University of Manitoba – Department of Statistics

STAT 3800 : Mathematical Statistics

Winter Term 2018

Course Details

Course Number & Title	STAT 3800, Mathematical Statistics
Section & CRN	Section A01, CRN: 51418
Class Schedule	MWF 11:30 AM – 12:20 PM
Class Location	115 Armes
Tutorial Schedule	M 2:30 PM – 3:45 PM
Tutorial Location	306 Buller
Prerequisites	STAT 3400 or the former STAT 3500 (005.350) (C).

Instructor Contact Information

Instructor	Dr. Elif Acar
Office Location	369 Machray Hall
Phone	(204) 480-1820
Email	elif.acar@umanitoba.ca
Office Hours	MW 10:00 AM – 11:30 AM, or by appointment.
	If the above times are not convenient for you, please send me an email to arrange an alternate time to meet.

TA Contact Information

Lab TA	Han Yu
Office Location	356 Machray Hall
Email	umyu7@myumanitoba.ca

General Goals for this Course

This course aims to provide students with a good understanding of the fundamental results and methods in mathematical statistics, which are essential to build statistical inference for real life situations. At the end of the course, students will be able to

- solve problems involving probabilistic models with varying level of difficulty,
- identify and apply the methods necessary to address the problems,
- build the required background for more advanced classes.

Textbook and Other Material

Textbook   *An Intermediate Course in Probability*, 2$^{\text{nd}}$ edition
Allan Gut, Springer, 2009.

E-book is available through the University of Manitoba Libraries.

Course Material   Any course related material will be posted on the UM Learn system.

Supplementary   *A Course in Probability*, N. A. Weiss, Pearson 2006.

Text   *Introduction to Mathematical Statistics*, R.V. Hogg, J. McKean, and A. T. Craig, Pearson 2013.

Introduction to Probability and Mathematical Statistics, L.J. Bain and M. Engelhardt, Duxbury Press, 2000.

Statistical Software   Where applicable, the course will make use of the R statistical software. You can download R for free (for Windows, Mac, UNIX or LINUX, including PDF documentation) from the *Comprehensive R Archive Network* at: http://cran.r-project.org/.

Course Assessment

Assignments   There will be no assignments for grading in this course. However, a list of supplementary problems, some taken from the textbook, will be provided for you to practice.

Term Tests   There will be two term tests. These are tentatively scheduled to be held during the tutorial time on **February 12** and **March 19** in 306 Buller. Test content is defined by the lecture notes along with the relevant chapters from the textbook. **There will be no make-up tests.**

Missed Test Policy

■ If you miss a test with a valid reason and inform me within 48 hours, the other test and the final exam will count for 25% and 75% of your final grade, respectively.

■ If you miss both tests with a valid reason and inform me within 48 hours, the weight of the final exam will be 100%.

■ If you do not follow this missed test policy, your grade for the missed test will be zero.

■ Students who miss any term test, with or without valid documentation, will be reported to the Dean's office as having incomplete term work. This could have repercussions on their ability to write a deferred exam for the course, should such a deferral be requested.

Final Exam   There will be a 3-hour final exam in this course. The final exam date and location will be set by the Registrar's office and announced later in the semester.

Tutorials (Labs)   There is a ninety-minute tutorial every week. Attendance is not obligatory, but is strongly recommended. Note, however, that the two tests will take place during the tutorials.

During the tutorials, the teaching assistant will be solving selected problems (taken from the list of supplementary problems) and answering other questions that you might have.

If needed, a tutorial may be replaced by a lecture.

Course Evaluation and Grading Scheme

Final Marks   The final mark for the course will be based on the following components.

Term Test I & II	50%	(30% better test, 20% other)
Final Exam	50%	

Letter Grades   The following cutoffs will be used when assigning the letter grades.

Letter Grade	Mark out of 100
A+	$90 - 100$
A	$80 - 90$
B+	$75 - 80$
B	$70 - 75$
C+	$65 - 70$
C	$60 - 65$
D	$50 - 60$
F	below 50

Outline of Topics

The course is expected to cover the following topics.

1. Multivariate distributions and transformations (Chapter 1)

2. Conditioning (Chapter 2)

3. Transforms (Chapter 3)

4. Order statistics (Chapter 4)

5. Multivariate normal distribution (Chapter 5)

6. Sampling distributions and Convergence (Chapter 6)

Important Dates

The following dates are important to how the course will progress throughout the term.

Date	Information
Jan 3	First lecture
Jan 16	End of the registration revision period
Feb 12	**Term Test I**
Feb 19	Louis-Riel day, no class
Feb 20–23	Mid-term break, no class
March 16	Last day to VW the course
March 19	**Term Test II**
March 30	Good Friday, no class
April 6	Last lecture
April 9–23	Final examination period

The dates for the term tests are tentative and subject to change at my discretion and/or based on the learning needs of the students. Changes are subject to Section 2.8 of the ROASS Procedure.

Technology 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. Students should restrict their use of technology to those approved by the instructor *for educational purposes only*. Electronic messaging, email, social networking, gaming, etc. should be avoided during class time. Cell phones should be turned 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.

Class Communications

The University requires all students to activate an official U of M email account, which should be used for all communications between yourself and the university (including all your instructors). All these email communications should comply with the University's policy on electronic communication with students, which can be found at: http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html

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:
http://umanitoba.ca/faculties/science/undergrad/resources/webdisciplinedocuments.html

Copyrights

Copyrighted Material 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 work must not be distributed in any format without permission.

Lectures No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without my permission.

More details are available online at: http://umanitoba.ca/copyright/

Student Accessibility Services

If you are a student with a disability, please contact Student Accessibility Services (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.

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 Department of Statistics web page at:

http://umanitoba.ca/science/statistics/files/pages/2016/09/Schedule-A-ROASS-Statistics.pdf