

Probability seminar, Fall 2018

Prerequisites: MATH-UA 233 Theory of Probability or equivalent.

Dates and time: 6pm to 7:30pm on Mondays from 09/17 through 12/10

Location: WWH 805 (in the Courant building)

This is a not for credit, open to any NYU student seminar. There is no registration, just send me an email with the choice of the topic that you want to present. Master students are welcome to present some of the more advanced topics beginning with week 6. For topics that take two weeks, you can just present one part of the topic.

Text: Topics are available from Rick Durrett's: *Essentials of stochastic processes*. Further good references for some topics are *A first course in probability* and *Introduction to probability models* by S. M. Ross. For weeks 6 to 11 another source will be provided.

Topics

1st week (*Bob Junyi Zou*) Markov Chains I. (1.1 through 1.3 from the notes) and Branching Processes Example 1.52

2nd week (*Haorui Guo*) Markov Chains II. (1.4 and 1.5 from the notes and Theorem 1.19 from chap. 1.7)

3rd week (*Shiva Darshan*) Markov Chains III. (1.6, 1.8, 1.9), Metropolis-Hastings algorithm (1.6.4)

4th week (*Michael Li*) Poisson Process (Chapters 2)

5th week (*Yixiang Gao*) Continuous time Markov Chains (Chapter 4) and Markovian Queues (4.5)

6-7th week (*not assigned yet, 2 available*) Conditional expectation and martingales (Chapter 5)

8-9th week (*Haoyu Wang, 1 available*) Brownian motion

10-11th week (*not assigned yet (2 available), master*) Stochastic integration and the Itô formula

12th week (*Simon Sun and Run Zhang*) Mathematical finance and the Black-Scholes model of financial markets