



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 multi-disciplinary teams and use a composite of their technical and general education courses to successfully complete these projects.

Senior Projects Faculty Board

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

Joe Moening (Chair), Eric Becks, Trevor Bryant, Jim Devaprasad, Robert Hildebrand, David Leach, Zakaria Mahmud, Edo Sarda, Ron Throener, and Masoud Zarepoor

Special thanks to Laura Moening

The School of Engineering & Technology comprises:

- Computer Engineering
- Electrical Engineering
- Mechanical Engineering
- Robotics Engineering
- Electrical Eng Technology
- Manufacturing Eng Technology



**ROBOTICS
ENGINEERING
DEGREE**

LAKE SUPERIOR STATE UNIVERSITY
LSSU.edu/Robotics



Welcome to the School of Engineering & Technology

Presentation Schedule

CART	1:00
UPA	1:30
ARC	2:00
MARLA	2:30
SOS	3:00
AFT	3:30
MAAP	4:00

All presentations via Zoom

<https://lssu.zoom.us/j/671082524>



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 2020



Engineering Senior Design Project Presentations

Friday • May 1, 2020
1:00 p.m. – 4:30 p.m.
via Zoom

<https://lssu.zoom.us/j/671082524>



Team CART

Team Members: Casey Murphy (ME), Joseph Dutcher (CE), Michael Nesburg (CE), Mitchell Mannarino (EE), Wyatt Jarvis (MET)

Faculty Advisor: Prof. Jim Devaprasad

Company: Lake Superior State University

Industrial Contact: Dr. Edoardo Sarda

1:00

Project Description: Team Collaborative Automation Robotics Technology (CART) will be pursuing the completion of a collaborative robot workcell for LSSU to safely illustrate the benefits of human-robot collaboration. Tasks include completion of a mobile robot platform, integration of an innovative robot hand, design and build of an integrated workcell, and the creation of exciting demonstrations and lab exercises. The project will enhance LSSU's engineering curriculum in the expanding robotics market.



Upper Peninsula Automation

Team UPA

Team Members: Aaron Heath (ME), Craig Jenkins (CE), Don Straw (ME), Dylan Richards (EET), Harrison Smith (CE), Neill Fesko (ME)

Faculty Advisor: Dr. Edoardo Sarda

Company: 4D Systems (Flint Township, MI)

Industrial Contacts: Philip Nicholson and Brett Newill

1:30

Project Description: Team Upper Peninsula Automation (UPA) is tasked with creating a prototype mobile robotic cell for 4D Systems to show the capabilities and benefits of integrating complex software into robotic systems. These software solutions consist of live data tracking of production statistics (such as quality and quantity of products) and implementing Assisted Reality visuals to display information corresponding to the data collected.



Team ARC

Team Members: Benjamin Zbytowski (ME), Daniel Foix (CE), Mitchell Scott (ME), Trenten Johns (MET), Wyatt Fremlin (ME)

Faculty Advisor: Prof. David Leach

Company: ACME Manufacturing (Auburn Hills, MI)

Industrial Contacts: Rob Thornton and Ryan Kruger

2:00

Project Description: Team Automated Robotic Contouring (ARC) has been tasked to develop a laboratory robotic automation cell. The cell will employ a machine vision system to capture and digitize 3D contoured work piece surfaces. The surface data will be auto-generated into tool paths for a Fanuc robot arm, simulating ACME's robotic surface sanding process. The lab cell will determine feasibility of the technology for production use, with the goal of increasing production capability while reducing set-up time.



Team MARLA

Team Members: Angelo Vitali (CE), Kent Barlow (CE), Miles Munro (MET), Preston Fairchild (EE), Justine Weber (GS), Lucas Burk (ME)

Faculty Advisor: Dr. Edoardo Sarda

Company: Lake Superior State University

Industrial Contact: Prof. Jim Devaprasad

2:30

Project Description: Team Mobile & Autonomous Robotic Lab Applications (MARLA) has been tasked to establish a semester of lab experiences to be taught in the Mobile Robotics class and to make demonstrations showcasing LSSU's mobile robotics capability. The main focus of the labs will be programming mobile robots (Turtlebot3's) while learning the Robot Operating System (ROS) format using Linux computers. Areas of interest for research include: swarm control, autonomy, and traffic control.



SUPERIOR OPTICAL SOLUTIONS

Team SOS

Team Members: Cameron Young (ME), Eden LaTulip (CE), Elliott Lyons (EE), Sarah Beardsley (ME), Tristan Bressler (CE)

Faculty Advisor: Mr. Eric Becks

Company: Nexteer Automotive (Saginaw, MI)

Industrial Contacts: Tim Bennett, Fred Berg, and Pat Fallon

3:00

Project Description: Team Superior Optical Solutions (SOS) is creating a portable gantry solution, which will utilize a high-end machine vision system for the alignment of steering column test fixtures which will replace Nexteer Automotive's current manual measurement technique.



Team AFT

Team Members: Alex Graham (ME), Alyssa Fossen (MET), David Isham (MET), Jesus Serrano (EE), Roger Ayers (ME), Gibson Kramer (ME)

Faculty Advisor: Dr. Masoud Zarepoor

Company: Textron Aviation (Wichita, KS)

Industrial Contact: Ben Woods

3:30

Project Description: Textron Aviation is creating an automated assembly line for the manufacturing of airplane wings. Team Aviation Fastener Technologies (AFT) will be designing, fabricating, and testing a prototype of an automated fastener delivery system. The system will be mounted to the end of a robot arm and will deliver various types of fasteners into pre-drilled holes of an airplane wing and will be controlled with a Programmable Logic Controller (PLC).



Team MAAP

Team Members: Chase Meehan (ME), Kyle Brandman (MET), Mitchell LeVasseur (EE), Nathan Arend (MET), Noah Pearson (ME)

Faculty Advisor: Dr. Robert Hildebrand

Company: Millbrook Revolutionary Engineering (Livonia, MI)

Industrial Contact: Robert Camp

4:00

Project Description: Team Millbrook Accelerator Actuator Prototype (MAAP) will be designing and building an accelerator actuator prototype to be used for noise, vibration and harshness (NVH) chassis dyno testing.