

MATH 344: Regression Analysis

Fall 2022 Course Syllabus

NJIT Academic Integrity Code: All Students should be aware that the Department of Mathematical Sciences takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

COURSE INFORMATION

Course Description: This course introduces the methods for fitting and interpreting regression models. Topics include ordinary least squares, inference for the Normal regression model, model diagnostics and test of fit, transformation of data, qualitative predictors, effects of measurement error, and model selection.

Number of Credits: 3

Prerequisites: MATH 333 with a grade of C or better or MATH 341 with a grade of C or better.

Course-Section and Instructors:

Course-Section	Instructor
Math 344-001	Professor J. M. Loh

Office Hours for All Math Instructors: [Fall 2022 Office Hours and Emails](#)

Required Textbook:

Title	<i>Applied Linear Regression Models</i>
Author	Kutner, Nachtsheim and Neter
Edition	4th
Publisher	McGraw-Hill
ISBN #	0073014664

University-wide Withdrawal Date: The last day to withdraw with a M is **Monday, November 14, 2022**. It will be strictly enforced.

POLICIES

DMS Course Policies: All DMS students must familiarize themselves with, and adhere to, the **Department of Mathematical Sciences Course Policies**, in addition to official **university-wide policies**. DMS takes these policies very seriously and enforces them strictly.

Grading Policy: The final grade in this course will be determined as follows:

Homework & Quizzes	20%
Two term Exams	45%
Final Exam	35%

Your final letter grade will be based on the following tentative curve.

A	90 - 100	C	55 - 59
B+	80 - 89	D	50 - 54
B	70 - 79	F	0 - 49
C+	60 - 69		

Attendance Policy: Attendance at all classes will be recorded and is **mandatory**. Please make sure you read and fully understand the **Math Department's Attendance Policy**. This policy will be strictly enforced.

Homework: Homework problems will be assigned in class.

Exams: There will be two exams during the semester and a cumulative final exam during the final exam week:

Term Exams (tentative)	Oct 20, 2022 and Nov 22, 2022
Final Exam Period	December 16 - 22, 2022

The final exam will test your knowledge of all the course material taught in the entire course. Make sure you read and fully understand the **Math Department's Examination Policy**. This policy will be strictly enforced.

Makeup Exam Policy: There will be **NO MAKE-UP QUIZZES OR EXAMS** during the semester. In the event an exam is not taken under rare circumstances where the student has a legitimate reason for missing the exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor's note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the Math Department Office/Instructor that the exam will be missed.

Cellular Phones: All cellular phones and other electronic devices must be switched off during all class times.

ADDITIONAL RESOURCES

Math Tutoring Center: Located in the Central King Building, Lower Level, Rm. G11 (See: **Fall 2022 Hours**)

Further Assistance: For further questions, students should contact their instructor. All instructors have regular office hours during the week. These office hours are listed on the Math Department's webpage for [Instructor Office Hours and Emails](#).

Accommodation of Disabilities: The Office of Accessibility Resources and Services (OARS) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Scott Janz, Associate Director of Disability Support Services at [973-596-5417](tel:973-596-5417) or via email at scott.p.janz@njit.edu. The office is located in Kupfrian Hall, Room 201. A Letter of Accommodation Eligibility from the Office of Accessibility Resources and Services office authorizing your accommodations will be required.

For further information regarding self identification, the submission of medical documentation and additional support services provided please visit the [Office of Accessibility Resources and Services \(OARS\)](#) website.

Important Dates (See: [Fall 2022 Academic Calendar, Registrar](#))

Date	Day	Event
September 5, 2022	Monday	Labor Day
September 6, 2022	Tuesday	First Day of Classes
September 12, 2022	Monday	Last Day to Add/Drop Classes
November 14, 2022	Monday	Last Day to Withdraw
November 22, 2022	Tuesday	Thursday Classes Meet
November 23, 2022	Wednesday	Friday Classes Meet
November 24 to November 25, 2022	Thursday and Friday	Thanksgiving Recess - Closed
November 26, 2022	Saturday	Saturday Classes Meet
December 14, 2022	Wednesday	Last Day of Classes
December 15, 2022	Thursday	Reading Day
December 16 to December 22, 2022	Friday to Thursday	Final Exam Period

Course Outline

Week	Chapter	Topic
1	1	Introduction to linear regression; Introduction to R statistical software
2	1	Ordinary least squares; parameter estimation; Normal regression model

3	2	Statistical inference review; Inference for the slope
4	2	Inference for regression; Analysis of Variance
5	3	Coefficient of determination; Diagnostics
6	4	Transformations; joint inference
7	4	Regression through the origin; Midterm 1
8	5	Matrices and Matrix representation of simple linear regression
9	6	Multiple regression - model and inference
10	6-7	Multiple regression
11	8	Quantitative and qualitative predictors
12	8	Polynomial regression; Midterm 2
13	9	Variable Selection - best subset; Mallows Cp
14	9	Collinearity; Diagnostics and remedial measures
15		Review
16		Final Exam

*Updated by Professor J. Loh - 7/25/2022
Department of Mathematical Sciences Course Syllabus, Fall 2022*