MATH 111: Calculus I
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 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 J. Stone
Math 111-004	Professor S. Alptekin
Math 111-006	Professor S. Iltuzer
Math 111-008	Professor J. Stone
Math 111-010	Professor D. Schmidt
Math 111-012	Professor S. Erfani
Math 111-018	Professor S. Iltuzer
Math 111-020	Professor D. Schmidt
Math 111-024	Professor R. Dandan
Math 111-104	Professor D. Aytas

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

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

- 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:

Quizzes and HW	17%
Common Midterm Exam I	17%
Common Midterm Exam II	17%
Common Midterm Exam III	17%
Final Exam	32%

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		

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.

MATLAB Assignments: MATLAB is a mathematical software program that is used throughout the science and engineering curricula. Tutors are available to help students having difficulties in accordance with a posted schedule.

Quiz Policy: Quizzes will be given approximately once a week throughout the semester. They will be based on the lecture, homework and the in-class discussions. There will be 8-12 assessments given throughout the semester.

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

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 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

Lecture	Section	Topic	Assignment in MyMathLab	Assignment to Hand-in
1	2.1	Rates of Change and tangents to Curves	1, 5, 9, 13, 25	3
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	32, 50, 80
3	2.4	One Sided Limits	3, 5, 9, 13, 15, 17, 27, 29, 31, 37, 41	32, 34, 49
4	2.5	Continuity	3, 5, 7, 15, 17, 21, 25, 27, 29	18, 30, 32
5	2.5/2.6	Continue Continuity; start Infinite limits	Section 2.5: 35, 37, 39, 41, 43, 45, 49, 55, 61	40, 56, 57
6	2.6	Limits Involving Infinity; Asymptotes	7, 9, 11, 23, 25, 27, 31, 33, 43, 45, 49, 53, 63, 67, 89, 91, 105	30, 79, 80, 109
7	3.1	Tangents and Derivatives at a Point	11, 13, 15, 17, 21, 35	34
8	3.2	The Derivative as a Function	1, 3.5, 13, 26, 33, 39, 41	32, 48, 58
9	3.3	Differentiation Rules	5, 7, 19, 25, 31, 39, 41, 43, 45	38, 40
10	3.3	Differentiation Rules	47, 53, 55, 57, 59, 62, 63, 74	52, 60, 72
11	3.4	Derivatives as a Rate of Change	1, 5, 7, 10, 13, 17, 23, 25, 31	18, 22
12		*REVIEW FOR EXAM #1*		
13	3.5	Derivatives of Trig Functions	2, 12, 15, 16, 19, 26, 29, 33, 35, 51, 55, 61, 63	46, 60
14	3.6	The Chain Rule	5, 17, 23, 25, 29, 33, 35, 39, 43, 47, 49, 51, 61, 63, 65, 67	46, 50, 62, 66
15	3.6/3.7	Continue Chain Rule; start Implicit Differentiation	Section 3.6: 71, 77, 81, 83, 85, 89, 97, 101	88, 90
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	26, 40
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	36, 74, 92, 98
18	3.9	Inverse Trig Functions	5, 11, 21, 23, 31, 33, 34, 37, 41,	36, 42, 44

			65	
19	3.1	Related Rates	7, 11, 15, 17, 21, 23, 25	26
20	3.10/3.11	Continue Related Rates; Start Linearization	Section 3.10: 27, 31, 33, 37, 40, 41	32, 42
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	18, 54
23	4.1	Extreme Values of Functions	7, 25, 29, 33, 35, 39, 41, 47, 49, 51, 57, 59, 78	54, 60
24	4.2	The Mean Value Theorem	3, 4, 5, 6, 11, 13, 16, 21	24
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	63
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	36, 40
27	4.4	Concavity and Curve Sketching	7, 13, 19, 25, 28, 31, 35, 39, 43, 45, 99, 117, 127	52, 58, 90, 94
28	4.5	Indeterminate Forms & L'Hopitals Rule	7, 9, 11, 15, 19, 21, 23, 29, 33, 37, 41, 44, 46, 49	40, 48
29	4.5/4.6	Finish L'Hopitals; Start Applied Optimization	Section 4.5: 51, 55, 57, 58, 63, 65, 67, 71, 79	60, 82
30	4.6	Applied Optimization	4, 7, 9, 11, 12, 14, 23, 29, 44, 45, 57, 62	24, 30
31	4.7	Newton's Method	1, 2, 5, 23	6, 16
32	4.8	Antiderivatives	5, 11, 19, 35, 37, 39, 41, 45, 47, 54, 59, 61, 69, 97, 101, 104, 107, 113, 100	64, 126
33	5.1	Area and Estimating with Finite Sums	1, 5, 8, 9, 11	7
34	5.2	Sigma Notation and Limits of Finite Sums	7, 9, 17, 25, 29, 37, 42, 43, 47	44, 50
35		*REVIEW FOR EXAM #3*		
36	5.3	Definite Integral	1, 9, 13, 21, 22, 33, 42, 45	28
37	5.3/5.4	Continue Definite Integrals; start Fundamental Theorem of Calculus	Section 5.3: 57, 59, 61, 71, 79, 88	73, 74
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	16, 50, 64
39	5.5	Indefinite Integrals and Substitution Method	11, 15, 18, 20, 21, 23, 25, 26, 27, 29, 33	32, 36
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	38, 46, 52, 56
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	24, 74, 90
42		*Review for Final*		
		FINAL EXAM		