NJIT New Jersey's Science & Technology University

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF MATHEMATICAL SCIENCES

MATH 213: Calculus III B

Spring 2020 Coordinated 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, surface 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 213-004	Professor V. Barreto-Aranda
Math 213-010	Professor V. Barreto-Aranda
Math 213-014	Professor S. Alptekin
Math 213-018	Professor P. Ward

Office Hours for All Math Instructors: Spring 2020 Office Hours and Emails

Required Textbook:

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

University-wide Withdrawal Date:The last day to withdraw with a **W** is **Monday, April 6, 2020**. It will be strictly enforced.

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%
In-class Quizzes	10%
Common Midterm Exams (3)	50%
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.

Homework 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.

Quiz Policy: At least one 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

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

Common Midterm Exam I	February 12, 2020
Common Midterm Exam II	March 11, 2020
Common Midterm Exam III	April 22, 2020
Final Exam Period	May 8 - 14, 2020

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 and put away during all class times.

ADDITIONAL RESOURCES

Math Tutoring Center: Located in the Central King Building, Lower Level, Rm. G11 (See: Spring 2020 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 Kupfrian Hall, Room 201. A Letter of Accommodation Eligibility from the Disability Support 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 Disability Support Services (DSS) website at:

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

Important Dates (See: Spring 2020 Academic Calendar, Registrar)

Date	Day	Event
January 21, 2020	T	First Day of Classes
January 31, 2020	F	Last Day to Add/Drop Classes
March 15 - 22, 2020	Su-Su	Spring Recess: No Classes/ University Open
April 6, 2020	M	Last Day to Withdraw
April 10, 2020	F	Good Friday - University Closed
May 5, 2020	T	Friday Classes Meet - Last Day of Classes
May 6 & 7, 2020	W & R	Reading Days
May 8 - 14, 2020	F - R	Final Exam Period

Course Outline

The placement of Common Exams within the Topic list below is meant to provide a rough estimate of material that will appear on the exam. The precise set of sections to be tested on for each Common Exam will be provided by the course instructor on the Friday preceding the exam.

Sections	Topic
12.1-12.2	Three-Dimensional Coordinate Systems, Vectors
12.3-12.4	The Dot Product, the Cross Product
12.4-12.5	The Cross Product, Lines and Planes in Space
12.5-12.6	Lines and Planes in Space, Cylinders and Quadric Surfaces
12.6	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	Curvature and Normal Vectors
14.1	Functions of Several Variables
	COMMON EXAM 1: WEDNESDAY, FEBRUARY 12, 2020
14.2-14.3	Limits and Continuity in higher Dimensions, Partial Derivatives
14.3	Partial Derivatives
14.4-14.5	The Chain Rule, Directional Derivatives and Gradient Vectors
14.5-14.6	Directional Derivative and Gradient Vectors, Tangent Planes and Differentials
14.7	Extreme Values and Saddle Points
14.8	Lagrange Multipliers
14.8-14.9	Lagrange Multipliers, Taylor's Formula in Two Variables
15.1	Double and Iterated Integrals over Rectangles
15.2	Double Integrals over General Regions
15.3	Area by Double Integration
15.4	Double Integrals in Polar Form
15.5	Triple Integrals in Rectangular Coordinates
	COMMON EXAM 2: WEDNESDAY, MARCH 11, 2020
15.7	Triple Integrals in Cylindrical and Spherical Coordinates
15.8	Substitutions in Multiple Integrals
15.8	Substitutions in Multiple Integrals
16.1	Line Integrals
16.1-16.2	Line Integrals, Vector Fields and Line Integrals: Work, Circulation, and Flux
16.2	Vector Fields and Line Integrals: Work, Circulation, and Flux
16.3	Path Independence, Conservative Fields, and Potential Functions
16.3	Path Independence, Conservative Fields, and Potential Functions

16.4	Greens Theorem in the Plane
16.4	Greens Theorem in the Plane
16.5	Surfaces and Area
16.5	Surfaces and Area
	COMMON EXAM 3: WEDNESDAY, APRIL 22, 2020
16.6	Surface Integrals
16.6	Surface Integrals
16.7	Stokes Theorem
16.7	Stokes Theorem
16.8	The Divergence Theorem
16.8	The Divergence Theorem
	FINAL EXAM REVIEW