

Statistics 503: Design of Experiments

Course Syllabus

Fall 2009

Course Personnel:

Professor: Naomi Altman naomi@stat.psu.edu 312 Thomas 865-3791
Teaching Assistant: TBA

Office Hours: will be posted to ANGEL

Web Page: ANGEL

office hours, homework and exam solutions, practice exams, exam times, homework hints and corrections, etc. will be posted here

Texts:

Required: Design and Analysis of Experiments by Douglas C. Montgomery, 6th or 7th edition. Wiley.
(Note: I will make sure that I have page numbers for both for readings and homework.)

Auditors

Auditors are encouraged to participate fully in lectures but may not attend Lab sessions or turn in material for grading.

Computing

Students will be required to use statistical computer software to complete many homework assignments and the project. For most assignments the Minitab GLM or SAS Proc GLM and Proc Mixed commands will satisfy the computing requirements. Minitab DOE commands are also utilized.

Homework

Regular assignments are designed to help you assimilate and practice the techniques covered in class and to prepare you for the material to come. Some reading assignments may be given in any class. These are to prepare you for class and are due as you come into class.

Homework, data and sample computer commands will be posted to ANGEL. Homework should be typed. Computer output should be downloaded to a word processor and edited appropriately - we do not want pages of useless output. Equations and other mathematical notation can be added by hand as needed or you can use an equation editor or Latex.

Copying will be penalized.

Late assignments: 10% per day deduction for up to 5 days, unless cleared approved by Prof. Altman. Approval will be given only in the case of medical or family emergency, or major academic event (e.g. comprehensive exam).

Project

A design and analysis project will be due on the last day of classes.

Exams (exact times will be posted)

Mid-term 1: Week of Oct. 11

Mid-term 2: Week of Nov. 15

Final: Finals Week

Make-up exams, if necessary, will follow the scheduled exams. Prof. Altman must be informed in writing of exam conflicts at least 1 week in advance. Final exam conflicts must be brought to my attention during the conflict filing period. Medical and family emergencies will be handled on a case by case basis. Please do not come to an exam if you are sick - you may infect the rest of us, and I cannot allow you to take the make-up exam if you have already taken the exam.

Regrades

Grading errors on homework should be brought to the attention of your TA within 2 weeks of the date on which it was returned. Your failure to pick up your homework does not extend this deadline, unless the cause was a lengthy medical or family emergency, in which case you need to contact Prof. Altman.

Grading errors on exams should be noted in writing. The exam paper and explanation of regrade should be given to Prof. Altman within 2 weeks of the date on which it was returned.

Homework and exam solutions will be available on the ANGEL on the same day the papers are returned.

Grade Breakdown

homework	25%
project	10%
mid-term 1	20%
mid-term 2	20%
final exam	25%

Topics: We will follow Chapters 1-14 of the text. 15 and 16 will come from other sources.

1. Introduction - Design Principles
2. Simple Comparative Experiments
3. Single Factor experiments
4. Randomized Blocks, Latin Square Designs and extensions
5. Introduction to Factorial Designs
6. Two level, 2^k , Designs
7. Confounding and Blocking in 2^k Designs
8. 2-level Fractional Factorial Designs
9. 3-level and Mixed-level Factorials and Fractional Factorials
10. Regression models

11. Response Surface Methodology
12. Robust Parameter Designs
13. Random and Mixed Effects Models
14. Nested and Split Plot and Strip Plot Designs
15. Repeated Measures Designs, unbalanced AOV and ANCOVA
16. Design of Computer Experiments

A detailed list of topics and readings is posted weekly to the course web page under “Readings”.

Academic Integrity

All Penn State and Eberly College of Science policies regarding academic integrity apply to this course. See: <http://www.science.psu.edu/academic/Integrity/index.html> for details.