



OPUS COLLEGE OF ENGINEERING

# Design Day

May 2, 2025



OPUS

College of Engineering

MARQUETTE UNIVERSITY

Dear Opus College of Engineering Community:



Welcome to our tenth annual Design Day, a celebration of the design and innovation that goes on throughout the Opus College of Engineering. I look forward to this event each year and the excitement it brings to our building.

Design Day is not only about recognizing the hard work our students have put into their projects over the past year, but it is just as much about celebrating how they have grown as innovators. I believe that with the right mindset and the curiosity to learn, we can all lead innovative projects that will create real, new value and solve some of the world's most pressing problems.

Each year I am proud to see that at the heart of all our student design projects, is a desire to deliver meaningful change. This year's projects continue to deliver on that. As you walk through Engineering Hall, you will see senior, first year, and other course-related design projects on display. I hope you will take a moment to talk with our students and hear more about their work. I am confident that you, too, will be inspired by what you learn.

On behalf of our students, I would like to thank our many generous senior design project sponsors, as well as our college faculty and staff. Without you, this day would not be possible.

Thank you for joining us to celebrate another great year of hard work, innovation, and the students who are already setting our world on fire.

Sincerely,  
**Kristina Ropella, Ph.D.**  
Opus Dean – Opus College of Engineering  
Marquette University

Oral Presentations			Posters/Demos		
	Rm. 136	Rm. 236	Rm. 323	Lower Level, Levels 1 & 2	
8:00-8:30			<b>CCEE Senior Design</b>		8:00-8:30
8:30-9:00		<b>BIEN Senior Design</b>			8:30-9:00
9:00-9:30					9:00-9:30
9:30-10:00	ELEN/COEN Senior Design				9:30-10:00
10:00-10:30	<b>MEEN Senior Design</b>			10:00-10:30	
10:30-11:00				10:30-11:00	
11:00-11:30				11:00-11:30	
11:30-12:00				11:30-12:00	
12:00-12:30	<b>Keynote* Marmon Holdings Inc.</b>			12:00-12:30	
12:30-1:00				12:30-1:00	
1:00-1:30	<b>MEEN Senior Design</b>	<b>BIEN Senior Design</b>	<b>CCEE Senior Design</b>		1:00-1:30
1:30-2:00					1:30-2:00
2:00-2:30					2:00-2:30
2:30-3:00					2:30-3:00
3:00-3:30					3:00-3:30
3:30-4:00					3:30-4:00
4:00-4:30				<b>GEEN Poster Exhibit &amp; Competition (Levels 1 and 2)</b>	4:00-4:30
4:30-5:00					4:30-5:00

\*12:00-1:00pm: Lunch will be available for keynote attendees

# **Design Projects**

## **Poster Exhibits and Competitions**

**12:00 p.m. – 1:30 p.m.**

### **Biomedical Engineering (BIEN) Poster Exhibit and Competition Levels 1 and 2**

This session will include 16 posters from engineering students enrolled in BIEN 1110. This year's design project tasked students with designing and constructing a user-friendly assistive device to empower individuals with limited hand dexterity to enhance their ability to perform daily tasks and improve their quality of life.

**1:30 p.m. – 3:00 p.m.**

### **Student-Led Design and Course Projects Lower Level, Levels 1 and 2**

#### **Student-Led Projects**

- Engineers without Borders (EWB) – Cruz Chich and Chumisa Water Treatment & Distribution System

#### **Course Projects**

- Introduction to Programming
- Digital Signal Processing
- Networks and Security

**3:30 p.m. – 5:00 p.m.**

### **General Engineering (GEEN) Poster Exhibit and Competition Levels 1 and 2**

This session will include posters and mock-ups/prototypes from 16 design teams of new engineering students enrolled in GEEN 1210. The theme of these projects is Water and Energy Sustainability.

## **Keynote Presentation** **12:00 to 1:00 p.m.**

### **Don't Let Anyone Talk You into Average – Career and Mentorship Advice from a Marmon Holdings Executive**

**Engineering Hall 136**

**Jeff Stupar, Vice President of Innovation – Industrial Products Group  
Marmon Holdings Inc. | A Berkshire Hathaway Company**



#### **Abstract**

Jeff Stupar is a hands-on R&D leader and chemical engineer who's all about turning great ideas into real-world products. With a strong background in plastics materials and a passion for innovation, he's spent years developing new tech and bringing it to market—building patents and pulling together the right teams to make it all happen. At Marmon, he leads teams creating next-gen products that solve real problems for customers. He's big on listening first, working fast, and keeping things practical. He also launched an intern program that's helped young engineers kick off their careers—because he knows the next big ideas will come from fresh perspectives.

He's here to share some of what he's learned and maybe spark some ideas for where your engineering journey could take you next.

