MATH 344: Regression Analysis
Fall 2024 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 C. Jin

Office Hours for All Math Instructors: Fall 2024 Office Hours and Emails

Required Textbook:

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

Recommended Book*: *Plane Answers to Complex Questions: The Theory of Linear Models (Springer Texts in Statistics) 5th (2020 edition)

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, November 11, 2024**. 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	30%
One Midterm Exam	30%
Final Exam	40%

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

A	90 - 100	**C**	68 - 74
B+	85 - 89	**D**	50 - 67
B	80 - 84	**F**	0 - 49
C+	75 - 79		

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. Attendance and participation in class affect 0 - 5% of your grade.

Homework: Homework problems will be assigned in class.

Exams: There will be one midterm during the semester and a final exam during the final exam week:

Midterm Exam	Oct 14, 2024
Final Exam Period	December 15 - December 21, 2024

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 2024 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 need an accommodation due to a disability, please contact the Office of Accessibility Resources and Services at oars@njit.edu, or visit Kupfrian Hall 201 to discuss your specific needs. A Letter of Accommodation Eligibility from the office authorizing student accommodations is 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 at:

https://www.njit.edu/accessibility/

Important Dates (See: Fall 2024 Academic Calendar, Registrar)

Date	Day	Event
September 2, 2024	Monday	Labor Day
September 3, 2024	Tuesday	First Day of Classes
September 9, 2024	Monday	Last Day to Add/Drop Classes
November 11, 2024	Monday	Last Day to Withdraw
November 26, 2024	Tuesday	Thursday Classes Meet
November 27, 2024	Wednesday	Friday Classes Meet
November 28 to December 1, 2024	Thursday and Sunday	Thanksgiving Recess - Closed
December 11, 2024	Wednesday	Last Day of Classes
December 12, 2024	Thursday	Reading Day 1
December 13, 2024	Friday	Reading Day 2
December 15 to December 21, 2024	Sunday to Saturday	Final Exam Period

Course Outline

Disclaimer: The syllabus is subject to change. Look for class announcements in case there are changes to this syllabus.

Week	Chapter	Topic
1	1	Simple Linear Regression Model with distribution of error terms unspecified, Normal Error Regression Model
2	2	Inferences Concerning Regression Parameters Interval Estimation of mean response Prediction of New Observation
3	2	Analysis of Variance Approach to Regression General Linear Test Approach Descriptive Measures of Linear Association
4	3	Diagnostics for Predictor Variable, Residuals Overview of Tests Involving Residuals Test for Constancy of Error Variance, F Test for Lack of Fit Overview of Remedial Measures, Box-Cox Transformations
5	4	Joint Estimation for Regression Parameters Simultaneous Estimation of Mean Responses Simultaneous Prediction Intervals for New Observations
6		MIDTERM EXAM: Monday~ Oct 14, 2024
7	4	Regression through Origin Effects of Measurement Errors Inverse Predictions
8	5	Matrices and their Properties Simple Linear Regression Model in Matrix Terms Least Squares Estimation of Regression Parameters
9	5	Fitted Values and Residuals Analysis of Variance Results Inferences in Regression Analysis
10	6	Multiple Regression Models General Linear Model in Matrix Terms Estimation of Regression Coefficients
11	6	Fitted Values and Residuals Analysis of Variance Results Inferences about Regression Parameters
12	7	Extra Sums of Squares Summary of Tests Concerning Regression Coefficients
13	9	Overview of Model-Building Process
14	Reading Day	Review for Final Exam

Updated by Professor C. Jin -
Department of Mathematical Sciences Course Syllabus, Fall 2024