MATH 105 : Statistics and Society
Spring 2025 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 105-004	Professor K. Horwitz
Math 105-014	Professor K. Horwitz
Math 105-020	Professor K. Horwitz

Office Hours for All Math Instructors: Spring 2025 Office Hours and Emails

Required Textbook:

Title	*Understanding Basic Statistics*
Author	Brase and Brase
Edition	8th
Publisher	Cengage

ISBN #	ISBN-13: 9781337888981 (Paper w/WebAssign) ISBN-13: 9781337683685 (EBook)

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, April 7, 2025**. 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 & Quizzes	20%
Midterm Exam I	15%
Midterm Exam II	20%
Project	15%
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 ensure you read and fully understand the Math Department's Attendance Policy. This policy will be strictly enforced.

Religious Observance: NJIT is committed to supporting students observing religious holidays. Students must notify their instructors in writing of any conflicts between course requirements and religious observances, ideally by the end of the second week of classes and no later than two weeks before the anticipated absence.

Homework Policy:
The reading assignment for the entire semester is to read/study the applicable chapter of the text, preferably before and after the lecture. Homework is completed online via Cengage/Webassign. Homework problems are assigned every week after each topic is completed.

Quiz Policy:
Quizzes will be given throughout the semester. They will be based on the lectures, homework, and in-class discussions.

There will be 4 - 8 in-class assessments given throughout the semester. There are NO make-up In-Class Quizzes.

In addition, online, asynchronous quizzes via Cengage/Webassign are also assigned to ensure you keep up with the class.

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	TBA
Midterm Exam II	TBA
Final Exam Period	May 10 - May 16, 2025

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: Cellular phones and other electronic devices must be switched off during all class times.

Calculator and AI Policy: This course expects students to work without artificial intelligence (AI) assistance in order

to better develop their skills in this content area. As such, AI usage is not permitted throughout this course under any circumstance. There will also be no **programmable calculators** used in this course.

ADDITIONAL RESOURCES

Math Tutoring Center: Located in the Central King Building, Lower Level, Rm. G11 (See: Spring 2025 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 accommodations due to a disability please If you need an accommodation due to a disability contact the Office of Accessibility Resources and Services at oars@njit.edu. The office is located in Kupfrian Hall, Room 201. A Letter of Accommodation Eligibility from the Office of Accessibility Resources and 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 Office of Accessibility Resources and Services (OARS) website at:

https://www.njit.edu/accessibility/

Important Dates (See: Spring 2025 Academic Calendar, Registrar)

Date	Day	Event
January 21, 2025	Tuesday	First Day of Classes
January 27, 2025	Monday	Last Day to Add/Drop Classes
March 16, 2025	Sunday	Spring Recess Begins
March 22, 2025	Saturday	Spring Recess Ends
April 3, 2025	Thursday	Wellness day
April 7, 2025	Monday	Last Day to Withdraw
April 18, 2025	Friday	Good Friday - No Classes
April 20, 2025	Sunday	Easter Sunday - No Classes Scheduled
May 6, 2025	Tuesday	Thursday Classes Meet
May 7, 2025	Wednesday	Friday Classes Meet
May 7, 2025	Wednesday	Last Day of Classes

May 8, 2025	Thursday	Reading Day 1
May 9, 2025	Friday	Reading Day 2
May 10 - May 16, 2025	Friday to Thursday	Final Exam Period

Tentative Course Outline

Week #	Lecture #	Sections	Topics	Homework Problems
1	1	1.1-1.3	Statistics and Sampling	**1.1** (4, 8, 9, 10) **1.2** (2, 8, 15, 19, 20)
	2	1.1-1.3 2.1	Statistics and Sampling Organizing Data	**1.3** (1, 2, 7, 8, 10, 11) **2.1** (2,3, 10,13,16,18, 23,25)
2	3	2.1-2.3	Organizing Data	**2.2** (3, 4, 5, 8,13, 16) **2.3** (1, 2, 5, 9, 10)
	4	3.1-3.3	Averages and Variation	**3.1** (1, 7, 9, 16, 19, 20, 21a-c, 24, 26, 27, 28) **3.2** (10, 13, 16a,b, 26)
3	5	3.1-3.3	Averages and Variation	**3.3** (5, 7, 9, 10, 12) Quiz on Ch. 2
	6	4.1-4.2	Correlation and Regression	**4.1** (13, 14, 15, 18)
4	7	4.1-4.2	Correlation and Regression	**4.2** (3, 7, 10, 11, 12) Quiz on Ch. 3
	8		Catch up & Review	
5	9		**MIDTERM #1**	
	10	5.1-5.3	Probability Theory	**5.1** (3, 8, 11, 12, 14, 18,19,20)
6	11	5.1-5.3	Probability Theory	**5.2** (15, 16, 18, 20, 25, 28, 31)
	12	5.1-5.3	Probability Theory	**5.3** (6, 10, 11, 14, 15, 18, 20, 21, 22, 23, 24, 25, 26, 27)
7	13	6.1	Discrete Random Variables	**6.1** (3, 7, 10, 13, 14)
	14	6.2-6.3	Binomial Variables Binomial Distribution	**6.2** (3, 11, 15, 16, 18, 23, 25) **6.3** (11, 13, 14, 15, 18, 19, 21)
8	15	7.1	Normal Curves	**7.1** (2, 5, 7, 8, 9)
	16	7.2	Normal Curves	**7.2** (4, 5, 9, 12, 13-27 odd, 33-43 odd)
9	17	7.3	Normal Curves	**7.3** (10, 12, 15-29 odd, 24, 30)

	18	7.4-7.5	Sampling Distributions, Central Limit Theorem	**7.4** (none) **7.5** (2, 6, 7, 10, 11, 15, 16, 17)
10	19		Catch up & Review	
	20		**MIDTERM #2**	
11	21			
	22	8.1-8.2	Estimating the Mean, Sample Size Determination	**8.1** (15,16, 17, 18, 23, 25)
12	23	8.1-8.2	Estimating the Mean	**8.2** (1, 3, 13, 14, 15, 16)
	24	8.1-8.3	Estimating Proportions, Sample Size Determination	**8.3**
13	25	9.1-9.2	Testing the Mean	**9.1** (16, 19, 21, 22, 23, 24)
	26	9.1-9.2	Testing the Mean	**9.2** (12, 14, 18)
14	27	9.1-9.3	Testing a Proportion	**9.3**
	28		Catch up & Review	
EXAM WEEK		1.1-9.3	**FINAL EXAM (CUMULATIVE)**	