

STATISTICS 706 SYLLABUS
Fall 2008

John M. Grego
MW 4-5:15 BA 204
Office Hrs: MW 2:30-4:00

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Text Lecture Notes and *Practical Data Analysis for Designed Experiments* by Brian S. Yandell

Attendance Though attendance is rarely a problem with graduate students, I would like to note that my policy corresponds to the policy stated in the student handbook: If you miss more than 10% of your classes (> 3 classes), the teacher may choose an appropriate penalty. I will deduct 2% from your final class average for each additional day that you miss after the third absence. Expect an e-mail message if you miss class—I will make inquiries on the days you do not show up.

Disabilities If you qualify for accommodations because of a disability, please submit a letter to me from the Office of Student Disability Services in a timely manner so that your needs may be addressed. The Office of Student Disability Services determines accommodations based on documented disabilities. Contact: 777-6142, LeConte 112A; <http://www.sa.sc.edu/sds>.

Learning Outcomes Students should be able to

- translate an experimental description into a statistical model, including identifying modeling restrictions and assumptions.
- develop appropriate hypothesis tests and statistical comparisons for non-standard designs; assess the appropriateness of computer packages' tests for non-standard designs.
- communicate experimental designs to a technical audience.
- evaluate and plan a sound experimental design, including randomization and power analysis.
- analyze experiments in the presence of common difficulties, including missing and unbalanced data.

Grading Grades will be weighted in the following way:

Take-home Mid-term exam	100 points
Homework/Classwork	100 points
Project	100 points
Take-home Final Exam	100 points
Total	400 points

The project can be undertaken with a partner (or partners) and will consist of a proposal, rough draft, polished final draft and oral presentation. I use the project to enhance (or reinforce) several skills you will need in your future (or current) career: written and oral communication, practical problem-solving and teamwork. The oral presentation should provide useful practice for your eventual master's thesis colloquium, as well as professional presentations.

You are encouraged to discuss homework and class assignments with your classmates and me, but all such assignments must be written independently. Do not copy any part of another student's work or computer code. You are not allowed to discuss take-home exams with your classmates—please consult me if you have any questions. Incidences of cheating and academic dishonesty will be punished to the full extent allowed under university regulations.

Though we will discuss analysis and model diagnostics from time to time, the emphasis in this class will be on recognizing, constructing and planning designs and deriving appropriate hypothesis tests from designs. Our current text concentrates on design rather than analysis. Additional worked-out exercises developed from its examples will be available on the website.

We will have some in-class activities that will help in your development as a statistics professional. Since design recognition is an integral skill for this course and the linear fashion in which we learn designs does not help develop this skill, we will have a “design of the week” posted on the Web page. The design will typically be too difficult for you to solve in its entirety but will have some familiar elements; I'd like you to be able to understand and articulate when complexities occur. Be prepared to discuss and hand in a write-up of your ideas in class. Your ideas can then be discussed with your classmates in a group discussion and the group consensus can then be shared with me. Grades will be based on participation level.

For portions of the course in which the text is exemplary, we will have lectures that emphasize active learning. You will come to class having thoroughly read the day's material and there will be a brief assessment of how well you understand the material. After group discussion of the material, any remaining questions will be cleared up by me. We will then close the period with either a group activity to reinforce the material or a lecture on advanced topics.

Computers I will maintain a class web page that will be used to communicate homework assignments and solutions, post copies of course-related materials and otherwise update the syllabus. The URL for the class web page is *http : //www.stat.sc.edu/ ~ grego/courses/stat706*.

I will use the computer/LCD projection system extensively in class for demonstrations and introduction of computer software. We will also convene occasionally in one of the workstation labs for group work on the computer. The group work will include data analysis and stochastic simulations.

We will be using two computer packages throughout the course. I tend to like to use the best available package for the job at hand and thus Minitab and SAS will be used appropriately; I may also use Splus or R for classroom presentations. Since Brian Yandell uses Splus extensively in his course, I have provided on the webpage R versions of his code that do not rely on his Splus library. Within this framework, I will always try to provide supplemental material on appropriate SAS code since familiarity with SAS is a course objective.

For J706: This course uses streaming video technology. The lectures should be available for download within 24 hours after the class session. I anticipate that most of the downtime (involving group discussions) can be skipped while viewing the streaming video; I also anticipate that most (if not all) distance students will take advantage of the streaming video technology. Most of the visual material will be PowerPoint, or computer screen capture, with some handwritten notes and stand-alone figures.

Date	Reading Assignment	Graded Work
8/25	1-3	
8/27		
9/3		
9/8	5	
9/10		
9/15		
9/17	10, 11	HW 1
9/22		
9/24		
9/29		HW 2
10/1		
10/6	19,20,21	
10/8		HW 3
10/13		
10/15		Midterm distributed
10/20		
10/22	22,23,24	
10/27		
10/29		HW 4, Proposal due
11/3	25	
11/5		
11/10	26	HW 5
11/12		
11/17	27	
11/19		HW 6
11/24		Project Due
12/1		Oral Presentations
12/3		Oral Presentations

The final exam will be due Thursday, December 14.