# Biomedical Engineering Senior Design Projects

## Engineering Hall 236

**9:30-10:00**

### **Device to Control Fluid Delivery to Children with Swallowing Difficulties**

Clinical Advisors ..... A. Morgan, C. Schindler, J. Schnell, Children's Wisconsin  
Faculty Advisor: ..... J. Goldberg  
Team Members: ..... S. Cascella, M. Kenny, N. Voglewede, I. Zabel, L. Montanari  
MIAD Partners: ..... A. Nadrasik, W. Gates

**10:00-10:30**

### **Device to Determine Volume of Air Delivered with AMBU Bag Ventilation**

Sponsor: ..... J. Tumalak, Marquette University School of Nursing  
Faculty Advisor: ..... G. Garcia  
Team Members: ..... A. Limon, M. Marquez, L. McCullough, F. Nuguid, R. Steffens

**10:30-11:00**

### **Bladder Emptying Device for Animal Spinal Cord Injury (SCI) Research**

Sponsor and  
Faculty Advisor: ..... J. Hokanson  
Team Members: ..... M. Bochnak, D. Garcia-Avila, B. Vizcaino Guzman, G. Peterson

**11:00-11:30**

### **Remote Safety Testing of Portable Imaging Equipment**

Sponsor: ..... D.J. Quam, GE HealthCare  
Faculty Advisor: ..... L. Fan  
Team Members: ..... A. Linder, M. Gamble, Z. Khan, M. Clayton

**11:30-12:00**                      **Development of a Novel Adaptive Toy for Children with Sensory Motor Challenges**

Sponsor: ..... V. Bjelic, Penfield Children's  
Faculty Advisor: ..... M. Erickson  
Team Members: ..... M. Filer, B. Bolz, P. Harrill, S. Riter, S. Peragine  
MIAD Partners: ..... L. Moris, N. Chung, C. Thomas

**1:00-1:30**                      **Battery-Powered Infant Ventilator for Low-Income Countries**

Sponsor and  
Faculty Advisor: ..... L. Olson  
Team Members: ..... M. Kim, K. Rule, A. Healey, T. Butler, D. Fore  
MIAD Partners: ..... J. Clayton, H. Houts, J. Hansen

**1:30-2:00**                      **System to Alert Healthcare Providers and FDA of Imaging Findings Related to Drug Side Effects**

Sponsor: ..... A. Barrington  
Faculty Advisor: ..... T. Sippel Schmidt  
Team Members: ..... N. Rios, J. Torres, J. Nordan, D. Mingo

**2:00-2:30**                      **Design and Fabrication of an Aquatic Landscape for Turtles Undergoing Rehabilitation**

Sponsor: ..... L. Rice, Wildlife in Need Center (WINC), Oconomowoc, WI  
Clinical Advisor: ..... D. Neumann, MU Physical Therapy  
Faculty Advisor: ..... S. Beardsley  
Team Members: ..... A. Fons, I. Koeppen, J. Albert, R. Iskra, C. Seyfarth

**2:30-3:00**                      **Tubeless/Wireless Monitoring of Arterial Blood Pressure**

Sponsor and  
Clinical Advisor: ..... J. Patel, Medical College of Wisconsin  
Faculty Advisor: ..... S. Audi  
Team Members: ..... A. Gunter, J. Kelly, K. Imanzi, P. Bohnart  
MIAD Partners: ..... C. Briones, L. Mathew, A. Keebler

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**Confidential Project**

Faculty Advisor: ..... B. Yu  
Team Members: ..... E. Raschke, J. Flores, M. Schlaefler, H. Jamiola

# Civil, Construction, and Environmental Engineering Senior Design Projects

## Engineering Hall 323

**8:00-8:40**

### **Arthur Ave Resurfacing**

Mentor Organization: ..... R. A. Smith

Lead Mentor: ..... A. Stasiukevicius, P.E.

Associated mentors: ..... J. Bruggeman, P.E., A. Utic, P.E., C. White, P.E.,  
J. Diekfuss, PhD, P.E. (P4 Infrastructure)

Team Members: ..... C. Olson, J. Perez, M. Montoya, S. Signorella

**8:40 to 9:20**

### **ARCO Design/Build Project**

Sponsor: ..... ARCO Design/Build

Mentors: ..... J. Stefan and I. O'Mahoney

Team Members: ..... C. Carlson, E. Mitchell, J. Owens, S. Molek, T. Nichols

**9:20 to 10:00**

### **Southeast Area Combined Sewer Improvements Phase 2**

Sponsor: ..... Strand Associates

Mentors: ..... C. Bolle and N. Wellenstein

Team Members: ..... A. McDonald, C. Carrillo, R. Pancotto, T. Staples

**10:00-10:40**

### **New Construction on Existing Conditions – Findorff (in MARVL)**

Sponsor: ..... J.H. Findorff and Son, Inc

Mentors: ..... M. Stern and K. Hanan

Team Members: ..... E. Smetana, J. Blaine, J. Mains, T. O'Regan

**10:40-11:20**

### **400 South Olympic Multimodal**

Sponsor: ..... City of Salk Lake

Mentor: ..... M. Sizemore

Team Members: ..... B. Lubeley, E. Fraser, M. Gallagher, S. Swinney



**1:00-1:40**                      **Urban Redevelopment of Environmentally Impacted Site**  
Mentor Organization: ..... The Sigma Group  
Mentors: ..... Z. Meyer and C. Trautschold  
Team Members: ..... I. Struebing, K. Borem, M. Madureira Deboni, M. Audi,  
N. DeGrazia

