STAT 517, Computing in Statistics -- Fall 2008

Instructor:
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Course Web Page: http://www.stat.sc.edu/~hitchcock/stat517.html

Classes:
Meeting Times:
Tue-Thu 4:00-5:15 p.m., LeConte College, Room 210A

Office Hours:
Mon. 10:00-11:00 a.m., Tues. 11:00 a.m.-12:00 noon, Wed. 10:00-11:00 a.m.,
Thurs. 11:00 a.m.-12:00 noon, Fri. 1:30 p.m.-2:30 p.m.
Please feel free to make appointments to see me at other times.

Textbook: *The Little SAS Book: A Primer*, 3rd edition, 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*). These packages are also available on the computers in the labs in LeConte College (LC 124 = both, LC 303A = R). Help in using R can be found on the CRAN home page.

Course Outline: Edwards' primer, plus chapters 1-4, 6, 7 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; PROC SQL

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. Please write up homework papers neatly and clearly.

You must do each homework problem independently. You may ask me for help on the homework problems. If homework is found to have been copied, all students involved will receive a 0. In addition, you may not get help from anyone other than me on take-home test assignments.

Lab Sessions:
Occasionally we will meet in the computer lab (LeConte 124 or 303A) for hands-on practice with R or SAS. Information about when we meet in the lab will be discussed in class.

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.

Exams:
There will be two in-class midterm exams and a final exam on December 9. The in-class exams may also include a take-home portion. 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.

Quizzes:
There will be frequent unannounced short quizzes during class throughout the semester. Your performance on these quizzes will count for 5% of your grade. None of these quizzes may be made up; however, only your best 11 scores on these quizzes will be counted toward your grade.

Grading:
The course grade will be based on quizzes (5%), homework (40%), midterm exams (35%), 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.

Tentative Course Schedule: Tues-Thurs, August 21 through December 4, except:
No class (Fall Break): October 9 (Thursday)
No class (Thanksgiving): November 27 (Thursday)

Thursday, September 25: Exam 1
Thursday, November 6: Exam 2
Tuesday, December 9 (9:00 a.m.): final exam

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

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*USC students can purchase the right to use SAS on their computer for about $60/year plus 5 blank CDs. To arrange this, call Barbara Koski (803-777-4657) at USC Computer Services (corner of Blossom and Sumter).