

University of Portland
School of Engineering
ME 403/503 – Engineering Design: Product Realization
Fall Semester, 2016

Course Description: Study of processes and knowledge used to create an engineered product. Topics include design for manufacturing and assembly, materials, and material selection, Lean Manufacturing, and Design of Experiments (DOE) for design and manufacturing.

Course: 3 credits, TR 8:10-9:35

Prerequisites: upper division standing

Course Instructor: Kenneth E. Lulay, Ph.D., P.E.
Office: Shiley Hall 236. Ph: 943-7432. e-mail: lulay@up.edu
Web page: <http://faculty.up.edu/lulay/>

Office Hours: Whenever I am free in my office and generally the following:
Monday: 11:30-noon, 1:00-2:00
Tuesday: 10:00-11:00
Wednesday: 2:00-3:00
Thursday: 10:00-11:30
Friday: none scheduled

Textbook: Handouts will be available for down-load. No textbook is required; however, several books from the library will be put on reserve as well as in Knovel (electronic library)

Communication: The number one consistent message we here from employers is that they seek individuals with good communication skills. Listening and staying informed is a critical element of effective communication. Therefore, students are responsible for regularly checking and acting upon messages sent to their University e-mail. Each student is required to follow the standard homework format at all times. And of course, attending and paying attention in class is part of communication.

Policy on assignments: All assignments are due at the beginning of class on pre-specified due day. Assignments will NOT BE ACCEPTED after that. This policy may be waived for extenuating circumstances.

Student Outcomes: students shall demonstrate ability to:

- Apply concepts of statistics to design full factorial and fractioned experiments.
- Demonstrate an understanding of *Design for Fabrication* and *Design for Assembly* concepts.
- Demonstrate an understanding of the precepts of *Lean Manufacturing*
- Demonstrate an understanding of “evolutionary” and “revolutionary” engineering design

Topics Covered:

<u>Subject:</u>	<u>Duration</u>	<u>Subject:</u>	<u>Duration</u>
Engineering Design	1 wk	3D Printing	1 wk
DOE in Design and Mfg	3 wks	Materials issues such as:	1 wk
Lean Manufacturing	2 wks	Engineering mat'ls	
Design Considerations	3wks	Mat'l selection	
Lean Design		Surface treatments	
Design for Fab		Mfg effects	
Design for Assy		Welding	
Physical Constraints		Corrosion prevention	
Prototyping		Non-traditional mat'ls	
Rapid Prototyping		Student presentations and	3wks
		Case Studies	

<u>Grading:</u>	Aspirational ethics and professional responsibility	5%
	One midterm examination	25%
	Final Examination	25%
	Projects and Assignments	35%
	<u>Attendance and Participation</u>	<u>10%</u>
	<u>Total:</u>	<u>100%</u>

At the completion of the course, the total weighted averages from the above distributions will be combined into a letter grade according to the following scale:

Above 90%	A range (A- to A)
80% to 90%	B range (B- to B+)
70% to 80%	C range (C- to C+)
60% to 70%	D range (D- to D+)
Less than 60%	F

ME503 – an additional project will be required

Grading Criteria for Exam Problems

NOTE: unclear methodology on exams, regardless of the answer may result in a significantly reduced grade, depending upon instructor's judgment. So your work should always be clear, especially on exams.

University of Portland's Code of Academic Integrity Academic integrity is openness and honesty in all scholarly endeavors. The University of Portland is a scholarly community dedicated to the discovery, investigation, and dissemination of truth, and to the development of the whole person. Membership in this community is a privilege, requiring each person to practice academic integrity at its highest level, while expecting and promoting the same in others. Breaches of academic integrity will not be tolerated and will be addressed by the community with all due gravity. See University Bulletin for policy.

Assessment Disclosure Statement Student work products for this course may be used

by the University for educational quality assurance purposes.

