

MATH 279: Statistics and Probability for Engineers

Spring 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 279-006	Professor F. Jamedar
Math 279-008	Professor F. Jamedar

Office Hours for All Math Instructors: [Spring 2019 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

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, April 8, 2019**. 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:

Hand-in Homework	15%
Midterm Exam I	25%
Midterm 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.**

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 in class during the semester and one comprehensive final exam. The final exam will be held during the following week:

Midterm Exam I	Lecture 5
Midterm Exam II	Lecture 10
Final Exam Week	May 10 - 16, 2019

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: [Spring 2019 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](tel: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: [Spring 2019 Academic Calendar](#), Registrar)

Date	Day	Event
January 22, 2019	T	First Day of Classes
February 1, 2019	F	Last Day to Add/Drop Classes
March 17 - 24, 2019	Su - Su	Spring Recess - No Classes, NJIT Open
April 8, 2019	M	Last Day to Withdraw
April 19, 2019	F	Good Friday - No Classes, NJIT Closed
May 7, 2019	T	Friday Classes Meet/ Last Day of Classes
May 8 & 9, 2019	W & R	Reading Days
May 10 - 16, 2019	F - R	Final Exam Period

Course Outline

Lecture	Sections	Topic	Assignment
1	1.1	The engineering method and statistical thinking	1-1,1-2,1-4,1-6
	1.2	Collecting Engineering Data	1-7,1-8,1-9,1-12,1-14
2	2.1	Data summary and display	2-1,2-2,2-3,2-4,2-7,2-8,2-9-2-10
	2.2	Stem and leaf diagram	2-14,2-16,2-20,2-22,2-24
3	2.3	Histogram	2-26,2-28,2-32
	2.4	Box plot & measures of positions	2-33(a,b,c,e), 2-34,2-38,2-39
	2.5	Time series plot	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	Introduction to probability	
	3.2	Random Variables	3-1 to 3-9
7	3.3	Probability	3-10,3-11,3,-12,3-13,3-15,3-17,3-18
	3.4	Continuous random variables	
	3.4.1	Probability density function	3-21,3-23, 3-24, 3-25, 3-26
	3.4.2	Cumulative distribution function	3-22,3-27,3-28,3-29,3-31,3-33
	3.5.1	Normal Distribution	3-38,3-40,3-41,3-42,3-43,3-45,3-46,3-50
	3.7	Discrete random Variables	
	3.7.1	Probability mass function	3-91 to 3-95
	3.7.2	Cumulative Distribution function	3-96,3-97,3-98
	3.7.3	Mean and variance	
8	3.8	Binomial Distribution	3-101,3-103,3-105,3-107
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	Hypothesis testing	
	4.3.1	Statistical hypothesis	4-15.4-17,4-18,4-19
	4.3.2	Testing statistical hypothesis	
14		REVIEW FOR FINAL EXAM	
15		COMPREHENSIVE FINAL EXAM	

*Updated by Professor F. Jamedar - 1/21/2019
Department of Mathematical Sciences Course Syllabus, Spring 2019*
