

MATH 111-W01: Calculus I

Winter 2020 - 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: 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, continuity, differentiation, optimization, approximation, and integration. Applications are drawn from engineering, physics, biology, economics, and design. Effective From: Fall 2014.

Number of Credits: 4

Prerequisites: Students *MUST* have passed the same course at NJIT with a grade of “D” or better and are repeating the course to improve their grade.

Course-Section and Instructors

Course-Section	Instructor
Math 111-W01	Professor P. Ward

Days, Times, and Locations:

Days	Times	Locations
M, T, W, R, F	9:00AM - 11:45AM	Online via Webex
M, T, W, R, F	12:45PM - 3:15PM	Online via Webex

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: Please note that the last day to withdraw with a W is Wednesday, January 6, 2021. 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 and Quizzes	30%
Midterm Exam	35%
Final Exam	35%

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

A	90 - 100	C	60 - 69
B+	85 - 89	D	50 - 59
B	75 - 84	F	0 - 49
C+	70 - 74		

Attendance Policy: Instruction will be conducted online through the Canvas LMS using WebEx for synchronous

lecture and class discussion. 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.

Online Exam Policy: 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](#).

Homework Policy: MyMathLab homework will be assigned through Canvas and is due daily.

Quiz Policy: Short quizzes based on homework and lecture will be given daily.

Exams: There will be one midterm exam held during the semester and one comprehensive common final exam. Tentative exam dates are:

Midterm Exam	January 5, 2021
Final Exam	January 15, 2021

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 EXAMS during the semester. In the event the Final Exam is not taken, under rare circumstances where the student has a legitimate reason for missing the final exam, a makeup exam will be administered by the math department. In any case the student must notify the Math Department Office and the Instructor that the exam will be missed and present written verifiable proof of the reason for missing the exam, e.g., a doctors note, police report, court notice, etc., clearly stating the date AND time of the mitigating problem.

ADDITIONAL RESOURCES

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](#).

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Important Dates (See: [Winter 2020-21 Academic Calendar](#), [Registrar](#))

Date	Day	Event
December 23, 2020	W	Winter Session Classes Begin
December 24 - 25, 2020	R, F	Christmas Eve/Day - No Classes/University Closed
December 26, 2020	Sa	Last Day to Add/ Drop
January 1, 2021	F	New Years Day - No Classes/ University Closed
January 6, 2021	W	Last Day to Withdraw
January 15, 2021	F	Last Day of Winter Session/ Final Exams

Course Outline

Day	Date	Section	Topics
W	12/23	2.1	Rates of Change and Tangents to Curves
		2.2	Limit of a Function
		2.4	One-Sided Limits
M	12/28	2.5	Continuity
		2.6	Limits Involving Infinity; Asymptotes of Graphs
T	12/29	3.1	Tangents and the Derivative at a Point
		3.2	The Derivative as a Function
		3.3	Differentiation Rules
		3.4	The Derivative as a Rate of Change
W	12/30	3.5	Derivatives of Trigonometric Functions
		3.6	The Chain Rule
		3.7	Implicit Differentiation
R	12/31	3.8	Derivatives of Inverse Functions and Logarithms
		3.9	Inverse Trigonometric Functions
M	1/4	3.10	Related Rates
		3.11	Linearization and Differentials
T	1/5		EXAM
W	1/6	4.1	Extreme Values of Functions
		4.2	The Mean Value Theorem
		4.3	Monotone Functions and the 1st Derivative Test
R	1/7	4.4	Concavity and Curve Sketching
		4.5	Indeterminate Forms and L'Hopital
F	1/8	4.5	Indeterminate Forms and L'Hopital's Rule
		4.6	Applied Optimization
M	1/11	4.7	Newton's Method
		4.8	Antiderivatives
		5.1	Area and Estimating with Finite Sums
T	1/12	5.2	Sigma Notation and Limits of Finite Sums
		5.3	The Definite Integral
W	1/13	5.4	The Fundamental Theorem of Calculus
		5.5	Indefinite Integrals and the Substitution Method
R	1/14	5.6	Substitution and Area Between Curves

Updated by Professor P. Ward - 12/21/2020
Department of Mathematical Sciences Course Syllabus, Winter 2020-21
