Stats217: Introduction to Stochastic Processes
Summer 2012

Place & Time: Herrin Hall, Room T175, Tue Thu 12:50 – 2:05 PM

Instructor: Apoorva Khare
Email: khare@stanford.edu
Office: Sequoia Hall, Room 202
Phone: 650-725-5976
Office Hours: Wed 10:35 AM – 12:35 PM (Special time: Jul 16 (Mon) 9–11 AM)

Teaching Assistants
- Bhaswar Bhattacharya bhaswar@stanford.edu Sequoia 206 Thu 2-4 PM
- Sumit Mukherjee sumitm@stanford.edu Sequoia 237 Mon Wed 3-5 PM

Course website: http://coursework.stanford.edu

Course Goals
This course will provide an introduction to stochastic models. Markov chains will be the main class of stochastic processes under consideration. We will study their properties, common techniques of analysis, and examples/applications. Main topics include: Discrete and continuous time Markov chains, point processes, random walks, branching processes, first passage times, recurrence and transience, stationary distributions.

Prerequisites
If you have not taken a probability course at the level of Stat116/Math151, please seek the instructor’s permission before taking Stat217 for credit. This policy has been introduced for the benefit of students so that those who take the class have adequate preparation to follow the material. Hence please consult the instructor if you have taken different but equivalent courses. Chapters 1-2.4 of the required text contain the material assumed to be known.

Required Text
Pinsky & Karlin, An Introduction to Stochastic Modeling, 4th edn. (Chapters 3 – 6, 9).

Optional Text
Hoel, Port, & Stone, Introduction to Stochastic Processes. (Chapters 1 – 3)
Other References
- Durrett, Essentials of Stochastic Processes. (Chapters 1, 3, 4, 5)
- Grimmett & Stirzaker, Probability and Random Processes, 3rd edition. (Chapters 6, 8, 10, 11)
- Resnick, Adventures in Stochastic Processes. (Chapters 2 – 5)
- Ross, Stochastic Processes, 2nd edn. (Chapters 2, 4, 5)

Grading & Exam Schedule
Homework 25% Due on Thursdays in Bhaswar’s office (by 4 PM) or in class
Midterm 25% July 17, Tuesday (in class)
Final 50% August 18, Saturday, 12:15 – 3:15 PM, Hewlett 103

Homework
There will be 6 or 7 homework assignments that will count towards grades. Homework problems will be posted on the course webpage. Collaboration is allowed in solving the problems, but each student should hand in his or her own independently written solutions.

Homework must be submitted by Thursday in the TA’s office hours (by 4 PM) or in class (at the beginning of class when applicable). Assignments will be graded in about a week and returned in class. The late homework policy is explained below.

Miscellaneous
1. Please write STATS217 in the subject heading of all email correspondence with instructor/TA’s. This is in general effective in weeding out spam email.
2. **Homework:** The TAs are responsible for the homework component of the class. As pointed our earlier, we are unable to accept late homework. Homework extensions only delay the grading of solutions. In order to mitigate this problem, from HW3 onwards each student is given four days of grace period over the quarter. When you use the grace period, please announce that you are using the grace period (and the number of days) by email to instructor/TAs. Beyond four days, there will be a penalty for late submission.
   Homework cannot be submitted by email/electronically as they need to be graded on a paper copy (the TAs do not have access to unlimited printing - so please print your homework before submission). Please submit HW on time, in the TA’s office (or at the beginning of Thursday’s class) and **not** to the mailbox (marked “STATS217”) on the second floor of Sequoia Hall. That mailbox is only for collecting graded homework back. Please do not place your homework under the office doors of the TAs/instructor. In the past homework placed under office doors have sometimes been lost or misplaced.
3. Please note that it is difficult to discuss mathematics/statistics questions by email due to the lack of an appropriate interface. In the past this has led to miscommunication or incorrect information relayed by email - hence you are
encouraged to ask your technical questions during office hours. As the TAs have responsibilities other than this course, please go to them only during office hours (unless prior arrangements have been made).

(4) In the past poor time management and planning have led to homeworks being handed in late etc... To be fair to the TA’s and your fellow students please do not unnecessarily burden the teaching team with unreasonable requests. Please be responsible and plan ahead if you have to be away from campus during the quarter.