

Massasoit Community College

Instructor:

Office:

Email:

Phone:

Office Hours:

Course: Calculus

Course Number: MATH221-XX

Semester:

Classroom:

Day and Time:

Course Description: This standard Calculus I course is a first course in the sequence of calculus of one variable intended for undergraduate mathematics, science, technology, or engineering majors. Topics include limits, continuity, techniques and applications of differentiation, indefinite and definite integrals, and the Fundamental Theorem of Calculus. Prerequisite: C- or higher in MATH217 Precalculus; waiver by placement testing results; or departmental approval.

Required Text and Materials:

1. Calculus: Early Transcendental Functions (custom textbook with EnhancedWebAssign access card), Larson/Edwards, 7th edition, Cengage, ISBN: 9781337888950.

Your textbook should come packaged with a WebAssign access card. Homework assignments must be completed online in WebAssign. If you do not purchase your textbook through the bookstore, please make sure that it comes with a WebAssign access code.

2. A TI-83/84 graphing calculator is required for this course. All assessments will assume that you have a graphing calculator. A TI-83/84 can be rented through the library for a small fee. You may not use any other technologies, such as cell phones, iPods, tablets, laptops, etc. on in-class assessments. You also may not borrow/share calculators, or borrow mine. Also, any calculator with a computer algebra system, such as a TI-89, TI-89 Titanium, TI-92, TINSpire, or others may NOT be used on in-class assessments!

Course Topics:

Chapter 2: Limits and Their Properties

Chapter 3: Differentiation

Chapter 4: Applications of Differentiation

Chapter 5: Integration

Teaching Procedures: This course will be taught in a lecture/discussion format with ample opportunity for student questions. Generally, class will begin with a question and answer session on the most recent homework assignment. New material will then be presented in a lecture format and homework be assigned to reinforce the topics covered in class.

Instructional Objectives:

COURSE OUTCOMES	OUTCOMES ACTIVITIES
At the end of this course, students will be able to	
Find limits in order to develop differentiation and integration.	<ol style="list-style-type: none"> 1. Estimate a limit numerically. (CT,TS,QS) 2. Determine a limit from a graph. (CT,TS,QS) 3. Evaluate a limit using analytic techniques. (CT,QS) 4. Find one-sided limits. (CT,TS,QS) 5. Find infinite limits and limits at infinity. (CT,T,QS) 6. Determine where limits fail. (CT,TS,QS)
Demonstrate an understanding of continuity in order to apply the concept to other topics in calculus.	<ol style="list-style-type: none"> 1. Determine continuity at a point, on an open interval and on a closed interval. (CT,TS,QS) 2. Use properties of continuity. (CT,QS) 3. Label a discontinuity as removable or nonremovable. (CT,TS,QS)
Differentiate algebraic and trigonometric functions in order to solve applied problems.	<ol style="list-style-type: none"> 1. Find the derivative of a function using the limit definition. (CT,QS). 2. Find the derivative of a function using the Constant Rule, Power Rule, Constant Multiple Rule, Sum and Difference Rules, Product & Quotient Rules, Chain Rule. (CT,TS,QS) 3. Find higher order derivatives. (CT,TS,QS) 4. Find the derivatives of trigonometric functions. (CT,TS,QS) 5. Find the derivative of exponential functions. (CT,TS,QS) 6. Find the derivative of logarithmic functions. (CT,TS,QS) 7. Find the derivative of an inverse trigonometric function. (CT,TS,QS) 8. Use logarithmic differentiation. (CT,TS,QS) 9. Perform implicit differentiation. (CT,TS,QS)
Solve applied problems involving differentiation.	<ol style="list-style-type: none"> 1. Solve related rate problems. (CT,TS,QS,R,W) 2. Find the absolute extrema of a function on an interval. (CT,TS,QS) 3. Use the first and second derivative tests to find relative extrema and intervals of increase and decrease for a given function. (CT,TS,QS)

