Syllabus – MATH 511

Prof. Joshua Cooper, Summer I 2009

Email: cooper@math.sc.edu
Office: LeConte πD
Homepage: http://math.sc.edu/∼cooper
Course Homepage: http://math.sc.edu/∼cooper/math511/
Main Text: Dennis D. Wackerly, William Mendenhall III, and Richard L. Scheaffer. Mathematical Statistics with Applications, 6th edition. Copyright 2002, Duxbury.
Class: MTWTh 8:00AM – 10:15PM, LeConte (LC) 210A
Office Hours: Mondays 12:00PM – 1:00PM or by appointment.

Objectives: The purpose of this course is to give you an introduction to probability theory and probability distributions. The material presented will not only serve as a basis for the subsequent courses, STAT 512/3, but is also extremely useful and fascinating in its own right. STAT 511 has a prerequisite of a standard multivariable calculus course, and a strong familiarity with differentiation, integration, infinite series and sequences, and related facts, is necessary. This course is very important for those of you considering careers in actuarial science.

Outline: From Wackerly, Mendenhall, and Scheaffer (WMS), we will cover Chapters 2–5. In particular, we will explore the axiomatic approach to probability, counting techniques, Bayes Theorem, random variables, probability distributions for discrete and continuous random variables, mathematical expectation, moment generating functions, joint and conditional distributions for multiple random variables, and measures of association (covariance and correlation). We will focus on both theory and application in this course. You will be expected to derive theoretical results using algebra and calculus and apply these results to problems from a multitude of applications.

Homework Assignments: I will assign homework problems from WMS on a regular basis. These will not be graded. However, I strongly encourage you to try all problems and see me if you are having problems solving them.

Quizzes: We will have four take-home quizzes during the semester. These quizzes will be handed out in class on a Thursday (6/3, 6/10, 6/17, and 6/24) and will be due the following Tuesday. Quizzes will be similar to the homework problems that I assign. I will discuss the quiz "ground-rules" when I hand out the first one.

Exam Schedule: We will have one cumulative final examination on Wednesday, July 1 at 8:00am (in this room). Please note that I do not give make-up examinations unless your absence is due to a university function and you have

discussed it with me at least one week in advance, or it is due to an emergency, which you can document to my satisfaction.

Grade Breakdown: Your course grade will be determined by your performance on take-home quizzes (50 percent; 12.5 percent each), the final examination (40 percent), and attendance/classroom participation (10 percent). Final course grades will be assigned according to a 90-80-70-60 protocol.

Some comments about STAT 511:

- Feel free to ask questions during class; your questions are an important part of this course. Introductory courses like STAT 511 can be challenging, and very few students are able to master the material without keeping up on a regular basis. See me if you have a question about finding tutors.
- I have found that in a course like STAT 511, most students are overwhelmed by the amount of algebra and calculus that is performed on a daily basis (e.g., in lectures, homework problems, examinations, etc.). It might be a good idea to get your calculus text out, dust it off, and review concepts such as real functions, limits, graphical methods, differentiation, integration, sequences and series, exponential and logarithmic functions, multivariate calculus, etc. This is a course that introduces statistics from a mathematical point of view. If your algebra and calculus skills are rusty, then you will have problems learning the material, and you will likely do poorly in this class.
- Working together on homework problems is permitted and encouraged, but each student should write up his/her solutions independently of others (this will help greatly). Naturally, cheating on exams and take-home quizzes is an extremely serious offense and will be dealt with accordingly.
- I would like to talk to anybody with a disability that may require special attention with examinations or other aspects of the course.

My expectations for you:

1. Attend every class and be on time.
2. Read appropriate sections of the text/notes before class.
3. Attempt all homework.
4. Ask questions if you do not understand something or wish to know more.
5. Remember what you have learned in calculus.
6. Make it your goal to understand everything we do.