

STAT 705, Data Analysis II -- Spring 2017

Instructor:

David Hitchcock, assistant professor of statistics
209A LeConte College
Phone: 777-5346
Email: hitchcock@stat.sc.edu
Course Web Page: <http://www.stat.sc.edu/~hitchcock/stat705.html>

Classes:

Meeting Times:
MWF, 10:50 am - 11:40 am, Leconte College 201A

Office Hours:

Mon 2:15-3:15 pm, Tues 2:00-3:00 pm, Wed 2:15-3:15 pm, Thurs 1:45-2:45 pm. Please feel free to make appointments to see me at other times.

Textbook:

Applied Linear Statistical Models, 5th edition, by Kutner, Nachtsheim, Neter and Li.

Purpose: To provide a detailed exploration of analysis-of-variance-type modeling, including design and analysis aspects, to study advanced regression techniques, and to survey basic categorical data analyses.

Prerequisite: Prerequisites are successful completion of STAT 704 and STAT 712.

Official Course Description: Continuation of STAT 704. Analysis of variance (fixed and random effects), analysis of covariance, experimental design, model building, other applied topics, and use of computer statistical packages.

Course Outline: Multi-Factor Analyses. Block Designs; Analysis of Covariance; Piecewise Regression. Specialized Designs. Nonlinear Regression; Logistic and Count Regression; Nonparametric Regression. Advanced Regression Techniques. Categorical Data Analyses.

Homework:

Homework exercises from the textbook (and possibly other sources) will be assigned on the course web page. Due dates are given on the course web page. Late homework will be penalized. Please write up homework papers neatly and clearly.

Each student's homework must be done independently. You may ask each other informal questions about the homework, but everyone is to do his/her own work. If homework is found to be copied, all students involved will receive a 0. Of course, you may always ask me questions about the homework. [To be clearer, students can ask each other informal ORAL questions about homework, but cannot look at or copy each other's homework papers. All submitted homework must be their own work.]

Project:

A project involving the analysis of real data using methods learned in this class will be due near the end of the semester. The first part of the project will be a preliminary proposal with a data description and the other part will be the final written report. More information will be given out later.

Exams:

There will be two in-class midterm exams and a final exam on Wednesday, April 26 at 9:00 a.m. Exams may not normally be made up, except in extreme circumstances, for which written documentation of excuse (doctor's note, funeral notice, etc.) is required. If you suspect you may miss an exam day, it is important to contact me well in advance of the test date.

Grading:

The course grade will be based on homework (16%), 2 midterm exams (24% each), and a final exam (28%) and a data analysis project (8%). A course average of 90-100 will result in an A, 87-89 a B+, 80-86 a B, 77-79 a C+, 70-76 a C, etc.

Learning Outcomes:

The successful students will learn important principles of normal-model (and advanced model) inference and methods for data analysis, especially analysis of variance methods and categorical data methods. Successful students will be able to interpret and clearly communicate the results of common analyses.

Computing:

Some problems in this course involve significant computations, and for these, we will learn to use the software packages SAS and R. You may use the department computers that have SAS and R installed on them. Also, you may access SAS on your own computer using SAS Studio (available for free to students in this class). This can easily be accessed your home computer through the internet. R is a free, open-source statistical programming language. Details about how to download R for free onto your home computer are posted on the course web page.

During Class: No cell phones may be on during class. Laptop computers must be put away during class time. Tablets (e.g., i-pads) may be used *only for note-taking*, only if flat on the desk like a traditional notebook. Students may not use tablets to look at web pages, play games, etc.

Course Schedule: MWF, Jan 9, 2015 - Apr 24, 2015, and note:

No class (MLK Day): January 16 (Monday)

Last day to withdraw without "WF" grade: March 2 (Thursday)

No class (Spring Break): March 6-10 (Monday- Friday)

Exam 1: To be announced: sometime in mid-February

Exam 2: To be announced: sometime in late March

Wednesday, April 26 (9:00 a.m): final exam

** Homework Due Dates will be posted on the course web page with each homework assignment.