NJIT New Jersey's Science & Technology University

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF MATHEMATICAL SCIENCES

MATH 279: Statistics and Probability for Engineers
Summer 2019 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 methods of summarizing and analyzing engineering data and the importance of observing processes over time such as control charts. Descriptive statistics, plots and diagrams are then used to summarize the data. Elements of probability and random variables with their distributions along with mean and variance are taught. All this knowledge is then used as a platform towards covering how to do basic estimation and inference, including confidence intervals and hypothesis testing based on a single sample. Students taking this course cannot receive degree credit for MATH 225,MATH 244, or MATH 333.

Number of Credits: 2

Prerequisites: MATH 112 with a grade of C or better or MATH 133 with a grade of C or better.

Course-Section and Instructors

Course-Section	Instructor
Math 279-011	Professor F. Jamedar

Office Hours for All Math Instructors: Summer 2019 Office Hours and Emails

Required Textbook:

Title	*Engineering Statistics*
Author	Montgomery, et al.
Edition	5th
Publisher	John Wiley & Sons, Inc.
ISBN #	978-0321912787

Withdrawal Date: Please see the Summer 2019 Academic Calendar for the last day to withdraw based on the summer session you are registered for.

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	15%
Exam I	25%
Exam II	25%
Final Exam	35%

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

A	90 - 100	**C**	70 - 74
B+	85 - 89	**D**	60 - 69
B	80 - 84	**F**	59 & Below
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: There will be homework assigned through the course outline and collected at the time of each exam. **NO LATE SUBMISSION IS ACCEPTED**. Home work must be on loose leaf paper either neatly hand written with the name and the course's section number printed on the top sheet and stapled. No need to type the homework, **IT WILL NOT BE ACCEPTED**. The homework will be collected prior to taking the exam. If given instructions are not followed exactly, Home work will not be accepted.

Class Project: A take home project worth 15% of the total final grade will be assigned at the middle of the semester. A period will be assigned in which duration the project must be completed. If the project is not completed during the assigned period the credit will be forfeited.

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

Midterm Exam	TBA
Final Exam	TBA
Final Exam	TBA

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

Math Tutoring Center: Located in the Central King Building, Room G11 (Summer Hours: TBA)

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. 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: Summer 2019 Academic Calendar, Registrar)

Date	Event
May 20, 2019	First Day of Classes
May 21, 2019	Last Day to Add/Drop Classes for **FIRST, MIDDLE, AND FULL**
May 27, 2019	University Closed for Memorial Day
June 24, 2019	Last Day of **FIRST SUMMER SESSION**
July 1, 2019	First Day of Second Summer Session
July 4-5, 2019	University Closed for Independence Day
July 15, 2019	Last Day of **MIDDLE SUMMER SESSION**
August 6, 2019	Last Day of **FULL AND SECOND SUMMER SESSIONS**

Course Outline

Lecture	Sections	Topic	Assignment
1	1.1 1.2	The engineering method and statistical thinking Collecting Engineering Data	1-1,1-2,1-4,1-6 1-7,1-8,1-9,1-12,1-14
2	2.1 2.2	Data summary and display Stem and leaf diagram	2-1,2-2,2-3,2-4,2-7,2-8,2-9-2-10 2-14,2-16,2-20,2-22,2-24
3	2.3 2.4 2.5	Histogram Box plot & measures of positions Time series plot	2-26,2-28,2-32 2-33(a,b,c,e), 2-34,2-38,2-39 2-44,2-46 a,2-50
4	2.6	Multivariate data	2-52,2-53,2-54 find the line of best fit as well,256,258
5	Test 1	Topics: 1.1-2.6	
6	3.1 3.2	Introduction to probability Random Variables	3-1 to 3-9
7	3.3 3.4 3.4.1 3.4.2 3.5.1 3.7 3.7.1 3.7.2 3.7.3	Probability Continuous random variables Probability density function Cumulative distribution function Normal Distribution Discrete random Variables Probability mass function Cumulative Distribution function Mean and variance	3-10,3-11,3,-12,3-13,3-15,3-17,3-18 3-21,3-23, 3-24, 3-25, 3-26 3-22,3-27,3-28,3-29,3-31,3-33 3-38,3-40,3-41,3-42,3-43,3-45,3-46,3-50 3-91 to 3-95 3-96,3-97,3-98
8	3.8 3.13	Binomial Distribution Central limit theorem	3-101,3-103,3-105,3-107 3-195, 3-196, 3-197,3-200,3-201
10	Test 2	Topics: 3.1-3.8	

11	4.1	Statistical inferences	
12	4.2	Point estimation	4-1,4-3,4-5
13	4.3 4.3.1 4.3.2	Hypothesis testing Statistical hypothesis Testing statistical hypothesis	4-15.4-17,4-18,4-19
14		Review for Final exam	
15		Comprehensive Final Exam	

Updated by Professor F. Jamedar - 5/17/2019
Department of Mathematical Sciences Course Syllabus, Summer 2019