STAT 512, Mathematical Statistics-- Spring 2012

Instructor:
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Course Web Page: http://www.stat.sc.edu/~hitchcock/stat512.html
(Also accessible via Blackboard)

Classes:
Meeting Times: MWF 9:05 a.m.- 9:55 a.m., LeConte College 210A

Office Hours:
MWF 10:05-10:40 a.m. and Tues-Thurs 11:00-11:45 a.m. or **please feel free** to make an appointment to see me at other times.

Textbook:
Mathematical Statistics with Applications, 7th edition. (2008), by Wackerly, D., Mendenhall, W., and Scheaffer, R.

Purpose: The purpose of this course is to introduce you to topics in mathematical statistics. Similar to STAT/MATH 511, this course is a mix of application and mathematical theory. STAT 512 will serve as a basis for the material to be covered in STAT 513.

Prerequisite: MATH/STAT 511 with a grade of C or higher.

Course Outline: Chapters 6 – 9 of the Wackerly, Mendenhall, and Scheaffer textbook. Topics covered include: distributions of functions of random variables (distribution function technique, transformations, moment-generating function technique), order statistics, t and F distributions, the Central Limit Theorem, interval estimation, efficiency, sufficient statistics, MVUE estimation, method of moments, maximum likelihood estimation, and large-sample theory.

Learning Outcomes: The successful students will be able to use the theory of mathematical statistics to: (1) derive and understand distributions of functions of random variables; (2) understand important results about sampling distributions; (3) derive and understand point and interval estimators; and (4) judge the quality of various estimators.

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.

Exams:
There will be three in-class exams (February 1, February 29, and April 11) and a final exam on Wednesday, May 2. 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.

Homework:
Homework assignments will be posted periodically on the course web page and will be due on the specified date given. Certain problems will be graded on effort and correctness (1 point for making a decent effort at the problem, 1 point for a correct (or very nearly correct) solution). Other problems will be graded on effort (1 point for making a decent effort at the problem) and not for correctness, but you should try to understand how to solve all these problems before test time!

You must write your homework solutions NEATLY. You must present your solutions in the order that the problems are assigned. Handwritten solutions are fine, but if you type solutions, you should use either LaTeX or MS Word's Equation Editor, since other word processors (like Word without Equation Editor) are not designed for mathematical typing.

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.]

Quizzes: There will be 14 **unannounced** short (1-minute) quizzes during class at random times throughout the semester. Quizzes will usually be given near the end of class, but may be given at the beginning of class occasionally. Your performance on these quizzes will count for 4% of your grade. **None of these quizzes may be made up**; however, **only your best 10 scores** on these quizzes will be counted toward your grade; if you miss a quiz, it will be one of the quiz grades that are dropped when the quiz average is calculated. The quizzes will consist of simple questions based on the material discussed during lecture. The purpose of the quizzes is to encourage students to attend class every day and to pay careful attention during class.

Course Notes: Some pdf files with the (incomplete) notes I will be following in class are available on the course web page. It is recommended (though not required) that you print these notes out ahead of time and bring them to class where you can fill in the blank parts.

Graduate Students: Any students enrolling in the course for graduate credit must do a short project that will count for 5% of their course grade (with other grade components being rescaled proportionally). Any graduate students should please see me for details.

Grading:
The course grade will be based on quiz average (4%), homework average (15%), the three midterm exams (19% each), and a comprehensive final exam (24%). The lowest midterm exam score may be replaced by the final exam score (if the final exam score is higher). The overall course average will result in the following grades: 90-100 = A, 87-89 = B+, 80-86 = B, 77-79 = C+, 70-76 = C, 67-69 = D+, 60-66 = D, 59 and below = F.

Course Schedule: MWF, January 9 through April 23, except:
No class (MLK Day): January 16 (Monday)
No class (Spring Break): March 5, 7, 9 (Monday, Wednesday, Friday)

February 1: Exam 1
February 29: Exam 2
April 11: Exam 3
Wednesday, May 2 (2:00 p.m.): final exam