

Senior Design Capstone Series

Students in the department of Mechanical and Aerospace Engineering are required to complete a senior design capstone in their final year of study as part of their graduation requirements. These courses provide an opportunity for students to apply their knowledge of the primary principles and concepts of engineering in an experiential learning-based environment. These courses are taken in a series during Winter and Spring quarter, with a culminating group project. Students are also encouraged to participate in the yearly [Engineering Design Showcase](#), which is hosted by the College of Engineering.

Mechanical Systems Design Project – EME 185A/B

(Open to Mechanical Engineering Majors ONLY)

Pre-requisites: EME 050, EME 150A, EME 165

Description:

The mechanical engineering design process and its use in design of engineering systems. The sole objective of the design project course is to provide students with an opportunity to use their own skills and knowledge to solve an engineering design problem. This experience will help students make the transition from school to work and bridge the gap between theory and applications.

Aircraft Performance and Design Project – EAE 130A/B

(Open to Mechanical Engineering Majors AND Aerospace Science and Engineering Majors)

Pre-requisites: EAE 126 OR EAE 127, AND EAE 129 (can be concurrent)

Description:

The objective of this capstone design course in aerospace science and engineering is to develop the methods of describing aircraft performance and to allow the student to integrate this knowledge with previously learned disciplines in conducting an aircraft design study from an initial specification of requirements the design must meet (including relevant engineering standards) to an overall aircraft layout, its performance, cost, weight, structure & materials, propulsion system, aerodynamics, and handling qualities. The design studies are typically conducted in teams of 4-6 students and have addressed a wide range of requests for proposals from electric vertical takeoff and landing urban air mobility vehicles to advanced hydrogen-powered civil transport airplanes, efficient regional jets, and electric personal air vehicles.

Space Vehicle and Mission Design Project – EAE 143A/B

(Open to Mechanical Engineering Majors and Aerospace Science and Engineering Majors)

Pre-requisites: EAE 140 and EAE 142

Description:

Governing equations and operational practices of robotic and human space travel. Principles of Systems Engineering are introduced and are used as a basis for a team project in spacecraft reverse-engineering and design. Intro to space systems design including space project organization, requirements definition & specification, concepts formulation, system tradeoffs, subsystem design. Prototype space mission concepts & multidisciplinary mission design.