

Larisa Alikhanova
Fall 2010
Calculus II, Math 256, 4 credit hours

Pre-requisite: Calculus I, MAT 254
Text: Calculus by James Stewart, 6E
Supplementary
Material: TI Graphing Calculator is required.

Course Description: The course is continuation of Calculus I. The topics include: areas, volumes, transcendental functions, techniques of integration, applications of integration, parametric equations and polar coordinates, vectors and operations on vectors, sequences and series

Measurements: Quizzes, projects - 15%, each test – 20%, and final exam - 25%.

Attendance: It is very important that you attend **ALL** classes. Your attendance in the classroom, participation in classroom work /projects and preparation for each class is required and is essential to your success in the course.

Support Services: Tutorial services. Meeting with me for an extra help.

Office Hours: M and W, 3:30 p.m. – 5:30 p.m. **Room C104**
E-mail lalikhanova@trcc.commnet.edu

Disabilities

Statement: Students with disabilities, who may require special accommodations and support services, are encouraged to notify:

1. Chris Scarborough, who is coordinating services to students with disabilities.
2. The instructor during the first two weeks of class.

Course Outline, Content, and Homework (Odd numbers. This is a guide only. Assignments may vary).

Section	Topic	Exercises
5.1	Areas (review)	298/5
5.2	The definite Integral (review)	310/5,17-19,33,47, 49
5.3	The Fundamental Theorem of Calculus (review)	321/19 – 35, 69 - 73
5.4	Indefinite Integrals (review)	329/5 15, 19 - 41
5.5	The Substitution Rule (review)	339/7 – 27, 35 - 43
6.1	Areas Between Curves	352/5 – 25, 53, 55
6.2	Volumes	362/1 – 17
6.3	Volumes by cylindrical shelves	368/3 – 13, 15 – 19
6.4	Work	373/3, 5, 7, 15
6.5	Average value of the function	377/1, 3
TEST		
7.8	Indeterminate Forms and L'Hospital's Rule	478/5 – 21, 47, 49, 55
8.1	Integration by parts	493/1 – 13, 33
8.2	Trigonometric Integrals	501/1 – 29
8.3	Trigonometric Substitution	508/1 - 13
8.4	Integration of Rational Functions by Partial Fractions	517/7 – 23
8.6	Table of Integrals	529/5, 7, 17
8.7	Approximate Integration	541/8
8.8	Improper integrals	551/1, 5, 13, 21, 27,31
TEST		
10.1	Differential Equations	607/1, 3, 5
10.3	Separable Equations	622/ 1 – 7, 11 – 15
11.1	Parametric Curves	662/1 – 13, 19
11.2	Calculus with parametric curves	672/1,3, 5, 7,11,17,31,33
11.3	Polar Coordinates	683/1-5,7-11,15, 17, 21
11.4	Areas and Lengths in Polar Coordinates	689/1-9
12.1	Sequences	720/3, 59, 13, 17 - 33
12.2	Series	730/3, 11 – 17, 21, 25, 35
12.3	The integral test	739/3 -9, 15, 21
12.4	The Comparison Tests	745/3, 7, 9
12.8	Power Series	763/3 – 15
12.9	Representations of functions as Power Series	769/ 3 – 7, 11, 15
12.10	Taylor and Maclaurin series	782/5, 7, 9, 15
TEST		
13.1	Three Dimensional Coordinate System	805/1, 3, 13
13.2	Vectors	813/5-9, 13-17, 21
13.3	The Dot Product	820/3, 5, 9, 15
13.4	The Cross Product	828/1, 3, 5, 15

FINAL EXAM

Course Objectives:

Student should be able to:

1. Integrate the functions using substitution, integration by parts, the method of partial fractions, trigonometric substitutions, tables
2. Perform approximate integration
3. Show that the improper integral converges and find its value, or show that it diverges
4. Find the area bounded by the curves.
5. Find the volumes of revolution: disks, washers, and cylindrical shells.
6. Use integration on various applications to physics and engineering
7. Find general and particular solution of separable differential equations
8. Determine whether the sequence is convergent or divergent, and find the limit of the convergent sequences.
9. Determine whether the geometric series converges or diverges, and find the sum of each convergent series.
10. Use divergence test, limit comparison test, Integral test, direct comparison test to determine whether the series is convergent or divergent.
11. Represent functions as power series, Taylor and Maclaurin series
12. Plot polar-form points.
13. Convert from polar to rectangular coordinates and from rectangular coordinates to polar
14. Find areas and lengths in polar coordinates
15. Graph in polar coordinates.
16. Find the derivative of equations of curves defined by parametric equations.
17. Find the arc length of a curve defined by parametric equations.
18. Perform operations on vectors.
19. Find the standard representative of a vector.
20. Compute a resultant vector.
21. Find the dot and the cross product of two vectors.