1. **MEEG402**   **Senior Design**

2. **Credits 6**   **Contact Hours [project based; ~20 hours per week, per student]**

3. **Fall 2016**   Dr. Steven Timmins

4. **Textbook**   None.

   Other Supplemental Materials: None.

5. **Specific course information**

   a. **Catalog Description:** Capstone engineering practice where teams develop real engineering system designs; discover customer requirements; benchmark best practices; develop engineering specifications; generate concepts; and justify a specific concept. Design, fabricate, assemble, test and improve an actual prototype. Focus is upon successful competition at the annual spring FSAE competition.

   b. **Prerequisite:** MEEG304, Machine Design - Elements.

   c. **Course is required.**

6. **Specific goals for the course**

   a. **Specific Outcomes of Instruction:** Senior Design is the Capstone Course in the engineering undergraduate curriculum. During this semester-long course, teams of senior-level students work with sponsors and faculty advisers to develop real engineering system designs. The objective of the course is for students to learn through the experience of developing a product-process system from concept through proof of concept in response to a real project sponsor's need. The course structure is fairly open, giving students ample time to work on their projects. The focus of this section is to design, build, and test the framework from which the students can then further develop (in the spring) an bring their vehicle to compete in the annual Formula Society of Automotive Engineers' competition.

   b. **Student Outcome Addressed:**

      Covers all the outcomes.

7. Brief list of topics to be covered

- Discover customer requirements, and develop the competition-based framework for their project

- Generate valid engineering concept alternatives

- Propose & justify a specific concept that promises to best meet identified goals/needs

- Develop a detailed resource management plan

- Develop the detailed design of a prototype of the best concept, including engineering specifications

- Create a working prototype

- Validate the concept using math based modelling technology in concert with the design and execution of an experimental process

- Continuously communicate project results, status, and plans with all constituencies.