# MATH 105: Elementary Probability and Statistics
## *Spring 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**: This course introduces methods of summarizing and analyzing data. Descriptive statistics, graphs, plots and diagrams are used to summarize the data. Elements of probability and discrete random variable with its distributions along with mean and variance of a given data set 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 (univariate) data. Students will be taught basic simple regression techniques involving two variables for a given data set.

**Number of Credits**: 3

**Prerequisites**: None.

**Course-Section and Instructors:**

| Course-Section | Instructor |
|---|---|
| Math 105-002 | Professor R. Dandan |
| Math 105-104 | Professor R. Dandan |

**Office Hours for All Math Instructors**: Spring 2024 Office Hours and Emails

**Required Textbook**:

| | |
|---|---|
| **Title** | *Understanding Basic Statistics* |
| **Author** | Brase and Brase |
| **Edition** | 8th |
| **Publisher** | Cengage |
| **ISBN #** | 9781337888981 |

**University-wide Withdrawal Date**: The last day to withdraw with a **W** is **Monday, April 1, 2024**. 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:

| | |
|---|---|
| **Worksheet** | 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** | 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.

**Worksheet:** Grade will be assigned based on group performance, participation and contribution.

**Exams**: There will be two midterm exams held during the semester and one comprehensive common final exam. Exams are held on the following days:

| | |
|---|---|
| Midterm Exam I | TBA |
| Midterm Exam II | TBA |
| Final Exam Period | May 3 - May 9, 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: Spring 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 are in need of accommodations due to a disability please If you need an accommodation due to a disability please 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 2024 Academic Calendar, Registrar)

| Date | Day | Event |
|---|---|---|
| January 16, 2024 | Tuesday | First Day of Classes |
| January 22, 2024 | Monday | Last Day to Add/Drop Classes |
| March 10, 2024 | Sunday | Spring Recess Begins |
| March 16, 2024 | Saturday | Spring Recess Ends |
| March 29, 2024 | Friday | Good Friday - No Classes |
| April 1, 2024 | Monday | Last Day to Withdraw |
| April 30, 2024 | Tuesday | Friday Classes Meet |
| April 30, 2024 | Tuesday | Last Day of Classes |
| May 1, 2024 | Wednesday | Reading Day 1 |
| May 2, 2024 | Thursday | Reading Day 2 |
| May 3 - May 9, 2024 | Friday to Thursday | Final Exam Period |

# Course Outline

| Week # | Lecture # | Sections | Topics |
|---|---|---|---|
| 1 (1/17) | 1-2 | 1.1-1.3 | Statistics and Sampling |
| 2 (1/24) | 3-4 | 2.1-2.3 | Organizing Data |
| 3 (1/31) | 5-6 | 3.1-3.3 | Averages and Variation |
| 4 (2/7) | 7-8 | 4.1-4.2 | Correlation and Regression |
| 5 (2/14) | 9-10 | 5.1-5.3 | Probability Theory |
| 6 (2/21) | 11-12 | 5.1-5.3 | Probability Theory cont'd / Review for Midterm #1 |
| 7 (2/28) | 13-14 | 6.1-6.2 | **MIDTERM #1 (Ch 1.1-5.3)** / Discrete Variables |
| 8 (3/7) | 15-16 | 6.3 / 7.1 | Binomial Distribution / Normal Curves |
| 9 (3/14) | **NO** | **CLASS** | **SPRING RECESS** |
| 10 (3/21) | 17-18 | 7.2-7.3 | Normal Curves cont'd |
| 11 (3/18) | 19-20 | 7.4-7.5 | Sampling Distributions and the CLT / Review for Midterm #2 |
| 12 (4/4) | 21 | | **MIDTERM #2 (Ch 6.1-7.5)** |
| 13 (4/11) | 22-23 | 8.1-8.2 | Estimating the Mean |
| 14 (4/18) | 24-25 | 8.3 / 9.1-9.2 | Estimating the Proportions / Testing the Mean |
| 15 (4/25) | 26-27 | 9.1-9.2 / 9.3 | Testing the Mean cont'd / Testing a Proportion |
| 16 (5/2) | 28 | | Review for Final (Ch 1.1-9.3, Comprehensive) |
| EXAM WEEK | | | **FINAL EXAM (CUMULATIVE)** |

*Updated by Professor R. Dandan- 12/7/2023*
*Department of Mathematical Sciences Course Syllabus, Spring 2024*