Calculus I, 10410, K254, M, W, 10:00 am – 11:40 am, room D211

Prof. Larisa Alikhanova

Spring 2013

Prerequisite: MAT 186, Precalculus

Text: Calculus, Early Transcendentals, by James Stewart, 7th edition
Publisher: Thomson/Brooks/Cole

Course Description :
Introduces functions, continuity, limits, derivatives of algebraic and early transcendental functions, antiderivatives, definite integrals, and their applications. Uses graphing calculators to enhance and broaden the range of concepts and applications discussed.

Measurements Quizzes, projects – 15%, each test – 20%, and final exam – 25%.
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: 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. Meeting with me for extra help on an appointment basis.

Office Hours: M,W 3:00 pm – 5:00 pm   **Room C104**
Email lalikhanova@trcc.commnet.edu

Class Cancellation: In case of increment weather, check the college website for class cancellations or call 860-886-0177 for recorded message on the college phone.

myCommNet Alert 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

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	• Physical Disabilities • Sensory Disabilities • Medical Disabilities • Mental Health Disabilities
Chris Scarborough (860) 892-5751	• Learning Disabilities • ADD/ADHD • Autism Spectrum

Course Content:

Chapter 1: 1/28/13 – 1/31/13

Functions and Their Representations. A Catalog of Essential Functions.
Sec.1.1 – 1.3, 1.5, 1.6

Chapter 2: 2/04/13 – 2/13/13
The Limit of a Function. Calculating Limits. Limits Involving Infinity. Continuity.
Sec. 2.2, 2.3, 2.5, 2.6

TEST (Chapters 1, 2) 2/13/13

Chapter 3: 2/20/13 –3/13/13
Derivatives and Rate of Change. The Derivative as a Function. Basic Differentiation
Formulas. The Product and Quotient Rules. The Chain Rule. Implicit Differentiation. Related
Rates. Linear Approximation. Differential.
Sec.2.7, 2.8, 3.1 – 3.7, 3.9, 3.10

TEST (Chapter3)   3/13/13

Chapter 4: 3/25/13 – 4/10/13
Maximum and Minimum Values. The Mean Value Theorem. Derivatives and the
Shapes of Graphs. Curve Sketching. Optimization Problems. Newton's Method.
Antiderivatives.
Sec.4.1, 4.2, 4.3, 4.5 - 4.8 ,4.9

TEST (Chapters 4) 4/10/13

Chapter 5: 4/15/13 – 5/01/13
Areas, Distances. The Definite Integral. Evaluating Definite   Integrals.
The Fundamental Theorem of Calculus. The Substitution Rule.
Sec. 4.9, 5.1 – 5.5

Chapter 6: 05/06/13 – 05/08/13
Areas between the Curves. Volumes (time permitting)
Sec. 6.1, 6.2

Final Exam   05/15/13

Course Objectives:

Upon completion of the course, student should be able to:

1.   Find the natural domain and range of the given function.
2.   Compute the value of the function at the indicated value of x.
3.   Know the classification of the functions, their basic properties and graphs,
4.   Classify a function as even, odd, or neither.
5.   Find the composite of two functions, and express a function as the composition of two or more functions.
6.   Sketch the graphs of the functions using concepts of reflections and translations, intercepts.
7.   Use vertical line test to identify whether the given graph is the graph of a function.
8.   Find the limit of a function, using graph, table of values, or algebra. Find limits involving infinity.
9.   Determine whether the given function is continuous or not, find and describe all points of discontinuity.
10.   Know the Intermediate Value Theorem.
11.   Use the definition of the derivative to differentiate a function. Understand graphical and physical meanings of the derivative.
12.   Find whether the function is differentiable or not.
13.   Use the techniques of differentiation, the Chain Rule to find first and higher derivatives of algebraic, trigonometric, inverse functions, exponential, and logarithmic functions.
14.   Find the equation of the line tangent to the graph of a function at the specified point.
15.   Solve the word problems on rate of change of the function.
16.   Find the derivative of a function by implicit differentiation; apply it to related rate problems.
17.   Find the differential of a function. Find the linear approximation of a function.
18.   Identify which of the given curves represents a function and which represents its first and second derivative. Sketch the graph of the derivative of a function defined by the graph.
19.   Know the Mean value and Rolle's Theorem.
20.   Use the first and second derivatives to find the shape of graph, show where the function is increasing / decreasing, concave up/ concave down; find the inflection points. Use the First and Second Derivative Tests to find relative extrema.
21.   Sketch the graph of a function (show all critical points, inflections, asymptotes, etc.)
22.   Find the absolute maximum and absolute minimum of a function on a given interval
23.   Solve optimization problems.
24.   Find antiderivatives.
25.   Know the definition of a definite integral, area and distance problems that lead to the definite integral.
26.   Know the Fundamental Theorem of Calculus; recognize the differentiation and integration as two inverse processes.
27.   Perform the indefinite and definite integration using basic integration rules, substitution method.
28.   Find the average value of a function on a given interval.
29.   Solve problems on applications of integration to geometry, physics, and engineering.

Homework (odd numbers). This is a guide only. Assignments may vary.
Chapter 1:

p.19	3, 7, 9, 27, 29,41,43,45, 47, 69 - 77
p.33	1, 3
p.42	1, 3,5,13, 21, 29,33,35,51
p.57	17, 19
p.69	3, 5, 7, 17

Chapter 2

p.96	5, 7, 9,11,15,17
p.106	11 – 29,47
p.127	3, 5,7,21, 23, 41,43,51,53
p.140	3, 5, 7,9,15 – 23, 41
p.150	3, 17, 33 – 37
p.162	3, 5 – 11, 21,23,37,39

Chapter 3

p.181	3 – 31,33, 39,43 ,47,51
p.189	3 – 25, 31
p.197	1 – 15, 25
p.205	1 – 25, 47, 49,51
p.215	5, 7
p.223	1 – 11, 15, 23, 39,43
p.233	1, 15, 23
p.248	1, 3, 7, 13 – 17
p.255	1, 3, 7, 9, 11-13

Chapter 4:

p.280	3, 5, 7, 9,17,21,29 – 33, 47, 49
p.288	1, 3,9,11
p.297	1, 5, 7, 9 – 15, 25, 33 – 41,45, 49
p.317	1, 3, 9, 15, 21
p.331	3, 7, 9, 13, 15
p.342	6
p.348	1 – 47, 59-63

Chapter 5:

p.369	1, 17
p.382	5, 17 -19, 33, 35, 47,49
p.394	3, 7, 19 – 43
p.403	1, 5 – 45, 61
p.413	1 – 47, 53 - 59

Chapter 6:

p.427	1 – 27
p. 438	1 - 17 (time permitting)