

MATH 213: Calculus III B

Fall 2018 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 213-003	Professor V. Barreto-Aranda
Math 213-009	Professor P. Petropoulos

Office Hours for All Math Instructors: [Fall 2018 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 12, 2018**. 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 Quizzes	14%
Common Midterm Exam I	19%
Common Midterm Exam II	19%
Common Midterm Exam III	19%
Final Exam	29%

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	September 26, 2018
Common Midterm Exam II	October 24, 2018
Common Midterm Exam III	November 28, 2018
Final Exam Period	December 15 - 21, 2018

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 2018 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. 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:

- <http://www5.njit.edu/studentssuccess/disability-support-services/>

Important Dates (See: **Fall 2018 Academic Calendar, Registrar**)

Date	Day	Event
September 4, 2018	T	First Day of Classes
September 10, 2018	M	Last Day to Add/Drop Classes
November 12, 2018	M	Last Day to Withdraw
November 20, 2018	T	Thursday Classes Meet
November 21, 2018	W	Friday Classes Meet
November 22 - 25, 2018	R - Su	Thanksgiving Recess
December 12, 2018	W	Last Day of Classes
December 13 & 14, 2018	R & F	Reading Days
December 15 - 21, 2018	Sa - F	Final Exam Period

Course Outline

Lecture	Sections	Topic
1	12.1-12.2	Three-Dimensional Coordinate Systems, Vectors
2	12.3-12.4	The Dot Product, the Cross Product
3	12.4-12.5	The Cross Product, Lines and Planes in Space
4	12.5-12.6	Lines and Planes in Space, Cylinders and Quadric Surfaces
5	12.6	Cylinders and Quadric Surfaces
6	13.1	Curves in Space and Their Tangents
7	13.2	Integrals of Vector Functions; Projectile Motion
8	13.3	Arc Length in Space
9	13.4	Curvature and Normal Vectors
10	14.1	Functions of Several Variables
		COMMON EXAM 1: WEDNESDAY, SEPTEMBER 26, 2018
11	14.2-14.3	Limits and Continuity in higher Dimensions, Partial Derivatives
12	14.3	Partial Derivatives
13	14.4-14.5	The Chain Rule, Directional Derivatives and Gradient Vectors
14	14.5-14.6	Directional Derivative and Gradient Vectors, Tangent Planes and Differentials
15	14.7	Extreme Values and Saddle Points
16	14.8	Lagrange Multipliers
17	14.8-14.9	Lagrange Multipliers, Taylor's Formula in Two Variables
18	15.1	Double and Iterated Integrals over Rectangles
19	15.2	Double Integrals over General Regions
20	15.3	Area by Double Integration
21	15.4	Double Integrals in Polar Form
22	15.5	Triple Integrals in Rectangular Coordinates
		COMMON EXAM 2: WEDNESDAY, OCTOBER 24, 2018
23	15.7	Triple Integrals in Cylindrical and Spherical Coordinates
24	15.8	Substitutions in Multiple Integrals
25	15.8	Substitutions in Multiple Integrals
26	16.1	Line Integrals
27	16.1-16.2	Line Integrals, Vector Fields and Line Integrals: Work, Circulation, and Flux
28	16.2	Vector Fields and Line Integrals: Work, Circulation, and Flux
29	16.3	Path Independence, Conservative Fields, and Potential Functions
30	16.3	Path Independence, Conservative Fields, and Potential Functions
31	16.4	Greens Theorem in the Plane
32	16.4	Greens Theorem in the Plane

33	16.5	Surfaces and Area
34	16.5	Surfaces and Area
		COMMON EXAM 3: WEDNESDAY, NOVEMBER 28, 2018
35	16.6	Surface Integrals
36	16.6	Surface Integrals
37	16.7	Stokes Theorem
38	16.7	Stokes Theorem
39	16.8	The Divergence Theorem
40	16.8	The Divergence Theorem
41		Applications of the Stokes Theorem and the Divergence Theorem
42		REVIEW OF COURSE

*Updated by Professor P.G. Petropoulos 8/31/2018
Department of Mathematical Sciences Course Syllabus, Fall 2018*
