Math 611 Probability

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Some 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 Chains[1], Random Walks[2].

Textbook(s):

This semester we will use as the main textbook:

- *Introduction to Probability Models*, 9th edition, by Sheldon M. Ross, Academic Press, 2006, ISBN-10: 0125980620 ISBN-13: 978-0125980623.

I choose this book mainly for the examples and exercises it contains.

However, the material which we cover goes beyond this book. On the course website (link above) I will post several chapters that detail the specific material covered in this class. Eventually, they will make a book but for now I only have these draft chapters. 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.

The following books are given as reference. They are on the list of reserved books in the library:

- *Probability: Theory and Examples*, by Richard Durrett, Thomson Learning 2004

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

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[1]Time permitting
[2]idem

- *A course in probability theory*, by Kai Lai Chung, Academic Press 2000

- *Probability with Martingales*, by David Williams, Cambridge University Press 1991

- *Probability and Random Processes* by Geoffrey Grimmett and David Stirzaker, Oxford University Press 2001.

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.