

# Syllabus for Math 3225, Honors Probability and Statistics, Fall 2010

August 24, 2010

**Instructor:** Ernie Croot

**Office:** 103 Skiles

**Office Hours:** TBA

**Place and Date of Classroom:** MWF, 1:05 - 1:55 in Skiles 271.

**Book:** *Probability and Random Processes, 3rd Edition*, by Grimmet and Stirzaker.

**Grade:** You grade will be based on 20% for each of two midterms, 30% homework, and 30% for the final exam. Homeworks will be collected about once every two weeks.

**Material:** Though you have a required text for this class, I will mostly be using my own notes, which I will post on the website occasionally. The book should be seen as a place to find more elementary explanations of some of the ideas – to consult when you don’t understand something from the lecture, study for exams, or to complete some of the homeworks.

In this course we will work through the foundations of probability theory, such as set theory, measure theory, conditional probability, expectation, variance, distributions, law of large numbers, central limit theorem, and so on. You will be required to understand and develop proofs as part of your homework.

We will also work through some interesting, exciting applications of the theory, such as applications to number theory, Bayesian spam filtering, statistical sampling and inference, Bayesian Networks and their application to artificial intelligence, and perhaps Hidden Markov Models with applications to gambling and speech recognition.

Puzzles and Paradoxes will also be discussed occasionally. Probability theory is full of them – it is interesting just how often our intuition can lead us astray!

I also plan to talk about the history behind some of the ideas. For example, who some of the people were, what contexts they operated in, and what impact their ideas have had on the field.

## M3225 : FALL 2011 SEMESTER

MICHAEL LACEY

**Textbook.** Grimmet and Stirzaker, Probability and Random Processes, 3rd edition

**Syllabus.** Chapters 1-6, with some supplemental material on statistics

**Homework.** will be collected approximately every two weeks, and will be worth 10% of the grade. You should attempt all the the problems in the text, and they will frequently be the basis of classroom discussion.

**Exams.** There are three midterms, and final exam. (More than enough to make up for the lack of Homework collected.)

Midterm 1	Sept 16	18%
Midterm 2	Oct 14	18%
Midterm 3	Nov 21	18%
Final	Dec 12	36%

**Attendance.** You are expected to come prepared and actively participate in every lecture and recitation session. In the event of an absence, you are responsible for all missed materials, assignments, and any additional announcements or schedule changes given in class. Class disruptions of ANY kind will NOT be tolerated and may result in your removal from the classroom and loss of attendance/participation points for that day. Please show courtesy to your fellow classmates and instructor by adhering to the following class rules: turning off all laptops, cellular phones, i-pods and pagers (and other electronic devices, unless being used for note-taking) during class, coming to class on time and staying for the entire class period, refraining from conversing with your fellow students, and putting away any reading materials unrelated to the course.

**Academic Honesty.** All students are expected to comply with the [Georgia Tech Honor Code](#). Any evidence of cheating or other violations of the Georgia Tech Honor Code will be submitted directly to the Dean of Students. Cheating includes, but is not limited to: using a calculator, books, or any form of notes on tests or quizzes; copying directly from any source, including friends, classmates, tutors, or a solutions manual; allowing another person to copy your work;

signing another person's name or having another person sign your name on an attendance sheet; taking a test or quiz in someone else's name, or having someone else take a test or quiz in your name; or asking for a regrade of a paper that has been altered from its original form.

**Makeup Exams.** Possible, but strongly discouraged. Justifications will have to be at the level of a university-sponsored event or athletics, please provide me with the official documentation in advance.

**Office Hours.** MWF, 12-1pm, and always by appointment.

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