

MATH 111: Calculus I

Spring 2021 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 Spring 2021: 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 limits, differentiation, applications of differentiation, and integration.

Number of Credits: 4

Prerequisites: **MATH 110** or placement by performance on standardized entrance examinations.

Course-Section and Instructors

Course-Section	Instructor
Math 111-002	Professor S. Erfani
Math 111-004	Professor C. Castillo
Math 111-006	Professor R. Dandan
Math 111-008	Professor E. Dupay
Math 111-010	Professor S. Mahmood
Math 111-012	Professor S. Mahmood
Math 111-018	Professor I. Peltekov
Math 111-020	Professor S. Erfani
Math 111-024	Professor E. Dupay
Math 111-104	Professor D. Aytas

Office Hours for All Math Instructors: [Spring 2021 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

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

STUDENT RESPONSIBILITIES

- Read and understand the syllabus
- Adhere to all policies and procedures
- Report conflicts and/or special circumstances in a timely manner
- Report any instances of violations of Academic Integrity to your Instructor
- Communicate directly with your Instructor on ALL course-related matters, including material, procedures, policies and exams. **NOTE: Do not attempt to contact other instructors or the course coordinator - you will not get a response. All course information will be communicated to you directly by your instructor.**
- Effectively manage time and devote sufficient time to succeeding in this course
- Keep track of your grades
- Make use of all resources available to help you learn
- Be respectful of peers and your instructor
- Accept responsibility for your grades - requests for extra credit opportunities will be denied

COURSE GOALS

Course Objectives

- Students should (a) learn about limits and their central role in calculus, (b) learn about derivatives and their relationship to instantaneous rates of change, (c) understand many practical applications of derivatives, (d) gain experience in the use of approximation in studying mathematical and scientific problems, (e) learn about integrals: their origin in the area problem and their relationship to derivatives.
- Students should gain an appreciation for the importance of calculus in scientific, engineering, computer, and other applications.
- Students should gain experience in the use of technology to facilitate visualization and problem solving.

Course Outcomes

- Students have improved logical thinking and problem-solving skills.
- Students have a greater understanding of the importance of calculus in science and technology.
- Students are prepared for further study in mathematics as well as science, engineering, computing, and other areas.

Course Assessment: The assessment of objectives is achieved through homeworks, quizzes, and common examinations with 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:

Online HW	10%
Weekly Quizzes	24%
Common Midterm Exam I	12%
Common Midterm Exam II	12%
Common Midterm Exam III	12%
Final Exam	30%

Your final letter grade will be based on the following tentative curve.

A	88 - 100	C	66 - 71
B+	83 - 87	D	60 - 65
B	77 - 82	F	0 - 59
C+	72 - 76		

THE FINAL GRADE DISTRIBUTION WILL BE DETERMINED BY COURSE INSTRUCTORS IN A MEETING TO BE HELD AFTER THE FINAL EXAM.

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 Policy: Homework is a requirement for this class. Online homework will be completed with MyMathLab, which comes with a new copy of the textbook. Access to it can also be purchased directly from the website.

New Policy for Exams and Quizzes: 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.

Demonstration videos and instructions of expected behavior and procedures, including what is expected in an environment check and in the Webex exam meeting are provided on the Canvas course page.

Quizzes: Quizzes will be given approximately once a week throughout the semester. They will be based on the lecture, homework and the in-class discussions.

Exams: There will be three common midterm exams held during the semester and one comprehensive common final exam. Common Midterm Exams will contain Multiple Choice questions, and are held on the following days:

Common Midterm Exam I	February 10, 2021
Common Midterm Exam II	March 10, 2021
Common Midterm Exam III	April 21, 2021

The time of the midterm exams is **4:20-5:20 PM** for daytime students and **6:00-7:00 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

Mandatory Tutoring Policy: Based upon academic performance indicating a significant gap in understanding of the course material, students may receive a notice of being assigned to mandatory tutoring to assist in filling the gap. A student will have 2 points deducted from the course average for each instance in which the required tutoring is not completed by the stated deadline.

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 2021 Hours**)

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. 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 (OARS) website at:

- <https://www.njit.edu/studentssuccess/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
May 7 - May 13, 2021	F - R	Final Exam Period

