

**STAT 4630 (CRN: 63004)**  
**STOCHASTIC PROCESSES**  
**WINTER 2024**

**Prerequisites:** STAT 3030 or the former STAT 3050

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

**Office Hours:** Monday and Wednesday, 9:30 am – 10:20 am, or by appointment

**Instructor:** Dr. Yuliya V. Martsynyuk  
E-mail: Yuliya.Martsynyuk@UManitoba.CA

**References:**

- [1] Dobrow, R.P. *Probability: With Applications and R*. 1<sup>st</sup> ed., 2014.
- [2] Pinsky, M.A. and Karlin, S. *An Introduction to Stochastic Modeling*. 4th ed., Elsevier, 2011.
- [3] Ross, S.M. *Introduction to Probability Models*. 10th ed., Elsevier, 2010.

[1] is required and available in an electronic format through UM libraries. [2] and [3] are recommended, but not required. The course notes are posted on the course UM Learn webpage.

**Homework:** Selected practice problems will be assigned as no-credit homework.

**Term Tests:** three 45-minute closed-book paper-and-pencil term tests will be held during the regular class time. The tentative date of the first test is February 2, 2024. The test problems will be related to the homework and the problems solved in class. There are no early and deferred term tests in this course.

**Grading Scheme:** 100%=Two Best of Term Tests 1, 2, 3 (2x25%) + Final Exam (50%, two-hour closed-book paper-and-pencil test based on the whole term).

**Course Topics:** Review of Conditional Probability, Distribution, Expectation, and Variance; Renewal Processes; Brownian Motion (Review) and Related Processes; Martingales; Introduction to Stochastic Calculus.

**Note:** if any changes to this course outline become necessary, the students will be given as much notice as possible.

**Voluntary Withdrawal Deadline:** March 20, 2024.

**Academic Integrity:** 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:

<https://sci.umanitoba.ca/students/undergraduate-students/academic-resources/academic-integrity/>

<https://umanitoba.ca/student-supports/academic-supports/academic-integrity>

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**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.

**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/>