



College of Eng

MARQUETTE UNIVERSITY

MESSAGE FROM THE DEAN

Dear Opus College of Engineering Community:

Welcome to our seventh 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 deliver on that, too.

As you walk through Engineering Hall, you will see senior, freshman, and 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'm 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

BIOMEDICAL ENGINEERING
SENIOR DESIGN PROJECT ORAL PRESENTATIONS
ROOM 136/236

SESSION A: ROOM 136

9:00-9:30 Otoscope for Telemedicine Applications*
 Clinical Advisor: A. Costello, Marquette University College of Nursing
 Faculty Advisor: S. Beardsley
 Team Members: S. Allen
 J. Contreras Saavedra
 G. Martinez
 C. Duong
 C. McFarlin
 MIAD Partners: H. Anderson
 E. Udovich

9:30-10:00 Activity Center to Engage Child with Disabilities*
 Clinical Advisor: M. Houser, Menominee Falls School District
 Faculty Advisor: F. Pintar
 Team Members: L. Becker
 A. Bilyeu
 C. Smith
 A. Hruz
 M. Cote
 MIAD Partners: R. Sell
 M. Xing

10:00-10:30 Device to Clean Teeth and Remove Plaque*
 Clinical Advisor: A. Bedran-Russo, Marquette University School of Dentistry
 Faculty Advisor: J. Goldberg
 Team Members: G. Rohde
 A. Thome
 O. Lutz
 A. Onufer
 E. Volk
 MIAD Partners: G. Race
 J. Ingle

10:30-11:00 Adaptive Gaming Technology Mounting System*
 Sponsor: C. Hege, eClusion, Milwaukee, WI
 Faculty Advisor: B. Silver-Thorn
 Team Members: A. Puchalski
 Z. Hadzima
 D. Trimboli
 A. Richards
 J. McCarty
 MIAD Partners: D. Streff
 C. Dixon

11:00-11:30 Mobile Health Solution for Remotely Evaluating
 Motor Function
 Sponsor: S. Nemanich, Department of Occupational Therapy,
 Marquette University
 Faculty Advisor: T. Onushko
 Team Members: K. Piper
 S. Ernst
 E. Lammers
 S. Sawalhi
 R. Cutlan

11:30-12:00 O₂ Saturation Monitor for Telemedicine Applications*
 Clinical Advisor: A. Costello, Marquette University College of Nursing
 Faculty Advisor: D. Cook
 Team Members: J. P. Gomez Postigo
 A. Doll
 M. Bradley
 C. Jaworski
 A. Mead
 MIAD Partners: P. Hartis
 B. Cole

1:00-1:30 Model for Teaching Fluid Dynamics of
 Physiological Processes
 Sponsor: M. Vigil, Department of Physics, Marquette University
 Faculty Advisor: B. Tefft
 Team Members: A. Byrne
 A. Carani
 J. Eddinger
 C. Rogozinski
 B. Carlson

*Supported by R25 EB013070 from the National Institute of Biomedical Imaging and Bioengineering.

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4:00-4:30 Device to Improve Balance in Patients with
Neurological Disorders
Sponsor: B. Schmit
Faculty Advisor: B. Schmit
Team Members: M. Boehm
B. Dirmish
E. Haag
B. Kloehn
N. Ragonese

CONFIDENTIAL PROJECTS

Project 1
Sponsor: GE Healthcare, Waukesha, WI
Faculty Advisor: J. Goldberg
Team Members: J. Grosz
A. Maradiaga
J. Selkirk
K. Steuer

Project 2*
Clinical Advisors: R. Chun, S. Shay, Medical College of Wisconsin,

11:00-11:30 WEAR (WE Energies Augmented Reality) Inspection Assistance
Sponsor: D. Nestler, WE Energies
Faculty Advisor: M. Trawicki
Team Members: M. Awadallah
A. Beugnet
N. Broeski
A. Simon
R. Yang

11:30-12:00 A Complete Tool for Analyzing and Detecting Cascading Failures in Electric Power Grids
Sponsor: M. Hayat, Marquette University Opus College of Engineering and Marquette Energy Analytics
Faculty Advisor: M. Hayat
Team Members: N. Arns
B. Nenninger
J. Popp
K. Povinelli
C. Sustar

1:00-1:30 Satellite Networks Communication Simulation
Sponsor: J. Gao, Marquette University Opus College of Engineering
Faculty Advisor: J. Gao
Team Members: J. Bielinski
R. Gray
A. Huynh
N. Lutz
N. Schaller

