

## COURSE SYLLABUS E M 585

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**Course Name:** Quality Engineering Using Design of Experiments

**Course Number:** E M 585

**Semester Credits:** 3

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

**Email:** [david.paulus@wsu.edu](mailto:david.paulus@wsu.edu)    **Phone:** (479) 431-7050    **Office Hours:** TBD

**Meeting Time:** Online, Thursday 5:15 – 7:30 pm Pacific    **Prerequisites:** None

**Textbook:** *Design and Analysis of Experiments, 8<sup>th</sup> Edition*, by Douglas C. Montgomery, ISBN 978-1-118-14692-7

**Course Description and Objectives:** Design of experiments is a systematic and efficient method of design optimization for performance, quality and cost in quality engineering. Statistical quality control improves the product and/or process quality for a given design. This course examines the design in order to acquire a better product/process quality. This course gives engineers a current understanding of the techniques and applications of design of experiments in quality engineering design.

**Learning Outcomes:** Students will learn:

- Simple Comparative Experiments
- Experiments with a Single Factor: The Analysis of Variance
- Randomized Blocks, and Related Designs
- Factorial Designs

**Course Schedule:**

<u>Week</u>	<u>Date</u>	<u>Topic</u>
1	8/22	Ch.1: Introduction
2	8/29	Ch. 2: Simple Comparative Experiments
3	9/5	Ch 3: Experiments with a Single Factor: The Analysis of Variance
4	9/12	Ch 3: Experiments with a Single Factor: The Analysis of Variance
5	9/19	Exam 1
6	9/26	Review and answer exam questions
7	10/3	Ch 4 : Randomized Blocks and Related Designs (No incomplete Blocks or Latin Squares)
9	10/10	Exam 2
10	10/17	Ch 5: Introduction to Factorial Designs
11	10/24	Ch 5: Introduction to Factorial Designs
12	10/31	Exam 3
13	11/7	Ch 6: The 2k Factorial Design
14	11/14	Ch 6: The 2k Factorial Design
15	11/21	Final Exam Review
16	11/28	No Class, Thanksgiving
17	12/5	Final Exam

**Grading:**

A [94-100], A- [90-94), B+ [88-90), B [83-88), B- [80-83), C+ [77-80), C [73-77), C- [70-73), D [65-70), F [0-65)

- Exam 1: 25% Exam 2: 25% Exam 3: 25% Final Exam: 25%
- Exams will be submitted in Blackboard

**Homework:** Suggested homework questions will be answered at the beginning of class the following week. Suggested homework problems are labeled in text with a book-logo because the solution may be found in the “Student Solution Manual”.

**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.

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**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](mailto:distance@wsu.edu)). We strongly recommend that you notify us as soon as possible. All accommodations must be approved through the [Access Center](#).