

**MAT 254, Calculus I, Spring, 2016, 10411,
W 6:30pm – 9:59pm room E202
Elizabeth Godwin**

PREREQUISITE: MAT* 186, Pre-Calculus
TEXT: *Calculus, Early Transcendentals 7th ed*, by James Stewart. We use only chapters 2-5. You will use the remaining chapters in Calculus 2 and Calculus 3. The text is available in hard copy or electronically. You are not required to have a hard copy of the book.

Online Homework: www.webassign.com

Class Key: trcc.mohegan 5704 8384

Institution is trcc.mohegan

Webassign includes an interactive copy of the text, lecture videos, great review and practice lessons. When you purchase WebAssign, you need not purchase a hard copy of the text. Webassign is free for 14 days you can try it and see if you want a hard copy of the book.

Calculator: You will need a graphing calculator. I would recommend TI-83/TI-84

COURSE

DESCRIPTION: This is a first course in the calculus sequence intended for students who plan on majoring in mathematics, physical sciences, or engineering technology. Topics include: rate of change, limits, continuity, differentiation of algebraic, trigonometric, exponential, and logarithmic functions, differentials, applications of differentiation, definite and indefinite integrals, and applications of integration.

MEASUREMENTS:	3 tests	100 points each	300
	8 quizzes	25 points each	200
	Webassign homework	see below	100
	Final exam	100 points	100

Final grade = (total points earned/700) *100

Grade equivalents: A 93 – 100, A- 90 – 93, B+ 87 -89, B 83 – 86, B- 80 – 82, C+ 77 – 79, C 73 – 76, C- 70 – 72, D+ 67 – 69. D 63 – 66. D- 60 – 62, F below 60, N if the student completed less than 60% of work.

Attendance: Your attendance in the classroom, participation in classroom work/projects and preparation for each class is required and is essential to success in the course.

Support Services: Tutorial services, peers, or meeting with me for extra help during office hours.

Office Hours: Wednesdays 11:00 – 12:00 and 5:00 – 6:00
Fridays 9:00 – 10:00 and 11:00 – 12:00 in or by appointment in C206
Email egodwin@trcc.commnet.edu , Phone (860) 215-9452

Class Cancellation: In case of increment weather, check the college website for class

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cancellations or call 860-215-9000 for recorded message on the college phone.

Plagiarism and Academic Honesty:

At TRCC, we expect the highest standards of academic honesty. The Board of Trustees' Proscribed Conduct Policy prohibits cheating on examinations, unauthorized collaboration on assignments, unauthorized access to examinations or course materials, plagiarism.

Disabilities

If you have a disability that may affect your progress in this course, please meet with a Disability Service Provider (DSP) as soon as possible. Please note that accommodations cannot be provided until you provide written authorization from a DSP.

TRCC Disabilities Service Providers Counseling & Advising Office Room A-119	
Matt Liscum (860) 383-5240	<ul style="list-style-type: none">• Physical Disabilities• Sensory Disabilities• Medical Disabilities• Mental Health Disabilities
Chris Scarborough (860) 892-5751	<ul style="list-style-type: none">• Learning Disabilities• ADD/ADHD• Autism Spectrum

MyCommNet Alert: MyCommNet is a system that sends text messages and emails to anyone signed up in the event of a campus emergency. Additionally, TRCC sends messages when the college is delayed or closed due to weather. All students are encouraged to sign up for myCommNet Alert. A tutorial is available on the Educational Technology and Distance Learning Students page of the web site. http://www.trcc.commnet.edu/div_it/educationaltechnology/Tutorials/myCommNetAlert/MIR3.html

Digication: All students are required to maintain a learning portfolio in Digication that uses the (Three Rivers) College Template.

COURSE OUTCOMES:
(note that #1-11 are Precalculus topics)

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1. Find the domain and range for a given function.
2. Classify the elementary functions; know their properties and graphs.
3. Understand the inverse of a function graphically, algebraically, and by coordinate pairs.
4. Compute the value of a function at the given independent variable. (Given x , find y .)
5. Solve for an independent variable given a value for the dependent variable. (Given y , find x .)
6. Classify a function as odd, even or neither.
7. Compose two or more functions. Decompose a function into simpler functions.
8. Sketch the graphs of functions using translations and reflections of the elementary functions.
9. Identify whether or not a relation is a function. The relation may be given as a graph, table or algebraic equation.
10. Find and interpret the slope of a line.
11. Find an equation of a line given the slope and a point or given two points.
12. Find the limit of a function using algebra, a table of values or a graph.
13. Determine whether or not a function is continuous. Indicate the points of discontinuity and whether the discontinuity is essential or not.
14. Understand the derivative as the instantaneous rate of change at a point in contrast with the average rate of change between 2 points on a curve.
15. Use the limit definition of the derivative to differentiate a function, understanding that it is the slope of the tangent to the curve at a given point.
16. Use the rules for differentiation, including the chain rule, to find the n th derivative of a function. Functions include the trigonometric, exponential and logarithmic functions.
17. Compute the derivative of the inverse of a function given the derivative of the function.
18. Solve applications involving exponential growth and decay.
19. Apply L'hospital's Rule to find limits of functions.
20. Find an equation of a line tangent to a function at a given point.
21. Solve applications involving rates of change of a function, including velocity and acceleration problems.
22. Use implicit differentiation to find the derivative of a function.
23. Solve related rates problems.
24. Use Newton's method to approximate a solution to an equation.
25. Find and apply the differential of a function.
26. Understand the relationship between the graph of a function and the graph of its derivative.
 - a. Given two graphs, determine which is the function and which is the derivative of the function.
 - b. Given the graph of a function, sketch its derivative.
 - c. Given the graph of the derivative of a function, sketch the function.
27. Use the first derivative to determine whether a function is increasing, decreasing or neither. Find the critical points.
28. Use the second derivative to determine whether a function is concave up, down or neither. Find the points of inflection.
29. Find absolute extrema of a function on a given interval.
30. Use the First and Second Derivative Tests to find relative extrema of a function.
31. Sketch the graph of a function using techniques from calculus. (Show all intercepts, relative extrema, points of inflection, concavity, and asymptotes.)
32. Understand Integration as the inverse of Differentiation, as the limit of Riemann sums, and as area under a curve.
33. Evaluate indefinite and definite integrals using rules for integration, including substitution.
34. Compute the average value of a function. Solve applications involving average value.
35. Use integration to find the area under a curve or bounded by two curves.
36. Use integration to find the volumes of solids of revolution by the Disk Method.

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37. State, understand and apply the Fundamental Theorem of Calculus, the Mean Value Theorem, and the Intermediate Value Theorem.