MATH 213: Calculus III B
Summer 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: 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 213-031	Professor M. Potocki-Dul

Office Hours for All Math Instructors: Office Hours and Emails

Required Textbook:

Title	*Thomas' Calculus: Early Transcendentals*
Author	Thomas
Edition	14th
Publisher	Pearson
ISBN #	978-0134768496 (bound) 9780134768762 (looseleaf)

University-wide Withdrawal Date: Please see the Summer 2022 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	15%
Quizzes	15%
Midterm Exam I	20%
Midterm Exam II	20%
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	76 - 84	F	0 - 59
C+	70 - 75		

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 Participation Policy: The homework assignments are online in My MathLab. 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. Please note that homework and participation is a significant portion (15%) of your final course average.

Quiz Policy: There will be at least one 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 grades will be a significant component of your course grade. (15%)

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 exams during the semester and a cumulative final exam:

Midterm Exam I	June 15, 2022
Midterm Exam II	July 20, 2022
Final Exam	August 8, 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: Summer 2022 Hours)

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: Summer 2022 Academic Calendar, Registrar)

Date	Day	Event
May 23, 2022	Monday	**Full, First, and Middle** Summer Session Begins
May 25, 2022	Wednesday	Last Day to Add/Drop for **First Summer** Session
May 27, 2022	Friday	Last Day to Add/Drop for **Middle Summer** Session
May 30, 2022	Monday	Last Day to Add/Drop for **Full Summer** Session
May 30, 2022	Monday	Memorial Day - University Closed/No Classes Scheduled
June 11, 2022	Saturday	Last Day to Withdraw from **First Summer** Session
June 17, 2022	Friday	Last Day to Withdraw from **Middle Summer** Session
June 27, 2022	Monday	Last Day of Classes for **First Summer** Session
July 1, 2022	Friday	Last Day to Withdraw from **Full Summer** Session
July 3, 2022	Sunday	Independence Day - University Closed/No Classes Scheduled
July 4, 2022	Monday	Independence Day - Holiday Observance/No Classes
July 5, 2022	Tuesday	Second Summer Session Begins
July 6, 2022	Wednesday	Last Day to Add/Drop for Second Summer Session
July 18, 2022	Monday	Last Day of Classes for Middle Summer Session
July 21, 2022	Thursday	Last Day to Withdraw for Second Summer Session
August 8, 2022	Monday	Last Day of Classes for Full and Second Summer Session

Course Outline

Lecture	Section #	Subject Topic	Homework (HW) Assignment
Week 1	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	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	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	14.1	Functions of Several Variables	14.1: #1,7,13
Week 4	14.2	Limits and Continuity in Higher Dimensions	14.2: #1,3,6,9,27
Week 4		REVIEW FOR EXAM I	Exam I on June 15, 2022
Week 4	14.3	Partial Derivatives	1,9,13,15,17,29,35,41,43,57
Week 5	14.4	The Chain Rule	1,9,13,15,17,29,35,41,43,57
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	14.8 14.9	Lagrange Multipliers Taylor's Approximation	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	2,3,5,9
Week 7		REVIEW FOR EXAM II	Exam II on July 20, 2022
Week 7	15.5	Triple Integrals in Rectangular Coordinates	7,9,11,23,25,31,35
Week 8	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	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	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	1,5,7,9,19,25,31,39,41
Week 11		FINAL EXAM, August 8, 2022	