

Math 611 Probability

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List of topics to be presented:

Elements of Probability Measure, Conditional Probability and Independence, Random Variables and Distributions, Conditional Distribution and Conditional Expectation, The Poisson Process, Generating Functions and their applications, Characteristic Function, Convergence of random variates, The Central Limit Theorem, Markov Chains¹, Random Walks².

Textbook(s):

You will receive lecture notes about the material to be covered. These are my original lecture notes that are (hopefully) going into a book, to be published 2012. I am going to ask that if you find mistakes or missprints to mark them on the notes and give them to me at the end of the semester.

Learning Probability is about doing as many problems as possible and reading as many books as possible. The following is a list of reference books:

- *Introduction to Probability Models*, 10th edition, by Sheldon M. Ross, Academic Press, 2009, ISBN-10: 0123756863 ISBN-13: 978-0123756862.
- *Probability and Random Processes* by Geoffrey Grimmett and David Stirzaker, Oxford University Press 2001.
- *Probability with Martingales*, by David Williams, Cambridge University Press 1991
- *Probability: Theory and Examples*, by Richard Durrett, Thomson Learning 2004
- *A course in probability theory*, by Kai Lai Chung, Academic Press 2000

¹Time permitting

²idem

- *Probability and Measure*, by Patrick Billingsley, Wiley series in probability and mathematical statistics 1995

Homework, Exams and Grading:

We will have one midterm and a final exam. Their dates will be agreed on during the semester. We will have assignments during the semester. They will be graded and counting for the final grade. However, the most weight for the final grade will be coming from the final examination.