

Benefits to industry, community, and personal sponsors

MIME capstone design project sponsorship is a two-way relationship that promises significant returns for your participation:

- With a relatively small investment of time and money, project sponsorship provides a solution to a design problem.
- It provides a “no-obligation” opportunity to work with and train potential future hires.
- It raises your organization’s visibility at OSU (and beyond) and leads to stronger working relationships with OSU MIME faculty.
- And most important, it’s an avenue through which you can help shape and influence our next generation of engineers—here in Oregon, throughout the Pacific Northwest, and around the world.

How does MIME Capstone Design help our students?

The MIME capstone design experience puts the finishing touches on our students’ preparation as engineering professionals. Students are responsible for all aspects of their project, including:

- Working with the project sponsor to fully define project requirements and design specifications
- Benchmarking to understand state-of-the-art in the project area
- Identifying multiple design solutions
- Specifying a complete paper design including, as appropriate, component sizing, sourcing, and budget
- Implementing and testing the design, and revising it to meet requirements
- Meeting project deadlines

Do you have an MIME capstone design project in the making?

Product Focused

- Do you have an idea or need for a new mechanical or electro-mechanical device or process, but don’t have the time or skills to do it yourself?
- Do you need help solving a problem with an existing mechanical/electro-mechanical device or process?
- Would you like to improve the efficiency or ergonomics of machinery on your manufacturing floor?
- Might a custom spreadsheet or database application improve decision making or record keeping in your manufacturing or service operations?

Process Focused

- Could the effectiveness, efficiency, or safety of any of your manufacturing or service processes be improved?
- Are your operations hampered by poor facilities layout?
- Could your workstations be improved through ergonomic analysis and re-engineering?
- Would you like to analyze, optimize, and clearly document work procedures to reduce process and product variability?

If you answered “yes” to any of these questions, please contact our industry research director to discuss your ideas:

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MIME Capstone Design:



Information & Guidelines for Project Sponsors

MIME Capstone Design is a 20-week course in which OSU mechanical, industrial, and manufacturing engineering seniors design and implement workable solutions to real-world engineering problems. The opportunity to synthesize and showcase their technical, communication, leadership, and teamwork skills readies MIME students for success as engineering professionals.

Our **Project Partners** contribute two key elements to the MIME capstone design experience:

- Real-world problems our students work to solve
- Mentorship to help our students devise solutions that meet the sponsor’s needs

With this brochure, we invite you and your organization to consider sponsoring an MIME capstone design project.

We think you’ll agree that this is a valuable partnership opportunity—one you won’t want to miss!

What kinds of design problems do project teams take on?

The sky is pretty much the limit. To illustrate, here are some examples of recent projects:

- Improved sand-mold clamping device for ESCO
- Precision targeting device stabilizer for the U.S. Army
- Saw-chain testing device for Blount International
- Casting filter testing apparatus for PCC Structural
- Value-stream mapping process and costing tool for Oregon Freeze Dry
- Tool-loan library for Habitat for Humanity ReStore
- Mini barley malter for Oregon State University's research brewery
- Physical exam toolkit for use in healthcare settings
- Truck cab scoring tool for Oregon Department of Transportation fleet purchasing
- Unmanned aerial vehicle for Oregon vineyard pest-bird control
- Shoe press for Corvallis-based Soft Star Shoes

Key requirements for MIME capstone design projects

1. Projects must address a technical problem in the area(s) of mechanical, industrial, and/or manufacturing engineering.
2. Project completion must involve interaction with the project sponsor to:
 - Fully define design specifications
 - Consider multiple design alternatives
 - Implement, test, and revise the design
3. The project scope must be suitable for:
 - Development of a complete paper or conceptual solution in 10 weeks
 - Implementation, testing, and revision of the solution in the following 10 weeks

The fine print...

Proposal Submission

Your MIME capstone project proposal should include a descriptive title, brief summary of problem to be addressed, and concise listing of project requirements and constraints. (This list need not be comprehensive or in technical terms; the student team will work with your company to finalize the requirements.)

Your proposal should also list the name and contact information for the project mentor (see below). Submit your proposal to the MIME Director of Industry Research & Outreach using contact information on reverse side.

Project Mentorship

The project mentor serves as the project team's technical consultant and point person, reviews project documentation, and participates in project evaluation. Over the course of the project, this individual typically makes several trips to OSU to meet with the student team and may also host the team for onsite visits.

Student Interaction Expectations

Project sponsor-student team interactions are extremely important and should occur regularly throughout the project. In addition, the project mentor's approval is required on all project requirements documents (see next panel). These documents serve as contracts for what the project team must accomplish and specify the key criteria for project evaluation. It is therefore crucial that the project mentor carefully reviews these documents prior to approving and provides feedback for necessary changes.

Intellectual Property (IP)

By default, any IP created by the student team during the project belongs to the students. However, other IP arrangements may also be negotiated.

Project Funding and Sustaining Donation

Project sponsors are expected to provide any necessary funding and/or materials for prototype construction and process implementation. We also request a \$5,000 sustaining donation from all project sponsors; these donations support the MIME Capstone Design program.

Sustaining donation payment by August 1 of the project year guarantees project acceptance.

Course timeline and student milestones

Weeks 1-3:

- Form team and select project
 - Meet with sponsoring organization and generate comprehensive project requirements list (**sponsor approval required**)
 - Conduct background research and begin benchmarking to learn state-of-the-art in project area
- Key milestone:** Background Report document

Weeks 4-6:

- Translate project requirements list into quantitative and testable specifications (**sponsor approval required**)
- Complete benchmarking
- Consider multiple potential solutions to design problem

Key milestone: Preliminary Proposal document

Weeks 7-10 (end of first term):

- Devise testing procedures for all project specifications (**sponsor approval required**)
- Select one design solution from options described in Preliminary Proposal
- Specify ALL aspects of selected design solution

Key milestone: Final Proposal document

Winter Break (4 weeks) or Spring Break (1 week):

Very useful for part delivery lead times!

Weeks 11-15:

- Construct prototype (product projects) or prepare for implementation (process projects)

Key milestone: Evaluation of prototype or process prior to testing and revision

Weeks 16-20 (end of second term):

- Test and revise prototype or process to meet project requirements

Key milestones: Final presentation and evaluation of prototype or process; Final Report document; project poster for Engineering Expo

OSU Engineering Expo (mid May): Publicly present project in College-wide capstone project showcase