

STATISTICS 433: STOCHASTIC PROCESSES

Spring 2020

Instructor:	Fan Yang (Email: fyang75@wharton.upenn.edu)
Lectures:	MW 12:00 – 1:30, JMHH 240
Office hours:	(tentative) Thursday 2:00 – 4:00, location TBD
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Course Description: The goal is to lay the foundation for the mastery of the technology of basic stochastic processes. We will study some essential processes such as Markov chains, Poisson Processes, Branching Processes, Renewal Processes, and some of the methodology of martingales. The focus is on the development of mathematical skills and the understanding of key theoretical concepts, but some simple applications to areas such as finance, statistics, or machine learning will also be discussed.

Prerequisites: Knowledge of the material of STAT 430 or equivalent is required. Students is expected to have a solid understanding of one-variable and multivariable calculus. Some basic knowledge of matrix theory is also required.

References: We use the following textbook.

- Essentials of Stochastic Processes (Springer Texts in Statistics, Third Edition) by Richard Durrett.

The following reference will also be helpful, but is not required.

- Introduction to Stochastic Processes with R (Wiley, First Edition) by Robert P. Dobrow.

Lecture notes will be posted after the classes. Please note that lecture notes is by no means a replacement for class attendance!

Grading Policy:

- Homework (20%) + Midterm (30%) + Final (50%).

Homework:

- There will be (almost) weekly homework assignments.
- No late homework will be accepted.
- Two lowest homework scores will be dropped.

Exams:

- There will be one in-class midterm exam, on March 4.
- The Final is scheduled on May 12 Tuesday, 9:00-11:00 am, location TBD.
- There is no make-up exam. You should attend the final exam to pass the course.
- Please bring you Penn ID to all the exams.

Class Policy:

- Regular attendance is essential and expected.
- Students are expected to abide by the principles of academic integrity of the University of Pennsylvania.