

MATH 213: Calculus III B

Fall 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.

DMS Online Exam Policy Fall 2020: 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.

Please be sure you read and fully understand our [DMS Online Exam Policy](#).

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 213-003	Professor V. Barreto-Aranda
Math 213-005	Professor V. Barreto-Aranda
Math 213-009	Professor P. Ward
Math 213-013	Professor S. Alptekin
Math 213-017	Professor P. Ward

Office Hours for All Math Instructors: [Fall 2020 Office Hours and Emails](#)

Required Textbook:

Title	<i>Thomas' Calculus: Early Transcendentals</i>
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, November 9, 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 and Participation	20%
In-class Quizzes	20%
Common Midterm Exams (3)	30%
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 and Participation 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. Please be aware

that since Math 213 will be conducted in the converged learning mode, completing homework is essential. Students must be especially diligent in attempting to participate during the synchronous portion of the class. Whether attending in-person or on-line, please make every effort to interact in a positive manner with your classmates and instructor. Please note that homework and participation is a significant portion (20%) of your final course average.

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 grades will be a significant component of your course grade. (20%)**

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: Detailed instructions regarding the Math 213 common midterm exams will be distributed by the course coordinator prior to each exam. 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	September 23, 2020
Common Midterm Exam II	October 21, 2020
Common Midterm Exam III	November 18, 2020
Final Exam Period	December 15 - 21, 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: [Fall 2020 Hours](#))

Accommodation of Disabilities: The Office of Accessibility 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 Chantonette Lyles, Associate Director of Office of Accessibility Resources and Services at [973-596-5417](tel: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 Office of Accessibility Resources and Services 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/studentssuccess/accessibility/>

Important Dates (See: [Fall 2020 Academic Calendar](#), Registrar)

Date	Day	Event
September 1, 2020	T	First Day of Classes
September 5, 2020	S	Saturday Classes Begin
September 7, 2020	M	Labor Day
September 8, 2020	T	Monday Classes Meet
September 8, 2020	T	Last Day to Add/Drop Classes
November 9, 2020	M	Last Day to Withdraw
November 25, 2020	W	Friday Classes Meet
November 26-29, 2020	R - Su	Thanksgiving Recess - University Closed
December 10, 2020	R	Last Day of Classes
December 11 & 14, 2020	F & M	Reading Days
December 15 - 21, 2020	T - M	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, SEPTEMBER 23, 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, OCTOBER 21, 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: WEDNESDA, NOVEMBER 18, 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

*Updated by Professor A. Bose 8/30/2020
Department of Mathematical Sciences Course Syllabus, Fall 2020*
