STAT 3400 Introduction to Probablity II (CRN 11516)

Fall Term - 2019

Instructor: Dr. Po Yang
Email: Po.Yang@umanitoba.ca
Office: 334 Machray Hall
Phone: (204)480-1821

Lecture hours and location: Monday, Wednesday, and Friday: 9:30am-10:20am, 111 Armes.

Lab schedule: Monday from 2:30 to 3:45 p.m., in 111 Armes.

Office hours: Monday and Wednesday: 10:30am-11:30am, or by appointment.

Course web: All course materials will be posted on the UM Learn system regularly.

Calendar description: Continuous distributions, properties of common distributions, distributions of functions of random variables.

Prerequisites: Stat 2400(C), Prerequisite or Corequisite: one of MATH 2150, MATH 2720, MATH 2721 (or the former MATH 2750) (C), or the former MATH 2730, or MATH 2731.

Textbook: Weiss, N.A. (2006), *A course in Probability*, Pearson Ed. (Addison-Wesley).
A copy of the textbook should be available on four-hour reserve at the Science Library.

Mark breakdown: Tests - 50% (30% for best, 20% for other)
Final Examination - 50%

- The two 75-minute tests are tentatively scheduled for Monday, October 7 and Monday, November 4, during the lab times. The location for the tests will be announced in class. The graded tests will be returned to students within one week after the tests.

- The final exam will be held on a date to be determined later by the Registrar's office and will be three hours in duration.

- If you miss a test, you will be assigned a mark of zero, unless reasons and acceptable evidence are provided. If you miss a test for an acceptable evidence, your final exam will be worth 75%. Make-up tests will not be scheduled.

Practice problems:

There are no assignments to be handed in for credit in this course. However, lists of practice problems will be provided to the students. *It is very important* to do the practice problems on a regular basis to help you learn the course material and prepare for tests and the exam.

Labs:

There is a 75 minute lab every week. Attendance is not obligatory, but is very strongly suggested. During labs, the teaching assistant will generally be solving selected problems (taken from the list of practice problems) and answering other questions that you might have.

Important dates:

Date	Information
Sept 17	Last date to drop without penalty
Sep 18	End of the registration revision period
Oct 7	**Midterm 1**
Oct 14	Thanksgiving Day, no class
Nov 4	**Midterm 2**
Nov 11	Remembrance Day, no class
Nov 12-15	Fall term break, no class
Nov 18	Last day to withdraw the course
Dec 6	Last lecture

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, as well as typical penalties) can be found at:

http://www.sci.umanitoba.ca/statement-on-academic-dishonesty/

Typical penalties imposed within the Faculty of Science for academic dishonesty are also described.

Copyrighted Material:

All course notes, assignments, tests, exams, practice exams, and solutions are the intellectual property of your instructor. Reproduction or distribution of these materials is strictly forbidden without my consent.

Recording of Class Lectures

I hold copyright over the course materials, presentations and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission from me.

Use of Electronics in the Classroom

It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. A student may use technology in the classroom setting only for educational purposes approved by the instructor and/or the University of Manitoba Accessibility Services. Students should not engage in electronic messaging/posting activities (e-mail, texting, video or voice chat, social networking (e.g. Facebook)) or electronic gaming during scheduled class time.

Class Communication

The University requires all students to activate an official University email account. Please note that all communication between your instructor and you as a student must comply with the Electronic Communication with Students Policy. Please see:

*http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_*

with_students_policy.html

You are required to obtain and use your U of M email account for all communication between yourself and the university.

Student Accessibility Services

If you are a student with a disability, please contact SAS for academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

http://umanitoba.ca/student/accessibility

ROASS Schedule A

Schedule "A" of the *Responsibilities of Academic Staff with regards to Students* (ROASS) policies of the University of Manitoba lists resources and policies for students. It is important that you familiarize yourself with these resources and policies. This document is available from the course web page at:

https://www.stats.umanitoba.ca/courses/stat-3400/fall-2019/

Outline of the covered topics:

1. CONTINUOUS RANDOM VARIABLES AND THEIR DISTRIBUTIONS (Weiss, Chap. 8)

   - Continuous random variables, cumulative distribution functions, and probability density functions
   - Uniform, exponential and normal random variables
   - Other continuous random variables
   - Functions of a continuous random variable

2. JOINTLY CONTINUOUS RANDOM VARIABLES (Weiss, Chap. 9)

   - Joint cumulative distribution functions
   - Joint and marginal probability density functions
   - Conditional density functions
   - Independence of continuous random variables
   - Functions of many continuous random variables (If time allows)
   - Bivariate transformations (If time allows)

3. EXPECTED VALUES OF CONTINUOUS RANDOM VARIABLES (Weiss, Chap. 10-11)

   - Basic properties
   - Mean, variance, covariance and correlation of continuous random variables
   - Conditional expectation
   - Laws of total expectation and variance
   - Moment generating functions