

1. ES404 Engineering Design Methods

2. 3 credit hours , 1 recitation hour, 4 laboratory hours, and at least two additional hours of project work including a weekly meeting with the faculty advisor

3. Course Coordinator: CDR Tracie Severson, USN

Additional Instructors: Faculty capstone advisors (numerous)

4. No required or supplemental textbook

5. Specific course information

a. This course is the final design, construction, test and evaluation of an approved project. It includes a final design presentation as part of Capstone Day and a final design report.

b. Prerequisite: ES401

c. Required course

6. Specific goals for the course

a. At the conclusion of the course, students will be able to:

- Apply the fundamentals of cost, schedule and project management learned in ES401 and successfully manage capstone project through the entire semester.
- Build and test project in accordance with your design proposal submitted at the end of ES401.
- Conduct testing of project in accordance with test plan developed in ES401.
- Prepare and give a final project presentation and poster on capstone project to faculty members, adviser, and other guests during Capstone Day at the end of the semester.
- Submit a final project report delineating the strengths and weaknesses of design and rating project against the metrics developed in ES401.

b. This course assesses the following Student Outcomes

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system
- (d) an ability to function on multidisciplinary teams

- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) a recognition of the need for, and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

All outcomes are assessed in this course

7. Topics covered varies by project and advisor.