

MATH 279-001/003: Statistics and Probability for Engineers

Fall 2020 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 A. Pole
Math 279-003	Professor A. Pole

Office Hours for All Math Instructors: [Fall 2020 Office Hours and Emails](#)

Required Textbook:

Title	<i>Engineering Statistics</i>
Author	Montgomery, et al.
Edition	5th
Publisher	John Wiley & Sons, Inc.
ISBN #	978-0470631478
Calculator Policy	Only a basic (non-programmable and non-graphing) calculator is permitted during the quizzes and exams.

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, November 9, 2020**. 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	35%
Final Exam	35%

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

A	90 - 100	C	65 - 74
B+	85 - 89	D	55 - 64
B	80 - 84	F	0 - 54
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.

Using Respondus LockDown Browser and a Webcam for Online Exams

Respondus LockDown Browser is a locked browser for taking assessments or quizzes in Canvas. It prevents you from printing, copying, going to another URL, or accessing other applications during a quiz. If a Canvas quiz requires that LockDown Browser be used, you will not be able to take the assessment or quiz with a standard web browser. You may be required to use LockDown Browser with a webcam (Respondus Monitor), which will record you during an online exam.

This course requires the use of Respondus LockDown Browser and/or Respondus Monitor with a webcam for online exams. The webcam can be built into your computer or can be the type that plugs in with a USB cable. Watch this **short video** to get a basic understanding of LockDown Browser and the webcam feature. A student **Quick Start Guide (PDF)** is also available.

1. Download and install LockDown Browser from this link:
<http://www.respondus.com/lockdown/download.php?id=264548414>
2. Once your download has finished, locate the "LockDown Browser" shortcut on the desktop and double-click it. (For Mac users, launch "LockDown Browser" from the Applications folder.)
3. You will be brought to the Canvas login page within the LockDown Browser, click "Login with your UCID" to log in with your NJIT UCID and password and then click Login.
4. Under "My courses", click on the course in which you have to take the exam that requires the LockDown Browser.
5. After you enter the course, find the exam and click on it.
6. A confirmation prompt will appear, click the "Start attempt" button. Once a quiz has been started with LockDown Browser, you cannot exit until the Submit all and finish button is clicked.

7. If you are required to use a webcam (Respondus Monitor), you will be prompted to complete a Webcam Check and other Startup Sequence steps.

Homework Policy: Each week homework problems denoted (*) will be collected and a short quiz based on the homework will be given. There are no make-up quizzes, but the lowest quiz/HW grade for the semester will be dropped. If absent, homework will be accepted up until the following class for full credit. Homework received during the following class, and up to one week later will be accepted for half credit. No homework accepted beyond two weeks late.

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	Week 8
Final Exam Period	December 15 - 21, 2020

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 2020 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**.

All students must familiarize themselves with and adhere to the Department of Mathematical Sciences Course Policies, in addition to official university-wide policies. The Department of Mathematical Sciences takes these policies very seriously and enforces them strictly.

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 Kupfrian Hall, Room 201. 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:

- <https://www.njit.edu/studentssuccess/accessibility/>

Important Dates (See: **Fall 2020 Academic Calendar, Registrar**)

Date	Day	Event
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September 1, 2020	T	First Day of Classes
September 5, 2020	S	Saturday Classes Begin
September 7, 2020	M	Labor Day
September 8, 2020	T	Monday Classes Meet
September 8, 2020	T	Last Day to Add/Drop Classes
November 9, 2020	M	Last Day to Withdraw
November 25, 2020	W	Friday Classes Meet
November 26-29, 2020	R - Su	Thanksgiving Recess - University Closed
December 10, 2020	R	Last Day of Classes
December 11 & 14, 2020	F & M	Reading Days
December 15 - 21, 2020	T - M	Final Exam Period

Course Outline

Week	Section	Topic	Homework Problems
1	2.1- 2.2, 2.4	Data summary, Stem-and- Leaf Diagram, Box Plots	2.1, 2.3, 2.4 (no dot plots), 2.14, 2.20, 2.25
2	3.1, 3.2 3.3	Random Variables, and Probability	3.1-3.7, 3.11, 3.13, 3.16, 3.17
3	3.7	Discrete Random Variables	3.91, 3.93 (no graph), 3.100 (no graph)
4	3.8	Binomial Distribution	3.103, 3.106, 3.113
5	3.4	Continuous Random Variables	3.23, 3.24
6	3.9.1	Poisson Distribution	3.121, 3.123, 3.130
7	3.9.2	Exponential Distribution & REVIEW	3.136, 3.137
8		MIDTERM EXAM	
9	3.5.1, 3.13	Normal Distribution, Random Samples, Statistics, and The Central Limit Theorem	3.41, 3.43, 3.45, 3.47., 3.50, 3.195, 3.197, 3.199, 3.203, 3.204
10	4.4.5, 4.5.3	Confidence Intervals, Choice of Sample Size	4.40d, 4.41d, 4.63d
11	4.3	Type I and Type II Error	4.15, 4.17, 4.19
12	4.3 4.4 4.5	Intro to Hypothesis Testing on the Mean Inference on the mean: Variance known & variance unknown	4.37abd, 4.38ae, 4.40a 4.54ad, 4.5a, 4.57a
13	4.7	Tests on a Population Proportion	4.75acdf
14	3.9.2	REVIEW FOR FINAL EXAM	