MATH 644: Regression Analysis Methods
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: Regression models and the least squares criterion. Simple and multiple linear regression. Regression diagnostics. Confidence intervals and tests of parameters, regression and analysis of variance. Variable selection and model building. Dummy variables and transformations, growth models. Other regression models such as logistic regression. Using statistical software for regression analysis.

Number of Credits: 3

Prerequisites: MATH 661 or equivalent with departmental approval

Course-Section and Instructors:

Course-Section	Instructor
Math 644-101	Professor W. Guo

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

Required Textbook:

Title	*Applied Linear Regression Models*
Author	Kutner, Nachtsheim, Nester
Edition	4th
Publisher	McGraw-Hill/Irwin
ISBN #	ISBN-10: 0073014664; ISBN-13: 978-0073014661.
Reference Book	Linear Models with R, by Julian Faraway (2005).

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	25%
Project	15%
Midterm Exam	25%
Final Exam	35%

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

A	90 - 100	C+	75 - 80
B+	85 - 90	C	70 - 75
B	80 - 85	F	0 - 70

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.

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

Midterm Exam	October 25, 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	Assignment
Week 1 9/6	1	Lecture Notes	**Basic Statistical Knowledge**	

Week 2 9/13	2	Chapter 1	**Linear Regression with One Predictor Variable**	Homework 1
Week 3 9/20	3	Chapter 2	**Inference in Regression and Correlation Analysis**	
Week 4 9/27	4	Chapter 3	**Diagnostics and Remedial Measures**	Homework 2
Week 5 10/4	5	Chapter 5	**Matrix Approach to Simple Linear Regression Analysis**	
Week 6 10/11	6	Chapter 6	**Multiple Linear Regression I**	Homework 3
Week 7 10/18	7	Chapter 7	**Multiple Linear Regression II**	
Week 8 10/25			**MIDTERM EXAM:** **Monday ~ October 25, 2021**	
Week 9 11/1	8	Chapter 7	**Multiple Linear Regression II**	Regression Analysis Project Homework 4
Week 10 11/8	9	Chapter 8	**Building the Regression Model I: Models for Quantitative and Qualitative Predictors**	
Week 11 11/15	10	Chapter 9	**Building the Regression Model II: Model Selection and Validation**	Homework 5

Week 12 11/22	11	Chapter 9	**Building the Regression Model II: Model Selection and Validation**	
Week 13 11/29	12	Lecture Notes	**Other Issues in Multiple Linear Regression**	Homework 6
Week 14 12/6			**Students' Project Presentation**	
Week 15 12/13			NO CLASS ~ Reading Day 1	
Week 16 12/20			**FINAL EXAM:** **Monday ~ December 20, 2021**	

Updated by Professor W. Guo - 8/17/2021
Department of Mathematical Sciences Course Syllabus, Fall 2021