Fall 2024

MATH 105-009: Elem Probability & Statistics

B. Mafarjeh

MATH 105 : Elementary Probability and Statistics
Fall 2024 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: Consider notions of probability. Topics include the binomial and normal distributions, expected value, and variance. The notions of sampling, hypothesis testing, and confidence intervals are applied to elementary situations.

Number of Credits: 3

Prerequisites: None.

Course-Section and Instructors:

Course-Section	Instructor
Math 105-001	Professor B. Mafarjeh
Math 105-009	Professor B. Mafarjeh

Office Hours for All Math Instructors: Fall 2024 Office Hours and Emails

Required Textbook:

Title	*Understanding Basic Statistics*
Author	Brase and Brase
Edition	8th
Publisher	Cengage
ISBN #	MyMathLab with E-text: 978-1337888981

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, November 11, 2024**. It will be strictly enforced.

COURSE GOALS

Course Objectives

- The objective of this course is to acquaint students with basic concepts and methods in statistics and probability and demonstrate real world applications using examples drawn from various fields. Topics to be covered include sampling, descriptive statistics, correlation and regression, notions of probability, binomial and normal distributions, estimation and hypothesis testing.

Course Outcomes *Upon successful completion of this course, the student will be able to -*

- Demonstrate their understanding of various statistical terms, types of data, and data collection methods Efficiently summarize, organize, and present data
- Effectively compute measures of central tendency, position, and variation and interpret the results Demonstrate their understanding of notions of probability and distributions
- Perform statistical analysis, such as estimation, hypothesis testing, correlation and regression and draw conclusions
- Apply statistical reasoning to real world problems and make informed decisions

Course Assessment: The assessment tools used will include class participation, homework assignments, quizzes, two midterm exams, and a cumulative/ comprehensive final exam.

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	10%
Quizzes	10%
Midterm Exam I	25%
Midterm Exam II	25%
Final Exam	30%

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.

Homework: Homework is assigned every week at the completion of each topic and will be handed in via WEBASSIGN. Quizzes will be given weekly and will test the material learned in class the week prior.

Exams: There will be two midterm exams, given during the class meeting time, in the semester and one comprehensive final exam. Exams will be tentatively held on the following days:

Midterm Exam I	Week 7
Midterm Exam II	Week 11
Final Exam Period	December 15 - December 21, 2024

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 2024 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 2024 Academic Calendar, Registrar)

Date	Day	Event
September 2, 2024	Monday	Labor Day

September 3, 2024	Tuesday	First Day of Classes
September 9, 2024	Monday	Last Day to Add/Drop Classes
November 11, 2024	Monday	Last Day to Withdraw
November 26, 2024	Tuesday	Thursday Classes Meet
November 27, 2024	Wednesday	Friday Classes Meet
November 28 to December 1, 2024	Thursday and Sunday	Thanksgiving Recess - Closed
December 11, 2024	Wednesday	Last Day of Classes
December 12, 2024	Thursday	Reading Day 1
December 13, 2024	Friday	Reading Day 2
December 15 to December 21, 2024	Sunday to Saturday	Final Exam Period

Course Outline

Week #	Lecture #	Sections	Topics
1	1	1.1-1.3	Statistics and Sampling
2	2	1.1-1.3	Statistics and Sampling cont'd
	3	2.1-2.3	Organizing Data
3	4	2.1-2.3	Organizing Data cont'd
	5	3.1-3.3	Averages and Variation
4	6	3.1-3.3	Averages and Variation cont'd
	7	4.1-4.2	Correlation and Regression
5	8	4.1-4.2	Correlation and Regression cont'd
	9	5.1-5.3	Probability Theory
6	10	5.1-5.3	Probability Theory cont'd
	11		In-Class Project (Linear Regression)
7	12		Catch up and Review
	13		**MIDTERM #1**
8	14	6.1-6.2	Discrete Variables
	15	6.3	Binomial Distribution

9	16	7.1	Normal Curves
	17	7.2	Normal Curves cont'd
10	18	7.3	Normal Curves cont'd
	19	7.4-7.5	Sampling Distributions and the Central Limit Theorem
11	20		Catch up and Review
	21		**MIDTERM #2**
12	22	8.1-8.2	Estimating the Mean
	23	8.1-8.2	Estimating the Mean
13	24	8.3	Estimating Proportions
14	25	9.1-9.2	Testing the Mean
	26	9.1-9.2	Testing the Mean
15	27	9.3	Testing a Proportion
	28		Catch up & Review
EXAM WEEK			**FINAL EXAM (CUMULATIVE)**