

1. EX476 Interdisciplinary Capstone Design II – Formula SAE

2. Credit Hours (3)/Contact Hours (5)

3. Course Director – Leonard J. Hamilton

4. George E. Dieter and Linda C. Schmidt, *Engineering Design, 5<sup>th</sup> Ed.* (New York: McGraw-Hill, 2013)

5. Specific course information

- a. 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.
- b. Prerequisites: EM371 or permission of the EME Dept Chair. Permission of the Major Dept Chair.
- c. Required for Nuclear and Mechanical Engineering Programs. Validates EX402.

6. Educational objectives for the course

- a. Apply appropriate codes as design constraints and standards in the testing and evaluation process.
- b. Communicate the process and design detail effectively through oral presentations and written reports.
- c. Predict and track progress using project management tools.
- d. Create a prototype of the design or a subsystem for testing and evaluation.
- e. Evaluate prototype performance and apply test results to inform redesign.
- f. Evaluate ethical considerations regarding the design, manufacture, use, and disposal of the design.
- g. Understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- h. Work effectively in teams, specifically interdisciplinary teams.
- i. Demonstrate a knowledge of contemporary issues facing the engineering profession.
- j. Demonstrate the professionalism required of a professional engineer.

7. Specific program outcomes addressed by this course

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Reinforced							
Mastered	X	X	X	X	X	X	X

8. Brief list of topics to be covered
  - a. Prototype Development
  - b. Prototype Demonstration
  - c. Redesign
  - d. Fabrication Techniques
  - e. Test Planning and Execution
  - f. Vehicle Setup and Testing
  - g. Final Design Review
  - h. Competition specific Training
    - i. Preparing for Static Events
    - ii. Driver Training