



STAT 360: Linear Models (Fall 2026)

Instructor:	Dr. D. Sen
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Office Hours:	Tuesdays, 11:00-12:30.
Important:	Students should get the above information from their instructor and from the course Moodle site. The instructor is the person to contact should there be any questions about the course.
Class Schedule:	Tuesdays & Thursdays, 13:15-14:30.
Prerequisite:	<u>STAT 250</u> or equivalent.

Reading Week

Begins on Saturday, October 10 and ends on Friday, October 16, 2026. No classes that week.

Text

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

The hard-copy text can be purchased at the Concordia bookstore, <https://www.bkstr.com/concordiastore/home>.

Note: Students should order textbooks as early as possible, especially for printed versions in case books are backordered or there are any shipping delays.

Assignments

There will be 3 assignments. Assignments are compulsory. Students are expected to submit electronic assignments as a PDF file through Moodle. **Late assignments will not be accepted.** Assignments contribute 15% to your final grade. Working regularly on the assignments is essential for success in this course.

Calculators

Only calculators approved by the Department (with a sticker attached as proof of approval) are permitted for the class test and final examination. For a list of Approved calculators see <https://www.concordia.ca/artsci/math-stats/services.html#calculators>

Midterm Test

There will be one **midterm test**, based on the material of weeks 1-6, which will contribute up to 25% to your final grade (see the **Grading Scheme** below). The midterm test will be held on **Tuesday, October 27, 2026, in class.** This exam, as well as the final, will be closed-book exams.

NOTE: It is the Department's policy that tests missed for any reason, **including illness**, cannot be made up. Students who are unable to write the midterm test for a valid reason must write to their instructor to request a 85% final exam. Such a request will not be granted unless it is made in writing (by email), the reason is valid and is supported by documentation or other evidence. Valid reasons for missing a midterm test include: conflicts with other exams or religious observances (must be reported to the instructor in advance); illness ([Short-Term Absence form](#) or valid medical note required); bereavement. Students who miss the midterm test but do not request a 85% final, as described above, will forfeit the marks for the midterm test.

Final Exam

The final examination will be three hours long and will cover all the material in the course. To obtain a good grade, the student **MUST** show that she/he has a THOROUGH understanding of the subject and is good at problem-solving.

PLEASE NOTE: Students are responsible for finding out the date and time of the final exams once the schedule is posted by the Examinations Office. Conflicts or problems with the scheduling of the final exam must be reported directly to **the Examinations Office, not to your instructor**. It is the Department's policy and the Examinations Office's policy that **students are to be available until the end of the final exam period. Conflicts due to travel plans will not be accommodated.**

Final Grade

The final grade will be based on the higher of (a) or (b) below:

- a) Assignments (15%)
Mid-term test (25%)
Final examination (60%)
- b) Assignments (15%)
Mid-term test (15%)
Final examination (70%)

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.

Weeks	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, 2.8	Prediction of new observation; confidence band for regression line; ANOVA approach to regression analysis.; General linear test approach.
4	2.9, 3.1, 3.2, 3.3, 3.4	Descriptive measures of linear association between X and Y; Diagnostics for predictor variable; residuals; Diagnostic for residuals; Overview of tests involving residuals.
5	3.7, 4.1, 4.2, 4.3, 4.4	F-test for lack of fit; Joint estimation of β_0 and β . Simultaneous estimation of mean responses; simultaneous prediction intervals for new observations; regression through origin.
6	Mid-Term Break 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.8	October 10 - October 16: Mid-term Break Matrices; Matrix Addition; Subtraction; Matrix multiplication, special Types of Matrices; Linear Dependence and Rank; Inverse of

		a matrix; random vectors and matrices.
7	MID-TERM 5.9, 5.10	Mid Term exam will cover material up to section 5.8. simple linear regression model in matrix terms, least square estimation of regression parameters.
8	5.11, 5.12, 5.13	Fitted values and residuals; ANOVA results; inferences in regression analysis.
9	6.1, 6.2, 6.3	Multiple regression models; general linear regression model in matrix terms; estimation of regression coefficients.
10	6.4, 6.5, 6.6, 6.7	Fitted values and residuals; ANOVA results; inferences about regression parameters; estimation of mean response and prediction of new observation.
11	6.8, 6.9, 7.1, 7.2	Diagnostics and remedial measures; multiple regression with two predictor variables; Extra sum of squares & its application; Uses of Extra Sum of squares in Tests for Regression Coefficients.
12	7.3, 7.4, 7.5 & Review	Summary of Tests concerning regression coefficients; coefficient of partial determination; standardized multiple regression model.

Student Services

You may wish to access the many services available to you as a Concordia student. An overview of these resources can be found here: <https://www.concordia.ca/students/services.html>

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: <https://www.concordia.ca/conduct/academic-integrity.html>" [Undergraduate Calendar, Sec 17.10.2]

Behaviour

All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications.

Concordia students are subject to the [Code of Rights and Responsibilities](#) which applies both when students are physically and virtually engaged in any University activity, including classes, seminars, meetings, etc. Students engaged in university activities must respect this Code when engaging with any members of the Concordia community, including faculty, staff, and students, whether such interactions are verbal or in writing, face to face or online/virtual. Failing to comply with the Code may result in charges and sanctions, as outlined in the Code.

Intellectual Property

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Use of Concordia email

Your [Concordia email](#) is the official channel for all university communications, as required by the university's [Policy on Concordia email accounts for students and employees](#). Please use your Concordia email for all communication related to this course and check it regularly so you don't miss important information. [Learn more about how to access your Concordia email](#).

As a student, you are expected to follow the email policy and to use your Concordia email in a respectful and responsible manner. The policy helps ensure that communication across the university is secure, reliable, and consistent.

Extraordinary circumstances

In the event of extraordinary circumstances and pursuant to the [Academic Regulations](#) the University may modify the delivery, content, structure, forum, location and/or evaluation scheme. In the event of such extraordinary circumstances, students will be informed of the change.