

## STOCHASTIC PROCESSES 098413

Instructor Haya Kaspi.

Grade will be based on homework assignments (50%) and a final in class exam (50%).

This is a pre measure theory graduate course in stochastic processes. It is meant for students with some background in stochastic processes (e.g. Stochastic Models in OR or Stochastic Signals).

### Topics covered

1. Some probability Theory—mainly conditional distributions and expectation. (first week)
2. Martingales in Discrete Time. ( Lectures 2-6).
3. Markov Chains in Discrete and Continuous Time. (Lectures 7-9)
4. Regenerative Processes and Renewal Theory (Lectures 10-12).
5. Brownian Motion (construction and some basic sample path properties)

The following are books that I will use for various topics of this course.

1. Resnick, S.I. *Adventures in Stochastic Processes*, Birkhauser 1992.
2. Durrett, R. *Essentials of Stochastic Processes* Springer 1999.
3. Bhattacharya, R.N. and Waymire, E.C. *Stochastic Processes with applications*, Wiley 1990.
4. Karlin, S. and Taylor, H.M. *A first Course in Stochastic Processes* Academic Press, 1975
5. Cinlar, E. *Introduction to Stochastic Processes* Prentice Hall 1975
6. Grimmett, G.R. and Stirzaker, D.R. *Probability Theory and Random Processes-Second Edition* Oxford Science Publications 1992.