

COURSE SYLLABUS E M 490

Course Name: Design for Product and Service Realization

Course Number: E M 490

Semester Credits: 3

Instructor/Contact Information: David Paulus, Ph.D., P.E.

Email: david.paulus@wsu.edu **Phone:** (479) 452-5940 **Office Hours:** TBD

Meeting Time: Online, Monday 5:15 – 7:30 pm Pacific

Prerequisites: None

Textbook: *Design for Manufacturability*, Anderson, CIM Press, 2010, ISBN
1-878072-23-4

Course Description and Objectives: Various techniques to identify opportunities for improvement and development of a comprehensive product design will be explored. Key issues and competitive product development and design optimization will include topics such as: quality function deployment; design for assembly and product variation; failure modes and effects analysis; reliability/serviceability, concurrent engineering; statistical process control, six sigma process and flexible process selection; tolerances design; rapid prototyping; design and development management issues; reducing part cost with DFM; DFM team building and training.

Learning Outcomes: Students will be able to:

- Design for manufacturability
- Improve product development by incorporating lean manufacturing techniques and concurrent engineering
- Minimize cost of designs including standardization
- Implement design for quality techniques

Course Topics:

Design for Manufacturability, Concurrent Engineering, Designing the Product, Designing for Lean and BTO, Standardization, Minimizing Cost By Design, Design for Quality

Course Schedule:

<u>Week</u>	<u>Date</u>	<u>Topic</u>
1	1/7	Ch.1: Design for Manufacturability
2	1/14	Ch. 2: Concurrent Engineering
3	1/21	Martin Luther King, Jr. Day
4	1/28	Ch 3: Designing the Product
5	2/4	Ch 4 : Designing for Lean and BTO
6	2/11	Ch 5: Standardization
7	2/18	President's Day
9	2/25	Ch 6: Minimizing Cost By Design
10	3/4	Midterm Exam / Project Summary
11	3/11	Spring Break
12	3/18	Ch 7: Total Cost
13	3/25	Ch. 8: DFM Guidelines for Product Design
14	4/1	Ch. 9: DFM Guidelines for Part Design
15	4/8	Ch.10: Design for Quality
16	4/15	Ch 11: Implementing DFM and C.E.
17	4/22	Ch 12: DFM Summary
18	4/29	Final Exam

Grading:

100%-90% = A, 89%-80% = B, 79%-70% = C, 69%-60% = D, 59% and Below = F

Project: 35% Presentation: 15% Participation: 15% Homework: 35%

Web Based Material: WSU Angel - <https://lms.wsu.edu/>

Attendance Policy: Students are responsible for any missed lecture notes and materials. Medical notes are not required for excused absences. One missed lecture will not affect participation grade.

Copyright Notice: The content of this program and the video transmissions of the classes are the property of Washington State University and are to be viewed and used only by persons currently enrolled in this course. The materials provided in this program are copyrighted and unauthorized duplication is not allowed without permission Of the copyright holders. Any other use requires the express written consent of the Instructor.

Academic Integrity: Academic integrity is the foundation of the academic community. WSU aims to foster and preserve the scholarly values of inquiry, experimentation, critical appraisal and integrity, and to foster these values in its students. 'Academic Integrity' is a term used at WSU to describe honest behavior as it relates to all academic work (for example papers written by staff, student assignments, conduct in exams, etc.) and is the foundation of university life. One of the main principles is respecting other people's ideas and not claiming them as your own. Anyone found to have used another person's ideas without proper acknowledgement is guilty of academic misconduct and the University considers this to be a serious matter. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3).

<http://conduct.wsu.edu/default.asp?PageID=338>

With the exception of team assignments and approved collaborative efforts, students are expected to work independently. All work turned in should represent the fruits of the students' own thoughts, studies, writing, and effort. With the advent of the internet and the ability to easily cut-and-paste written works in whole or in part, plagiarism is becoming a significant issue. Plagiarism is informally defined as any effort to portray the specific writings, anecdotes, thoughts, and concepts of others as if they were the work of the student. Any original work presented by the student should be comprised of at least 50% original material. Any and all work copied by cut-and-paste or any other method

must be appropriately identified and attributed to the original author by proper citation. Violations of this policy may result in failure of the course, and may lead to elimination from graduate studies or expulsion. Plagiarism detection software is used in many of our classes.

Academic integrity is the cornerstone of the university.

We also recognize the importance of courtesy and decorum during all discussions – in class, in chat rooms, email, and other conversations.

Professional Oral and Written Presentations: The WSU ETM Master's degree is a professional graduate program. It is expected that student work be presented neatly and with correct English spelling, grammar and punctuation. There are numerous software packages available to help students present professional papers, homework and projects. Sloppy, poorly- written work will not be accepted. The professor will determine whether to ask for a re-write or assign an "F".

Incomplete Policy: Students who desire an Incomplete (I) grade must notify the professor in writing, complete an [Incomplete Grade Agreement form](#) and provide sufficient reason for the Incomplete request. Incompletes will only be considered if at least 50% of point assignments required in the course are totally completed and submitted by the end of the course. Incompletes must be cleared by the tenth week of the following semester. Spring and summer incompletes must be cleared by the tenth week of the fall semester. Fall Incompletes must be cleared by the tenth week of the spring semester. If Incompletes are not completed by the deadline, the student must retake the class to have a grade change submitted. Students must have permission to register for future semesters if they have two or more Incompletes on their transcripts. Students will not be allowed to graduate with an Incomplete on their transcript. Incompletes will automatically change to a Failing (F) grade if not cleared within one year.

Disability Statement: Reasonable accommodations are available for students with a documented disability. WSU Online and the Access Center work together to provide reasonable accommodations for students who have documented disabilities and who are registered both with WSU Online and the Access Center. WSU Online's liaison to the Access Center will assist you in getting started. To begin this process, contact WSU Online (800-222-4978 or distance@wsu.edu). We strongly recommend that you notify us as soon as possible. All accommodations must be approved through the [Access Center](#).