STAT 3000 Section A01
Applied Linear Statistical Models

Time M/W/F, 12:30 p.m. – 1:20 p.m.
Location 115 Armes —- CRN: 11515

Instructor Dr. Zeny F. Mateo
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Web Pages

Statistics:	http://umanitoba.ca/statistics
Course Website:	http://umanitoba.ca/umlearn
Gradebook:	http://www.stats.umanitoba.ca/gradebook
R Studio Download:	https://www.rstudio.com/products/rstudio/download3/

Office Hours

Monday	1:30 pm–2:30 pm
Tuesday	1:00 pm–2:00 pm
Wednesday	1:30 pm–2:30 pm

(Or by appointment.)

Course Description: Applied Linear regression and analysis of variance for designed experiments. This course is not for use in the Honours or Major degree programs in Statistics. Not to be held with STAT 3470 (005.347), STAT 3480 (005.348), the former STAT 3120 (005.312) or the former STAT 3130 (005.313). Prerequisite: STAT 2000 (005.200) or STAT 2001 (005.201) (C).

Textbooks: The following textbook will be used throughout the course. I will be assigning reading and practice from the text through out the course and may assign some questions on the assignments. Other textbooks may be referenced for additional reading.

STAT2 Building Models for a World of Data by Cannon, Cobb, et al. W.H. Freeman and Company ISBN 1-4641-4826-0

Reference: *Applied Linear Statistical Models* with Student CD (Fifth Edition) by M.H. Kutner, C.J. Nachtsheim, J. Neter and W. Li. McGraw Hill 2004.ISBN 0-07- 310874-X Student Solutions Manual is included in compact disk for use by students. The disc also includes all data set files from the text.

Course Materials : All the course materials will be posted on the UM Learn website.

Software: We will be using some softwares like JMP 13 and R Studio to analyze some problems but the interpretation of the output is the most important thing in this course.

Term Work: The term work will consist of two midterm tests , and a final exam with the following mark breakdown:

Midterm Tests (2)	25% each
Final Exam	50%

Grade Assignment: The following are **guaranteed** minimum requirements to receive a letter grade.

A+	90-100%
A	80-89%
B+	75-79%
B	70-74%
C+	65-69%
C	60-64%
D	50-59%
F	0-49%

There is an **additional requirement** for obtaining a C in the course: **to obtain a grade of C or better, you must obtain at least 50% on the final examination**.

Gradebook: All marks will be available through the department of statistics Gradebook (see link at the top of the page). Please check that all of your grades have been entered correctly before the final exam.

Midterm Tests: There will be two midterm tests that will take place during class time on **Wednesday, October 11, 2017 and on Friday, November 03, 2017** in the regular classroom. The details of the scope of the Midterm Test will be discussed in class. Non-graphical calculators are both permitted and necessary to complete the midterm. There will be no makeup midterms. Should you miss for a valid and documented reason, the weights will be adjusted to the final exam.

Final Exam: There will be a 3-hour cumulative final exam. Please check Aurora for the date and time of the exam.

Course Website: All course material and news announcements will be posted on UMLearn.

Voluntary Withdrawal: The voluntary withdrawal date is **November 17, Friday** (by which time you will have received your marks for the first two midterm tests).

Copyrighted Materials: All course notes, assignments, tests, exams, practice 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.

Note Sharing: Please note that all course materials are the intellectual property of the instructor and are not to be shared or altered without the explicit permission of the instructor. You do not have permission to upload any course notes, tests, assignments, or handouts to any note sharing

websites. Please see the following site for more information: https://umanitoba.ca/student/resource/student_advocacy/media/Message_note_sharing_December_2013.pdf

Recording of 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.

Classroom 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_communicatio
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/

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

Course Topics

1. Linear Regression
    - Review of the Simple Linear Regression
    - Assessing Conditions
    - Transformations
2. Inference for Simple Linear Regression
    - Inference for regression slope
    - ANOVA for regression
    - Regression and correlation
    - Intervals for prediction

3. Multiple Regression
    - Muliple linear regression model
    - Assessing the model
    - New predictors from old
    - Techniques for choosing predictors
4. Analysis of Variance
    - One-Way ANOVA
    - Assessing and using the model
    - Scope of inference
    - Fisher's LSD
5. Multifactor ANOVA
    - Main effects model
    - Interaction in the Two-Way model
6. Overview of Experimental Design
    - Comparisons and Randomizations
    - Randomization F-test
    - Blocking
    - Factorial Crossing