MATH 111H: Calculus I - Honors
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 enhance those of Math 111 and concepts are studied in detail. Emphasizes science and engineering applications. Effective From: Spring 2009.

Number of Credits: 4

Prerequisites: Placement by performance on standardized entrance examinations.

Course-Section and Instructors

Course-Section	Instructor
Math 111-H01	Professor J. Bechtold

Office Hours for All Math Instructors: Fall 2018 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, November 12, 2018**. 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:

Homework	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	85 - 100	C	65 - 69
B+	80 - 84	D	60 - 64
B	75 - 79	F	0 - 59
C+	70 - 74		

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. In addition to the online homework, there will be several problem sets to hand in.

MATLAB: 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**.

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

Diagnostic Assessment: Having a solid background in pre-calculus is a prerequisite for success in calculus. Accordingly, during the first week of the semester, every student will complete a diagnostic assessment of pre-calculus. Students whose outcomes indicate gaps in this material will be assigned additional activities in order to assist in filling these gaps. Students who do not complete the diagnostic assessment and all assigned follow-up activities will have two points deducted from their course average.

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: 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/studentsuccess/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	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	2.3 2.4	Precise Definition of Limit One Sided Limits	Pg 84: 17,21, 23, 35, 43 1,3,5,9,13,15,17,27,29,39,41
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	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	5,17,23,25,29,33,35,39,43,47,49,51,63,65,67
15	3.6/3.7	Continue Chain Rule and start Implicit Differentiation	Section 3.6: 71,77,81,83,85,89,97,101
16	3.7/3.8	Continue Implicit Differentiation and start Derivatives of Inverses and Logs	Section 3.7: 1,7,11,15,16,17,19,23,33,39,41
17	3.8	Continue 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
19	3.1	Related Rates	7,11,15,17,21,23,25
20	3.1	Related Rates	27,31,33,37,40,41
21	3.11	Linearization and Differentials	5,11,13,19,31,35,41,51,53,59
22		**REVIEW FOR EXAM #2**	
23	4.1	Extreme Values of Functions	7,25,29,33,35,39,41,47,49,50,51,57,59,78
24	4.2	The Mean Value Theorem	3,4,5,6,11,13,16,21,31,35,37,41,45,47,49,51,56
25	4.3	Monotone Functions and the First Derivative Test	11,13,21,29,37,41,43,51,63,75,77
26	4.4	Concavity and Curve Sketching	7,13,19,25,28,31,35,39,43
27	4.4	Continue Curve Sketching	45,99,117,127

	/4.5		
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	4,7,9,11,12,14,23,31,44,45,57,62
31	4.7	Newton's Method	1,2,5,23
32	4.8	Antiderivatives	5,11,19,35,37,39,41,45,47,59, 61,69,97,101,104,107,113,127
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 Thm 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	Indefinite Integrals and Substitution Method	37,43,47,53,55,59,63,65,79
41	5.6	Area Between Curves	3,12,17,19,27,29,33,39,53,66,71, 77,83,87,93,97,99,102,115
42		**CATCH UP AND REVIEW**	
		FINAL EXAM	