

EM472 Mechanical Engineering Design

**United States Naval Academy
Mechanical Engineering Department**

Catalog Description: EM472 Mechanical Engineering Design **Credit:** 3 (2-2-3)

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

Part two of the two-semester capstone design course sequence. Students continue with concept selection, detail design, prototyping and evaluation of their capstone design projects. Formal presentations and reports are prepared to review and document the designs.

Prerequisites: EM371 and EM471, or approval of department chair.

Corequisites: None

Textbooks: None

Course Director: Prof. R.E. Link

Course Content:

Students spend course time with their teammates working on their capstone projects. Each team has weekly meetings with their adviser. There is no formal presentation of any new topics in this course.

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 Outcomes¹:

1. employ modern techniques such as computer-aided design and analysis software required for engineering design (E,F,H).

2. complete a major team design experience following the engineering design process (G,H).

3. demonstrate an understanding of project management. (E,F)

4. identify and formulate engineering problems which involve the applications of mechanical systems, thermal fluid systems and materials selection for such systems (F,H).

5. apply knowledge of mathematics and the sciences of engineering principles to solve problems in mechanical engineering. (E,F,G,H)

6. work in and lead teams in the solution of engineering problems (E,F,G,H)

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- 7. communicate effectively through written reports. (F)
- 8. communicate effectively through oral presentations (E)
- 9. apply engineering fundamentals as a basis to learn about and understand other technical topics not explicitly covered in the mechanical engineering curriculum (E,F,G,H).

¹ Letters in parenthesis refer to the assessment methods listed in the previous section.

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

Date of Latest Revision: 29 APR 2010, Prof. R.E. Link