

**STAT 449 (MAST 671/881E)**

Advanced Probability  
*Fall 2016*

**Instructor:** Dr. X. Zhou, Office: LB 921-19 (SGW), Phone: 514-848-2424, Ext. 3220  
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**Office Hours:** Thursday 13:00-14:30.

**Textbook:** *Probability and Random Processes*, by G. R. Grimmet and D. R. Stirzaker.

**Homework:** Homework will be assigned bi-weekly.

**Exams:** There will be one one-hour midterm exam. The schedule of the exam will be announced later. **NO MAKE UP TERM EXAMS.** There will be around 5 assignments.

**Grading:**

- Homework (10%)
- Midterm Exam (30%)
- Final Examination (60%)

**Topics:** This course will cover the materials from Chapters 1, 3, 4, 5, 7 and 12 including:

- Discrete and continuous random variables, indicator functions\*.
- Conditional probability and conditional expectation\*.
- Generating functions and characteristic functions, limit theorems.
- Random walk, branching process and Poisson process.
- Convergence of random variables, modes of convergence.
- Introduction of martingales, martingale convergence theorem, optional stopping.

Week	Topics to be covered
1	Section: 1.1 - 1.3, 3.1-3.3
2	Section: 3.4 - 3.7
3	Section: 4.1- 4.8
4	Section: 5.1 - 5.3
5	Section: 5.4 - 5.5
6	Section: 5.7 - 5.10
7	Section: 5.11, Midterm
8	Section: 7.1 - 7.3
9	Section: 7.4, 7.10
10	Section: 7.7, 7.8
11	Section: 12.1, 12.4, 12.5
12	Review
13	Presentations by graduate students