MATH 344: Regression Analysis
Fall 2021 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 A. Wang

Office Hours for All Math Instructors: Fall 2021 Office Hours and Emails

Required Textbook:

Title	*Applied Linear Regression Models*
Author	Kutner, Nachtsheim and Neter
Edition	4th
Publisher	McGraw-Hill
ISBN #	0-07-238691-6

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Wednesday, November 10, 2021**. 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	30%
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.

Homework: Homework problems will be assigned in class.

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

Midterm Exam	October 07, 2021
Final Exam Period	December 15 - 21, 2021

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 2021 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 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 at:

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

Important Dates (See: Fall 2021 Academic Calendar, Registrar)

Date	Day	Event
September 1, 2021	Wednesday	First Day of Classes
September 4, 2021	Saturday	Saturday Classes Begin
September 6, 2021	Monday	Labor Day
September 8, 2021	Wednesday	Monday Classes Meet
September 8, 2021	Wednesday	Last Day to Add/Drop Classes
November 10, 2021	Wednesday	Last Day to Withdraw
November 25 to November 28, 2021	Thursday to Sunday	Thanksgiving Recess - Closed
December 10, 2021	Friday	Last Day of Classes
December 13 and December 14, 2021	Monday and Tuesday	Reading Days
December 15 to December 21, 2021	Wednesday to Tuesday	Final Exam Period

Course Outline

Date	Lecture	Chapter	Topic
Week 1 9/2	1	Chapter 1	Simple Linear Regression Model with distribution of error terms unspecified, Normal Error Regression Model

Week 2 9/6, 9/9	2	Chapter 2	Inferences Concerning Regression Parameters Interval Estimation of mean response Prediction of New Observation
Week 3 9/13, 9/16	3	Chapter 2	Analysis of Variance Approach to Regression General Linear Test Approach Descriptive Measures of Linear Association
Week 4 9/20, 9/23	4	Chapter 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
Week 5 9/27, 9/30	5	Chapter 4	Joint Estimation for Regression Parameters Simultaneous Estimation of Mean Responses Simultaneous Prediction Intervals for New Observations
Week 6 10/4,10/7	6, 7	└▶ **Review for Midterm Exam** **MIDTERM EXAM (Tentative): Thursday~ Oct 07, 2021**	
Week 8 10/11, 10/14	8	Chapter 4	Regression through Origin Effects of Measurement Errors Inverse Predictions
Week 9 10/18, 10/21	9	Chapter 5	Matrices and their Properties Simple Linear Regression Model in Matrix Terms Least Squares Estimation of Regression Parameters
Week 10 10/25, 10/28	10	Chapter 5	Fitted Values and Residuals Analysis of Variance Results Inferences in Regression Analysis
Week 11 11/1, 11/4	11	Chapter 6	Multiple Regression Models General Linear Model in Matrix Terms Estimation of Regression Coefficients
Week 12 11/8, 11/11	12	Chapter 6	Fitted Values and Residuals Analysis of Variance Results Inferences about Regression Parameters
Week 13 11/16, 11/18	13	Chapter 7	Extra Sums of Squares Summary of Tests Concerning Regression Coefficients

Week 14 11/22, 11/29	14	Chapter 9	Overview of Model-Building Process
Week 15 12/2, 12/6	15	Chapter 9	Overview of Model-Building Process and Final Review