

STAT 3480  
Statistical Methods for Research Workers 2  
Winter 2020

**Time** Tu & Th 11:30 a.m. – 12:45 p.m.  
**Location** 124 Machray Hall  
**CRN** 50094

**Instructor** Ankit Doshi  
320 Machray Hall  
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Email: Ankit.Doshi@umanitoba.ca

**Web Pages** UM Learn: <http://umanitoba.ca/umlearn>  
Statistics: <http://umanitoba.ca/statistics>

**Office Hours** Monday 10:00 a.m. – 11:00 a.m.  
Tuesday 1:30 p.m. – 2:30 p.m.  
Friday 10:00 a.m. – 11:00 a.m.

If the above times are not convenient for you, please call, email or speak to me to arrange an alternate time to meet. I will do my best to return all email or telephone messages within 24 hours.

## Calendar Description

Analysis of variance, randomized block design, nested and Latin square experiments, analysis of covariance. Not to be held with STAT 3000 or the former STAT 3130. Prerequisite: STAT 3470 (C).

## Textbook

*A First Course in the Design of Experiments: A Linear Models Approach* by Donald C. Weber and John H. Skillings, CRC Press (2000). (On reserve in Science Library)

## Software

We will be using SAS in this course. SAS is available in the open area computer labs or you can install a free copy of SAS University Edition on your personal computer.

## Evaluation

Assignments	20%
Midterm Test	30%
Final Examination	50%

Marks will be posted on UM Learn (see the web link above).

The following are the minimum percentage grades required to receive each of the various letter grades: A<sup>+</sup> (90%), A (80%), B<sup>+</sup> (75%), B (70%), C<sup>+</sup> (65%), C (60%), D (50%).

## Exam Information

The midterm test will be held **Tuesday February 25, 2020**, in-class. There will be no make-up midterm. Students missing the midterm test for a valid reason (and with documentation) will have the midterm weight added to the final exam.

The final exam will be 3 hours in duration and will be scheduled by the Registrar's Office. It will cover the entire course, with emphasis on the material after the midterm test.

For the midterm test and the final examination: (i) nonprogrammable handheld calculators are permitted (graphing calculators are **not** permitted), (ii) electronic devices, such as cell phones or headphones, are prohibited, and (iii) statistical tables will be provided.

## Assignments

There will be four assignments, each counting equally (5%) toward your final grade. Assignments may include data analysis using SAS. Assignments are due at the beginning of class on the due date; late assignments will not be accepted. You are encouraged to discuss assignments with your classmates and me, but final submission must be written independently.

## Voluntary Withdrawal

The voluntary withdrawal date is **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, and exams 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 (e.g. Facebook)) or electronic gaming during scheduled class time.

## 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 will be posted on your instructor's UM Learn page.

## Course Outline

The course aims to provide a solid understanding of the concepts of Design and Analysis of Experiments including the following areas.

- Introduction to the Design of Experiments (Chapter 1)
- The Completely Randomized Design (Chapter 7)
- Planned Comparisons and Multiple Comparisons (Chapters 8 and 9)
- Randomized Complete Block Design (Chapter 10)
- Incomplete Block Designs (Chapter 11)
- Latin Square Designs (Chapter 12)
- Factorial Experiments with Two Factors (Chapter 13)
- Analysis of Covariance (Chapter 15)
- Random and Mixed Models (Chapter 16)