

## MATH 211: Calculus III A

### *Summer 2019 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 211-041	Professor J. H. Ro
Math 211-141	Professor J. H. Ro

**Office Hours for All Math Instructors:** [Summer 2019 Office Hours and Emails](#)

**Required Textbook:**

<b>Title</b>	<i>Thomas' Calculus: Early Transcendentals</i>
<b>Author</b>	Thomas
<b>Edition</b>	14th
<b>Publisher</b>	Pearson
<b>ISBN #</b>	978-0134768496
<b>Notes</b>	w/ MyMathLab access code

**Withdrawal Date:** Please see the [Summer 2019 Academic Calendar](#) for the last day to withdraw based on the summer session you are registered for.

### 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.

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## 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	25%
Midterm Exam	35%
Final Exam	40%

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

A	90 - 100	C	60 - 66
B+	81 - 89	D	57 - 59
B	74 - 80	F	0 - 56
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. You can get an access code with a new book purchase that is bundled with My MathLab 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 My MathLab. In addition on the first day of class your course instructor will give you an additional code needed to access the homework assignments. A quiz based on the homework problems will be given each week online or 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 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/MML_Getting_Started.pdf)
- [http://m.njit.edu/Undergraduate/UG-Files/Technology\\_Tips.pdf](http://m.njit.edu/Undergraduate/UG-Files/Technology_Tips.pdf)

**MATLAB Assignments:** MATLAB is a mathematical software program that is used throughout the science and engineering curricula. Several MATLAB assignments will be given out. These assignments have been designed to help you learn how to use this software in order to visualize many of the concepts taught in class. Each MATLAB

assignment will be graded and will be counted as a weekly quiz grade.

**Class Preparation:** Class preparation consists of written summaries of lectures handed in at the beginning of every class (together with homework). Students are responsible to read the section before the lecture and write one page summary consisted of definitions, theorems, and important examples.

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

Common Midterm Exam	June 19, 2018
Final Exam	July 15, 2018

**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](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, Room G11 (Summer Hours: TBA)

**Accommodation of Disabilities:** Disability Support Services (DSS) 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 Chantonette Lyles, Associate Director of Disability Support Services at 973-596-5417 or via email at [lyles@njit.edu](mailto:lyles@njit.edu). The office is located in Fenster Hall Room 260. For further information regarding self identification, the submission of medical documentation and additional support services provided please visit the Disability Support Services (DSS) website at:

- <http://www5.njit.edu/studentsuccess/disability-support-services/>

**Important Dates** (See: [Summer 2019 Academic Calendar](#), [Registrar](#))

Date	Event
May 20, 2019	First Day of Classes
May 21, 2019	Last Day to Add/Drop Classes for <b>FIRST, MIDDLE, AND FULL</b>
May 27, 2019	University Closed for Memorial Day
June 24, 2019	Last Day of <b>FIRST SUMMER SESSION</b>
July 1, 2019	First Day of Second Summer Session
July 4-5, 2019	University Closed for Independence Day
July 15, 2019	Last Day of <b>MIDDLE SUMMER SESSION</b>
August 6, 2019	Last Day of <b>FULL AND SECOND SUMMER SESSIONS</b>

## Course Outline

Lecture	Section	Topic	Assignment
1	12.1-12.2	Three-Dimensional Coordinate Systems and Vectors	p. 726: 7, 13, 15, 17, 25, 29, 33, 39, 45, 49

2	12.3	The Dot Product	p. 734: 3, 7, 11, 13, 16, 26, 29, 30, 43, 45
3	12.4	The Cross Product	p. 741: 7, 15, 18, 21, 23, 25, 39, 43, 46, 48
4	12.5	Lines and Planes in Space	p. 749: 3, 9, 17, 23, 27, 29, 35, 41, 55, 57, 63
5	12.6 13.1	Cylinders and Quadric Surfaces Curves in Space and Their Tangents	p. 755: 7, 9, 11, 14, 19, 23, 33, 41 p. 770: 5, 11, 13, 15, 19, 25, 26, 38
6	13.2 13.3	Integrals of Vector Functions; Projectile Motion Arc Length in Space	p. 777: 1, 7, 11, 17, 21, 23, 25, 29, 31 p. 784: 1, 6, 7, 11, 13, 14, 18
7	14.1 14.3	Functions of Several Variables Partial Derivatives	p. 812: 5, 11, 13, 14, 19, 23, 25, 27, 39, 49, 53, 59, 61 p. 832: 5, 13, 17, 23, 25, 31, 37, 43, 48, 57, 68, 75, 77, 85, 89, 93
8	14.4	The Chain Rule	p. 842: 3, 5, 7, 9, 27, 31, 33, 37, 39, 41, 52
9	14.5	Directional Derivative and Gradient Vectors	p. 852: 5, 9, 11, 15, 17, 19, 23, 27, 31, 33, 37, 38
10	REVIEW FOR MIDTERM EXAM		
	MIDTERM EXAM: WEDNESDAY, JUNE 19		
11	14.6	Tangent Planes and Differentials	p. 860: 1, 5, 11, 17, 21, 23, 31, 43, 45, 54, 55
12	14.7	Extreme Values and Saddle Points	p. 870: 3, 7, 19, 21, 27, 31, 35, 41, 51, 53, 59
13	14.8	Lagrange Multipliers	p. 879: 3, 7, 13, 17, 21, 23, 25, 30, 31
14	15.1	Double and Iterated Integrals over Rectangles	p. 901: 3, 9, 10, 11, 19, 21, 23, 29, 31
15	15.2- 15.3	Double Integrals over General Regions and Area by Double Integration	p. 909: 7, 13, 15, 35, 39, 43, 49, 51, 53, 57 p. 914: 3, 9, 11, 21
16	15.4	Double Integrals in Polar Form	p. 919: 7, 11, 13, 17, 23, 25, 29, 37
17	15.5	Triple Integrals in Rectangular Coordinates	p. 929: 7, 11, 15, 23, 25, 27, 31, 33
18	15.6	Moments and Center of Mass	p. 939: 3, 4, 13
19	15.7	Triple Integrals in Cylindrical Coordinates (ONLY)	p. 949: 25, 29, 31, 33, 39, 41, 65, 77, 79, 81
20	16.1	Line Integrals	p. 974: 7, 9, 11, 15, 19, 21, 23, 29, 33
21	16.2	Vector Fields and Line Integrals: Work, Circulation, and Flux	p. 986: 9, 11, 15, 19, 21, 23, 25, 27, 29, 33
22	16.3	Path Independence, Conservative Fields, and Potential Functions	p. 998: 3, 7, 9, 15, 19, 21, 23, 27, 29
23	16.4	Green's Theorem in the Plane	p. 1010: 3, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 32, 34, 39
24	REVIEW FOR THE FINAL EXAM		
25	FINAL EXAM: MONDAY, JULY 15		

*Updated by Professor J. H. Ro- 5/17/2019  
Department of Mathematical Sciences Course Syllabus, Summer 2019*