

**MATH 419, Stochastic Processes, Section 201,**

**Term 2, 2012–13**

**Time:** MWF 10:00–11:00 Math 104

**Instructor:** D. Brydges,  
MATX 1205, 604-822-3620, db5d@math.ubc.ca

**Office hours:** TBA

**Text:** G.R. Grimmett and D.R. Stirzaker, Probability and Random Processes, Third Edition, Oxford.

**Prerequisites:** Math 418, which in turn requires Math 321. In particular, prior knowledge of the Riemann-Stieltjes integral will be assumed. If this is new to you please read Chapter 6 of W. Rudin's Principles of Mathematical Analysis.

**Description:**

Outline: The course will be based on Chapters 6, 7, 8, 12, 13 of Grimmett and Stirzaker, with additional topics as time permits. This includes:

- Markov chains (discrete and continuous time)
- Poisson process
- Convergence of random variables
- Martingales
- Brownian motion

**Reference books:**

- G.R. Grimmett and D.R. Stirzaker, One Thousand Exercises in Probability, Oxford (contains solutions to the problems in the book).
- David Williams, Probability with martingales, Cambridge University Press, (1991).
- J.R. Norris, Markov Chains, Cambridge University Press, (1997).
- Hoel, Port and Stone, Introduction to Stochastic Processes, Waveland Press, (1972).
- P.G. Doyle and J.L. Snell, Random Walks and Electric Networks. Free at: <http://arxiv.org/abs/math/0001057>.
- William Feller, An Introduction to Probability and its Applications, Vol I,II. (hard, but inspiring).

**Homework:** Homework is posted at

<http://www.math.ubc.ca/~db5d/math419/assignments.html>.

It is assigned each Friday and is due on my desk at the beginning of class the following Friday.

**Grading:** Exams: There will be one midterm, on Friday, date TBA, and a final exam in the April examination period. Grading: hw: 25% Midterm 25% Final exam: 50%.

**Policies:** Students who are unable to hand in a homework due to a medical or equivalent excuse will have that hw not count towards their final grade. Missing a test normally results in a mark of zero. Exceptions are granted only with prior consent of the instructor or due to a medical emergency. In the latter case, the instructor must be notified within two working days of the missed test and presented with a doctors note immediately upon the students return to UBC. If an exception is granted for a missed test, the final exam will be used to make up that portion of the grade.

Updated Dec 12 2012.