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Syllabus

CALCULUS I
MAT 254
Fall 2011

Instructor: John DeLucia

Office Hours: By Appointment

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Prerequisite: Precalculus, MAT 186

Required Text: Calculus: Early Trancendentals, 7th ed., by James Stewart
Publisher: Brooks/Cole CENGAGE Learning

Supplementary Materials: Graphing Calculator (TI-83 or 84 recommended)

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. The topics include: rates of change, limits, continuity, differentiation of algebraic, trigonometric, exponential and logarithmic functions, differentials, applications of differentiation, definite and indefinite integrals, and applications of integration.

Grading Policy: Your grade will be determined in the following manner:

1. *Tests*. There will be four tests given throughout the semester. The tests will be worth 85% of the final grade. Makeup tests will be available if prior arrangements are made with the instructor.

2. *Homework.* Homework will be assigned throughout the semester and I will collect and grade these assignments occasionally. The homework will be worth 15% of the final grade.

Grade	A 93 – 100	B+ 87 – 89	C+ 77 - 79	D+ 67 – 69	F 59 or below
Equivalents:	A- 90 – 92	B 83 – 86	C 73 – 76	D 63 – 66	
		B- 80 – 82	C- 70 – 72	D- 60 – 62	

Attendance: Regular class attendance is expected and attendance is mandatory for all tests.

Support Services: The tutoring center offers free services to all TRCC students. Additionally, the textbook has a web site and supplemental materials.

Disabilities Statement: If you are a student with a disability and believe that you will need accommodations for this class, it is your responsibility to contact the Disabilities Counseling Services at 383-3240. To avoid any delay in the receipt of accommodations, you should contact the counselor as soon as possible. Please note that I cannot provide any accommodations based upon your disability until I have received notification from the disabilities counselor.

Academic Integrity: You are expected to do your own work on exams, tests, and quizzes. You may receive help and work collaboratively on homework provided you understand the work you submit. I will enforce college policies on academic dishonesty.

Class Cancelation: Refer to the college catalog and/or website for notification of full college cancellations or delays due to weather or for any other reason. In the event that this class is canceled for a reason other than a full college closing, notification will be made via Blackboard announcement.

Learning Outcomes: After successful completion of this course, the student will be able to:

1. Determine the limit at a point (from the left, from the right, and two sided) for functions presented in graphical form.
2. Estimate the limit at a point (from the left, from the right, and two sided) for functions presented in symbolic form using an appropriate table.
3. Determine the limit at a point (from the left, from the right, and two sided) for functions presented in symbolic form.
4. Estimate the limits at infinity (both positive and negative) for functions presented in graphical form.
5. Estimate the limits at infinity (both positive and negative) for functions presented in symbolic form using an appropriate table.
6. Determine the limits at infinity (both positive and negative) for functions presented in symbolic form.
7. Identify points of discontinuity for functions presented in graphical and symbolic form.
8. Identify intervals of continuity for functions presented in graphical and symbolic form.

9. Find average velocities for objects whose position functions are presented in graphical, tabular, and symbolic form.
10. Estimate instantaneous velocities for objects whose position functions are presented in graphical, tabular, and symbolic form.
11. Find average accelerations for objects whose position functions and velocity functions are presented in graphical, tabular, and symbolic form.
12. Estimate instantaneous accelerations for objects whose position functions and velocity functions are presented in graphical, tabular, and symbolic form.

13. Estimate derivative values for functions presented in graphical , tabular, and symbolic form.
14. Sketch the graph of the derivative for functions presented in graphical form.
15. Use the formal definition of the derivative to find derivative values.
16. Find the units for, and interpret the meaning of, derivative values for applied functions presented in graphical, tabular, symbolic, and written form.
17. Identify points of nondifferentiability for functions presented in graphical form.
18. Identify the concavity and points of inflection for functions presented in graphical form.
19. Determine the shape of a function from numerical and
20. graphical information about that function's first and second derivatives.

21. Utilize the rules of differentiation for power, exponential, logarithmic, and trigonometric functions.
22. Differentiate the sum, difference, product, and/or quotient of two or more functions.
23. Differentiate a composite function.
24. Differentiate implicit functions.
25. Solve applications involving related rates.

26. Find the critical numbers for a function.
27. Use the First Derivative Test to identify intervals where the function is increasing and decreasing and to identify maxima and minima.
28. Use the Concavity Test to identify intervals where the function is concave up or concave down, and identify points of inflection.
29. Graph a function by hand after identifying the increasing/decreasing behavior, concavity, asymptotes and intercepts

30. Evaluate indefinite and definite integrals of elementary functions, including selected trigonometric functions
31. Evaluate indefinite and definite integrals by substitution.
32. Integrate natural and general exponential functions.,
33. Integrate functions whose anti-derivatives involve logarithms
34. Integrate functions whose anti-derivatives involve inverse trigonometric functions.
35. State the basic properties of the definite integral
36. Apply the fundamental theorem of calculus.
37. Find the area of a region bounded by a curve using n-rectangles and limits
38. Find the area of a region bounded by a curve using indefinite integrals.

