

MATH 105-103: Elementary Probability and Statistics

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: 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 105-103	Professor R. Dandan

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

Required Textbook:

Title	<i>Understanding Basic Statistics</i>
Author	Brase and Brase
Edition	8th
Publisher	Cengage
ISBN #	978-1337888981

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

Quizzes	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. .

Fall 2020 Note: Online Attendance at all classes will be recorded and is mandatory. Every class will include a recorded instruction, a Webex discussion and a short quiz on canvas at the end of the session

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

Midterm Exam I	October 20, 2020; 6PM
Midterm Exam II	December 1, 2020; 6PM
Final Exam	Decemeber 15, 2020; 6PM

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/studentsuccess/accessibility/>

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

Date	Day	Event
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

Day	Date	Section	Section Topics
1	Tuesday, Sept 1	1.1 - 1.3 2.1 - 2.3	Statistics and Sampling Techniques Organizing Data
2-3	Tuesday, Sept 8-15	3.1 - 3.3	Mean, mode, median, and variation of a data set. Organizing dot plot and box-n-whisker plot of a given data set.
4	Tuesday, Sep 22	5.1 - 5.2	Elementary Probability Theory
5	Tuesday, Sep 29	5.2 - 5.3 6.1	Probability rules - compound events Decision tree and counting techniques Expected value (mean) and variance of Discrete Random Variable
6	Tuesday, Oct 6	6.2 - 6.3	Binomial distribution Mean and variance of binomial distribution
7	Tuesday, Oct 13		MID TERM TEST 1 (CHAPTERS 1 THROUGH 6)
8	Tuesday, Oct 20	7.1 - 7.3	Normal distribution
9	Tuesday, Oct 27	7.4 - 7.5	Sampling Distribution Central Limit Theorem
10	Tuesday, Nov 3	7.5 - 7.6	Central Limit Theorem (Continued) Normal Approximation to Binomial
11	Tuesday, Nov 10	8.1 - 8.2	Estimating Mean, Estimating Proportions (aka. confidence interval estimate of one population mean)
12	Tuesday, Nov 17	8.3	Confidence interval estimate of one population proportion
13	Tuesday, Nov 24	9.1 -9.2	MID TERM TEST 2 (CHAPTERS 7 AND 8 ONLY) Hypothesis Testing of One Population mean (when σ is known and when σ is unknown)
14	Tuesday, Dec 1	9.3	Hypothesis Testing of Population Proportion Final Exam Review Session
15	Tuesday, Dec 8	4.1-4.2	Scatter plot Linear Coefficient of Correlation Regression Equation Coefficient of Determination
16	Tuesday, Dec 15		FINAL EXAM IS CUMULATIVE (CH. 1.1 THRU 9.3)

*Updated by Professor R. Dandan - 8/22/2020
Department of Mathematical Sciences Course Syllabus, Fall 2020*
