

EGR 705: Design & Analysis of Engineering Experiments

Sep 7 – Nov 13, 2010
Tue and Thu, 12:20 – 2:00 pm, Russ 146

- Catalog Description:** Introduction to the planning and analysis of engineering experiments. Topics include linear models, regression, analysis of variance, experiment designs, response surface methods, and engineering applications. Learn methods of experiment organization and data analysis to identify relationships and relative importance between independent and dependent variables.
- Prerequisite:** Undergraduate probability & statistics (e.g. ISE 301, STT 363)
- Objectives:** At the end of this course, students will be able to:
- ❖ Understand the utility of experimental design within an engineering context
 - ❖ Define factors and responses within an experimental design context
 - ❖ Analyze the results of engineering experiments and draw appropriate conclusions
 - ❖ Define and conduct a response surface methodology study
- Instructor:** Dr. Yan Liu
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- Office Hours:** RUSS 230
Tuesday & Thursday, 10:00 - 11:30 AM
- Textbook:** Montgomery, Douglas C. (2009). *Design and Analysis of Experiments*, 7th Edition, John Wiley and Sons, (ISBN 978-0-470-12866-4)
* The 6th edition of the book is slightly different from the 7th edition, but it also works fine for the course.
- JMP Software:** Visit <http://www.onthehub.com/jmp/> to purchase a 6 or 12-month license. Also available for use in the Russ 243 (Cacioppo Lab).

Course Website: <http://www.engineering.wright.edu/~yan.liu/EGR705>, where you can find information about the course materials, such as a pre-course questionnaire, syllabus, lecture notes, sample projects, and homework assignments.

Homework and exam solutions and grades are posted on WebCT (<http://wisdom.wright.edu/>).

Homeworks: Seven homework assignments will be distributed during the course. Homework grades will be based on: 1) thought process and procedure, 2) clarity, and 3) final answer.

Homeworks are due by the midnight on the assigned dates. **Late assignments will be reduced by 15% in grades for each day late unless arrangements are made prior to the due date or if a valid emergency exists. Homework will not be accepted for credit after the solution is distributed.**

Note that discussions with your fellow classmates on homeworks are encouraged, but you have to turn in your own version of the homeworks. Copying others' work is strictly prohibited and may result in an "F" grade for the course.

Project: There is a group (up to 4 members in each group) term project for this class. You are responsible for identifying the specific project topic of interest. However, I will assist you if you have difficulties. Read sample projects posted on the course website, which may help you come up with ideas for your project. Also, read carefully the instructions of the term project posted on the course website.

I highly recommend you to think about your own research when deciding the project topic. If your project is of high quality, we can consider submitting it to a conference or even a journal (after some revisions and improvement).

The project marks will be assigned as follows:

- ❖ 50% for quality of research and methodologies
- ❖ 30% for quality of writing
- ❖ 20% for quality of oral presentation

Exams: Two exams, one midterm and one final, will be scheduled during the course. The tests are open-book, i.e. you may consult any references you like. However, **you may not discuss this exam or share your work with anyone other than the instructor.**

Grading Criteria:	Mid-term exam	25%
	Final exam	30%
	Project	25%
	Homework	20%

The percentage grades needed to achieve an A, B, C, or D will follow approximately the following scale: 90 – 100 = A, 80 – 89 = B, 70 – 79 = C, 55 – 69 = D, 0 – 54 = F. The minimum score needed for a given letter grade could be lowered if necessary but will not be raised.

- My Expectations:**
- ❖ I expect that you will work hard in this course.
 - ❖ I expect you to come to each class prepared to listen and understand. I expect that you will ask questions if things are not clear.
 - ❖ I expect that you will use the textbook and other resources, and will read material as assigned.
 - ❖ I expect you to attend class regularly, and that you will promptly catch up on any classes you miss.
 - ❖ I expect you to make an honest attempt at assigned homework, and to ask for help when you need it. I expect you to not misrepresent the work of others as your own, and to neither give nor receive unauthorized aid in examinations or homework. The university standards of academic honesty under academic information can be found in the WSU student handbook, <http://www.wright.edu/students/judicial/integrity.html>.
 - ❖ I expect you to behave appropriately and politely towards me and your fellow classmates at all times. This includes remaining quiet when others are speaking and being patient with the questions of others.