Department of Mathematics & Statistics
Concordia University

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STAT 360
Linear Models
Summer 2018

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Office Hours: Tuesdays, 10:30-12:00 p.m.

Text: *Applied Linear Regression* Models, 4th Edition, by Kutner, Nachtsheim and Neter, McGraw Hill-Irwin, 2004.

Final Grade:
a) Assignments (12%)
b) Mid-term test (40%)
c) Final examination (48%)

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

IMPORTANT: **PLEASE NOTE THAT THERE IS NO "100% FINAL EXAM" OPTION IN THIS COURSE.**

Note:
1) Assignments are compulsory. Late assignments will not be accepted.
2) A mid-term exam will be held on Monday, **May 28, 2018**. This exam, as well as the final, will be closed book exams.
3) Please note that there are **no supplemental privileges** in this course.

Lectures	Sections	Topics to be covered
1	1.3, 1.6, 1.7, 1.8	Simple linear regression models; estimation of regression function; estimation of error term variance; normal error regression model.
2	2.1, 2.2, 2.4	Inferences concerning β_1 and β_0; interval estimation of E (Y_h).
3	2.5, 2.6, 2.7	Introduction to MINITAB, prediction of new observation; confidence band for regression line; ANOVA approach to regression analysis.
4	2.8, 2.9, 3.1, 3.2	General linear test approach; descriptive measures of linear association between X and Y; diagnostics for predictor variable; residuals.
5	3.3, 3.4, 3.7	Diagnostic for residuals; overview of tests involving residuals; F-test for lack of fit.
6	4.1, 4.2, 4.3, 4.4	Joint estimation of β_0 and β; simultaneous estimation of mean responses; simultaneous prediction intervals for new observations; regression through origin.

7	Midterm	**Mid Term exam will cover material up to section 4.4.**
8	5.6, 5.8, 5.9, 5.10	Inverse of a matrix; random vectors and matrices; simple linear regression model in matrix terms; least square estimation of regression parameters
9	5.11, 5.12, 5.13	Fitted values and residuals; ANOVA results; inferences in regression analysis.
10	6.1, 6.2, 6.3	Multiple regression models; general linear regression model in matrix terms; estimation of regression coefficients.
11	6.4, 6.5, 6.6	Fitted values and residuals; ANOVA results; inferences about regression parameters.
12	6.7, 6.9, 7.1, 7.2	Estimation of mean response and prediction of new observation; multiple regression with two predictor variables. Extra sum of squares & its application.
13	7.3, 7.4, 7.5 & Review	Tests concerning regression coefficients; coefficient of partial determination; standardized multiple regression models.

Academic Integrity and the Academic Code of Conduct
This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." [*Undergraduate Calendar, Sec 17.10.2*]