

SYLLABUS

TuTh
3:00-4:20
King 227

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Office hours: MW 3:30-4:30, TuTh 12:00-1:30, and by appointment.

Required text: Sheldon M. Ross, *Introduction to Probability Models*, Academic Press, ninth edition.

Purpose: This course can be viewed as an introduction to mathematical modeling. During the semester, we will survey a variety of mathematical models. Many of them are considered classics, and virtually all of them are stochastic (i.e. involve probability). We will devote the first two weeks or so to Distance and Location Problems and a review of Probability (Chapters 1-3). We'll then take a long, hard look at Discrete Time Markov Chains and Markov Decision Processes (Chapter 4). Afterwards, we will study Poisson Processes (Chapter 5) and Continuous Time Markov Chains (Chapter 6). Depending on how quickly we move, we may study Renewal Theory (Chapter 7), Queueing Theory (Chapter 8), Reliability (Chapter 9), and Simulation (Chapter 11). In addition, we may study Stochastic Dynamic Programming and Revenue Management.

Homework: Homework will be due at my office by 4:30 pm on Fridays. I encourage you to discuss the assignments with your classmates, but I insist that you write and submit your own solutions. Under normal circumstances, no late homework will be accepted. Each homework assignment will be worth 25 points. At the end of the semester, when computing your homework grade, I will drop your lowest score.

Exams: There will be two midterms. The first one will have two parts: an in-class portion and a take-home portion. The second will be a take-home exam. You will have the option of taking an in-class final **or** doing a final project. (To do a final project, you must submit a proposal to me by April 21.) All exams will be open-text, open-notes. The first midterm will be held on March 13. The second will be distributed on April 24. The final will be held on May 16 at 7 pm.

Project: The final project can involve you doing some modeling, conducting a simulation, or writing a research paper on a topic that interests you. Each team of students that does a final project must give a brief in-class presentation of their project and submit a 5-10 page written report. Presentations will be held during the last week of class. The written reports will be due at 7 pm on May 16.

Grading: The homework assignments will be worth a total of 25% of the final grade. Each exam (or project) will be worth 25%.