Course Outline

Lecture	Section	Topic	Assignment in MyMathLab
1	2.1	Rates of Change and tangents to Curves	1, 5, 9, 13, 25
2	2.2	Limit of a Function and Limit Laws	1, 2, 13, 19, 22, 25, 31, 33, 35, 41, 47, 49, 53, 57, 63, 79, 81
3	2.4	One Sided Limits	3, 5, 9, 13, 15, 17, 27, 29, 31, 37, 41
4	2.5	Continuity	3, 5, 7, 15, 17, 21, 25, 27, 29
5	2.5/2.6	Continue Continuity; start Infinite limits	Section 2.5: 35, 37, 39, 41, 43, 45, 49, 55, 61
6	2.6	Limits Involving Infinity; Asymptotes	7, 9, 11, 23, 25, 27, 31, 33, 43, 45, 49, 53, 63, 67, 89, 91, 105
7	3.1	Tangents and Derivatives at a Point	11, 13, 15, 17, 21, 35
8	3.2	The Derivative as a Function	1, 3.5, 13, 26, 33, 39, 41
9	3.3	Differentiation Rules	5, 7, 19, 25, 31, 39, 41, 43, 45
10		REVIEW FOR EXAM #1	
11	3.3	Differentiation Rules	47, 53, 55, 57, 59, 62, 63, 74
12	3.4	Derivatives as a Rate of Change	1, 5, 7, 10, 13, 17, 23, 25, 31
13	3.5	Derivatives of Trig Functions	2, 12, 15, 16, 19, 26, 29, 33, 35, 51, 55, 61, 63
14	3.6	The Chain Rule	5, 17, 23, 25, 29, 33, 35, 39, 43, 47, 49, 51, 61, 63, 65, 67
15	3.6/3.7	Continue Chain Rule; start Implicit Differentiation	Section 3.6: 71, 77, 81, 83, 85, 89, 97, 101
16	3.7/3.8	Continue Implicit Differentiation; start Derivatives of Inverses and Logs	Section 3.7: 1, 7, 11, 15, 16, 17, 19, 23, 33, 39, 41
17	3.8	Derivatives of Inverse and Log Functions	7, 9, 13, 21, 24, 29, 31, 35, 39, 43, 57, 61, 63, 65, 69, 83, 89, 95
18	3.9	Inverse Trig Functions	5, 11, 21, 23, 31, 33, 34, 37, 41, 65
19	3.1	Related Rates	7, 11, 15, 17, 21, 23, 25
20	3.10/3.11	Continue Related Rates; Start Linearization	Section 3.10: 27, 31, 33, 37, 40, 41
21		REVIEW FOR EXAM #2	
22	3.11/4.1	Continue Linearization and Differentials; start Extreme Values	Section 3.11: 5, 11, 13, 19, 31, 35, 41, 51, 53, 59
23	4.1	Extreme Values of Functions	7, 25, 29, 33, 35, 39, 41, 47, 49, 51, 57, 59, 78
24	4.2	The Mean Value Theorem	3, 4, 5, 6, 11, 13, 16, 21
25	4.2/4.3	Continue Mean Value Theorem; Start Monotone Functions and the First Derivative Test	Section 4.2: 31, 35, 37, 41, 45, 47, 49, 51, 56
26	4.3/4.4	Continue the First Derivative Test; start Concavity and Curve Sketching	Section 4.3: 11, 13, 21, 29, 37, 41, 43, 51, 63, 75, 77
27	4.4	Concavity and Curve Sketching	7, 13, 19, 25, 28, 31, 35, 39, 43, 45, 99, 117, 127

28	4.5	Indeterminate Forms & L'Hopitals Rule	7, 9, 11, 15, 19, 21, 23, 29, 33, 37, 41, 44, 46, 49
29	4.5/4.6	Finish L'Hopitals; Start Applied Optimization	Section 4.5: 51, 55, 57, 58, 63, 65, 67, 71, 79
30	4.6	Applied Optimization	4, 7, 9, 11, 12, 14, 23, 29, 44, 45, 57, 62
31	4.7	Newton's Method	1, 2, 5, 23
32	4.8	Antiderivatives	5, 11, 19, 35, 37, 39, 41, 45, 47, 54, 59, 61, 69, 97, 101, 104, 107, 113, 100
33	5.1	Area and Estimating with Finite Sums	1, 5, 8, 9, 11
34	5.2	Sigma Notation and Limits of Finite Sums	7, 9, 17, 25, 29, 37, 42, 43, 47
35	5.3	Definite Integral	1, 9, 13, 21, 22, 33, 42, 45
36		REVIEW FOR EXAM #3	
37	5.3/5.4	Continue Definite Integrals; start Fundamental Theorem of Calculus	Section 5.3: 57, 59, 61, 71, 79, 88
38	5.4	Fundamental Theorem of Calculus	7, 9, 13, 15, 21, 23, 27, 30, 41, 47, 53, 55, 57, 60, 61, 63, 77, 79
39	5.5	Indefinite Integrals and Substitution Method	11, 15, 18, 20, 21, 23, 25, 26, 27, 29, 33
40	5.5/5.6	Finish Indefinite Integrals and Substitution Method; start Substitution and Area Between Curves	Section 5.5: 37, 43, 47, 53, 55, 59, 63, 65, 79
41	5.6	Substitution and Area Between Curves	3, 12, 17, 19, 27, 29, 33, 39, 53, 66, 71, 77, 83, 87, 93, 97, 99, 102, 115
42		REVIEW FOR FINAL	
		FINAL EXAM	

*Updated by Professor J. Bechtold - 2/4/2021
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