MechSE ILLINOIS

Senior Capstone Design Program

MECHANICAL
SCIENCE AND ENGINEERING

Program overview

Seniors work in teams of four to five students under the supervision of world-class MechSE professors to tackle real design problems from manufacturers and service industries. Since 1991, more than 4,500 senior mechanical engineering and engineering mechanics students have worked with 250+ companies on more than 1,200 projects.

Students gain a variety of benefits from this open-ended problem-solving experience, which requires them to synthesize and apply the knowledge they have gained through their engineering courses, to work within time and budget constraints, and to present their progress and results through regular oral and written communications with company members. The hands-on design/build curriculum that begins freshman year prepares MechSE seniors to excel in their design projects.

Sponsor benefits

MechSE students have logged more than 750,000 work hours on Senior Capstone Design projects since 1991. Beyond these hours logged planning, building, and innovating, the student teams provide many benefits for their corporate sponsors, including:

- Fresh, “out of the box” problem analysis
- A valuable design option
- Ability to retain intellectual property
- Excellent recruiting opportunities (students are matched with projects based on their interest)
- A first-hand look at the performance of students who could become future employees
- Corporate exposure to the MechSE Department
- Window to faculty expertise in diverse technical fields
- Enhanced public relations by donating to Illinois

Facilities and resources

- Individual team workspace in Senior Design Labs
- Innovation Studio (laser cutters, 3D printers, power tools…)
- Rapid Prototyping Lab
    - 3D Systems Viper Stereolithography
    - Objet Eden 350 Multijet Modeler
    - EOS Formiga Selective Laser Sintering
    - Stratasys Fortus 360 Fused Deposition
- CNC water jet sheet cutting
- Precision Machine Shop with professional machinists
- Wide range of test facilities/equipment, including:
    - 3-million-pound testing facility
    - Materials Testing Lab
    - Metrology Lab
    - Data acquisition systems
    - Thermal imaging and high-speed cameras
    - 3-D scanners for reverse engineering

Ideal project

The best senior design projects consist of mechanical design (not just analysis) challenges and are important to the client. This could involve

- New product design
- Product/component redesign
- Manufacturing/process/thermal systems design
- Controls/instrumentation/sensor design
- Test stand design

The project should take four students each roughly 10 hours per week over the course of one semester (16 weeks) to complete. It is preferable, but not necessary, that the project involve building a prototype.

Ideal projects contain multiple constraints (need not have all): Economic, Regulatory, Manufacturability, Space, Environmental, Health, Safety, Sustainability, Ergonomic, and Cultural.

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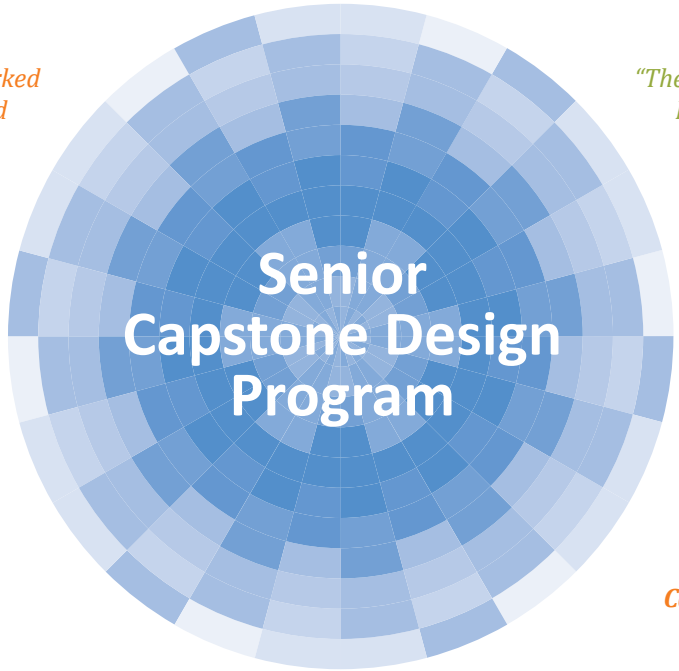
"This is the first time Vapor has worked with Illinois on a design project, and we are very happy with the results. The team came up with a number of new and novel design concepts."
David C. Griffis
Vapor Bus International

"Excellent graphics in presentation. Communicated key issues clearly. Good design recommendations. All presentations were clear. Excellent explanation of problems and proposed solutions."
Forrest Nixon
Cerro Flow Products, Inc.



"The students did a great job working around Deere's busy schedule. The students were very professional and enjoyable to work with. All design requirements were met. The Angle-o-Meter was a fantastic addition! It eliminates problems with measurement."
James Wang
John Deere

"This was a tough project with difficult scope. I was really impressed with their presentation and the work that they did."
Nick Jost
Caterpillar, Inc.

Make a lasting impression on the lives of our incredible students, and address a mechanical design challenge you are facing in an effective, affordable, and meaningful way.

To sign up or learn more, contact:

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