

STAT 449 (MAST 671/MAST 881), Sec. B
Advanced Probability
Fall 2023

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Class Schedule: Tuesdays and Thursdays. 14:45-16:00.

Office Hours: TBA.

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

Homework: There will be about 5 assignments.

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

Grading:

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

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

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, 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
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	Presentations by graduate students

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