MATH 546: Advanced Calculus
Spring 2022 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 several real variables: the geometry and algebra of n-dimensional Euclidean space, limit, continuity, derivative, and the Riemann integral of functions of several variables, the inverse and implicit function theorems, series, including Taylor series, optimization problems, integration on curves and surfaces, the divergence and related theorems.

Number of Credits: 3

Prerequisites: Math 545 or Math 480 with a grade of C or better.

Course-Section and Instructors:

Course-Section	Instructor
Math 546-002	Professor B. Hamfeldt

Office Hours for All Math Instructors: Spring 2022 Office Hours and Emails

Required Textbook:

Title	*Introduction to Real Analysis*
Author	Trench
Edition	2013
Publisher	Digital Commons @ Trinity
ISBN #	Digital Version

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, April 4, 2022**. It will be strictly enforced.

COURSE GOALS

Course Assessment: Outcomes are assessed through quizzes, 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	20%
Quizzes	10%
Midterm Exam	40%
Final Exam	30%

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

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

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 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.

Quizzes: Brief unannounced quizzes will periodically be given during class time. Quizzes will be graded 50% on completeness and 50% and on correctness.

Lectures: Class lectures will take place in person. If circumstances prevent classes from occurring in person, class lectures will take place via Webex at the regularly scheduled time.

Exams: There will be two midterm exams and one comprehensive final exam.

Midterm Exam I	February 22, 2022
Midterm Exam II	April 5, 2022
Final Exam Period	May 6 - May 12, 2022

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 2022 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 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: Spring 2022 Academic Calendar, Registrar)

Date	Day	Event
January 18, 2022	Tuesday	First Day of Classes
January 22, 2022	Saturday	Saturday Classes Begin
January 24, 2022	Monday	Last Day to Add/Drop Classes
March 14, 2022	Monday	Spring Recess Begins
March 19, 2022	Saturday	Spring Recess Ends
April 4, 2022	Monday	Last Day to Withdraw
April 15, 2022	Friday	Good Friday - No Classes
April 17, 2022	Sunday	Easter Sunday - No Classes
May 3, 2022	Tuesday	Friday Classes Meet

May 3, 2022	Tuesday	Last Day of Classes
May 4 - May 5, 2022	Wednesday and Thursday	Reading Days
May 6 - May 12, 2022	Friday to Thursday	Final Exam Period

Course Outline

Week	Dates	Topic
1	1/18 & 1/20	5.1: Structure of Rn
2	1/25 & 1/27	5.2-5.3: Continuity and partial derivatives
3	2/1 & 2/3	5.4: Chain rule and Taylor's Theorem
4	2/8 & 2/10	6.1-6.2: Continuity and differentiability of transformations
5	2/15 & 2/17	6.3: Inverse Function Theorem and review
6	2/22 & 2/24	Midterm (February 22) and 6.3: Inverse Function Theorem
7	3/1 & 3/3	6.4: Implicit Function Theorem
8	3/8 & 3/10	7.1-7.2: Multiple integrals
9	3/15 & 3/17	Spring Break – No Class
10	3/22 & 3/24	7.3: Change of variables in multiple integrals
11	3/29 & 3/31	8.1: Metric spaces and review
12	4/5 & 4/7	Midterm (April 5) and 8.1: Metric spaces
13	4/12 & 4/14	8.2: Compact sets in metric spaces
14	4/19 & 4/21	8.3: Continuous functions on metric spaces
15	4/26 & 4/28	Extra/review
16	5/3 (No class)	Friday Schedule – No class