

**STAT 2400 – Introduction to Probability I**  
WINTER 2015

<b>CRN</b>	11496
<b>Instructor</b>	Dr. Elif F. Acar Machray Hall, room 348 <a href="mailto:elif.acar@umanitoba.ca">elif.acar@umanitoba.ca</a>
<b>Office hours</b>	M W 10:30 AM – 12:00 AM, or by appointment.
<b>Lectures</b>	M W F 9:30 AM – 10:20 AM 201 St. John's College
<b>Labs</b>	W 2:30 PM – 3:45 PM (Labs will start on January 21) 111 Armes
<b>Website</b>	<a href="https://umanitoba.ca/d2l">https://umanitoba.ca/d2l</a> All course related information will be posted on Desire2Learn.
<b>Textbook</b>	<i>A Course in Probability</i> by N. A. Weiss, Pearson Ed. (Addison-Wesley) A hard-copy of the textbook will be available on course reserve.

**Prerequisites** STAT 1000 or STAT 1001 (005.100) (C); and one of MATH 1700, MATH 1701 (136.170), or MATH 1690 (136.169) (C).

**Evaluation** The final grade will be based on the following components.

<b>Term Test I</b>	<b>25%</b>
<b>Term Test II</b>	<b>25%</b>
<b>Final Exam</b>	<b>50%</b>

**Term Tests and Final Exam** Exam content is defined by the lecture notes along with the relevant chapters from the textbook. The two term tests are tentatively scheduled to be held during the lab time (possibly in different rooms) on **February 11, 2015** and **March 18, 2015**. The Final Exam date will be set by the Registrar's Office and announced later in the semester.

**Missed Test Policy** If you miss a test for a valid reason and submit appropriate documentation within two weeks of the examination date, the weight of the missed test will be shifted to the final exam. If documentation is not received in time, your test mark will be zero. **There will no make-up tests.**

**Labs** Labs are your opportunity to get additional help with concepts covered in class. Labs will not meet during the first two weeks. The first lab will be on Wednesday, January 21. Each week you will be assigned a set of practice problems. These problems are not to be handed in; however, you are expected to solve them prior to the lab session. During labs, your teaching assistant will solve selected problems and answer other questions that you might have. Attendance to labs is not mandatory, but is highly recommended. Note that the the two term tests will take place during the lab time. Also, labs may occasionally be replaced by lectures. During these times your attendance to lab sessions is required.

### Outline of Topics

1. **Basic Concepts** (Weiss, Chapters 1 and 2): review of set theory, sample space, events, axioms of probability, basic probability rules
2. **Combinatorial Probability** (Weiss, Chapter 3): permutations and combinations, the use of counting rules in probability calculations
3. **Conditional Probability and Independence** (Weiss, Chapter 4): conditional probability, the general multiplication rule, independence of events, Bayes' rule
4. **Discrete Random Variables and Probability Distributions** (Weiss, Chapter 5): discrete random variables and probability mass functions, some important discrete random variables, functions of discrete random variables
5. **Jointly Discrete Random Variables** (Weiss, Chapter 6): marginal and joint probability mass functions, conditional probability mass functions, independent random variables, sums of discrete random variables
6. **Expected Values of Discrete Random Variables** (Weiss, Chapter 7): basic properties of expected values, mean, variance and correlation of discrete random variables, conditional expectation
7. **Introduction to Continuous Random Variables** (Weiss, Chapter 8): continuous random variables, cumulative distribution functions, probability density functions, some important continuous random variables, mean and variance of continuous random variables

**Academic Integrity** It is your responsibility to understand the meaning and consequences of academic dishonesty. Therefore, please check:

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

**Course Registration** It is your responsibility to ensure 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 an appropriate permission from the instructor to waive these prerequisites;
- have 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.