MATH 279: Statistics and Probability for Engineers
Fall 2023 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 279-001	Professor K. Carfora
Math 279-003	Professor K. Carfora

Office Hours for All Math Instructors: Fall 2023 Office Hours and Emails

Required Textbook:

> *A PDF of the textbook (Elementary Statistics, Bluman, 7th edition) will be provided to you on canvas;* ***you DO NOT need to purchase a textbook!***

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, November 13, 2023**. 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	15%
Quizzes/Projects	25%
Midterm Exam	30%
Final Exam	30%

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**	0 - 59
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.

Technology Requirements: Exams will be proctored using both Respondus LockDown Browser+Monitor and Webex. Students will be required to join a Webex meeting from their phone with their cameras on, and to access the exam through LockDown Browser on a Mac or Windows PC with webcam. Students must follow all instructions related to environment checks and camera positioning.

Homework: Homework will be assigned through Canvas and may be collected on a weekly basis.

Quiz Policy: A short quiz based on homework and lecture will be given frequently.

Exams: There will be one midterm exam held in class during the semester and one comprehensive final exam. Exams will be held during the following weeks:

Midterm Exam I	Class #9
Final Exam Period	December 17 - December 23, 2023

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 2023 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 2023 Academic Calendar, Registrar)

Date	Day	Event
September 4, 2023	Monday	Labor Day
September 5, 2023	Tuesday	First Day of Classes
September 11, 2023	Monday	Last Day to Add/Drop Classes
November 13, 2023	Monday	Last Day to Withdraw
November 21, 2023	Tuesday	Thursday Classes Meet
November 22, 2023	Wednesday	Friday Classes Meet
November 23 to November 26, 2023	Thursday and Saturday	Thanksgiving Recess - Closed
December 13, 2023	Wednesday	Last Day of Classes
December 14, 2023	Thursday	Reading Day 1
December 15, 2023	Friday	Reading Day 2
December 17 to December 23, 2023	Sunday to Saturday	Final Exam Period

Course Outline

Class	Section	Topic
1	1.1-1.2, 2.1-2.3	Intro, Frequency Distributions, Stem & Leaf Plots, Histograms
2	3.1-3.4	Numerical Summary of Data, Box Plots (No Empirical Rule)
3	4.1-4.2	**Quiz: Chap 3** Intro to Probability, Addition Rule
4	4.3-4.4 5.1	**Quiz: 4.1-4.2** Conditional Probability, Multiplication Rule, Counting Rules Discrete Variables
5	5.2-5.3	**Quiz: 4.3-4.4** Mean/Variance Discrete Variables, Binomial Distribution *In-class project (Chap 5)*
6	Alt text: 4.1, 4.3	Continuous Variables, PDFs, Mean/Variance *In-class Project (Chap 5 challenge)*
7	6.1-6.2 (3.3)	**Quiz: Alt text 4.1, 4.3** Z-scores, Standard Normal Distribution, Other Normal Distributions
8	6.3	**Quiz: 6.1-6.2 (3.3)** Central Limit Theorem Review *In-Class Project*
9		**Midterm Exam**
10	7.1-7.2	Confidence Intervals for a Mean
11	7.3 8.1-8.2	**Quiz: 7.1-7.2** Confidence Intervals for a Proportion Hypothesis Testing
12	8.2-8.3	Hypothesis Testing
13	8.4 10.1-10.2	**Quiz: 8.1-8.3** Hypothesis Testing In-class project (Wheel of Fortune) Linear Regression
14	TBD	Catch up & Review In-class Project
15		**Final Exam**