Fall 2014

# MATH 4600/6600
## SYLLABUS

T. Shifrin

**Text**: Sheldon Ross, *A First Course in Probability*, 9th edition, Pearson.
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**Web page** for the class at `http://www.math.uga.edu/~shifrin/MATH4600`.
**Office Hours**: to be decided. They will be announced in class and posted on the web page.

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The prerequisites for this class are MATH 2270/2500/3510 and MATH 3100 (or MATH 2260), i.e., multivariable calculus and sequences and series.

There will be three midterm exams (15% each), a final exam (35%), occasional pop quizzes (10%), and weekly homework assignments (10%). Homework will be collected every Friday. Graduate students must do at least one theoretical problem on each assignment.

I am aware of various sources of solutions for problems in the text. You are only cheating yourself if you pass off someone else's work as your own. I will give a number of pop quizzes to make sure you're actually absorbing what's in the homework; I will also assign some homework problems *not* taken from the text to help keep you honest.

> **N.B.: No late homework or makeup exams.** Although I encourage you to work on homework with **a few** other students, you **must** write up your assignments **by yourself**. You must comply with UGA's Academic Honesty Policy; see items 3, 4, 5, and 6 at `http://ovpi.uga.edu/academic-honesty/academic-honesty-policy`.
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> All students are responsible for maintaining the highest standards of honesty and integrity in every phase of their academic careers. The penalties for academic dishonesty are severe; note that "lack of knowledge of the provisions of this policy is not an acceptable response to an allegation of academic dishonesty."

The last day to withdraw with the possibility of a WP is October 23. Midterm exams are *tentatively* scheduled for September 24, October 29, and December 5. The comprehensive final exam will be Wednesday, December 17, 8:00–11:00 a.m.

## Course Outline

1. Counting principles, permutation, combinations, multinomial coefficients. Sample spaces, equally likely outcomes, basic principles in probability.
2. Conditional probability and independence. Bayes's Rule. (Exam 1)
3. Discrete random variables, expected value, variance. The binomial distribution, Poisson processes.
4. Continuous random variables, probability densities, expectation and variance. Normal and exponential distributions. Chebyshev's inequality and the weak law of large numbers. (Exam 2)
5. Jointly distributed random variables, independent random variables. Conditional distributions, discrete and continuous.
6. Expectation: expectation of sums of random variables, conditional expectation.
7. Central limit theorem, and strong law of large numbers. (Exam 3)