

Summer 2020 - STAT 511/MATH 511: Probability

12:30 pm - 2:10 pm MTWR via Zoom

May 11th, 2020 - June 18, 2020

Instructor: Karl Gregory
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Office hours: MTWR 2:10 p.m. – 3:00 p.m.

Bulletin description

(Prereq: MATH 241 with a grade of C or higher) Probability and independence; discrete and continuous random variables; joint, marginal, and conditional densities; moment generating functions; laws of large numbers; binomial, Poisson, gamma, univariate and bivariate normal distributions.

Purpose of the course

To provide a strong foundation in basic probability for understanding the concepts and modelling of random phenomena, and to prepare students for study of the mathematical development of statistical methodology.

Topics covered

By the end of the semester, students should be able to do the following:

- Understand the laws of probability, use counting rules, and understand independence.
- Recognize and understand common discrete and continuous probability distributions and their properties.
- Be able to use joint, marginal, and conditional densities and moment generating functions.
- Understand moments, expectation, variance, covariance, correlation, and conditional expectation.
- Derive theoretical results using algebra and calculus and apply these results to problems from a variety of applications.

Recommended textbook

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

Comprehensive course notes which I expect you to read and study can be found at the [course website](#).

Grading

The graded components of the course are the following:

Homework (10%) There will be around 8 homework assignments. The lowest two homework scores will be dropped in the calculation of the course grade. No late homework will be accepted. Homework will be submitted on Blackboard.

Exam I (30%): Will be posted after class on **Thursday, May 21st** and will be due in Blackboard by **Friday, May 22nd** at midnight.

Exam II (30%): Will be posted after class on **Thursday, June 4th** and will be due in Blackboard by **Friday, June 5th** at midnight.

Final exam:

- **Written component (15%)**: Will be posted after class on **Thursday, June 18th** and will be due in Blackboard by **Friday, June 19th** at midnight.
- **Oral component (15%)**: You will be orally quizzed by the instructor during a 20 minute Zoom appointment to be scheduled sometime on **Friday, June 19th**.

If the final exam score (written + oral) is higher than the lower of the two in-semester exam scores, the final exam score will replace that in-semester exam score in the calculation of the course grade.

All assignments and exams are to be *uploaded as single pdf documents*. One way you can do this is by using a smartphone app to take pictures of your hand-written work and to merge them into a pdf (there are various cost-free apps that do this). Or you can use a scanner if you have access to one.

The thresholds 90%, 87%, 80%, 77%, 70%, 67%, and 60% will be used to determine the assignment of the letter grades A, B+, B, C+, C, D+, and D, respectively. A grade of F will be assigned to those earning less than 60%.

To find important dates about withdrawal from the course etc., go to [this link](#).

Honor code

See the Carolinian Creed in the Carolina Community: Student Handbook Policy Guide. Violations of the USC Honor Code may result in a 0 for the work in question, and, in accordance with University policy, other punishments up to and including expulsion from the University.

Accommodations

If you require special accommodations, they must be arranged in advance through the Office of Student Disability Services in room 112A LeConte (777-6142, TDD 777-6744, sasds@mailbox.sc.edu).