

Senior Design II
(ME 491, 3 credits)
Milwaukee School of Engineering
Winter 2019-20
Mondays 10-10:50
S-341

Instructor: Dr. Christopher Damm, Professor and Senior Design Coordinator
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Office hours: Students are always welcome to schedule an appointment to meet with Dr. Damm. Please send an email to schedule an appointment.
Office location: S-146 (Northeast Corner of Science Building)
Required textbook: <u>none</u>

Course Description

This course is a continuation of ME 490. Students are required to complete or show sufficient progress on an engineering design project proposed in ME 490. Design work is performed by design teams under the supervision of a faculty advisor. A final or interim design report is prepared and orally defended. Lecture meetings are used for discussion of topics related to professionalism and engineering careers and oral presentation of design efforts by each team. (prereq: ME 490)

Course Learning Outcomes

Upon successful completion of this course, the student will be able to:

- Have designed a mechanical or thermal system in a team setting
- Have addressed possible societal and environmental impacts of their project
- Have written a formal, detailed design report for the major design experience
- Have made an oral presentation in defense of his or her design work

Elements of Design

Problem identification and definition; synthesis and creativity; time management and scheduling; analysis and troubleshooting; use of basic engineering, mathematics, and science principles; use of computer tools (word processing, spreadsheets, general mathematics packages, CAD, finite elements, dynamic simulation, thermodynamics and fluid dynamics packages, statistical, data analysis, graphing, etc.); economic considerations; manufacturability and maintainability; testing and evaluation methods; safety and product liability concerns; written and oral communication.

General Requirements

- Most projects are 3-quarter projects. Students on 3-quarter projects are required to take ME 492 in the Spring (unless the student graduates after winter quarter). ME 492 counts as a technical elective.
- Groups must establish a regular meeting time with their faculty advisor and meet at least *one hour* per week with their faculty advisor. ***Note: the scheduled times for ME 491 outside of the Monday seminar are Wednesday and Friday 10-10:50. Students should utilize those time periods for group meetings unless student/faculty schedules allow for alternate times for group meetings.***
- All students are required to attend scheduled seminars, which will be held during the regular class meeting time (Mondays 10-10:50 in S341 for ME 491). There will not be a seminar every week. ***The plan is to have presentations on odd weeks (week 1, 3, 5, etc.), but there may be an occasional meeting during an even week.*** Dr. Damm will send out email reminders for the seminars as well as reminders when there is no planned meeting.

ME 491 Requirements

- Oral Presentations
You should give an oral presentation to your faculty advisor in preparation for the end-of-quarter presentation to a faculty committee (see below).
- Engineering Design Report.
The final written report should document all aspects of the design project, including the background and objectives of the project, design methodologies utilized, preliminary design concepts, analysis and testing performed, details of final design selection, final budget and cost analysis, and conclusions and recommendations for future work.
- Oral Presentations, Friday of Finals Week.
The final oral presentations summarize the work performed over the two quarters on the design project, including final conclusions and recommendations. These presentations are evaluated by a committee of faculty (3 ME faculty members, including the faculty advisor) and industry advisors if applicable. **All design team members must participate** by making individual presentations, and the students

are expected to attend the presentations given by other groups during the 65 minute time slot. Each group has 30 minutes. The presentation must not exceed 25 minutes, this will allow a minimum of 5 minutes for questions from the faculty. ***Students who attend the presentation of another group should not ask questions until all faculty committee members have had a chance to ask their questions.*** The faculty will be given as much time as needed to assess the project by asking questions of the group. (If needed, the faculty questioning will be allowed to exceed 5 minutes.)

Grading

Grades are determined by your faculty advisor based on their own individual criteria. However, students will receive a grade penalty if they miss any of the Monday seminars (without a legitimate excuse). There will be a ½ grade penalty for each missed seminar. Grades for ME 490, 491 (and 492 if applicable) are not submitted to the registrar until the conclusion of the project. (You will see NR on your transcript until the end of the project.)

The Role of the Faculty Advisor

The faculty advisor provides general technical advice to the team, such as suggestions of specific analytical techniques, recommendations for reference materials, and critiquing of technical work. *The advisor should not be asked to provide, nor should they volunteer to provide, creative or technical work on the project.*

Institutional Policies:

- **Nondiscrimination statement:** Milwaukee School of Engineering admits students of any race, color, national and ethnic origin to all the rights, privileges, programs and activities generally accorded, or made available, to students at the university. It does not discriminate on the basis of race, color, national and ethnic origin, religion, age, gender, sexual orientation, marital status or disability in administration of its educational policies, admission policies, scholarship and loan programs, and athletic and other institutionally administered programs. MSOE also maintains its long-standing policy as an Equal Opportunity/Affirmative Action Employer of male and female personnel for its faculty and administrative staff.
- **Student Accessibility Services (SAS):** For students with documented disabilities, chronic medical conditions or mental health concerns; MSOE provides services to make reasonable accommodations available. If you are a student who requires or anticipates the need for accommodations, please contact Student Accessibility Services Office at 414-277-7281, by email at moureau@msoe.edu, or in person at K250 to discuss appropriate accommodations and eligibility requirements.
- [Policy on Student Integrity](#) (Academic Integrity)
- [Sexual Misconduct Policy](#)
- [Research with Human Participants](#) (Responsible Conduct of Research)