

Stat 704: Data Analysis I

Fall 2012

- Lecture: 12:30–1:45pm, Tuesday and Thursday, LeConte 201A.
- Instructor: Dr. Tim Hanson, Professor of Statistics.
Office: LeConte College 219C, phone: (803) 777-3859,
e-mail: hansomt@stat.sc.edu.
Office hours Tuesday & Thursday 10-11:30am, and by appointment.
- Prerequisite: completion of an elementary statistics course or consent of department. Co-requisite: Stat 712.
- Course description: Primarily for graduate students in statistics and the mathematical sciences. Informally, we will cover about a third of *Applied Linear Statistical Models* (5th edition), by Kutner, Nachtsheim, Neter and Li as well as additional topics covered in notes. Specifically, we will cover:
 - Random Variables and Moments, Important Probability Distributions;
 - Single-Sample Inference, Two-Sample Inference, Nonparametric Alternatives;
 - Simple Linear Regression and Correlation, Multiple Regression;
 - Nonlinear Regression; Logistic and Count Regression; Nonparametric Regression.
- Homework: Approximately nine homework assignments will be announced in class and posted on the course web page. Please write up homework papers neatly and clearly. The last homework will be a take-home data analysis project, due the week after the last lecture.
Each student's homework must be done independently. You may discuss the homework, compare answers, et cetera, but all submitted homework must be your own work.
- Exams: There will be two in-class exams. 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 (50%), and the two exams (25% each).
- **Learning Outcomes:** The successful students will learn important principles of normal-model inference and methods for data analysis, especially regression 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 package SAS. Currently the computers in LeConte College 124 (and some in Physical Sciences Building 102 and LeConte College 303A) have SAS. Student copies of SAS for home use are also available for purchase; for information, contact USC Computer Services. In many industries and jobs, SAS is the standard statistical computing package used, and this course will introduce you to some common SAS procedures.

Students may also use other packages such as Stata, Minitab, SPSS, or R. R is a free, open-source statistical programming language. Prof. David Hitchcock has R code for many examples in the text linked to his webpage. R is an extremely useful statistical programming language that has become widely used in recent years.