

**STAT 4630 (CRN: 58377)**  
**STOCHASTIC PROCESSES**  
**WINTER 2020**

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**Office Hours:** Monday and Wednesday 11:30 am – 1:00 pm, or by appointment

**References:**

- Ross, S. (1996), *Stochastic Processes*, 2<sup>nd</sup> ed., New York: John Wiley.
- Ross, S.M. (2010), *Introduction to Probability Models*, 10<sup>th</sup> ed., Elsevier.
- Karlin, S. and Taylor, H.M. (1975), *A First Course in Stochastic Processes*, 2<sup>nd</sup> ed., New York: Academic Press.
- Pinsky, M.A. and Karlin, S. (2011), *An Introduction to Stochastic Modeling*, 4<sup>th</sup> ed., Elsevier.
- Durrett, R. (2012), *Essentials of Stochastic Processes*, Springer (available for free on Springer online through the library).

**Lectures:** Monday, Wednesday, and Friday 10:30 am -- 11:20 am, in 316 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)

**Term Tests:** There will be three 50-minute closed-book tests held during the regular class time. They will take place every four weeks or so. The approximate date of the first test is February 3, 2020. 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. There are no early and deferred 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 18, 2020.

**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](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.