STAT 7060: Advanced Probability Theory, Winter 2019 (A01)

Tentative Course Outline

Course Details

Course Title & Number:	Advanced Probability Theory (STAT 7060)
Credit Hours:	3
Class Times:	Monday, Wednesday & Friday 1:30 a.m. – 2:20 p.m.
Location for Lectures:	379 University College
Pre-Requisites:	Consent of the instructor.
Course Description:	Selected topics from probability theory, including: probability as measure, events, random variables, independence, integration and expectation, convergence and conditional expectation.

Instructor Contact Information

Instructor:	Brad Johnson
Preferred From of Address:	I'll answer to just about anything.
Office:	375 Machray Hall
Office Hours & Availability:	Open door policy — if my door is open, I am available for questions.
Office Phone Number:	(204) 474-8162
E-mail:	brad_johnson@umanitoba.ca (**Note**: I will only respond to e-mail from UMNet ID's)
Contact:	I prefer contact by e-mail or in person contact.

Textbook, Readings, Materials

Textbook:	RESNICK, S. I. 2005. *A Probability Path*. Birkhäuser Boston Inc., 5th printing. (Available through SpringerLink) + Lecture Notes from Instructor.
Suggested Resources:	Available in the Science Library. Note also that there are a number of probability theory books available though the Library's Springer E-book subscription.

ASH, R. B. 2000. Probability and measure theory. Harcourt/Academic Press, second edition. With contributions by Catherine Doléans-Dade.

BILLINGSLEY, P. 1995. Probability and measure. John Wiley & Sons Inc., third edition.

DURRETT, R. 2005. Probability: theory and examples. Duxbury Press, third edition.

ROSENTHAL, J. S. 2006. A first look at rigorous probability theory. World Scientific Publishing Co. Pte. Ltd., second edition.

WILLIAMS, D. 1991. Probability with martingales. Cambridge Mathematical Textbooks. Cambridge University Press.

Readings: In order to prepare for class, I will normally ask you to read about the topics to be covered prior the lecture. I am not expecting you to learn the material on your own, only to familiarize yourself with the main ideas and vocabulary so that the lectures are easier to follow. Do not get bogged down in formulae or minute details. If you come across something that is confusing or troubling, don't despair. If your questions are not resolved during the lecture, please ask. As you work on the problem sets, it will be helpful to re-read the material on a more detailed level.

Course Technology

Course web-page: Course materials will be made available through the University of Manitoba's UM Learn system (`umanitoba.ca/d2l`).

Software: We will also be making use of the software package R. It is freely available for Linux, Macintosh and Windows from *The Comprehensive R Archive Network* at `http://cran.r-project.org/`. Please download and install. A number of datasets will be made available through the UM Learn system (`umanitoba.ca/d2l`) in the form of an R package.

Other Technology: It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. Students should restrict their use of technology to those approved by the instructor and/or University of Manitoba Accessibility Services for educational purposes only. Electronic messaging, e-mail, social networking, gaming, etc. should be avoided during class time. Cell phones should be off. If a student is on call for emergencies, their cell phone should be on vibrate mode and the student should leave the classroom before using it.

Course Work, Examinations & Grading

Midterm Exams: There will be 1 in-class mid-term exams, each worth 30% of your final grade. The tentative date is February 25, 2019 but this are **subject to change**.

Note: There will not be any makeup (deferred) mid-term exams for this course. If you miss a mid-term exam, **have a valid excuse**, and **notify me within 48 hours of the scheduled exam**, your final exam will be re-weighted to account for an additional 22.5% of your final grade per test.

Assignments: There will *formal* assignments for this course. The distributed lecture notes have a number of exercises and questions, which I may add to. The midterm tests and final examination will be based, in part, on these or similar problems. You are free (and encouraged) to work in groups on these but you must be able to complete the work individually on tests/examinations. Additional problems may be posted to the UM Learn system (`umanitoba.ca/d2l`).

Grading Scheme:

Item	Percent	Comments
Mid-term Test	30%	(Date/Time to be announced, Approx. Feb 25, 2019)
Assignments	20%	(Approximately 4)
Final Exam	50%	(Date/Time to be announced)
Total	100%	

Using Copyrighted Material

Please respect copyright. We will use copyrighted content in this course. I have ensured that the content I use is appropriately acknowledged and is copied in accordance with copyright laws and University guidelines. Copyrighted works, including those created by me, are made available for private study and research and must not be distributed in any format without permission. Do not upload copyrighted works to a learning management system (such as UM Learn), or any website, unless an exception to the Copyright Act applies or written permission has been confirmed. For more information, see the UniversityÕs Copyright Office website at `http://umanitoba.ca/copyright/` or contact `um_copyright@umanitoba.ca`.

Recording Class Lectures

Brad Johnson 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 of Brad Johnson. Course materials (both paper and digital) are for the participantÕs private study and research.

Class Communication

The University requires all students to activate an official University email account. For full details of the Electronic Communication with Students please visit: `umanitoba.ca/admin/governance/media/Electronic_Communication_with_Students_Policy_-_2014_06_05.pdf`

Please note that all communication between myself and you as a student must comply with the electronic communication with student policy (`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.

Academic Integrity

It is important that you understand what constitutes academic dishonesty and that you are familiar with the very serious consequences. Please familiarize yourself with the information contained in *Academic Calendar > General Academic Regulations> SECTION 8: Academic Integrity*. (see `http://umanitoba.ca/calendar`) The Faculty of Science home page at www.umanitoba.ca/science also contains links regarding academic and disciplinary matters.

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 will be posted to the Department of Statistics web page under "Courses" and to the UM Learn system.