

Mechanical & Materials Engineering

Engineering Building, Suite 400
www.pdx.edu/mme
503-725-4290



Course Number & Title	ME 492: Design Process
Credits	4
Required or Elective	Required
Prerequisite(s)	Completion of ME 491 in Fall 2017
Days/Time	Mondays, 8:15 – 10:05 AM
Location	Engineering Building, Room 102
Instructor	Dr. Gerald Recktenwald, gerry@pdx.edu , 503-725-4296
Teaching Assistant	Dan Ringle, ringle@pdx.edu
Office Hours	Tuesdays, 2:30 – 4:00 PM, Thursday, 10:00 – 11:30 AM, or by appointment
Public Web site	http://web.cecs.pdx.edu/~gerry/class/ME492
Textbook	Fundamentals of Product Development, 4th ed., Christopher A. Mattson and Carl D. Sorenson, 2016, Brigham Young University, ISBN 9781516903955

Course Description:

ME 492 is the second course in the three-term Capstone sequence for BSME majors. Students work in teams on a major project that spans two courses, ME 492 and ME 493. The goal the project is create a design that is desirable and transferable. A desirable design meets client and/or market needs. A transferable design is fully specified so that it can be created (or implemented) only from the documentation produced by the team.

Course Learning Objectives:

Learning objectives are the goals for student learning that follow from activities in the course.

Students must demonstrate	ABET Outcomes*
1. The ability to identify client/market needs and performance metrics for meetings those needs.	c
2. The ability to develop a project contract to meet the requirements of the project sponsor <i>and</i> the requirements of ME 492-493.	c, g
3. The ability to use physical prototypes and/or computer simulations to explore design options and to demonstrate performance of engineering subsystems.	b, c
4. The ability to effectively communicate design concepts and decisions in writing and orally.	g
5. The ability to make sustained and substantive contributions to your team in ways that help the team achieve the goals in the project contract.	d
6. Professional conduct in all interactions with team members, project sponsors, faculty and staff of the MME Department.	f
7. The ability to write a project progress report that documents the state your design.	c, g

*Program Outcomes are Learning Outcomes for the entire BSME Program. Refer to the standard ABET learning outcomes listed at abet.org. For example, outcome “c” is “An ability to an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability”.

Grading

Item	Weight	Scoring by	Due
Team contract	5 %	Group	19 Jan
Project contract	10 %	Group	26 Jan
Weekly meetings	10 %	Group and individual	weekly
Concept evaluation report	15 %	Group	23 Feb
Progress presentations	10 %	Group and individual	TBD
Peer evaluation	20 %	Individual	19 Mar
End-of-term progress report	30 %	Group	19 Mar

Policies

Homework is due in a D2L drop box, 5 minutes before the beginning of class on the due date.

Group Work: ME 492 requires extensive collaboration in groups. Individuals are expected to act professionally, and adhere to the PSU Code of Student Conduct, which is published at <https://www.pdx.edu/dos/psu-student-code-conduct>.

Course and Campus Climate: As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. We expect a culture of professionalism and mutual respect in our department and class. You may report any incident of discrimination or discriminatory harassment, including sexual harassment, to either the Office of Equity and Compliance, <http://www.pdx.edu/diversity/office-of-equity-compliance>, or the Office of the Dean of Student Life, <http://www.pdx.edu/dos/student-conduct-at-psu>.

Accommodations: If you have a disability and are in need of academic accommodations, please notify me (G. Recktenwald) immediately to arrange needed supports. If you need information about disabilities, please contact the Disability Resource Center, 116 Smith Memorial Student Union, 503-725-4150 or via the web at <http://www.pdx.edu/drc/>.

Course Topics

Refer to the *lecture* page on the public web site, <http://web.cecs.pdx.edu/~gerry/class/ME492/lecture/> for more detailed description of these topics.

