

# STAT 3400: Introduction to Probability II (Fall 2010)

**Instructor** Dr. L. Wang  
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**Class Hours** Monday/Wednesday/Friday: 9:30 am - 10:20 am, room 315 Buller

**Lab Hours** Monday: 2:30 pm - 3:55 pm, room 315 Buller

**Office Hours** Monday/Wednesday: 10:30 am - 11:30 am

**Textbook** Weiss, N.A. (2006), *A Course in Probability*, Pearson Ed. (Addison-Wesley).

**Marking Scheme** The final grade will consist of two mid-term tests and one final exam. Their weights and tentative schedules are given below. The tests will take place during the LAB session and the location will be announced in class.

Test #1	30%	October 4, 2010
Test #2	30%	November 1, 2010
Final Exam	40%	Scheduled by the university

**Homework** There is no homework. Supplementary problems will be given but they are not to be handed in for credits.

## Important Note from the Dean of Science:

It is your responsibility to insure that you are entitled to be registered in this course. This means that you have:

- the appropriate prerequisites, as noted in the calendar description, or have permission from the instructor to waive these prerequisites;
- not previously taken, or are concurrently registered in, this course and another that has been identified as "not to be held with" in the course description. For example, BIOL 1000 cannot be held for credit with BIOL 1020.

The registration system may have allowed you to register in this course, but it is your responsibility to check. If you are not entitled to be in this course, you will be withdrawn, or the course may not be used in your degree program. There will be no fee adjustment. This is not appealable. Please be sure to read the course description for this and every course in which you are registered.

**Academic Dishonesty:** I wish to draw your attention to the sections in *The University of Manitoba Undergraduate Calendar* dealing with academic integrity, including plagiarism, cheating and examination impersonation.

## **Topics to be covered:**

### 1. CONTINUOUS RANDOM VARIABLES AND THEIR DISTRIBUTIONS (Chapter 8)

- Continuous random variables and probability density functions
- Cumulative distribution functions
- Some special continuous random variables
- Functions of a continuous random variable

### 2. JOINTLY CONTINUOUS RANDOM VARIABLES (Chapter 9)

- Joint probability density functions
- Joint cumulative distribution functions
- Marginal and conditional density functions
- Independence of continuous random variables
- Functions of continuous random variables
- Multivariate transformations

### 3. EXPECTED VALUES OF CONTINUOUS RANDOM VARIABLES (Chapter 10)

- Expectation and its basic properties
- Variance, covariance and correlation
- Conditional expectation
- Bivariate normal distribution

### 4. GENERATING FUNCTIONS AND LIMITING THEOREMS (Chapter 11)

- Moments and moment generating functions
- Joint moment generating functions
- Law of larger numbers
- Central limit theorem, normal approximation of Binomial distribution

### 5. ADDITIONAL OPTIONAL TOPICS