1:30-2:00 Privio Website Metamask Backend
Sponsor: D. Hudetz, Privio
Faculty Advisor: M. Trawicki
Team Members: D. Faye
J. George
R. Gonzalez
J. Jacob
S. Torti

2:00-2:30 Potentiostatic Battery Cell Tester
Sponsor: A. Spaulding, Milwaukee Tool
Faculty Advisor: M. Trawicki
Team Members: M. Alvarez
B. Angiolo
Z. Bishop
A. DeFelippis
S. Gonzalez

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11:00-11:30 AM Drexel Avenue Reconstruction
Sponsor: R. A. Smith
Lead Mentor: A. Stasiukevicius
Other mentors: J. Bruggeman; A. Axt, J. Diekfuss (P4 Infrastructure)
Team Members: T. Garcia Guarneros
P. Tennant
N. Jackson
I. Luevano

11:30-12:00 Rainworks Challenge
Mentor: W. McDonald, Marquette University Opus College of Engineering
Team Members: Z. Meyer
M. Weltzien
J. Zwiefelhofer
J. Branca
A. Kimmet

1:00-1:30 Marquette University College of Business Administration

Sponsor: Fing1d (Fing1d (Fing1d (Fiud p6S 1:00-1:30)Tj /Span<</ActualText<FEFF0009>>> BDC ()Tj MC ern 0 Td (Fing1d (Fin -12 -1.333 Td [(T)80 (eam Members:)
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MECHANICAL ENGINEERING
SENIOR DESIGN PROJECT ORAL PRESENTATIONS
ROOM 128

9:00-9:30 A Low-cost Stethoscope for Developing Countries
Sponsor: Marquette University Opus College of Engineering
Faculty Advisor: V. Cariapa
Team Members: A. Beyer
 B. Bouwhuis
 J. Kozin
 O. Miller
 M. Olding
 J. Salas

9:30-10:00 A 4-bar Linkage for Studying Dynamics Efficiently
Sponsor: Marquette University Opus College of Engineering
Faculty Advisor: R. Crowley
Team Members: C. Dorn
 N. Halaseh
 J. Strohbeck

10:00-10:30 NASA Mars Lunabotics 2022
Sponsor: NASA, Wisconsin Space Grant Consortium
Faculty Advisor: P. Voglewede
Team Members: T. Carrasco
 B. Charles
 C. Hohl
 P. Larkin
 J. Listowski
 E. Marinic
 C. Piszczek
 J. Podhola
 J. Stinehart
 A. Yakisan

10:30-11:00 Low-cost Water Purifier for Developing Countries
Sponsor: Marquette University Opus College of Engineering
Faculty Advisor: V. Cariapa
Team Members: G. Beltran
 W. Cruz
 C. Lindsay
 F. San Andres Aquado
 J. Weiss

11:00-11:30 Rocket for Exploring Biomedical Research at an
Altitude of 10,000 Feet
Sponsor: Marquette University Opus College of Engineering
Faculty Advisor: A. Bowman
Team Members: S. Keller
 C. Martinez
 P. Naumann
 W. Nikolay
 T. Mark
 Z. Thompson

11:30-12:00 Collapsible Bicycle
Sponsor: Marquette University Opus College of Engineering
Faculty Advisor: A. Murray
Team Members: J. Aguirre
 T. Mertes
 D. Skaff
 T. Winger
 A. Zulfer

1:00-1:30 Designing Devices to Protect Toddlers
Sponsor: Marquette University Opus College of Engineering
Faculty Advisor: V. Cariapa
Team Members: E. Catalan
 J. Locy
 Z. Martin
 B. Stevenson
 D. Tabares-Zamaro

1:30-2:00 An Exoskeleton that Assists Humans in Performing Difficult
Physical Tasks
Sponsor: Marquette University Opus College of Engineering and student-teachers
Faculty Advisor: V. Cariapa
Team Members: D. Czapla
 J. Foley
 N. Palomino
 D. Schumann
 A. Walker

2:00-2:30 A High Pressure, High Flow Rate, Movable Test Station
Sponsor: Sentry Equipment Corporation
Faculty Advisor: A. Bowman
Team Members: G. Bascunansimone
 L. Chun
 B. Iling
 S. Monroy
 E. Romaniz

