

**United States Naval Academy
Mechanical Engineering Department**

Catalog Description: EX486F/EX476 Formula SAE Capstone II **Credit:** 3 (1-4-3)
Listed as EX486F Interdisciplinary Capstone Design II

Designation: Required, engineering design, capstone course (part 2)

This course is the second in a two course sequence that provides the capstone experience for an interdisciplinary team of midshipmen designing, fabricating, and testing a small formula style racecar. During this semester, students will focus on fabrication and testing of the project vehicle using detailed designs developed during the previous semester. Work will be completed in a teaming environment focused on effective program management and students will complete a series of oral and written design reviews. The course culminates in participation in an intercollegiate competition.

Prerequisites: EX485F/EX475 or department chair approval

Corequisites: None

Textbooks: Dieter, G. E., & Schmidt, L. C. (2012). *Engineering Design, 5th Ed.* New York: McGraw-Hill.

Course Director: Prof. L.J. Hamilton

Course Content:

Students spend the vast majority of course time with their teammates working on their capstone projects. Each team has weekly meetings with their adviser.

Assessment Methods:

		YES	NO
A	Quizzes		X
B	Homework		X
C	Exams		X
D	Laboratory Reports		X
E	Oral Presentations	X	
F	Design Reports/Notebooks	X	
G	Prototypes/Demonstrations	X	
H	Projects		X
I	Other		X

Course Outcomes:

Letters in parenthesis refer to the assessment methods listed in the previous section.

1. Apply appropriate codes as design constraints and standards in the testing and evaluation process. (F,G)
2. Communicate the process and design detail effectively through oral presentations and written reports. (E,G)
3. Predict and track progress using project management tools. (E,G)
4. Create a prototype of the design or a subsystem for testing and evaluation. (F,G)
5. Evaluate prototype performance and apply test results to inform redesign (F,G)
6. Evaluate ethical considerations regarding the design, manufacture, use, and disposal of the design. (F)
7. Understand the impact of engineering solutions in a global, economic, environmental, and societal context. (F)
8. Work effectively in teams, specifically interdisciplinary teams. (E,F,G)
9. Demonstrate a knowledge of contemporary issues facing the engineering profession. (E,F)
10. Demonstrate the professionalism required of a professional engineer. (E,F)

	1	2	3	4	5	6	7	8	9	10
Program Outcomes										
(a)					X					
(b)	X				X					
(c)	X			X	X	X				
(d)			X					X		
(e)				X	X					
(f)	X	X				X				X
(g)		X								X
(h)							X			X
(i)				X						X
(j)									X	X
(k)			X	X	X					X

Date of Latest Revision: 29 OCT 2017, Prof L.J. Hamilton