MATH 545: Introductory Mathematical Analysis
Fall 2021 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: Rigorous treatment of the calculus of real-valued functions of one real variable: the real number system, epsilon-delta theory of limit, continuity, derivative, and the Riemann integral. The fundamental theorem of calculus. Series and sequences, including Taylor series and uniform convergence. The inverse and implicit function theorems.

Number of Credits: 3

Prerequisites: MATH 211 with a grade of C or better or MATH 213 with a grade of C or better, and departmental approval.

Course-Section and Instructors:

Course-Section	Instructor
Math 545-001	Professor M. Booty

Office Hours for All Math Instructors: Fall 2021 Office Hours and Emails

Required Textbook:

Title	*Introduction to Real Analysis*
Author	W. Trench
Edition	Digital Version
Publisher	Digital Commons@Trinity
ISBN #	---
For Digital Version	SEARCH *trench introduction to real analysis* for a pdf file

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Wednesday, November 10, 2021**. It will be strictly enforced.

COURSE GOALS

Course Assessment: Outcomes are assessed through class participation, homework assignments, two midterm exams, and a 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	40%
Midterm Exams (2)	30%
Final Exam	30%

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

A	90 - 100	**C**	70 - 75
B+	86 - 89	**D**	60 - 69
B	80 - 85	**F**	0 - 59
C+	76 - 79		

Homework: Homework assignments will be given frequently. Assignments will be posted on Canvas. Each assignment must be submitted on Canvas before the beginning of class-time on the due date. Late assignments are NOT accepted. Solutions will be graded for correctness, completeness, and clarity.

Exams: There will be two midterm exams, held during class-time on October 7 and November 18, and one comprehensive final exam.

Midterm Exam I	October 7, 2021
Midterm Exam II	November 18, 2021
Final Exam Period	December 15 - 21, 2021

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 are in need of accommodations due to a disability please contact Scott Janz, Associate Director of Disability Support Services at 973-596-5417 or via email at scott.p.janz@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/studentsuccess/accessibility/

Important Dates (See: Fall 2021 Academic Calendar, Registrar)

Date	Day	Event
September 1, 2021	Wednesday	First Day of Classes
September 4, 2021	Saturday	Saturday Classes Begin
September 6, 2021	Monday	Labor Day
September 8, 2021	Wednesday	Monday Classes Meet
September 8, 2021	Wednesday	Last Day to Add/Drop Classes
November 10, 2021	Wednesday	Last Day to Withdraw
November 25 to November 28, 2021	Thursday to Sunday	Thanksgiving Recess - Closed
December 10, 2021	Friday	Last Day of Classes
December 13 and December 14, 2021	Monday and Tuesday	Reading Days
December 15 to December 21, 2021	Wednesday to Tuesday	Final Exam Period

Course Outline

Week	Dates	Topic
1	9/2 and 9/7	1.1-1.2: Intro & Mathematical Induction
2	9/9 and 9/14	1.3: The Real Line (Set Theory). 2.1: Functions and Limits
3	9/16 and 9/21	2.1: Limits. 2.2: Continuity
4	9/23 and 9/28	2.3: Differentiability, Mean Value Theorem. 2.4: L'Hopital's Rule
5	9/30 and 10/5	2.4: L'Hopital's Rule. **REVIEW**
6	10/7 and 10/12	**MIDTERM 1 (OCTOBER 7).** 2.5: Taylor's Theorem
7	10/14 and 10/19	2.5: Taylor's Theorem. 3.1: Definition of the Integral
8	10/21 and 10/26	3.2: Existence of the Integral. 3.3: Properties of the Integral
9	10/28 and 11/2	3.4: Improper Integrals. 4.1: Sequences of Real Numbers
10	11/4 and 11/9	4.2: Sequences Revisited. 4.3: Series of Real Numbers and Convergence
11	11/11 and 11/16	4.3: Series of Real Numbers and Convergence. **REVIEW**
12	11/18 and 11/23	**MIDTERM 2 (NOVEMBER 18).** 4.4: Sequences and Series of Functions. (No class 11/25)
13	11/30 and 12/2	4.4: Sequences and Series of Functions. 4.5: Power Series
14	12/7 and 12/9	**EXTRA & REVIEW**

Updated by Professor M. Booty - 8/18/2021
Department of Mathematical Sciences Course Syllabus, Fall 2021