

College of Engineering Capstone Program

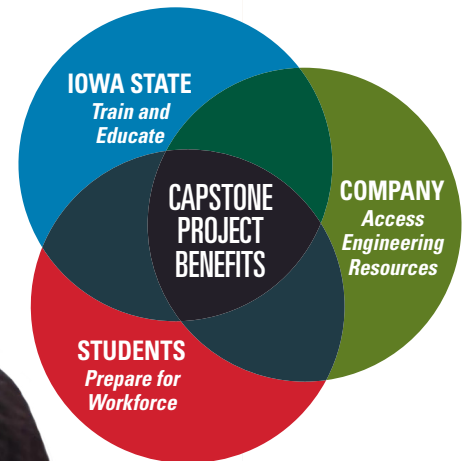
Skilled engineers are essential at innovative companies when it comes to applying new technologies to solve complex problems, developing new product concepts, and creating new manufacturing processes. The College of Engineering at Iowa State University offers companies the opportunity to do these things via capstone projects.

Within the College of Engineering, each student is required to complete a formal capstone course during their senior year in which they apply their education experience to a real-world project. Students form teams and work with companies on a project.

Capstone projects serve as an essential learning experience for students as they conclude their formal undergraduate education and transition into the workforce.

Companies submit project ideas and work with CIRAS, instructors, and students to finalize a project scope and deliverables.

Project selection is determined by the number and types of projects submitted to the respective capstone programs. Companies engage the student teams during the semester(s), and each project concludes with a final report and/or presentation.



Mechanical engineering students huddle in “The Mine” in the basement of the Black Engineering Building while working on their capstone project. Counter-clockwise from left are students Nick Felbinger, Jacob Fosse, Wee Sean Koh, and Isaac Bibus.

Project Topics

Each College of Engineering department manages a capstone program, and collectively these represent the types of engineering topics that can be addressed in a project:

- Aerospace Engineering
- Agricultural and Biosystems Engineering
- Chemical and Biological Engineering
- Civil, Construction, and Environmental Engineering
- Electrical and Computer Engineering
- Industrial and Manufacturing Systems Engineering
- Materials Science and Engineering
- Mechanical Engineering

Attributes of Capstone Projects

- Each project is designed to be mutually beneficial for both the company and the students.
- The focus should not be mission critical but should represent a problem or need of high interest to the company. For example, students could investigate an engineering problem, redesign an existing product or process, or explore a new technology.
- The project needs to challenge students in the areas of engineering analysis and design solutions.
- Projects can be one or two semesters, depending upon the respective department and scope of work.
- Student teams and companies determine levels of engagement and project management.
- Deliverables usually include a final report, data and analyses, and design solutions. In some cases, physical concepts are included.

Company's Role

- Submit an appropriate project idea and work with the instructor on scope and deliverables.
- Use standard Iowa State University project agreements and, if necessary, the intellectual property (IP) and nondisclosure agreements. Note: In almost all cases, the IP rights are assigned to the company.
- Allocate staff time for student engagement and project management as necessary.
- Depending upon department and project scope, each company pays for expenses incurred by Iowa State or pays a standard project fee. These costs vary for each department.

Benefits to Companies

- Apply a high level of engineering resources to a topic of interest, such as investigating an engineering problem, redesigning an existing product or process, or exploring a new product concept or technology platform.
- Engage students as potential future employees.
- Use capstone projects to "seed" innovation projects within the company.

“
Capstone Projects are a good way for companies like ours to expedite product development.”

—Dan Stieler, PowerFilm

“
I'm able to bring new young talent in to solve a problem that I might not otherwise have the time or skills to solve.”

—Bob Recker,
Cedar Valley Innovation (CVI)

Dan Stieler, president of PowerFilm, and Jon Fecht, Iowa State University student and PowerFilm employee, evaluating a rollable solar panel.



CIRAS CONTACT INFORMATION

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