



APPM 4/5560
Markov Processes
Fall 2009
MWF 2-2:50, DUAN G2B47

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...or by appointment...or if you can catch me...

Welcome to “Markov Processes”. We’ll begin with a brief review of probability and pick up more and more as needed throughout the semester. We’ll talk Markov chains in both discrete and continuous time, and we’ll linger a bit on Poisson processes in particular until you become thoroughly paranoid about how pervasive they are in your life. There will be lots of queueing theory too. When you leave this course, you’ll be an old pro at navigating grocery store checkout lines, rush hour traffic, and even spider webs. We’ll cover Chapters 1,3,4, and 5 of your textbook as well as some scattered (but really cool) Markov chain simulation algorithms that will allow you to “see infinity”. If there is extra time at the end of the semester there will be Brownian motion for everyone!

Course Specs:

Text: *Essentials of Stochastic Processes*
by Rick Durrett

Grading: Homework 30%
Two exams 25 % each
Final exam 20 %

Important Dates: Exam 1: Monday, September 28th, In class.
Exam 2: Monday, November 2nd, In class.
Final: Date and Time: To be announced.

A few more details...

- Homework will be assigned each Wednesday and due the following Wednesday with possible exceptions surrounding an exam week.
- The final exam may be comprehensive but will emphasize material from the end of the course.
- Course information, including homework assignments and solutions will be posted at <http://amath.colorado.edu/courses/4560>. This page includes a link to a course message board where you can ask questions (and browse answers!) about homework problems and chat with all of your new best Markov chain loving friends!

- For simulations, you may use any software that has a random number generator. For example, C, C++, R, Matlab, FORTRAN, etc... The programming assignments will be relatively infrequent and will stay fairly “light” (meaning hopefully not too time consuming and not requiring phenomenal programming expertise).
- Know that I am really here to help you do your best in this course and that I REALLY dig Markov chains! Questions and comments are always welcome whether it’s in class, in my office, or over e-mail!

To Students Registered for Graduate Credit: (APPM 5560)

There are three things that distinguish the graduate version of this course from the undergraduate.

1. You may have an extra, more in-depth, problem on each homework assignment.
2. At each of the two in class exams, you will be given an additional short (2-3 questions) take-home exam.
3. You may be held to higher standards in grading than the undergraduates.

Again, welcome to Markov Processes!