Program Description

Senior Design is a required course for seniors across many departments. It provides a capstone experience allowing students to tackle a "real-world" engineering design problem in some depth. Departments that work with industry and other external partners include: Biomedical Engineering (BME), Computer Science & Engineering (CSE), Electrical Engineering (EE), Industrial & Systems Engineering (ISE) and Mechanical Engineering (MAE). We also offer an interdisciplinary senior design experience, allowing students from two or more departments to work together.

We expect students to develop concepts and a final design for an open problem – i.e. students should not just provide drawings and BOM for a previously identified solution concept? This is important to one of our educational objectives to help students appreciate that solving engineering problems requires group decision-making, analysis, handling ambiguity and selecting among multiple potential solutions. Senior design projects typically take form in one of the following:

1. Design-and-build: Teams work to design a small system, sub-system or critical component for a system/sub-system. Fabrication of an (alpha) prototype and preliminary testing are done. [3-5 students per team]

2. Concept exploration: Teams explore multiple solutions to a problem through analysis (e.g. structural failure, manufacturability, cost) to quantify tradeoffs and provide final recommendations. [3-5 students per team]

3. Software application development: Teams from Computer Science develop software apps for web, mobile or standalone systems. [3-5 students per team]

4. Embedded industrial engineers: Students from ISE work on projects related to operations and manufacturing efficiency. Students typically spend 8-10 hours per week onsite during the Spring semester and there is *no cost for sponsorship*. [1-2 students per project]

Projects occur during Fall and Spring semesters, with some departments running projects across both semesters. The ***deadline for projects to be considered is early September*** of each academic year.

Expectations of Sponsors

Sponsor interaction typically includes: 1) introducing the problem at the start of the project period during a meeting with student team; 2) regular design review meetings (at least bi-weekly is preferred) with student teams; and 3) participation in the final Senior Design Expo poster session and/or presentation at the conclusion of the project.

We respectfully request an investment of $3,000 be made to the Senior Design Course Support Fund[1]. This gift will support students in their projects including prototyping material, laboratory and machine shop use and investment, software and computing needs, and the Senior Design Expo. The benefits of engagement include:

- access to one or more teams of engineering seniors,
- up to 30 weeks of engagement with the project teams,
- a final technical report and presentation with design recommendations (and potential prototype, if applicable),
- exclusive rights to any generated IP

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[1] Alternatively, projects can be done as a Gold Member in the Engineering Partners Program, which includes a number of additional benefits to sponsors across the entire academic year. For more information, contact Nick Lane from Corporate and Foundation Relations (nmlane2@buffalo.edu) or Todd Brooks from SEAS Philanthropy and Alumni Relations (toddbroo@buffalo.edu).