**1:40-2:20**                      **Connecting the Campus**  
Sponsor: ..... HGA  
Mentors: ..... M. Zak, L. Knapp, G. Corbett, D. Foren  
Team Members: ..... A. Arnieri, J. Cieslewicz, V. Salvador, Z. Johnson

## **Computer and Electrical Engineering Senior Design Projects**

### **Engineering Hall 136**

**9:30-10:00**                      **Plantelligence Smart Plant Monitoring System**  
Sponsor: ..... A. Crosby, WEM Automation  
Faculty Advisor: ..... C. Ababei  
Team Members: ..... K. Bebej, A. Borst, A. Esposito, K. Land, X. Mejia, N. Mika  
MIAD Partners: ..... O. Tetzlaff, T. Waters

# Mechanical Engineering Senior Design Projects

## Engineering Hall 136

**10:00-10:30**

### **InnoVapor**

Sponsor: ..... Marquette University

Faculty Advisor: ..... S. Singer

Team Members: ..... M. Figueroa Hernandez, A. Jennings, N. Samaniego, M. Scott,  
R. Zenke, A. Zizzo

**10:30-11:00**

### **Elephant Repeller**

Sponsor: ..... Marquette University

Faculty Advisor: ..... V. Cariapa

Team Members: ..... K. Coss, A. Feehan, J. Martin, A. Moses, B. Nguyen, T. Stevens

**11:00-11:30**

### **Buoy for Nautical Weather Data Collection System**

Sponsor: ..... Marquette University/Mast and MCSC

Faculty Advisor: ..... A. Bowman

Team Members: ..... I. Horder, I. Kaisner, J. Rovin, C. Seidl

**11:30-12:00**

### **Remote Nautical Weather Data Collection System**

Sponsor: ..... Marquette University/Mast and MCSC

Faculty Advisor: ..... A. Bowman

Team Members: ..... A. LoFaro, E. O'Rourke, A. Paulus, E. Whalen, A. Winklosky

**1:00-1:30**

### **Marquette Aerospace and Robotic Systems**

Sponsors: ..... Ramirez Family Foundation, Komatsu, Wisconsin Space Grant Consortium, Hernandez Family Construction LLC, El Rey Foods, J. Mercado Agency, Inc. American Family Insurance, FRC Team 1732 Hilltopper Robotics and Marquette University

Faculty Advisors: ..... P. Voglewede and S. Cash.

Team Members: ..... B. Castro, J. Cruz-Guzman, C. Davila, O. Hernandez, O. Ibarra, M. Mische, M. Rivera, O. Rivera Templos, A. Samuelson, N. Yah

**1:30-2:00****Low-cost Hydration Device**

Sponsor: ..... Marquette University and Self-funded

Faculty Advisor: ..... V. Cariapa

Team Members: ..... A. Alzamli, Z. Anderson, G. Del Rosario, C. Engebretson, R. Guo,  
B. O'Bryan, J. Ryan

MIAD Partners: ..... A. Rosas, A. Schaus

**2:00-2:30****Marquette Eagle Racing Drivetrain**

Sponsor: ..... Marquette University

Faculty Advisor: ..... A. Dempsey

Team Members: ..... J. Ament, B. Basulto, B. Boxall, C. Horaitis, C. Lang, D. Rodriguez,  
W. Rooke, C. Sersen, P. Shemroske  
**Confidential Projects****Project 1**

Sponsor: ..... Husco

Faculty Advisor: ..... J. Schimmels

Team Members: ..... K. Dillon, D. Dominy, H. Frank, W. Gottschalk, P. Schulte

**Project 2**

Sponsor: ..... Sentry Corp.

Faculty Advisor: ..... A. Bowman

Team Members: ..... C. Abenth, G. Conlon, J. Lundberg, K. Opp

**Project 3**

Sponsor: ..... V. Moss, Strattec Corp.

Faculty Advisor: ..... C. Allen

Team Members: ..... B. Carty, J. Faber, A. Ochoa

**Project 4**

Sponsor: ..... Marquette University

Faculty Advisor: ..... V. Cariapa

Team Members: ..... A. Cave, D. Gardetto, L. Gustafson, N. Hirsch, J. Martin, Q. Nguyen

# Dear Graduating Seniors,

Congratulations on your upcoming graduation!

We in the Opus College of Engineering have watched you transform from freshman engineering students into dedicated, ethical, and mission-driven engineers with a desire to serve others.

Allow this mission to guide you and remain open to continued growth and transformation. You are the difference; go forth and set the world on fire.

We know that your career will benefit from the same commitment and effort that you devoted to your academic work.

We wish you the best!

Warmest Regards,  
Opus College of Engineering Faculty and Staff



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