Tentative Course Outline:

Date	**Sections Covered**
9/01	Chapter 1
9/08	2.1, 2.2, 2.3, 2.5
9/15	2.6, 2.7, 2.8
9/22	Review, 3.1, 3.2
9/29	***Test (Chapters 1 & 2)***, 3.3
10/06	3.4, 3.5, 3.6
10/13	3.7, 3.8, 3.9
10/20	Review, 3.10, 4.1
10/27	***Test (Chapter 3)***, 4.2
11/03	4.3, 4.4, 4.5, 4.6
11/10	4.7, 4.8, 4.9
11/17	Review, ***Test (4.1 through 4.8)***
11/24	*No Classes – Thanksgiving Break*
12/01	5.1, 5.2, 5.3
12/08	5.3, 5.4, 5.5
12/15	Review, ***Test (4.9 & Chapter 5)***

Homework: This is a guide only. Assignments may vary.

Chapter 1:

1.1	p.19	#1, 3, 7, 9, 25, 27, 31, 33, 41, 43, 47, 49, 51, 55, 69 – 77 odd
1.2	p.33	#3
1.3	p.42	#1, 3, 5, 9, 13, 15, 21, 29, 31, 33, 41, 51
1.5	p.57	#3, 7, 9, 11, 13, 17, 25, 27
1.6	p.70	#5, 7, 11, 13, 15, 17, 21, 23, 25, 29, 35, 39, 42, 47, 51, 53, 57, 58, 61 – 69 odd, 73

Chapter 2:

2.1	p.86	#5, 7
2.2	p.96	#5, 7, 9, 13, 15, 17, 23, 25, 29, 31, 33, 41
2.3	p.106	#11 – 23 odd, 27, 37, 42, 48, 50
2.5	p.127	#3, 5, 7, 9, 17, 19, 21, 23, 33, 39, 41, 43, 45, 51, 53
2.6	p.140	#3, 5, 7, 11, 15 -25 odd, 29 – 37 odd, 41, 43, 57
2.7	p.150	#5, 7, 11, 13, 17, 18
2.8	p.162	#1 – 11 odd, 21, 23, 37, 39, 43, 45

Chapter 3:

3.1	p.181	#3 – 25 odd, 29 – 37 odd, 43, 47, 51, 63, 67
3.2	p.189	#3, 5, 7, 9, 13, 17, 19, 23, 27, 33, 35, 37, 43, 45, 51
3.3	p.197	#1 – 11 odd, 15, 21, 25, 33 – 43 odd, 49
3.4	p.205	#1 – 15 odd, 23, 25, 29, 31, 33, 37, 39, 51, 63, 77, 79
3.5	p.215	#5, 7, 11, 13, 27, 37, 49, 50, 51, 57
3.6	p.223	#3 – 11 odd, 15, 17, 21, 23, 29, 31, 33, 39, 43, 45
3.7	p.233	#1, 5, 7, 9, 13, 15, 18
3.8	p.242	#3, 9, 13, 19
3.9	p.248	#1 – 15 odd, 19, 27, 33, 41
3.10	p.255	#1, 3, 7, 11, 13, 15, 17, 23, 33, 43

Chapter 4:

4.1	p.280	#3, 5, 11, 13, 17, 21, 23, 31, 33, 37, 41, 43, 47, 49, 53, 61
4.2	p.288	#1, 5, 9, 11, 13, 17
4.3	p.297	#1, 5, 9, 11, 15, 17, 19, 25, 29, 31, 33, 53
4.4	p.307	#7, 9, 11, 13, 17, 21, 25, 29, 33, 39, 45, 55, 61
4.5	p.317	#5, 9, 13, 17, 45, 47, 61, 63, 65, 67
4.6	p.324	#11
4.7	p.331	#1, 3, 5, 7, 13, 15, 17, 19, 33
4.8	p.342	#7, 11, 13, 15, 31
4.9	p.348	#1 – 17 odd, 21, 25 – 35 odd, 39, 41, 43, 49, 59, 61, 65

Chapter 5:

5.1	p.369	#5, 13, 15, 17
5.2	p.382	#3, 5, 7, 11, 33 – 41 odd, 42, 47 – 51 all, 53
5.3	p.394	#3 – 13 odd, 19 – 43 odd, 53, 57
5.4	p.403	#5 – 11 odd, 15, 21 – 37 odd, 41, 47 – 53 odd, 59, 69
5.5	p.413	#1 – 9 odd, 13, 15, 17, 21, 23, 25, 29 – 35 odd, 41, 53 -59 odd, 63, 69, 81