

MATH 419
MATH 545

Stochastic Processes
Probability II

Jan-Apr 2016
The course is cross-listed 419/545.

Instructor: Dr. G. Slade, Math Annex 1211, 604-822-3781, slade@math.ubc.ca

Course webpage: <http://www.math.ubc.ca/~slade/math419/419-web-16.html>

Office hours: Monday, Wednesday, Friday 9:00–9:50 a.m., or by appointment.

Prerequisite: Math 418/544, which in turn requires Math 321. Background in analysis and probability equivalent to this sequence is essential—you should not enrol without it.

Text: R. Durrett, Probability Theory and Examples, Cambridge University Press, (2010). Available at: https://www.math.duke.edu/~rtd/PTE/PTE4_1.pdf.

Other references: G.R. Grimmett and D.R. Stirzaker, Probability and Random Processes, 3rd edition, Oxford, (2001). There is a solutions manual to this text that will also be useful to consult: G.R. Grimmett and D.R. Stirzaker, One Thousand Exercises in Probability, Oxford, (2001).

J.R. Norris, Markov Chains, Cambridge University Press, (1997).

D. Williams, Probability with Martingales, Cambridge University Press, (1991).

W. Feller, An Introduction to Probability Theory and its Applications, Wiley; Volume I, 3rd edition, (1968); Volume II, 2nd edition, (1971); this is a classic.

P.G. Doyle and J.L. Snell, Random Walks and Electric Networks. Available at: <http://arxiv.org/abs/math/0001057>

Outline: The course will be based on Chapters 5–8 of Durrett, with additional topics as time permits. The main topics are:

1. Martingales
2. Markov chains
3. Ergodic theory
4. Brownian motion

Evaluation: The final mark will be computed according to the following formula:

Homework: 50%

Exam: 50%.

Homework: Nine assignments will be given and marked for credit, with the following schedule. Assignments are due at the beginning of class on the due date. No late assignments will be accepted.

<u>Assignment given</u>	<u>Assignment due</u>
January 8	January 15
January 15	January 22
January 22	January 29
January 29	February 5
February 5	February 26
February 26	March 4
March 4	March 11
March 11	March 18
March 18	April 1

Examination: There will be a final examination held during the April examination period.

Updated December 30, 2015.