



Team KRO

1:00 PM Team Members: Zachary Shelton (RE), Molly O'Toole (ME), Nolan Benson (MfgET, EET, & Mechatronics), Charles Kleiman (Mechatronics), Beck Tapert (RE & CE)

Faculty Advisor: Prof. Jim Devaprasad

Company: LSSU

Industrial Contacts: Dr. Edoardo Sarda

Project Description: Team KRO, KUKA Robotics Optimizer, has incorporated new features in LSSU's 4-robot KUKA line. These features include newly implemented safety devices, integration of advanced KUKA robotics software, and utilization of modern end-of-arm robot tooling. The team has also completed an exciting final demonstration of the line utilizing these features. The outcome of this project will be used in four LSSU robotics classes, as well as for showcasing the education provided by LSSU Robotics.



Team SCRAPE

1:30 PM Team Members: Damian Cook (CE), Jack Izzard (ME), Ryan Reiniche (ME), Bethany Roberts (MfgET), Ian Sweet (CE), Riley Traver (MfgET)

Faculty Advisor: Dr. David Baumann

Company: Smithers MSE (Brimley, MI)

Industrial Contacts: Eric Pierce

Project Description: Team SCRAPE worked closely with Smithers Winter Testing Center (SWTC) to develop a device that measures the shear and compression characteristics of a compacted snow surface that is defined by various ASTM standards. SWTC's current measurement methods are inconsistent and hard to repeat, therefore Team SCRAPE has automated these methods to reduce error and provide repeatable data to better characterize their compacted snow surface.



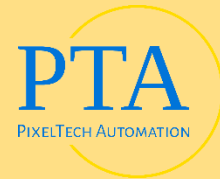
Team SOD

2:00 PM Team Members: Morgan Kelly (ME), Emily Hagelthorn (ME), Andrew Heiny (ME), Omar Nobani (EE), Dustin Mangone (CE)

Faculty Advisor: Dr. Robert Hildebrand

Company: LSSU

Project Description: Team SOD, (Systems for Object Detection) is an internal research project tasked with validating a previous hypothesis that underground objects/voids can be detected from a horizontal distance using surface waves. The team has performed digital simulations and created a physical testing apparatus to validate the hypothesis given by observing the interaction between the surface waves and an object/void placed at different distances and depths within the simulations/apparatus.



Team PTA

2:30 PM Team Members: Ryan Keup (EE), Andrew Hamilton (ME & RE), Josiah Matuzak (RE), Scott Vacek (MfgET), Kaaleb Ranta (RE)

Faculty Advisor: Dr. Masoud Zarepoor

Company: ASO Safety Solutions (Landing, NJ)

Industrial Contacts: Simon Rockel

Project Description: Team PTA has modified a robotic cell for ASO Safety Solutions with the purpose of picking and placing double-sided stickers onto a metal sheet that will be used in the production of safety-rated pressure mats. The modifications include the development on a new end of arm tool, improving the design, testing, and debugging of the current system in order to create a reliable robotic cell that will enhance the current process for ASO Safety Solutions



Team APTAS

3:00 PM Team Members: Leo Dudeck (ME), Carter Stark (EE), Nathan Demers (MfgET), Dominic Pucci (CE), Jeremy Misiak (ME)

Faculty Advisor: Dr. Zakaria Mahmud

Company: JR Automation (Auburn Hills, MI)

Industrial Contacts: Mark Compton

Project Description: Team APTAS has designed and built a compact, automatic bagel slicer and toaster for industrial kitchens. The user-friendly device features an interface for custom toasting and is constructed from food-grade, easy-to-clean materials. The device is safe to operate and fits on a typical kitchen countertop. Both mechanical and electrical specifications align with industrial standards.



Team SSS

3:30 PM Team Members: Steve Clifton (CE & RE), Júlia Fraile Ratón (MfgET), Drew Hulse (ME & RE), Derek Postma (RE), Joe Stone (EE)

Faculty Advisor: Dr. Paul Weber

Company: Soo Locks Children's Museum & LSSU

Industrial Contacts: Dr. Raquel Fernandez-Earns & Interim Dean Mindy McCready

Project Description: Team SSS, Superior Slapshot Systems, developed multiple ice hockey shooting systems to track the power and accuracy of each shot. These systems will be used as a game for children and prospective students, as well as used for training the collegiate ice hockey teams on campus. The systems are using microcontrollers for the vision system to obtain the data from each shot.



Team AMORE

4:00 PM Team Members: Michael Goldenbogen (CE & RE), Chase Jannetta (ME & RE), Collin Pajot (Mechatronics), Nikolas Curlett (EE), Ryan Houck (RE)

Faculty Advisor: Dr. Edoardo Sarda

Company: LSSU

Industrial Contacts: Dr. Travis Moscicki, Mario Miranda, Xavier Vicent Navarro, Zach Kassuba

Project Description: Team Autonomous Maritime Operations & Robotics Engineering (AMORE) has developed a mobile water quality monitoring system, utilizing an Unmanned Surface Vehicle (USV). Team AMORE has integrated: a new propulsion system consisting of two additional thrusters, a water quality sensor and mechatronics on the USV. The USV is capable of sampling water quality data in different bodies of water at specific GPS coordinates, through both remote control and autonomous navigation.

Senior Design Projects

All of the Lake Superior State University senior engineering and engineering technology bachelor's students are required to complete a challenging senior design project. The students work in multidisciplinary teams and use a composite of their technical and general education courses to successfully complete these projects.

2023-24 Senior Projects Faculty Board

This group serves as advisors, overseers, and guides to help the teams through their overall process:

Joe Moening (Chair), David Baumann, Trevor Bryant, Jim Devaprasad, Robert Hildebrand, Edo Sarda, Ron Throener, Paul Weber, and Masoud Zarepoor

Special thanks to Becca Kilponen

The School of Engineering & Technology comprises:

- Computer Engineering
 - Electrical Eng. Technology
 - Electrical Engineering
 - Manufacturing Eng. Technology
 - Mechanical Engineering
 - **Mechatronics (New)**
 - Robotics Engineering
- lssu.edu/mechatronics



ROBOTICS ENGINEERING DEGREE
LAKE SUPERIOR STATE UNIVERSITY
[LSSU.edu/Robotics](https://lssu.edu/Robotics)



Welcome to the School of Engineering & Technology

Presentation / Demonstration Schedule

Team KRO	1:00 / 1:30 PM
Team SCRAPE	1:30 / 2:00 PM
Team SOD	2:00 / 2:30 PM
Team PTA	2:30 / 3:00 PM
Team APTAS	3:00 / 3:30 PM
Team SSS	3:30 / 4:00 PM
Team AMORE	4:00 / 5:00 PM

Presentations will be in CASET Room 212

Students will be available throughout the afternoon for informal demonstrations and questions.



For more information about LSSU's School of Engineering & Technology
www.lssu.edu/eng or 906-635-2207

The School of Engineering & Technology

presents the

Class of 2024



Senior Design Project Presentations & Demonstrations

Friday May 3

1:00 – 5:30 PM

in the

Center for Applied Science and Engineering Technology

Presentations: lssu.zoom.us/j/98470091861
Demonstrations: lssu.zoom.us/j/91897689643