Math 632– Introduction to Stochastic Processes

Time and place: Tuesdays and Thursdays 9:30 AM - 10:45 AM, Van Vleck B139.

Instructor: *David Anderson*
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Course webpage: *http://www.math.wisc.edu/∼anderson/632F12/632F12.html*

- I will use the class email list to send out corrections, announcements, etc. Please check your wisc.edu email regularly.
- This syllabus is always subject to change.

Office Hours: TBD, and by appointment.

Textbook: Rick Durrett: *Essentials of Stochastic Processes.* Available on Prof. Durrett's website. Note that you do not need to purchase a book. We will cover most of the topics in the text (plus a few extra).

Course Content: The course consists of Chapters 1-4 from Durrett's book: discrete time Markov chains, Poisson processes, renewal processes, and continuous time Markov chains. I also hope to cover at least a portion of chapter 5, martingales. Further, I will have some extra topics such as simulation and applications to biology. The course will begin with a review of basic probability (though this is *not* a substitute for having taken math 431 or equivalent).

Prerequisites: Calculus, linear algebra, and an introduction to probability (at the level of Math 431) are sufficient. However, the material in this class is sophisticated, so a degree of intellectual maturity and a willingness to work hard are required. For this reason some 500-level work in mathematics is recommended for background, preferably in analysis (521). Students must have enough mathematical maturity to be comfortable following proofs in the textbook and in the lectures, and must also be able to construct proofs of their own on homeworks and tests.

Exams: There will be two midterm examinations and a final. No make-up midterm exams will be given unless proof of extraordinary circumstance is provided at least one week before the exam day. According to university policy, no early final exams will be given for ANY reason.

Homework Assignments: Reading assignments and homework exercises will be given in class and posted on the course website. It is your responsibility to get this information. Some notes on homework:

- The homework problems are graded mainly on your reasoning. Part of doing good mathematics is explaining your reasoning in a way that is easy to understand. *It is your responsibility to provide a clear explanation to the grader.*

- Working in groups on homework assignments is strongly encouraged; however, every student must write their own assignments.
- Organize your work neatly. Use proper English. Write in complete English or mathematical sentences. Answers should be simplified as much as possible.
- I strongly encourage students to type up there solutions (perhaps in Latex).
- Put problems in the correct order and staple your pages together.
- Do not use paper torn out of a binder.
- Be neat. There should not be text crossed out.
- Recopy your problems. *Do not hand in your rough draft or first attempt.*

Grades: In determining your final numerical grade your work will be weighted in the following manner

Homework & Quizzes:	25%
First Midterm:	25%
Second Midterm:	25%
Final Exam:	25%

In determining your final letter grade, a curve will be utilized at the end of the course to normalize the class GPA with GPAs from past classes (plus or minus some points based on my discretion).