

MIE Project Sponsorship Opportunities

Industry Sponsorship Benefits

These projects present an opportunity to:

- Introduce new concepts into your organization (e.g., optimization to reduce production time, simulation to compare various scheduling alternatives, Lean Manufacturing practices, data visualization and analytics)
- Attain significant improvements to your organization
- Identify bright, future engineers who will soon enter the workforce
- Access expertise of our faculty members who interact closely with the student teams and are at the forefront of their fields.
- Provide a low-stress, low-risk environment for employees to refine their project management skills and/or learn to use specific equipment and software.
- Support community and educational outreach as an integral part of your business plan.

For more ideas on how to make the most out of your sponsorship, check out the American Journal of Engineering Education article: [Industrial Sponsor Perspective on Leveraging Capstone Design Projects to Enhance their Business.](#)

Industry Sponsorship Expectations

1. **At least one semester ahead:** Capstone project proposal (~1 page)
 - a. Define project in as much detail as possible
 - b. Identify available data and personnel to support project
 - c. Specify expected deliverables
 - d. \$5k commitment to capstone program
 - e. See timeline at the end of this document for proposal submission details.
2. **During the semester:** Regular meetings (bi-weekly is encouraged)
 - a. Students provide project updates to sponsor, ask questions and request information
 - b. Sponsor provides feedback, ensuring engineering assumptions are appropriate and in alignment with next steps
3. **End of semester:** Project deliverables
 - a. Students will provide a written report and presentation, as well as any prototypes (algorithms, designs, physical) they complete
 - b. Students present their work at the public end-of-semester project design showcase. Sponsor is encouraged to attend (and judge if interested).

Project Requests for Spring 2022

Mechanical Engineering Capstone Projects

(if interested in sponsoring, please contact Jim Lagrant jlagrant@umass.edu)

What makes a good Mechanical Engineering Capstone Project?

- The projects should be of high potential value to your organization, typically something you want to do, but you do not have the resources or knowledge to do yourself.
 - It is NOT a pressing need for your organization

- What topics and tasks would be appropriate?
 - Conversion of existing process to industry 4.0 standards.
 - New sensors, operator interface, etc.
 - Use of augmented reality for operator training
 - Application of machine learning and AI to process data.
 - Automation of manual processes via collaborative robots.
 - Design and fabrication of processing or inspection fixtures
 - Ergonomic improvements to assembly and fabrication cells
 - Purpose-built assembly, test, and/or feeding devices
 - Assistive technology / Universal design
 - Green energy / energy use reduction

Sample Projects can be found on the MIE website: <https://mie.umass.edu/fall-2021-senior-capstone-design>

1. Programmable fish jigging rig
 - Deliverables: Fabricated prototype with single-axis stepper control

2. Clamshell emptying device
 - Deliverables: Prototype with 2 axes of motion control

3. Dual track treadmill
 - Deliverables: Design and fabrication of treadmill sub-assemblies to be integrated into larger research system

4. Wind turbine emulator
 - Deliverables: Working prototype device capable of applying a thrust, weight, and torque to the top of a miniature wind turbine tower to simulate the forces that a wind turbine's base would experience.

Engineering Management Capstone Projects

(if interested in sponsoring, please contact Ana Muriel muriel@umass.edu)

What makes a good Engineering Management Capstone Project?

- The projects should be of high potential value to your organization, typically something you want to do, but you do not have the resources or knowledge to do yourself.
 - It is NOT a pressing need for your organization
- What topics and tasks would be appropriate?
 - A case study of a past project or program to identify strengths and weaknesses and provide recommendations for the future.
 - Analysis of a potential project or program to determine if it is of value to pursue.
 - A case study of a current process to look for opportunities for improvement.
 - Any project that uses the students' diverse skills in project management, engineering project budgeting and finance, systems thinking, leadership, innovation, entrepreneurship, decision analysis, production planning, operations management, supply chain management and optimization.

Sample Projects

1. Evaluation of recently completed project:
 - Analysis of costs, resources, and timing to determine what worked well and what did not.
2. Assessment of new products or features:
 - Study of a new feature or product that the firm is considering to bring to market to determine if there is customer interest (are we really solving a customer problem or a perceived customer problem?)
3. Process analysis and improvement:
 - Mapping of a manufacturing process to determine critical failure points, efficiency, etc.
4. Business case development:
 - Evaluating a potential tool (software, hardware, machine) to determine ROI, true costs, time to production use, training needs, etc.
5. Life cycle management analysis of new products:
 - Use of Windchill PLM software to manage the development of a new system accounting for the system's entire life cycle.

MIE Project Sponsorship Timeline

It takes time to develop a meaningful proposal for student capstone projects. The calendar below may help you plan your work around our key milestones which are at the end of each month. We are happy to review your draft proposals for Mechanical Engineering (ME), Industrial Engineering (IE) and Engineering Management (EM) projects; and provide feedback before you submit your final documents.

