

Multidisciplinary Design Program

Requirements for credit for students seeking credit for ENGR255, ENGR355 and ENGR455

Student Team Activities

Engineering is inherently a very creative profession, but it is often difficult for engineering students to have opportunities to practice creativity during their engineering education. Through the Multidisciplinary Design Program, Michigan engineering students have an opportunity to earn credit for their engineering experiences outside of their normal curriculum study. Engineering teams and engineering organization activities, such as BLUElab, provide an avenue for students to earn engineering credit while working on real world problems on a team of other UM students.

In order to receive credit for their design experience, students are required to develop a proposal during the beginning of their activities a gain the approval through the Multidisciplinary Design Program.

The proposal should have the following components.

1. For each credit hour students are expected to spend 3-4 hours per week on the project. Provide an indication of time expenditures during the semester. This is a general estimate of an average week, and may vary widely during the course of the project.
2. The students should make a specific proposal of what they want to accomplish during the semester. **Specific contributions to the project are much more important than time allocation estimates, and the bulk of the proposal should be spent in this area.**
3. The students should propose peers who might provide input on their accomplishments.
4. The students will need to generate a portfolio item to receive credit for the project. Portfolio guidelines are provided in a separate document.
5. Students are required to establish a meeting schedule with an MDP faculty member to monitor progress.

After the proposal is developed it must be approved by the student team's faculty member and/or a member of the faculty associated with the Multidisciplinary Design Program.

Please contact Megan Langille (mlangill@umich.edu), Academic Advisor for MDP, with any questions.

Sample ENGR 355 Project Proposal
(used with author's permission)

For my MDP project, I will be working on the SAE Supermileage Team. I intend to spend approximately 9-12 hours/ week for a total of 3 credit hours received toward an ultimate total of 7 credit hours to complete the project.

Prior to Fall 2014, I have completed ENGR 100, which counts toward the minor as a DBT class. Also relating to my work on Supermileage are MECHENG 211, which I have completed, and MECHENG 240 and 250, in which I am currently enrolled.

I have been on the Supermileage team since the fall of 2013, as a member of the Driver Interface and Integration subteam. Now, I act as the lead of that subteam; my main responsibility is to ensure the timely completion of the design and manufacturing of the chassis components. As a member of Supermileage, I attend weekly meetings with the whole team to discuss progress and ideas. These are about 1-1.5 hours long once a week. I also attend bi-weekly technical leads meetings every other week averaging 1 hour/ week. In these meetings, we communicate with each other about possible designs involving more than one component of the car (e.g. engine and body). As a subteam lead, I direct a weekly subteam meeting in which I assign projects to my team and teach/discuss technical topics relating to work that needs to be done. This averages 1-1.5 hours/week. In addition to the design aspects of the car, I will also be spending a great deal of time manufacturing parts using the manual mill and lathe, and the waterjet, and installing these parts in the car.

One of my main goals for the semester includes designing and building the engine/rear wheel mount with a colleague. Hopefully, this will be sketched in CAD then optimized for weight. I will also help to construct this piece out of carbon fiber after doing research on manufacturing with composite materials. Another of my responsibilities includes designing part of the steering system. I have to research and purchase or make these parts using CAD and waterjet or mill/lathe. I will undergo a design review with the other leads for all parts designed.

Before design and manufacturing work can be completed, I will be doing research on parts available, possible designs, and methods of manufacturing. In addition to this pre-research, I will also be looking into how to improve our car for next year once this year's car is completed around mid-November. This should take about 2-3 hours per week.

During the actual build of the car, I am responsible for installing everything that isn't the engine. This includes safety components, drivetrain parts, steering, and all mounts.

Summary of weekly hours:

- 3-4 hours attending meetings
- 2 hour team workdays (at the Wilson Center)
- 2-3 hours of individual design work and build
- 1-2 hours of research

I will complete ~135 hours of total work this semester, spread over the above areas, to receive 3 credit hours.