

Lakehead University

Department of Mathematical Sciences

MATH-4211-FA/MATH-5331-FA

STOCHASTIC PROCESSES

Fall 2008

COURSE OUTLINE

Instructor: Dr. Deli Li, RB-2003, Ext. 8231, dli@lakeheadu.ca

Textbooks: *Introduction to Stochastic Processes* by Gregory F. Lawler

Prerequisite: MATH 2331 and MATH 2333.

Topics: Stochastic processes concern sequences of events governed by probabilistic laws. Many applications of stochastic processes occur in physics, engineering, biology, medicine, psychology, and other disciplines, as well as in other branches of mathematical analysis. The purpose of Part I of this course is to provide an introduction to the many specialized treatises on stochastic processes. Topics include finite Markov chains, countable Markov chains, continuous-time Markov chains, optimal stopping, martingales, renewal processes, reversible Markov Chains, Brownian motion, stochastic integration, etc.

Lectures: **Wednesday 12:30 PM – 02:00 PM in RB-2023.**

This is a undergraduate reading course so that the course materials will be distributed among all students almost equally for giving presentations during the lecture hours. All students and your instructor will discuss questions related to the course materials and even get help to finish your assignments. Pre-reading related sections in the textbook is expected.

Office Hours: **Monday & Wednesday 02:30 PM - 04:30 PM or by appointment.**
For an appointment, please email the instructor.

Problems that you are having with the course should be either

a) given to Dr. Deli Li in class, or

b) left in Dr. Deli Li's mail box in the Math Department Office RB-2012. If you are having a problem then most likely other people in the class are having the same problem, thus it will be worth to take class time to discuss the problem. If I don't discuss your problem in the lecture to your satisfaction please come and see me in my office during the office hours.

Course Requirements:

Assignments: A list of assignment problems will be given to students during lecture hours. **The due dates will be announced in class. Late assignments will not be marked under any circumstances. Sloppy writing may face a mark penalty up to 20%. There will be 6 assignments worth 25% of your final mark.**

Midterm Exam: The midterm exam will be written during the regularly scheduled class time, on **Monday October 13, 2008**. No make-up test is provided for students who miss writing the test at the scheduled time. If there is a legitimate (documented) excuse, the final mark will be calculated on the basis of the final exam. Otherwise, a grade of 0% for the missed exam will be averaged with other grades.

Final Exam: The final exam will be written in the scheduled three hours. It will cover all course materials. Further details will be provided closer to the exam date.

Determination of Final Marks: The basic formula is as follows

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|-------------------------------------|------------|
| Assignments: | 25% |
| Presentation and Attendance: | 15% |
| Midterm Exams: | 20% |
| Final Exam: | 40% |

Note: Exams will be open book and calculators are permitted. However no examination aides other than those specified are permitted.