1. Introduction. Customer Requirements. Project Contract
2. MLK Holiday: On-line notes on meeting skills
3. Project Planning and Scheduling
4. Conceptual design process: Evaluation of Design concepts
5. Progress presentation overview; Review goals for end-of-term progress report
6. Guest Lecture: William Nesbit, *Writing for Clarity*
7. Guest Lecture: by Jill Murfin, Nike, *Thoughts and Tips for Teamwork*
8. Progress presentations
9. Progress presentations
10. Progress presentations

Computer and E-mail Accounts

- If you haven't done so already, please go to the CADLab located in EB 325 to activate your engineering account. If you need help in using this account, please see the attendant or send an e-mail to support@cecs.pdx.edu
- If you choose not to check your CECS e-mail account regularly (yourname@cecs.pdx.edu) then please forward it to an e-mail account that you do check. Important information and announcements are delivered via this e-mail address.

Code of Conduct

The PSU Student Conduct Code prohibits all forms of academic cheating, fraud, and dishonesty. Further details can be found in the PSU Bulletin. Allegations of academic dishonesty may be addressed by the instructor, and/or may be referred to the Office of Student Affairs for action. Acts of academic dishonesty may result in a failing grade on the exam or assignment for which the dishonesty occurred, disciplinary probation, suspension or dismissal from the University. The students and the instructor will work together to establish optimal conditions for honorable academic work. Questions about academic honesty may be directed to the Dean of Student Life:

<http://www.pdx.edu/dos/student-conduct-at-psu/>.

Classroom Rules and Behavior Expectations

The classroom is a professional space and professional conduct is expected. Please silence your cell phone and refrain from text messaging during class and exam times. Treat your fellow students and the instructor with respect and please use appropriate language at all times. Additional rules may be added at the instructor's discretion.

Ethics and Professionalism

As future professional engineers you should plan to take the FE Exam (see the Oregon State Board of Examiners for Engineering and Land Surveying at

www.oregon.gov/OSBEELS), and you should be familiar with the ASME Code of Ethics (<http://www.asme.org/>), which includes the following:

Engineers uphold and advance the integrity, honor and dignity of the engineering profession by:

1. *Using their knowledge and skill for the enhancement of human welfare;*
2. *Being honest and impartial, and serving with fidelity their clients (including their employers) and the public; and*
3. *Striving to increase the competence and prestige of the engineering profession.*

Campus Resources

As a PSU student, you have numerous resources at your disposal. Please take advantage of them while you are here. A small sample is listed below:

- MME Website: <http://www.pdx.edu/mme>
- Career Center: <http://www.pdx.edu/careers>
- Center for Student Health & Counseling: <http://www.pdx.edu/shac>
- The Writing Center: <http://www.pdx.edu/writing-center>
- PSU Disability Resource Center: 435 SMU - The PSU Disability Resource Center is available to help students with academic accommodations. If you are a student who has need for test-taking, note-taking or other assistance, please visit the DRC and notify the instructor at the beginning of the term.

Student Groups and Professional Organizations

Participation in student and professional groups can be a valuable part of your education experience. Membership gives students opportunities to get to know fellow students better, meet and network with professionals, collaborate in solving real engineering problems, learn about internship or job possibilities, socialize and have fun. Consider becoming active with a student organization, such as the following:

- American Society of Mechanical Engineers Student Group (ASCE): <http://web.cecs.pdx.edu/~asme/>
- Society of Automotive Engineers: Viking Motorsports: <http://www.pdx.edu/mme/viking-motorsports>
- Engineers without Borders: <http://ewb.cecs.pdx.edu/>
- Portland State Aerospace Society: <http://psas.pdx.edu>

Most professional organizations have monthly meetings and encourage student participation by providing discounts for lunch and dinner meetings. These meetings provide opportunities to network with potential future employers, learn about scholarships, and increase your technical knowledge. Take a look at these organizations as a starting point:

- American Society of Mechanical Engineers (ASME) Oregon Section: https://community.asme.org/oregon_section/default.aspx
- Society of Automotive Engineers, Oregon Chapter: <http://www.oregonsae.org/>
- Society of Women Engineers (SWE) Columbia River Section - <http://columbiariver.swe.org>
- Engineers without Borders, Portland Chapter: <http://www.ewbportland.org/>

Campus Safety

Student safety is paramount. The Campus Public Safety Office is open 24 hours a day to assist with personal safety, crime prevention and security escort services. Call 503-725-4407 for more information.

For Campus emergencies call 503-725-4404.