NJIT
New Jersey's Science &
Technology University

**THE COLLEGE OF SCIENCE
AND LIBERAL ARTS**

THE DEPARTMENT OF MATHEMATICAL SCIENCES

MATH 213: Calculus III B
Summer 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.

DMS Online Exam Policy Summer 2021: Exams will be proctored using both Respondus LockDown Browser+Monitor and Webex. Students will be required to join a Webex meeting from their phone with their cameras on, and to access the exam through LockDown Browser on a Mac or Windows PC with webcam. Students must follow all instructions related to environment checks and camera positioning.

COURSE INFORMATION

Course Description: Topics include vectors, curvature, partial derivatives, multiple integrals, line 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 213-030	Professor J. Porus

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

Required Textbook:

Title	*Thomas' Calculus: Early Transcendentals*
Author	Thomas
Edition	14th
Publisher	Pearson
ISBN #	978-0134768496

Withdrawal Date: Please see the Summer 2021 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.

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	7.5%
Quizzes	12.5%
Midterm Exam I	25%
Midterm Exam II	25%
Final Exam	30%

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

A	90 - 100	C	65 - 74
B+	85 - 89	D	60 - 64
B	80 - 84	F	0 - 59
C+	75 - 70		

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. Students are expected to attend class. Each class is a learning experience that cannot be replicated through simply "getting the notes."

Common Midterm Exam I	June 16, 2021
Common Midterm Exam II	July 21, 2021
Final Exam	August 2, 2021

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, Room G11 (See: Summer 2021 Hours)

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. 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:

- https://www.njit.edu/studentsuccess/accessibility/

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

Date	Event
May 24, 2021	First Day of Classes for **FIRST, MIDDLE, AND FULL SUMMER SESSIONS**
May 26, 2021	Last Day to Add/Drop Classes for **FIRST SUMMER SESSION**
May 28, 2021	Last Day to Add/Drop Classes for **MIDDLE SUMMER SESSION**
May 31, 2021	Last Day to Add/Drop Classes for **FULL SUMMER SESSION**
May 31, 2021	University Closed for Memorial Day
June 28, 2021	Last Day of **FIRST SUMMER SESSION**
June 29, 2021	First Day of **FTF AND SUMMER SESSION**
July 4, 2021	University Closed for Independence Day
July 5, 2021	University Closed for Independence Day
July 7, 2021	First Day of **FTF SUMMER SESSION**
July 19, 2021	Last Day of **MIDDLE SUMMER SESSION**
August 2, 2021	Last Day of **FULL SUMMER SESSION**
August 16, 2021	Last Day of **FTF SUMMER SESSION**

Course Outline

Lecture	Sections	Topic	Assignment
Week 1 (5/24 – 5/27)	12.1, 12.2	Three-Dimensional Coordinate Systems, Vectors	12.2: #1, 5, 7, 9, 31, 35
Week 1	12.3, 12.4	The Dot Product, the Cross Product	12.3: # 1, 3, 5, 31 12.4: #1, 2, 15, 22, 24, 35,41
Week 1	12.5	Lines and Planes	3,9,12,22,23,27,29,35,42,48,59,61,65
Week 2 (6/2 – 6/3)	12.5	Lines and Planes	3,9,12,22,23,27,29,35,42,48,59,61,65
Week 2	12.6	Cylinders and Quadric Surfaces	1,3,9,13,20,21,24

Week 2	13.1	Vector Functions	1,7,9,14,15,25,29
Week 3 (6/7 – 6/10)	13.2	Physics Applications	1,7,11,15,17,25,37
Week 3	13.3	Arc Length and the Unit Tangent Vector T	1,6,11,13,15
Week 3	13.4	Curvature and Normal Vectors of a Curve	9, 11, 13
Week 3	13.5	Binormal Vector of a Curve and Torsion	9, 11, 13
Week 4 (6/14 – 6/17)	14.1, 14.2	Functions of Several Variables; Limits and Continuity in Higher Dimensions	14.1: #1,7,13 14.2: #1,3,6,9,27
Week 4		REVIEW FOR EXAM I	Exam I on June 16th (4:15-5:40)
Week 4	14.3	Partial Derivatives	1,9,13,15,17,29,35,41,43,57
Week 5 (6/21 – 6/24)	14.4	The Chain Rule	3,5,7,9,27,29,35,43,48
Week 5	14.5	Directional Derivatives and Gradient Vectors	5,9,11,15,17,20,27,31
Week 5	14.6	Tangent Planes and Differentials	1,5,9,19,27
Week 5	14.7	Extreme Values and Saddle Points	3,7,20,27,31,32,41,51,53,58
Week 6 (6/28 – 7/1)	14.8	Lagrange Multipliers	3,8,13,17,19,25,30,37
Week 6	15.1, 15.2	Double Integrals	15.1: #1, 9 15.2: #1,23,26,29,33,37,41,47,51
Week 6	15.3	Areas by Double Integrals	2,3,5,9
Week 6	15.4	Double Integrals in Polar Form	10,14,17,21,23,29,37
Week 7 (7/7 – 7/8)		REVIEW FOR EXAM II	Exam II on July 21st (4:15-5:40)
Week 7	15.5	Triple Integrals in Rectangular Coordinates	7,9,11,23,25,31,35
Week 8 (7/12 – 7/15)	15.7	Triple Integrals in Cylindrical and Spherical Coordinates	1,3,6,43,45,57,59,65,67,79,83
Week 8	15.8	Substitution in Multiple Integrals	14, 15, 16, 21
Week 8	16.1	Line Integrals	9,10,15,21,24,25,29
Week 8	16.2	Vector Fields, Work, Circulation, and Flux	9,10,15,19,21,23,24,27.33,36,40
Week 9 (7/19 – 7/22)	16.3	Path Independence, Potential Functions, and Conservative Fields	1,7,9,19,24,25,27,29
Week 9	16.4	Green's Theorem	5,11,13,15,18,19,21,25,26,27
Week 9	16.5	Surfaces and Area	17-25 odd
Week 10 (7/26 – 7/29)	16.6	Surface Integrals	1,5,7,9,19,25,31,39,41

Week 10	16.7	Stokes Theorem	1,5,7,9,19,25,31,39,41
Week 10	16.8	Divergence Theorem	1, 7, 11, 15
Week 11 (8/2)		**FINAL EXAM, AUGUST 2, 2021**	

Updated by Professor J. Porus - 5/19/2021
Department of Mathematical Sciences Course Syllabus, Summer 2021

Week 10	16.7	Stokes Theorem	1,5,7,9,19,25,31,39,41
Week 10	16.8	Divergence Theorem	1, 7, 11, 15
Week 11 (8/2)		**FINAL EXAM, AUGUST 2, 2021**	