STAT 512, Mathematical Statistics-- Spring 2022

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

Classes:
Meeting Times: MWF 1:10 pm – 2:00 pm, Carolina Coliseum 3020D (COL 3020D)

Office Hours:
Mon-Tues-Wed-Fri 10:45-11:45 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., iPads) 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 11, March 2, and April 13) and a final exam on Monday, May 2 (at 12:30 p.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.

Homework: Weekly homework exercises will be assigned in class or on the course web page. These homework exercises will be collected and graded. You may work with other students in this class on these problems, but you should write your answers independently. Test problem(s) will often be similar in nature to assigned homework problems. Therefore you are personally responsible for knowing how to do each homework problem (even if you worked in a group on the homework). So it is important that you understand how to solve the homework problems! Please write your homework answers NEATLY on the pages provided (you can use other paper for preliminary scratch work, but neatly copy your final solution).

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 will do some extra homework problems during the semester.

Grading: The course grade will be based on homework average (12%), the three midterm exams (21% each), and a comprehensive final exam (25%). 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.

Disabilities: Any student with a documented disability should contact the Student Disability Resource Center at 777-6142 to make arrangements for appropriate accommodations.

Course Schedule: MWF, January 10 through April 25, except:
No class (MLK Day): January 17 (Monday)
No class (Spring Break): March 7, 9, 11 (Monday, Wednesday, Friday)