

STAT 3050, CRN 20115
Introduction to Probability Theory and its Applications
Winter 2014

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Office Hours: Monday, Wednesday, Friday 9:30-10:30 a.m.
(or by appointment)

Class Time: Slot 3, 10:30-11:20 a.m. Monday, Wednesday, Friday

Text: *Introduction to Probability Models*, 9th edition, 2007, by Sheldon Ross.
Published by Academic Press. ISBN-10-12-598062-0. Not required.

Topics: The following list of topics serves only as an approximate outline and is subject to change:

- Chapter 1: Introduction to Probability (counting techniques; sampling spaces; general properties of probability; conditional probability; Bayes' Theorem; independence) & probability generating functions, Branching processes & random walks.
- Chapters 2 & 3: Random variables (probability functions; frequently functions; frequently encountered discrete random variables; continuous random variables; jointly distributed random variables, independent random variables; expectation, variance & covariance; conditional probability & conditional expectation for random variables) & applications to discrete time processes. Stationary processes & autocorrelation functions.
- Chapter 4: Markov chains (general formulation & properties; classification of states; steady state distributions; applications).
- Chapters 5, 6 & 10: Exponential random variables & their properties; the Poisson process & Brownian motion; Continuous time Markov chains.

Assignments: There will be four assignments, and some problems will be marked. There will be two midterm tests.

Additional (ungraded) exercises will be given frequently in class. Some of the assignment questions will be taken from these. Success in this course depends strongly on the problem-solving skills you will develop from doing these exercises. For the same reason, your work on assignments should be essentially an "individual effort."

Mark Breakdown:	4 Assignments	10%
	Mid-Term Test 1 (Mon., Feb. 10th)	15%
	Mid-Term Test 2 (Mon., Mar. 10th)	15%
	Final Exam (TBA)	60%

Voluntary Withdrawal: March 19, 2014

Academic Dishonesty:

It is important that you understand what constitutes academic dishonesty and that you are familiar with the very serious consequences. Links to resources that describe academic dishonesty (including plagiarism, cheating, inappropriate collaboration and examination impersonation) can be found at

<http://umanitoba.ca/faculties/science/undergrad/resources/webdisciplinedocuments.html>.