Fall 2024

MATH 645-001: Analysis

A. Bose

MATH 645: Analysis I
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: This is the first part of the two-semester course that introduces an application-minded student to foundations and modern techniques of real analysis. Topics covered in this course include measure and integration theory, Lp spaces, integral inequalities, topological and metric spaces, Banach and Hilbert spaces, contraction mapping, duality, weak convergence, compactness.

Number of Credits: 3

Prerequisites: MATH 546 or departmental approval.

Course-Section and Instructors:

Course-Section	Instructor
Math 645-001	Professor A. Bose

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

Required Textbook:

Title	*Real Analysis*
Author	H. L. Royden and P. M. Fitzpatrick
Edition	4th
Publisher	Pearson
ISBN #	978-8120342804

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

COURSE TEXTS

- J. K. Hunter and B. Nachtergaele, Applied Analysis, World Scientific
- N. V. Kolmogorov and S. V. Fomin, Introductory Real Analysis, Dover
- W. Rudin, Real and Complex Analysis, 3rd edition, McGraw-Hill

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	35%
Midterm Exam I	30%
Final Exam	35%

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: Assignments will be regularly assigned and must be submitted electronically as a single scanned pdf in Canvas.

Exams: There will be one in class midterm exam with a date to be agreed upon by students. Further details will be provided.

Midterm Exam I	TBD
Final Exam Period	TBD

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, 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	Topics
1	The Real Numbers: Sets, Sequences, and Functions
2	Lebesgue Measure
3	Lebesgue Measurable Functions
4	Lebesgue Integration
5	Lebesgue Integration: Further Topics

	FINAL EXAM WEEK: December 16 – 22, 2022