Lecture Time and Location: MWF 1—2pm, Altgeld 347.


My coordinates: Altgeld Hall 259, 217-333-5601

Text(s): The only required text is


The solution manual for the book has been published as a separate volume, and I recommend that you get this as well:


(See the course web page for links to find these books online.)

Prerequisites: The only real prerequisite of this course is a course in undergraduate probability theory, and in the best case a student will also have a course in undergraduate real analysis. MATH 447 and 461 (or their equivalent) should be fine.

The texts used in those courses are Sheldon Ross’s “A First Course in Probability Theory” and Kenneth Ross’s “Elementary Analysis. Theory of Calculus”. (Two Rosses, I know!) Any student who is more or less familiar with the material in those two texts should be prepared for this course.

Course setup: This course has two properties which determine the way the course will be taught: it is a graduate course, and it is a course about applied probability theory.

The fact that it is a graduate course implies that it will move quickly, and most students need to be continuously engaged with the material to keep up.

The fact that it is a course about applied probability theory implies that the course will be more focused on **problem solving** than **theory building**. Therefore, while I will talk about theory in lecture, I also plan to work problems in lecture — specifically talking about how problems are solved, discussing potential “false starts”, generalizing problems to theorems, etc. Expect that at least one problem is worked per lecture. I’ll come prepared with a problem of my own to work out, but if there is a consensus on any given day that I should work a different problem, I’m happy to do that as well.

The material of the course will be simple enough: we’ll plow through most of G&S through the semester. My plan is to cover the first four chapters very quickly and then go through chapters 5–13 with a more reasonable pace (see the calendar on the course web page for details). Note that the first four chapters of G&S are basically equivalent to Ross’s *First Course*, which is the text we use in MATH 461. If you’ve done well in MATH 461 or any comprehensive undergraduate probability course, this first part of the class should be a review.

In general, I am a strong advocate of active learning (as opposed to passive). I will structure the homework assignments so that you usually have to **read ahead** to be able to do the problems.
The idea here is that you should come to any lecture with some familiarity of the definitions and basic results of a lecture, and I will concentrate the lecture time on the most important or most difficult parts of the material.

**Grading:** I mentioned continuous engagement with specific problems above, and I meant it. There will be a homework assignment after every lecture.

The solution manual is a recommended book for the course, and most of the assignments I give will be problems from the book (or suitably modified versions). Because of this, the homework will not be collected. However, for best results you should do as many of the problems independently as you can: there will be quizzes throughout the semester based on the homework problems (these are designed so that if you can do the homework problems, you will ace the quizzes).

Since it is a course on probability theory, the dates of the quizzes will be random. By this I mean I will literally choose a realization of \(k\) dates without replacement in the set of all open lecture dates, and those will be the dates of the quiz. I'm sure there will be three lectures in a row with quizzes and then a two-week desert; this is in itself a lesson in probability theory (cf. Section 5.12 of G&S).