitfield
Industry Sponsor: Honda R&D Americas
Industry Contact(s): Kellen Beauchesne

186 Honduras Sustainable Housing
Students: Jeff Kremer, ME; Tyler Wasserman, ME; Jacqueline Mills, GES; Brittany Boyer, FABE; Megan Jones, ACCT; Kelsey Rumburg, BUG; Trent Fagrell, CSM; Warren Ashton, CSM
Faculty Advisor(s): Howard Greene, Clifford Whitfield
Industry Sponsor: World Gospel Mission
Industry Contact(s): Larry Overholt, Angie Overholt

187 Hot Steel Slab Measurement
Students: Sam Taylor, ME; Julia Kramer, ME; Ashley Simpson, ME; Tim Lamprey, ME; Justin Darding, BUG
Faculty Advisor(s): Bob Rhoads
Industry Sponsor: ArcelorMittal
Industry Contact(s): TJ Harrah

188 Improvement of a Visually-Guided Urinary Catheterization System
Students: Constantine Nicolozakes, BME; Gordie Hammond, BME; Dana DiFranco, ME; Wei Li, FIN; Marcus Hamilton, Ind Des (CCAD); Oscar Garcia, Ind Des (CCAD)
Faculty Advisor(s): Peter Rogers, Gregory Thune
Industry Sponsor: eNNOVEA
Industry Contact(s): Christopher O'Keefe, Megan Hieber
189  **John Deere 3 Point Hitch Draft Control**
Students: Rahul Chitalia, ME; Kevin Hoang, ECE; Jack Manofsky, ME; Seth Bullock, ME
Faculty Advisor(s): Krista Kecskemety, Bob Rhoads
Industry Sponsor: John Deere
Industry Contact(s): Jacob Lin, Andrew Tilkes, Samuel Harris

190  **Redesign of Street Luge Sled**
Students: Steven Fry, AAE; Dino Celli, AAE; Travis Murray, EP; Vince Kitsmiller, EP; Thomas Barnum, HS
Faculty Advisor(s): Clifford Whitfield
Industry Sponsor: Dean USA
Industry Contact(s): David Dean

191  **Snowville Creamery Capstone Project**
Students: Elizabeth Johnson, FABE; Chloe Huang, FABE; Zifeng Deng, CBE; John Weber, ME
Faculty Advisor(s): Dennis Heldman, Bob Rhoads
Industry Sponsor: Snowville Creamery
Industry Contact(s): Warren Taylor

192  **Subsea Tieback Foundation Capstone**
Students: Katie Daehn, MSE; Katrina Boos, MSE; Ryan Girard, WE; Kyle Ellison, WE; David Vallo, ME; Nate Baggs, ME
Faculty Advisor(s): Menachem Kimchi, Bob Rhoads
Industry Sponsor: Subsea Tieback Foundation
Industry Contact(s): Pat Boster

193  **Technical Development Trainer**
Students: Eric Tchen, ME; Jonathan Arledge, ME; David Perkins, ME; Jacob Meyer, ME
Faculty Advisor(s): Jerald Brevick, Clifford Whitfield
Industry Sponsor: Honda North America, Inc.
Industry Contact(s): Jerry Maynard, Mark Schmid, Bud Baringer, Joe Farquharson, Jeff Garlock
194 **CampusParc - Parking App Capstone**
Students: David Little, Ind Des (CCAD); Shane Reed, Ind Des (CCAD); Richard McDaniel, GIS; Alexander Davidson, ComLdr; Beth Paulsen, CRP; Dan Boberek, CRP; Daniel Low-Pitroff, BUG
Faculty Advisor(s): Peter Rogers
Industry Sponsor: CampusParc
Industry Contact(s): Sarah Blouch

195 **Elmer’s Flow Innovation Test System**
Students: Elisha Glass, Agri Bus; Justin Letts, ME; Mohamad Mohamad, CBE, EP; Sam Story, Ind Des (CCAD); Erin Taylor, ME; Nathaniel Welton, Ind Des (CCAD)
Faculty Advisor(s): Peter Rogers, Gregory Thune
Industry Sponsor: Elmer’s Products, Inc.
Industry Contact(s): James Chomic, Shawn Heipp, Greg Hood, Ted Mayberry
Engineering Capstone Design Program

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

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

**Bob Rhoads**  
Multidisciplinary Capstone Design Program Coordinator  
Engineering Education Innovation Center  
614-292-9340  
rhoads.2@osu.edu

**Dr. Peter Rogers**  
Professor of Practice  
Biomedical Engineering  
Social Innovation and Commercialization Director  
Engineering Education Innovation Center  
614-579-3462  
rogers.693@osu.edu

**Dr. Cliff Whitfield**  
Assistant Professor of Practice  
Mechanical and Aerospace Engineering  
Engineering Education Innovation Center  
614-292-4257  
whitfield.22@osu.edu
Engineering Education Innovation Center

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.

The center provides academic, personal, and professional activities that are designed to supplement the undergraduate experience both inside and outside the classroom. In addition, the EEIC 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 http://eeic.osu.edu or contact:

Dr. Ann Christy
Interim Director
Engineering Education Innovation Center
Associate Professor
Food, Agricultural, and Biological Engineering
614-292-0573
christy.14@osu.edu
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The committee would also like to show its appreciation for the students who are involved with the projects displayed today.
Engineering Design Showcase Committee

Bob Rhoads  
Multidisciplinary Capstone Program Coordinator  
Engineering Education Innovation Center

Jacob Allenstein  
Graduate Teaching Associate  
Aerospace Engineering  
Engineering Education Innovation Center

Emily Callahan  
Office Associate  
Engineering Education Innovation Center

Candi Clevenger  
Marketing & Communications Coordinator  
College of Engineering

Paul Clingan  
Sr. Lecturer  
Engineering Education Innovation Center

Dr. Deb Grzybowski  
Assistant Professor of Practice  
Chemical and Biomolecular Engineering  
Engineering Education Innovation Center

Sally Lindeboom  
Program Assistant  
Engineering Education Innovation Center

Dr. Cliff Whitfield  
Assistant Professor of Practice  
Mechanical and Aerospace Engineering  
Engineering Education Innovation Center
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