MATH 213: Calculus III B
Spring 2025 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: Topics include vectors, curvature, partial derivatives, multiple integrals, line integrals, surface integrals, and Green's, Divergence, and Stokes' theorems. Effective From: Fall 2012.

Number of Credits: 4

Prerequisites: Math 112 with a grade of C or better or Math 133 with a grade of C or better.

Course-Section and Instructors:

Course-Section	Instructor
Math 213-002	Professor V. Barreto Aranda
Math 213-006	Professor V. Barreto Aranda
Math 213-008	Professor P. Petropoulus
Math 213-010	Professor P. Ward
Math 213-012	Professor P. Ward

Office Hours for All Math Instructors: Spring 2025 Office Hours and Emails

Required Textbook:

Title	*Thomas' Calculus: Early Transcendentals*
Author	Hass, Heil, Bogacki, and Weir
Edition	15th
Publisher	Pearson
ISBN #	9780137559893

	9780137560042
Notes	w/ MyMathLab

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, April 7, 2025**. It will be strictly enforced.

COURSE GOALS

Course Objectives

- Apply previously developed skills learned in Calculus to learn Multivariable Calculus and Vectors.
- Cover Vectors, Partial Derivatives, Multiple Integrals and Vector Fields to prepare students for further study in technological disciplines and more advanced mathematics courses.
- Cover relevant applications in science and engineering to illustrate the utility of learning these topics. Use mathematical software, in problem solving, to allow the solution of more complex problems and provide visualization of the mathematical concepts in three dimensions.

Course Outcomes

- Prepare students for further study in technological disciplines and more advanced mathematics courses.
- Illustrate the utility of learning Multivariable Calculus to solve problems in engineering and the sciences. Demonstrate mastery of the topics covered by testing with common exams and common grading.

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	10%
In-class Quizzes	10%
Common Midterm Exams (3)	50%
Final Exam	30%

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

A	88 - 100	**C**	65 - 71
B+	83 - 87	**D**	60 - 64
B	77 - 82	**F**	0 - 59
C+	72 - 76		

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.

Religious Observance: NJIT is committed to supporting students observing religious holidays. Students must notify their instructors in writing of any conflicts between course requirements and religious observances, ideally by the end of the second week of classes and no later than two weeks before the anticipated absence.

Homework and Participation Policy: The homework assignments are online. In order to do the assignments you need to have a student access code. You can get an access code with a new book purchase that is bundled with MyMathLab or by buying the code separately at the campus bookstore. If you buy a new book from another source **make sure it is bundled with MyMathLab.** In addition on the first day of class your course instructor will give you an additional code needed to access the homework assignments.

Quiz Policy: At least one quiz based on the homework problems will be given each week in class. There will be a short quiz every week on the material covered during the previous week. All of the quizzes will be graded. The homework and quizzes are intended to develop your problem-solving skills and to prepare you for the exams. **The HW+Quiz grades are a significant component of your course grade. (20%)**

Generative AI: This course expects students to work without artificial intelligence (AI) assistance in order to better develop their skills in this content area. AI usage is not permitted throughout this course under any circumstance. Violation of the policy will result in a grade of zero on any impacted assignment(s) and will be reported to the dean of students for supplemental discipline.

How to Get Started with MyMathLab:

http://m.njit.edu/Undergraduate/UG-Files/MML_Getting_Started.pdf
http://m.njit.edu/Undergraduate/UG-Files/Technology_Tips.pdf

Exams: Detailed instructions regarding the Math 213 common midterm exams will be distributed by the course coordinator prior to each exam. There will be three common midterm exams held during the semester and one comprehensive common final exam. Exams are held on the following days:

Common Exam I	February 12, 2025
Common Exam II	March 12, 2025
Common Exam III	April 16, 2025
Final Exam Period	May 10 - May 16, 2025

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 2025 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 If you need an accommodation due to a disability please contact the Office of Accessibility Resources and Services at oars@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/accessibility/

Important Dates (See: Spring 2025 Academic Calendar, Registrar)

Date	Day	Event
January 21, 2025	Tuesday	First Day of Classes
January 27, 2025	Monday	Last Day to Add/Drop Classes
March 16, 2025	Sunday	Spring Recess Begins
March 22, 2025	Saturday	Spring Recess Ends
April 3, 2025	Thursday	Wellness day
April 7, 2025	Monday	Last Day to Withdraw
April 18, 2025	Friday	Good Friday - No Classes
April 20, 2025	Sunday	Easter Sunday - No Classes Scheduled
May 6, 2025	Tuesday	Thursday Classes Meet
May 7, 2025	Wednesday	Friday Classes Meet
May 7, 2025	Wednesday	Last Day of Classes
May 8, 2025	Thursday	Reading Day 1
May 9, 2025	Friday	Reading Day 2
May 10 - May 16, 2025	Friday to Thursday	Final Exam Period

Course Outline

The placement of Common Exams within the Topic list below is meant to provide a rough estimate of material that will appear on the exam. The precise set of sections to be tested on for each Common Exam will be provided by the course instructor on the Friday preceding the exam.

Sections	Topic
12.1-12.2	Three-Dimensional Coordinate Systems, Vectors
12.3-12.4	The Dot Product, the Cross Product
12.4-12.5	The Cross Product, Lines and Planes in Space
12.5-12.6	Lines and Planes in Space, Cylinders and Quadric Surfaces
12.6	Cylinders and Quadric Surfaces
13.1	Curves in Space and Their Tangents
13.2	Integrals of Vector Functions; Projectile Motion
13.3	Arc Length in Space
	COMMON EXAM 1
13.4	Curvature and Normal Vectors
14.1	Functions of Several Variables
14.2-14.3	Limits and Continuity in higher Dimensions, Partial Derivatives
14.3	Partial Derivatives
14.4-14.5	The Chain Rule, Directional Derivatives and Gradient Vectors
14.5-14.6	Directional Derivative and Gradient Vectors, Tangent Planes and Differentials
14.7	Extreme Values and Saddle Points
14.8	Lagrange Multipliers
14.8-14.9	Lagrange Multipliers, Taylor's Formula in Two Variables
15.1	Double and Iterated Integrals over Rectangles
15.2	Double Integrals over General Regions
15.3	Area by Double Integration
15.4	Double Integrals in Polar Form
	COMMON EXAM 2
15.5	Triple Integrals in Rectangular Coordinates
15.7	Triple Integrals in Cylindrical and Spherical Coordinates
15.7	Triple Integrals in Cylindrical and Spherical Coordinates
15.8	Substitutions in Multiple Integrals
15.8	Substitutions in Multiple Integrals
16.1	Line Integrals
16.1-16.2	Line Integrals, Vector Fields and Line Integrals: Work, Circulation, and Flux
16.2	Vector Fields and Line Integrals: Work, Circulation, and Flux

16.3	Path Independence, Conservative Fields, and Potential Functions
16.3	Path Independence, Conservative Fields, and Potential Functions
16.4	Green's Theorem in the Plane
16.4	Green's Theorem in the Plane
	COMMON EXAM 3
16.5	Surfaces and Area
16.5	Surfaces and Area
16.6	Surface Integrals
16.6	Surface Integrals
16.7	Stokes' Theorem
16.7	Stokes' Theorem
16.8	The Divergence Theorem
16.8	The Divergence Theorem
	FINAL EXAM REVIEW

Updated by Professor D. Shirokoff Jan. 17 - 2025
Department of Mathematical Sciences Course Syllabus, Spring 2025