Math 831– Theory of Probability I

Time and place: Tuesdays and Thursdays 11:00 AM - 12:15 PM, VV B139.

Instructor: *David Anderson*
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- 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: *Probability: theory and examples*, fourth edition.
A good reference for Measure theory is *Real Analysis*, by Gerald Folland.

Course Content: This is a graduate level introductory course on mathematical probability theory. We cover selected portions of Chapters 1-5 of Durrett.

The course continues in the Spring Semester with chapters 5-8 on topics such as Markov chains, stationary processes and ergodic theory, and Brownian motion.

Prerequisites: Probability theory operates in a measure-theoretic framework, so it is important to know basic measure theory. A suitable background can be obtained from Math 629 or Math 721. Comfort with rigorous analysis and some elementary probability are also necessary.

Evaluation: Course grades will be based on home work assignments, a take-home midterm exam and an in class final exam at the end of the semester. Specific percentages are: Homework 40%, Midterm 25%, Final Exam 35%. 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.

Homework Assignments:

- Homework must be handed in by the due date, either in class or by 3 PM in the instructor's office or mailbox. Late submissions cannot be accepted.
- Neatness and clarity are essential. Write one problem per page except in cases of very short problems. Staple you sheets together. You are welcome to use LaTeX to typeset your solutions.
- It is not trivial to learn to write solutions. You have to write enough to show that you understand the flow of ideas and that you are not jumping to unjustified conclusions, but not too much to get lost in details. If you are unsure of the appropriate level of detail to include, you can separate some of the technical details as "Lemmas" and put them at the end of the solution. A good rule of thumb is if the grader needs to pick up a pencil to check your assertion, you should have proved it. The grader can deduct points in such cases.
- You can use basic facts from analysis and measure theory in your homework, and the theorems we cover in class without reproving them. If you find a helpful theorem or passage in another book, do not copy the passage but use the idea to write up your own solution. If you do use other literature in this way for help, cite your sources properly. However, it is better to attack the problems with your own resources instead of searching the literature or the internet. The purpose of the homework is to strengthen your problem solving skills, not literature search skills.
- It is valuable to discuss ideas for homework problems with other students. In fact, this is strongly encouraged. But it is not acceptable to write solutions together or to copy another person's solution. In the end you have to hand in your own personal work.