

## MATH 309-102: Mathematical Analysis for Technology *Spring 2021 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 Spring 2021:** Exams and Quizzes 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:** Emphasis on partial derivatives; vector calculus, and multiple integrals.

**Number of Credits:** 4

**Prerequisites:** **MATH 112** with a grade of C or better, or **MATH 133** with a grade of C or better or **MATH 238** with a grade of C or better.

**Course-Section and Instructors**

Course-Section	Instructor
Math 309-102	Professor M. Potocki-Dul

**Office Hours for All Math Instructors:** [Spring 2021 Office Hours and Emails](#)

**Required Textbook:**

Title	<i>Calculus: Concepts and Contexts</i>
Author	Stewart
Edition	4th
Publisher	Cengage
ISBN #	978-0495557425

**Supplementary Text:**

*Active Calculus-Multivariable*, Schlicker, 2018.

ISBN: 978-1724366856

<https://activecalculus.org/ACM.html>

<https://activecalculus.org/multi/>

<https://activecalculus.org/>

**University-wide Withdrawal Date:** The last day to withdraw with a **W** is **Monday, April 5, 2021**. It will be strictly enforced.

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## 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	20%
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	55 - 64
B	80 - 84	F	0 - 54
C+	75 - 79		

**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 each class via WebEx. Each class is a learning experience that cannot be replicated through simply "getting the notes."

**Homework Policy:** Homework is an expectation of the course. All homework assignments are online using WebAssign. The online assignments are accessible via Canvas. You need to have a student access code. Access codes are included with new book that is bundled with WebAssign; codes can be purchased separately from the bookstore or online. WebAssign gives you free access for two weeks after the start of class.

**Quiz Policy:** Approximately 8-10 quizzes will be given throughout the semester. They will be based on the lecture, homework and the in-class discussions. Quizzes will be assigned through WebAssign and/or Canvas. Students will be expected to complete the quiz online. There are no make-up quizzes; average will be calculated after dropping the lowest two scores.

**Exams:** There will be two midterm exams held in class during the semester and one comprehensive final exam. Exams are held on the following days:

Midterm Exam I	Week 5
Midterm Exam II	Week 10

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: **Spring 2021 Hours**)

**Further Assistance:** For further questions, students should contact their instructor. All instructors have regular office hours during the week. These office hours are listed on the Math Department's webpage for **Instructor Office Hours and Emails**.

All students must familiarize themselves with and adhere to the Department of Mathematical Sciences Course Policies, in addition to official university-wide policies. The Department of Mathematical Sciences takes these policies very seriously and enforces them strictly.

**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 Chantonette Lyles, Associate Director of the Office of Accessibility Resources and Services at **973-596-5417** or via email at [lyles@njit.edu](mailto: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 Office of Accessibility Resources and Services (OARS) website at:

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

**Important Dates** (See: **Spring 2021 Academic Calendar, Registrar**)

Date	Day	Event
January 19, 2021	T	First Day of Classes
January 23, 2021	S	Saturday Classes Begin
January 25, 2021	M	Last Day to Add/Drop Classes
March 14 - March 21, 2021	Su - Su	Spring Recess - No Classes
April, 2, 2021	F	Good Friday - No Classes
April 5, 2021	M	Last Day to Withdraw
May 4, 2021	T	Friday Classes Meet
May 4, 2021	T	Last Day of Classes
May 5 & May 6, 2021	W & R	Reading Days

## Course Outline

Week	Section and Topic	Lecture and Homework Assignments
1	9.1: Three Dimensional Coordinate Systems	1 11, 12, 13, 17, 19, 20, 22, 23, 26, 28, 33
	9.2: Vectors 9.3: The Dot Product	2 5, 7, 9, 11, 12, 15, 17, 19, 20 2, 3, 4, 5, 9, 15, 16, 17, 19, 20, 21, 22, 29, 32
2	9.4: The Cross Product	3 7, 8, 9, 10, 11, 19, 21, 27, 28, 29
	9.5: Equations of Lines and Planes	4 3,4,6,7, 11,17,19, 23,27,29,33,39,43,53, 55,56
3	9.6: Derivatives of Vector Functions	5 5,6,7,8,16,17,18,19,20,21,22
	H.1: Polar Coordinates H.2:	6 1,3,5,9,11,13,15,17,18,25,29,49,51 3,5,7,15,31,35,36
4	9.7: Cylindrical Coordinates	7 3,5,7,9,11,12,15,17,19,21(a),25
	<b>REVIEW FOR EXAMINATION 1</b>	8 Study for Examination 1
5	<b>EXAMINATION 1</b>	9
	10.1: Vector Functions and Space Curves 10.2: Derivatives & Integrals of Vector Functions	10 1,3,5,7,9,15,17 9,11,13,15,17,23,33,35,37,39
6	10.3: Arc Length and Curvature	11 1,2,3,17,21,22,23,27,41,43
	11.1: Functions of Several Variables	12 5,6,7,8,9,11,15,17
7	11.3: Partial Derivatives	13 15,16,17,18,19,25,26,29,30,31,39,46,56
	11.4: Tangent Planes	14 1,2,3,5,11,12,15,21
8	11.5: The Chain Rule	15 1,2,3,5,7,9,10,11,21,22,26,28
	11.6: Directional Derivatives and the Gradient Vector	16 5,6,7,9,11,12,15,21
9	11.7: Maximum and Minimum Values	17 5,7,9,10,11,27,29
	<b>REVIEW EXAMINATION 2</b>	18 Study for Examination 2
10	<b>EXAMINATION 2</b>	19
	12.1: Double Integration over Rectangles Iterated 12.2: Integrals	20 11,12,13 3,5,7,8,12,16,17,27
11	12.3: Double Integrals over General Regions	21 1,3,4,5,7,9,10,17,20,41,47,48
	12.4: Double Integrals in Polar Coordinates	22 7,9,11,15,27
12	12.7: Triple Integrals	23 3,4,5,9,11,19
	13.1: Vector Fields	24 1,3,21,24
13	13.2: Line Integrals	25 1,3,5,7,19,20
	13.3: The Fundamental Theorem for Line Integrals	26 3,5,12,13,14
14	13.4: Green's Theorem	27 1,3,5,7,9
	<i>Review for Final Examination</i>	28
<b>FINALS</b>		

