MATH 211: Calculus III A
Spring 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: Topics include vectors, curvature, partial derivatives, multiple integrals, line integrals, and Green's theorem. Students who are considering a major in Mathematical Sciences or who are undecided about their major should take MATH 213.

Number of Credits: 3

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 211-002	Professor R. Kelly
Math 211-004	Professor C. Diekman
Math 211-006	Professor L. Kondic
Math 211-102	Professor Y. Boubendir

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

Required Textbook:

Title	*Thomas' Calculus: Early Transcendentals*
Author	Hass, Heil, 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 1, 2024**. It will be strictly enforced.

COURSE GOALS

Course Objectives

- Apply previously developed single-variable calculus skills to learn multivariate calculus describing the properties of scalar- and vector-valued functions of several variables.
- Acquire an in-depth understanding of partial derivatives, multiple integrals, scalar and vector fields.
- Prepare students for further study of learned topics 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 to allow the solution of more complex problems and to provide visualization of mathematical concepts in three dimensions.

Course Outcomes

- Students will be prepared for further study in STEM disciplines and more advanced mathematics courses.
- Students can apply their multivariable calculus skills to solve problems in engineering and the sciences. Students can demonstrate mastery of the learned material through testing with common exams.

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	26%
Common Midterm Exam I	22%
Common Midterm Exam II	22%
Final Exam	30%

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

A	90 - 100	**C**	60 - 66
B+	81 - 89	**D**	56 - 59
B	74 - 80	**F**	0 - 55
C+	67 - 73		

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 and Quiz Policy: The homework assignments are in the syllabus and online. In order to do the assignments you need to have a student access code for MyMathLab. You can get an access code with a new book purchase that is bundled with MyMathLab or by buying the access 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 a further code that is needed to access the homework assignments.

Each week a short quiz will be given online or in class based on the homework problems and 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 quiz and homework grades will be a significant component of your course grade.

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: There will be two common midterm exams held during the semester and one comprehensive common final exam. Exams are held on the following days:

Midterm Exam	February 21 and April 10, 2024
Final Exam Period	May 3 - May 9, 2024

The time of the midterm exams is **4:15-5:40 PM** for daytime students and **5:45-7:10 PM** for evening students. 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: To properly report your absence from a midterm or final exam, please review and follow the required steps under the DMS Examination Policy found here:

http://math.njit.edu/students/policies_exam.php

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 2024 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 2024 Academic Calendar, Registrar)

Date	Day	Event
January 16, 2024	Tuesday	First Day of Classes
January 22, 2024	Monday	Last Day to Add/Drop Classes
March 10, 2024	Sunday	Spring Recess Begins
March 16, 2024	Saturday	Spring Recess Ends
March 29, 2024	Friday	Good Friday - No Classes
April 1, 2024	Monday	Last Day to Withdraw
April 30, 2024	Tuesday	Friday Classes Meet
April 30, 2024	Tuesday	Last Day of Classes
May 1, 2024	Wednesday	Reading Day 1
May 2, 2024	Thursday	Reading Day 2
May 3 - May 9, 2024	Friday to Thursday	Final Exam Period

Course Outline

Lecture	Section	Topic	HW Assignment
1	12.1	3-Dimensional Coordinate Systems	p. 713: 11, 13, 21, 26, 37, 55, 61
2	12.2	Vectors	p. 723: 7, 13, 15, 17, 25, 29, 33, 39, 45, 49
3	12.3	Dot Product	p. 732: 3, 7, 11, 13, 16, 26, 29, 30, 43, 45
4	12.4	Cross Product	p. 739: 7, 15, 18, 21, 23, 25, 39, 43, 46, 48
5	12.5	Lines and Planes in Space	p. 747: 3, 9, 17, 23, 27, 29, 35, 41, 55, 57, 63, 65, 69
6	12.6	Cylinders and Quadric Surfaces	p. 753: 7, 9, 11, 14, 19, 23, 33, 41
7	13.1	Curves and Tangents in Space	p. 767: 5, 11, 13, 15, 19, 25, 26, 38
8	13.2	Integrals of Vector Functions: Projectile Motion	p. 774: 1, 7, 11, 17, 21, 23, 25, 29, 31
9	14.1	Functions of Several Variables	p. 808: 5, 11, 13, 14, 19, 23, 25, 27, 39, 49, 53, 59, 61

10	14.3	Partial Derivatives	p. 828: 5, 13, 17, 23, 25, 31, 37, 43, 48, 57, 68, 75, 77, 85, 89, 93
11	*	REVIEW FOR EXAM 1	****
	*	**COMMON EXAM 1: WEDNESDAY, February 21, 2024**	
12	14.4	The Chain Rule	p. 838: 3, 5, 7, 9, 27, 31, 33, 37, 39, 41, 52
13	14.5	Directional Derivatives and Gradients	p. 849: 5, 9, 11, 15, 17, 19, 23, 27, 31, 33, 37, 38
14	14.6	Tangent Planes and Differentials	p. 857: 1, 5, 11, 17, 21, 23, 31, 43, 45, 51, 54, 55
15	14.7	Extrema and Saddle Points	p. 867: 3, 7, 19, 21, 27, 31, 35, 41, 51, 53
16	14.8	Lagrange Multipliers	p. 876: 3, 7, 13, 17, 21, 23, 25, 30, 31
17	15.1	Double and Iterated Integrals over Rectangles	p. 898: 3, 9, 10, 11, 19, 21, 23, 29, 31
18	15.2-	Double Integrals over General Regions and	p. 905: 7, 13, 15, 35, 39, 43, 49, 51, 53, 57
	15.3	Area by Double Integration	p. 910: 3, 9, 11, 21
19	15.4	Double Integrals in Polar Form	p. 916: 7, 11, 13, 17, 23, 25, 29, 37
20	15.5	Triple Integrals in Rectangular Coordinates and	p. 926: 7, 11, 15, 23, 25, 27, 31, 33
	15.6	Moments and Center of Mass	p. 935: 3, 4, 13
21	15.7	Triple Integrals in Cylindrical Coordinates	p. 946: 25, 29, 31, 33, 39, 41, 65, 77, 79, 81
22	16.1	Line Integrals and	p. 970: 7, 11, 15, 19, 21, 29, 33
	13.3	Arc Length of Space Curves	p. 781: 1, 6, 7, 11, 13, 18
23	*	REVIEW FOR EXAM 2	****
		COMMON EXAM 2: WEDNESDAY, April 10, 2024	
24	16.2	Vector Fields and Line Integrals: Work, Circulation and Flux	p. 982: 9, 11, 15, 19, 21, 23, 25, 27, 29, 33
25	16.3	Path Independence, Conservative Fields and Potential Functions	p. 994: 3, 7, 9, 15, 19, 21, 23, 27, 29
26, 27	16.4	Green's Theorem in the Plane	p. 1006: 3, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 32, 34, 39
28	**	REVIEW FOR FINAL EXAM	*****
	***	**FINAL EXAM PERIOD: May3 - May 9, 2024**	