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 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, 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 P. Ward

Office Hours for All Math Instructors: Summer 2019 Office Hours and Emails

Required Textbook:

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

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.

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%
Quizzes	10%
Midterm Exam I	25%
Midterm Exam II	25%
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. Students are expected to attend class. Each class is a learning experience that cannot be replicated through simply "getting the notes."

Homework and Quiz 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. 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/Technology_Tips.pdf

MATLAB: 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.

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:

Common Midterm Exam I	June 12, 2019
Common Midterm Exam II	July 17, 2019
Final Exam	August 5, 2019

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 (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. 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 **FIRST, MIDDLE, AND FULL**
May 27, 2019	University Closed for Memorial Day
June 24, 2019	Last Day of **FIRST SUMMER SESSION**
July 1, 2019	First Day of Second Summer Session
July 4-5, 2019	University Closed for Independence Day
July 15, 2019	Last Day of **MIDDLE SUMMER SESSION**
August 6, 2019	Last Day of **FULL AND SECOND SUMMER SESSIONS**

Course Outline

Homework will be assigned Online and are DUE at the dates and times specified online. Students are required to work through the problems assigned in homework after each lecture in order to gain a better understanding of the course material.

Sections	Topic
12.1-12.2	Three-Dimensional Coordinate Systems, Vectors
12.3-12.4	The Dot Product, the Cross Product
12.5-12.6	Lines and Planes in Space, 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
13.4-13.5	Curvature and Normal Vectors, Tangential and Normal Components of Acceleration
14.1-14.2	Functions of Several Variables, Limits and Continuity in higher Dimensions
14.3	Partial Derivatives
14.4-14.5	The Chain Rule, Directional Derivatives and Gradient Vectors
14.6	Tangent Planes and Differentials
	COMMON EXAM 1: WEDNESDAY, JUNE 12, 2019
14.7	Extreme Values and Saddle Points
14.8	Lagrange Multipliers
14.9	Taylor's Formula in Two Variables
15.1	Double and Iterated Integrals over Rectangles
15.2	Double Integrals over General Regions
15.3-15.4	Area by Double Integration, Double Integrals in Polar Form
15.5	Triple Integrals in Rectangular Coordinates
15.7	Triple Integrals in Cylindrical and Spherical Coordinates
15.8	Substitutions in Multiple Integrals
16.1	Line Integrals
	COMMON EXAM 2: WEDNESDAY, JULY 17, 2019
16.2	Vector Fields and Line Integrals: Work, Circulation, and Flux
16.3	Path Independence, Conservative Fields, and Potential Functions
16.4	Greens Theorem in the Plane
16.5-16.6	Surfaces and Area, Surface Integrals
16.7	Stokes Theorem
16.8	The Divergence Theorem
	REVIEW OF COURSE
	FINAL EXAM, AUGUST 5, 2019