

STAT 4630 (CRN: 54785) /STAT 7250 (CRN: 54788)
STOCHASTIC PROCESSES
WINTER 2018

Instructor: Dr. Yuliya V. Martsynyuk
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Office Hours: Monday, Wednesday, and Friday 8:30 am – 9:30 am, or by appointment

Prerequisites: STAT 3050 (005.305) (with a grade of C or better); and STAT 3800 or the former STAT 3600 (005.360) (with a grade of C or better); or consent of the department.

References:

- Ross, S.M. (2010), *Introduction to Probability Models*, 10th ed., Elsevier.
- Pinsky, M.A. and Karlin, S. (2011), *An Introduction to Stochastic Modeling*, 4th ed., Elsevier.
- Durrett, R. (2012), *Essentials of Stochastic Processes*, Springer (available for free on Springer online through the library).

note: copies of the first two references are available on four-hour reserve at the Science Library

Lectures: Monday, Wednesday, and Friday 10:30 am -- 11:20 am, in 418 Machray Hall

- attendance is mandatory
- the lecture notes presented in class constitute a self-contained source of the course material
- some problems will be solved in class, and some will be assigned for you to practice (no credit homework)

Tests: There will be three 50-minute closed book term tests held during the lecture hours. They will take place every four weeks or so. The approximate date of the first test is January 31, 2018. The exact dates for each of the tests will be announced in advance in class. The test problems will strongly be related to those that are solved in class and also those that are on your homework. STAT 4630 tests will be different from STAT 7250 ones.

note: no makeup, early, or delayed tests in this course

Evaluation: Final grade is based on:

Term Work (50%): 3 term tests

Final Exam (50%): two-hour closed book exam based on the whole term

Course Outline: Review of Conditional Probability and Conditional Expectation; Renewal Processes; Brownian Motion and Related Processes; Martingales; Miscellaneous Topics (Partial Sums Processes, Student Processes, and Empirical Processes).

note: the above is only an approximate outline. It is your responsibility to keep up with what is being done in class and with any changes announced in class.

Voluntary Withdrawal Deadline: March 16, 2018.

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://umanitoba.ca/science/undergrad/resources/webdisciplinedocuments.html>

Copyrighted Material: All course notes, assignments, tests, exams, and solutions are the intellectual property of your instructor or the Department of Statistics. Reproduction or distribution of these materials is strictly forbidden without their consent.

Recording of Class Lectures: Your instructor and the University of Manitoba 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 your instructor.

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) or electronic gaming during scheduled class time. Cell phones should be turned off at the beginning of class. If a student is on call for emergencies, their cell phone should be on vibrate and the student should leave the classroom before using it.

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/saa/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. Schedule A is posted on the Department of Statistics webpage.