

Customer Guidelines Brief AY 2015/16

Senior Projects Course

Welcome to CU-Boulder's Aerospace Engineering Sciences Capstone Senior Design program! We are delighted that you are interested in sponsoring a senior project. Below you will find an overview of our program listing the educational objectives as well as the customer benefits and responsibilities.

Background

All undergraduates in the CU-Boulder Aerospace Engineering Sciences (AES) Department are required to take a two-semester capstone project course during their senior year. This course consists of *Design Synthesis* in the fall semester and *Design Practicum* in the spring semester. Oversight of the course is managed by the Course Coordinator (CC) with faculty and staff, who comprise the Project Advisory Board (PAB), guiding, mentoring and evaluating the students through the nine-month duration of each project.

Educational Purpose

The purpose of the Senior Projects course is to provide undergraduate students with an integrated, engineering-focused, mentored experience while working on a requirements-based design project in self-directed teams. Each year, every project conceives, designs, manufactures, and tests a system to solve a specific customer problem. In addition, each project includes mechanical, electrical, and software elements so that student teams are exposed to a variety of technical challenges. Learning outcomes include:

- Requirements development
- Engineering design
- Systems engineering
- Modeling and performance prediction
- Manufacturing and procurement
- Verification and validation
- Project management
- Team work
- Written, oral, and graphical communication
- Professional-level responsibility and accountability
- Customer interaction

Customer Benefits

Exploratory or proof-of-concept projects can be quite successful as an undergraduate capstone senior project. Benefits to the customer include:

- Faculty-mentored student teams work on targeted company problems
- Opportunity to assess potential future employees
- On-the-job training for potential future employees
- Professional mentoring of the next generation of aerospace employees
- Support of hands-on, project-based education

Our primary goal is the education of aerospace engineering students and, as such, projects that are in the customer's critical path are generally not suitable for the Senior Design course. "Good-to-have" results and "off-ramp" studies are more appropriate for this learning environment. A comprehensive design, build, test methodology is followed in all projects. The University of Colorado cannot take responsibility for final results and can only guarantee a written report as a final project deliverable.

Customer Expectations

Our students enthusiastically welcome interaction with industry experts! Your active participation in the project is critical to the students' educational experience as well as the successful outcome of your project. Therefore, we require that customers:

- Identify a contact person for the project who can dedicate an average of one hour per week to the project. Interactions are most important and intensive during the first six weeks of the fall semester as the students are working to define the project and its requirements.
- Meet and/or be available for periodic teleconferences with the project team.
- Provide the project team with advice and feedback on submitted documents and presentations such as the Project Definition Document, Conceptual Design Document, Preliminary and Critical Design Reviews, etc., in a timely manner.
- Attend final team design reviews once each semester (in person or via teleconference). These reviews last one hour.
- Provide input to the advising faculty regarding student engagement and performance. The advising faculty determine grades for each student based on the team results and individual contributions.

A CU-Boulder Aerospace Engineering Sciences Capstone Senior Design project is a unique opportunity to explore solutions that benefit the customer, while providing world-class professional development for students at the threshold of their engineering careers. We want to collaborate with you to develop the next generation of leaders in the aerospace industry and look forward to talking with you in greater detail!

For more detailed customer guidelines and course information, please contact Professor James (Jim) Nability at james.nability@colorado.edu, or visit the course web site at <http://www.colorado.edu/aerospace/industry-home-page/senior-design-projects>