	<ol style="list-style-type: none"> 4. Find points of inflection and intervals of concavity for a given function. (CT,TS,QS) 5. Solve optimization problems. (CT,TS,QS,R,W) 6. Calculate differentials. (CT,QS,R,TS)
Use limits and approximation techniques in order to develop the definition of a definite integral.	<ol style="list-style-type: none"> 1. Approximate area under a curve using upper and lower sums. (CT,QS,R,TS) 2. Evaluate definite integrals using the limit definition. (CT,QS,R,TS) (Light treatment)
Use numerical techniques in order to approximate a definite integral.	<ol style="list-style-type: none"> 1. Approximate the value of a definite integral using the midpoint rule, the trapezoidal rule, or Simpson's rule. (CT,QS,R,TS)
Integrate algebraic and trigonometric functions in order to develop the techniques necessary to solve applied problems.	<ol style="list-style-type: none"> 1. Use the Fundamental Theorem of Calculus to evaluate definite integrals and calculate area. (CT,QS,R,TS) 2. Use the Second Fundamental Theorem of Calculus. (CT,QS,R,TS) 3. Evaluate integrals using change of variable and substitution (CT, QS, R, TS) 4. Evaluate definite and indefinite integrals using basic integration rules including integration formulas for the six basic trigonometric functions, logarithmic and exponential functions. 5. Evaluate integrals that result in inverse trigonometric functions

**Indicate the Core Competencies that apply to the outcomes activities and assessment tools: Critical Thinking (CT); Technology Skills (TS); Oral Communications (OC); Quantitative Skills (QS); Reading (R); Writing (W).

Basis for Student Grading: Grades for this course will be assigned as follows:

Grade	Average
A	93%-100%
A-	90%-92%
B+	87%-89%
B	83%-86%
B-	80%-82%
C+	77%-79%

Grade	Average
C	73%-76%
C-	70%-72%
D+	67%-69%
D	63%-66%
D-	60%-62%
F	0-59%

The grade you earn is the grade you will receive in this course. Grades are not negotiable. You will not be allowed to make up work, substitute alternative assignments, or submit extra assignments in order to improve your grade during the semester or after the semester ends.

Grades of incomplete are given only in situations when extenuating circumstances prevent a student from taking the final exam or fulfilling a specific requirement in the course. The grade of "I" cannot be used to give students additional time to complete course assignments in order to raise their grade.

Basis for Evaluating Student Performance: The grade for this course will be weighted based on the following categories:

- *Homework (10%):* Homework will be assigned in WebAssign at the end of each section. It is due by the next class period.
- *Exams (60%):* There will be four in-class exams given throughout the semester, approximately every 3 weeks. Exams must be taken during the regular class time and no make-up exams will be given. The lowest exam grade will be dropped. Your exam average will account for 60% of your final grade.
- *Final Exam (30%):* The course will culminate in a cumulative final exam. It will be worth 30% of your final grade.

There is no extra credit available for this course.

Tentative Test Schedule/Assignment(s) Schedule:

Assignment:	Tentative Date:
Test 1	
Test 2	
Test 3	
Test 4	
Final Exam	

Attendance: Attendance for this course is mandatory. After the third absence, students will lose two points per absence thereafter from their final average. I will take attendance at the beginning of every class, and students not present at that time will be marked absent for the class, even if they show up late. If you must miss a regular class, you are still responsible for the material that was presented in class. The average student needs to attend all class meetings in order to be successful in this course.

Accommodations Statement: Massasoit's Disability Services office provides accommodations to students who qualify for services based on a documented disability. Students interested in accessing classroom or testing accommodations must contact Disability Services directly. In an effort to avoid any lapse in services, new and returning students are encouraged to contact Disability Services at the beginning of each semester to receive an Accommodation Letter for the current semester. Students on all campuses can contact Disability Services at 508-588-9100 X 2132 or by e-mail at DisabilityServices@massasoit.edu for further information or questions.

Title IX Statement: Massasoit Community College is committed to providing a safe learning and work environment for all. If you believe you have experienced discrimination, sexual harassment, sexual assault, domestic/dating violence, stalking, or retaliation, we encourage you to report it to *Yolanda Dennis, Chief Diversity Officer and Title IX Coordinator, Office of Diversity and Inclusion, at 508-588-9100, x1309 or ODI@massasoit.edu*. While you may talk to a faculty member, understand that as a "responsible employee" of the College, the faculty member must report what you share to the College's Title IX Coordinator. On and off campus resources and interim measures are available to assist you. Information about both of these policies can be found at www.massasoit.edu/title-ix and www.massasoit.edu/eo. We are here to support you.

Academic Integrity: Academic dishonesty will not be tolerated. Please see the following URL for more information on the college's policies on academic integrity:

<http://www.massasoit.edu/academics/policies/academic-honesty/index>