Capstone Project Objective
The senior capstone is a design experience which requires students to work in teams to solve an open-ended engineering problem to meet a customer need. The project is subject to real-world constraints such as schedule, budget, environment, and regulatory requirements. In executing the project, students are expected to
- Work with customers to gain a refined understanding of the customers’ requirements.
- Select a preferred solution from among multiple potential solutions.
- Follow the practices of good project management: establish realistic deliverables and milestones, plan, track, and report.
- Exercise and enhance their skills as members of teams.
- Hone their skills in written, graphical, and oral presentation.

How long does a capstone project take?
The capstone project takes place in the spring semester of the senior year (mid-January – early May). Preliminary work in defining project objectives often starts in September.

Capstone paths
The mechanical engineering department offers several paths for the capstone.
1. Work in a small team (3, 4, or 5 students) on the customer’s premises, typically for the full day on Friday.
2. Work on the BU campus on a problem proposed by a customer. The customer may be an outside party such as a local company or agency, or an internal customer such as a professor in need of specialized research or teaching apparatus. The work takes place under supervision of the mechanical engineering faculty, with additional coaching and periodic review from project sponsors.

What kinds of projects have we done with outside sponsors?
1. Manufacturing process studies: capacity improvement, inventory reduction, yield improvement, lead-time reduction, inspection, FMEA, packaging.
2. Design of tooling for product assembly or test.
3. Design of specialized apparatus in support of a research program.
5. Product redesign for cost or performance improvement.
7. Supply chain optimization studies.

Descriptions of recent projects, and links to videos of capstone presentations, are available at http://www.bu.edu/me/academics/senior-capstone-experience/.

What do we provide to a sponsor?
- Use of Boston University shops and supervision by professional machinists as students create prototypes.
- A written report of all project results, including CAD drawings and data files.
- Protection of the customer’s intellectual property. Students and faculty routinely sign non-disclosure agreements with sponsoring organizations.
Ownership of intellectual property developed in the course of the project.\(^1\)
Presentation, at the customer’s premises, of project results which might potentially involve trade secrets or other proprietary information.
Ownership of prototypes.
Recognition in the Senior Capstone Presentations program.

What do we ask from a sponsor?
- A very brief initial statement of the problem. One or two sentences will do.
- Contact information (Name / e-mail / Phone No) for a person we can follow up with.
- The sponsor’s participation in reviews at critical stages of the project.
- Access to any specialized equipment required to develop and test the design.
- Provision or purchase of materials for models and prototypes.
- Permission to present project results in the students’ Final Presentation, which is a public event and which is streamed live to parents and friends over the Internet. Trade secrets and other proprietary information will be omitted from the public presentation and will be presented separately to the customer.

What do we ask from a sponsor for projects conducted on campus?
- A project kick-off meeting to describe the problem and prepare a problem statement.
- Conversations with the students about what the Customer Requirements for the project are.
- Conversations with the student to formalize the Engineering Specifications for the project.
- Agreement with the students on the schedule for project status reviews.
- Review of the students’ mid-term and final reports.
- Recognition that day-to-day mentoring is the responsibility of the course instructors.

What do we ask from a sponsor for projects conducted at the customer’s facilities?
- A designated person to serve as the team’s on-site mentor or supervisor.

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\(^1\) BU will assert no claim to intellectual property developed in the course of a capstone project. Faculty and students engaged in the projects generally sign Non-Disclosure Agreements as required by the sponsoring party. BU can provide a model agreement.