NJIT New Jersey's Science & Technology University

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF MATHEMATICAL SCIENCES

MATH 644: Regression Analysis Methods
Fall 2018 Graduate 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.

Course-Section and Instructors

Course-Section	Instructor
Math 644-101	Professor A. Wang

Office Hours for All Math Instructors: Fall 2018 Office Hours and Emails

Required Textbooks:

Title	*Applied Linear Regression Models*
Author	Kutner, Nachtsheim and Neter
Edition	4th
Publisher	McGraw-Hill
ISBN #	0-072386916

University-wide Withdrawal Date:The last day to withdraw with a **W** is **Monday, November 12, 2018**. 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%
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 Policy: Homework problems will be assigned in class.

Exams: There will be two midterm exams held in class during the semester and one comprehensive final exam. Exams are held on the following days:

Midterm Exam I	October 15, 2018
Final Exam	December 15 - 21, 2018

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: To properly report your absence from a midterm or final exam, please review and follow the required steps under the DMS Examination Policy found here:

- http://math.njit.edu/students/policies_exam.php

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

ADDITIONAL RESOURCES

Accommodation of Disabilities: Disability Support Services (DSS) 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 Chantonette Lyles, Associate Director of Disability Support Services at 973-596-5417 or via email at lyles@njit.edu. The office is located in Fenster Hall, Room 260. A Letter of Accommodation Eligibility from the Disability Support 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 Disability Support Services (DSS) website at:

- http://www5.njit.edu/studentsuccess/disability-support-services/

Important Dates (See: Fall 2018 Academic Calendar, Registrar)

Date	Day	Event
September 4, 2018	T	First Day of Classes
September 10, 2018	M	Last Day to Add/Drop Classes
November 12, 2018	M	Last Day to Withdraw
November 20, 2018	T	Thursday Classes Meet
November 21, 2018	W	Friday Classes Meet
November 22 - 25, 2018	R - Su	Thanksgiving Recess
December 12, 2018	W	Last Day of Classes
December 13 & 14, 2018	R & F	Reading Days
December 15 - 21, 2018	Sa - F	Final Exam Period

Course Outline

Date	Lecture	Chapter	Topic	Assignment
WEEK 1 9/10	1	Chapter 1	Simple Linear Regression Model with distribution of error terms unspecified, Normal Error Regression Model	
WEEK 2 9/17	2	Chapter 2	Inferences Concerning Regression Parameters Interval Estimation of mean response Prediction of New Observation	
WEEK 3 9/24	3	Chapter 2	Analysis of Variance Approach to Regression General Linear Test Approach Descriptive Measures of Linear Association	
WEEK 4 10/1	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 10/8	5	Chapter 4	Joint Estimation for Regression Parameters Simultaneous Estimation of Mean Responses Simultaneous Prediction Intervals for New Observations	
WEEK 6 10/15	6	**MIDTERM 1 EXAM: MONDAY~ OCT 15, 2018**		
WEEK 7 10/22	7	Chapter 4	Regression through Origin Effects of Measurement Errors Inverse Predictions	
WEEK 8 10/29	8	Chapter 5	Matrices and their Properties Simple Linear Regression Model in Matrix Terms Least Squares Estimation of Regression Parameters	
WEEK 9 11/5	9	Chapter 5	Fitted Values and Residuals Analysis of Variance Results Inferences in Regression Analysis	
WEEK 10 11/12	10	Chapter 6	Multiple Regression Models General Linear Model in Matrix Terms Estimation of Regression Coefficients	
WEEK	11	Chapter 6	Fitted Values and Residuals	

11 11/19			Analysis of Variance Results Inferences about Regression Parameters	
WEEK 12 11/26	12	Chapter 7	Extra Sums of Squares Summary of Tests Concerning Regression Coefficients	
WEEK 13 12/3	13	Chapter 9	Overview of Model-Building Process	
WEEK 14 12/10	14	**READING DAY ~ DEC 13, 2018**	**REVIEW FOR FINAL EXAM**	
FINALS				

Updated by Professor A. Wang - 9/1/2018
Department of Mathematical Sciences Course Syllabus, Fall 2018