STAT J540, Computing in Statistics -- Fall 2012

Instructor:
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Course Web Page: http://www.stat.sc.edu/~hitchcock/stat540.html

Class Meeting Times:
Tue-Thu 9:30AM-10:45AM, WD 116 **or via distance by streaming video**

Office Hours:
Mon. 1:00-2:00 p.m., Tues. 11:00-11:55 a.m., Wed. 1:10-2:00 p.m., Fri. 10:30-11:30 a.m.
Please feel free to make appointments to see me at other times.

Textbook: *The Little SAS Book: A Primer*, 4th edition (3rd edition is possibly OK too), by
Delwiche and Slaughter.

Required Supplementary Material: Available for download: *Basics of R: A Primer*, by Don
Edwards. You should download this at the course web page. Recommended to look at:
Introduction to R, Available at CRAN: http://www.r-project.org (click "Manuals" at left side of
page; then choose the first manual, "Introduction to R").

Required Computing Resources: Access to a computer with R (available as a free download
from the CRAN home page) and SAS (students who want SAS can buy a copy from USC
Computer Services*). We will be using these computer packages throughout
the course. R is available for free download. Instructions are given on the course web page, and
everyone should probably install R on his/her own computer.

Both SAS and R are available through the MS network in LC 124 and LC 303A (SAS is only
available on a limited number of computers in Room 303A) and on the PCs in Gambrell's
basement (use your Blackboard login userid and password), but there are options for students to
obtain copies of SAS for personal use: **(1)** SAS licenses are available for student use for $60
from USC (accessed via the Technology tab in VIP). **(2)** SAS is available for temporary student
use **for free** via a program called **SAS OnDemand for Academics**. Instructions for installing
this program (which will allow you to use SAS via the Internet) will be sent to you through email
and will be posted on the course web page. However, this program is not compatible with Macs.

Course Outline: Edwards' primer, plus most of chapters 1-8 of the Delwiche & Slaughter
textbook. Topics covered include: Objects in R; Inputting and Outputting Data in R; R Graphics,
Functions, Arithmetic, Logicals, Conditional Execution, Subsetting, Sorting, Iteration; Random
Variables and Simulation Studies; Introduction to SAS; Reading and Writing Data; Working with
Your Data; Sorting, Printing, Summarizing Data; Modifying and Combining Data Sets; MACRO
programming in SAS; ODS output in SAS; PROC SGPLOT

Class Lectures:
You may attend the lectures live on Tuesdays and Thursdays in WD 116, or you may watch them
online via Adobe Connect or streaming video. Adobe Connect generally gives a clearer video
picture. Information about how to access online lectures has been emailed to you. In addition,

you may can look at the "Online Viewing" link on the course web page. The details for viewing the lectures either: (1) live through Adobe Connect, (2) recorded through Adobe Connect, or (3) recorded via streaming video, are listed under "Accessing Online Lectures". The call-in number for the studio and technical support contact information are also given there.

Homework:
Homework exercises will be assigned on the course web page. Due dates will be given on the course web page. Late homework will be penalized.

The homework will typically involve writing some programs/code in R or SAS. You may do the homework individually **or in a group of up to three people**. If you do the homework in a group, the group should turn in one file of code (with comments) with all names on it.

Along with every homework solution, each student must write an abstract explaining the purpose of the code and the programming tools that were used in the program. **If working in a group, each student must write his or her own abstract separately! Again, you may not speak with other group members about the abstract and you may not look at other group members' abstracts at all – it must be completely your own!** Violations of this will result in a 0 for the homework and possibly additional disciplinary punishment.

Learning Outcomes: The successful students will learn computing skills that will be useful to them both in academic endeavors and as working statisticians. Students will be introduced to programming using the free software package R and the widely used commercial software SAS. Programming skills, rather than straightforward data analyses, are emphasized in this course.

For Graduate Students:
Since 500-level courses are required to contain more rigor for graduate students than for undergraduates, there will be an extra short project required for graduate students. Undergraduate students may do this project for extra credit. The project will be due near the end of the semester. More information will be given out later in class. In addition, the grading scale will be slightly more rigorous for graduate students, as required by university policy.

Quizzes and Exam:
There will be two in-class multiple-choice quizzes (on September 27 and on November 1) and a take-home final exam due on Monday, December 10. **The final exam must be done completely individually – you are not allowed to receive help from *anyone except me* on the exam.** Each quiz will be given in the classroom during the regularly scheduled class time. If you are not able to come to campus for the quizzes, you must contact the distance education office to set up a proctor. If you are on campus and not able to attend class live, you may either contact the distance education office to set up a proctor, or may arrange with me to take it at some other time.

Grading:
The course grade will be based on quizzes (20% each), homework (40%), and a final exam (20%). For undergraduates, 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.

For graduate students, the grading scale is shifted by one point: A course average of 91-100 will result in an A, 88-90 a B+, 81-87 a B, 78-80 a C+, 71-77 a C, etc. For graduate students, the mandatory project will represent 5% of their overall grade, with the other grade components scaled proportionally.