

THE DEPARTMENT OF MATHEMATICAL SCIENCES

## MATH 663: Introduction to Biostatistics

### *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:** Introduction to statistical techniques with emphasis on applications in health related sciences. This course will be accompanied by examples from biological, medical and clinical applications. Summarizing and displaying data; basic probability and inference; Bayes' theorem and its application in diagnostic testing; estimation, confidence intervals, and hypothesis testing for means and proportions; contingency tables; regression and analysis of variance; logistic regression and survival analysis; basic epidemiologic tools; use of statistical software. **MATH 661** and **MATH 663** cannot both be used toward degree credits at NJIT.

**Number of Credits:** 3

**Prerequisites:** Undergraduate Calculus.

**Course-Section and Instructors:**

Course-Section	Instructor
Math 663-101	Professor G. Kariuki

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

**Required Textbook:**

Title	<i>Fundamentals of Biostatistics</i>
Author	Bernard Rosner
Edition	8th
Publisher	Cengage
ISBN #	978-1305268920

**University-wide Withdrawal Date:** The last day to withdraw with a W is **Monday, November 11, 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:

Homework and Quizzes	25%
Midterm Exam	30%
Final Exam	45%

Your final letter grade will be based on the following tentative curve.

A	90 - 100	C	68 - 74
B+	85 - 89	D	50 - 67
B	80 - 84	F	0 - 49
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 problems will be assigned in class.

**Exams:** There will be one midterm exam during the semester and a cumulative final exam during the final exam week:

Midterm Exam	Week 8
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

**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](mailto: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

Date	Lecture	Chapter	Topic
Week 1	1	Chapter 1-2	Introduction, Descriptive Statistics
Week 2	2	Chapter 3	Probability
Week 3	3	Chapter 4-5	Discrete Probability Distributions and Continuous Probability Distributions
Week 4	4	Chapter 6	Estimation, Sampling Distribution Models and Confidence Intervals for Proportions
Week 5	5	Chapter 7	Hypothesis Testing: One Sample Inference
Week 6	6	Chapter 8	Hypothesis Testing: Two Sample Inference
Week	7	Chapter 10	Categorical data, Chi-Square tests and Two-Sample Test for Binomial Proportions
Week 8	8		Midterm Exam
Week 9	9	Chapter 13	Logistic Regression
Week 10	10	Chapter 14	Survival Analysis I
Week 11	11	Chapter 14	Survival Analysis II
Week 12	12	Chapter 14	Survival Analysis III
Week 13	13		Nonparametric Analysis I
Week 14	14		Nonparametric Analysis II
Week 15	15		Final Review

*Updated by Professor G. Kariuki - 8/2024  
Department of Mathematical Sciences Course Syllabus, Fall 2024*