Accessible Education Services (AES) Students who experience a disability and require an accommodation to fully participate in this class, contact the Accessible Education Services office located in Buckley Center, Rm. 163 or call 503---943---8985. If you have an AES accommodation plan that includes academic accommodations that apply to this course, make an appointment to meet with the professor to discuss how your accommodation will be implemented. You are responsible for giving sufficient notice to your professor for timely implementation of your accommodation; therefore it is recommended you speak with your professor in the first week of the semester or as soon as your accommodation plan is activated. Also, meet with the professor if you have an AES Safety Plan and/or wish to discuss emergency medical information or special arrangements in case the building must be evacuated. Requests for an alternate location for exams and/or extended exam time should, when possible, be made two weeks in advance of an exam, and must be made at least one week in advance of an exam.

Shepard Academic Resource Center (SARC) The Learning Resource Center, located on the first floor of Buckley Center within SARC (BC 163), provides peer assistance tutoring for writing, math, speech and presentations, languages, business and economics, sciences and nursing. For any of these services please visit the website at: <https://www1.up.edu/learningcommons/index.html>. For **Writing**. You will need to register as a user the first time you go to the website. If you cannot make any of the posted office hours, you can arrange an appointment by emailing writing@up.edu. For **Math**. Math assistants are available on a walk-in basis. Please go to check the website listed above for a current schedule of hours' math assistants are available. For **Speech and Presentations**. Speech assistants from the Communication Department are available by appointment only. Just send a request to: speech@up.edu. For **International Languages**. Language assistance is available by appointment; go to the website listed above and send an email to the target language. For **Biology and Chemistry**. The Chemistry Department offers peer mentoring on a walk-in and appointment basis. The Biology Department offers peer mentoring on a walk-in and appointment basis. For **Business and Economics**. In collaboration with the Pamplin School of Business, the Learning Commons now offers peer learning support in Economics and Business Law by appointment only. Go to the website listed above for appointment information. **Learning Assistance Counselor**. Learning assistance counseling is also available in BC 163. The counselor teaches learning strategies and skills that enable students to become more successful in their studies and future professions. The counselor provides strategies to assist students with reading and comprehension, note-taking and study, time management, test-taking, and learning and remembering. Appointments can be made in the on-line scheduler available to all students in Moodle or during posted drop-in hours

Mental Health Statement As a college student, you may sometimes experience problems with your mental health that interfere with academic experiences and negatively impact daily life. If you or someone you know experiences mental health challenges at UP, please contact the University of Portland Health and Counseling Center in Orrico Hall (down the hill from Franz Hall and Mehling Hall) at

<http://www.up.edu/healthcenter/> or at [503---943---7134](tel:503-943-7134). Their services are free and confidential, and if necessary they can provide same day appointments. Also know that the University of Portland Public Safety Department (503---943---4444) has personnel trained to respond sensitively to mental health emergencies at all hours. Remember that getting help is a smart and courageous thing to do – for yourself, for those you care about, and for those who care about you.

Non-Violent Community Statement University of Portland Faculty, Staff, and Students are committed to creating a community free of interpersonal violence, in which all members feel safe and respected. Each of us has a personal responsibility to reject violence or intimidation of any kind. Resources for those experiencing or wishing to report violence can be found on our <http://www.up.edu/cav>.

For courses with labs and/or projects, the suggested statement is as follows:

No one is allowed to work in the shops without appropriate training from the shop technician and without instructor permission. If students require card access to a lab, they must receive training from a technician.

No food or beverages (including water bottles) are allowed in the computer classrooms, shop, or labs.

For courses that require students to drive to off-campus meetings, plant tours, field work, or any university sponsored activity, the suggested statement is as follows:

If you plan to drive to off-campus events as part of this course, you must read the University Vehicle and Transportation Policy for Students:

<http://www.up.edu/showimage/show.aspx?file=21092>. The policy requires drivers of private or University vehicles to attend a one-time safe driving course, offered by Public Safety, and to submit a trip itinerary to Public Safety prior to each off-campus trip. The itinerary form must be signed by the instructor.

Academic Regulation Statement Policies governing your coursework at the University of Portland can be found in the University Bulletin at

<http://www.up.edu/provost/default.aspx?cid=9663&pid=1950>