CALCULUS II

Course Policy

Fall 2004

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MAT – 282: Calculus II: This course is a continuation of Calculus I (MAT 281) and begins with a study of numerical integration. Techniques of integration are applied to the following topics: transcendental functions, (including their derivatives), area of region between two curves, volume, integration by parts, trigonometric substitution, partial fractions, and improper integrals. Sequences and series are examined with an emphasis on determining convergence or divergence. Taylor and Maclaurin series will also be studied. Prerequisite: Grade of C or better in Calculus I (MAT 281) or placement.

Office Hours: Monday & Wednesday 10:00 – 11:15 (E- 321- O)
Tuesday& Thursday 08:30 – 09:45 (E- 321-O)

Required Course Material:

Text Book: Calculus by Roland E. Larson, Robert P. Hostetler and Bruce H. Edwards. Published by Houghton Mifflin Company, Seventh Edition.

Calculator: A graphing calculator is recommended for this course (TI-83, TI-85, TI-86)

SYLLABUS:

Attendance:

Attendance is mandatory. You are also expected to arrive on time. You are responsible for all subject matter/information presented in class. In case of extended absence such as serious illness, you are expected to call the Office of the Dean of Student Affairs so that your Instructor will be notified. In such situations arrangements for make-up must be discussed individually with your Instructor. Attendance will be recorded for every class meeting. Furthermore, poor attendance generally results in poor grades.

Objectives and Teaching Procedures:

The course objectives will be discussed at the beginning of each chapter. Your Instructor will provide you with information in the form of lectures. Further, a variety of instructional modes may be used in working these objectives. This is NOT a self-pace course.

Assignments:

A problem set will be assigned and due as specified. You are encouraged to work on the assignments with a student partner. All assignments will be graded. A total of seven assignments must be completed for this course.

Tests:

Six unit tests, a mid-exam and a final examination are required. All tests must be taken as scheduled. No make-ups are given unless arranged prior to test. Testing will be carried out only in the classroom.

Grading:

The semester grade will be a weighted average of the assignment grades (25%), the unit test grades (45%), the mid-exam grade (10%) and the final exam grade (20%). The final grade will be changed to a letter grade as described in the catalog

Chapter 4: (Section 6

Section 6: Numerical Integration

Use the Trapezoidal Rule to approximate the value of a definite integral.
Use Simpson's Rule to approximate the value of a definite integral.
Use error formulas to determine accuracy of approximations.
Solve area problems.

Chapter 5: LOGARITHMIC, EXPONENTIAL, AND OTHER TRANSCEDENTAL FUNCTIONS

Use properties of logarithms to rewrite natural log expressions.
Find the derivatives of logarithmic functions.
Use logarithmic differentiation to find dy/dx..
Find indefinite integrals for: a) algebraic and b) trigonometric functions.
Evaluate definite integrals.
Find the inverse of a given function.
Show that the function may be monotonic.
Write an exponential equation as a logarithmic equation or vice-versa.
Find the derivative of a function containing e^{u} .
Evaluate integrals containing e^{u}.
Find the derivative of a function with x as the exponent.
Use logarithmic differentiation to find dy/dx.
Solve compound interest problems.
Solve population growth problems.
Solve learning curve problems.
Express inverse trigonometric expressions in algebraic form.
Find derivatives of inverse trigonometric functions.
Evaluate integrals by completing the square if necessary.
Evaluate integrals by the application of basic integration rules.
Use substitution to evaluate an integral.

Chapter 6: Applications of Integration

Find the area of regions bounded by two or more functions.
Sketch the graph and shade the area described by a given integral.
Find the area of the region described.
Solve appropriate word problems.
Use the ***Disc Method*** and/or ***Shell Method*** for the next three objectives.
Find the volume of the solid formed by revolving a region about the x-axis.
Find the volume of the solid formed by revolving a region about the y-axis.
Find the volume of the solid formed by revolving a region about a given line.
Solve word problems involving volume.
Solve Constant Force word problems.
Solve Hook's Law word problems.
Solve pumping fluid word problems.

Chapter 7: Integration Techniques, L'Hopital's Rule, and Improper Integrals

Evaluate indefinite integrals by fitting integrands to basic rules.
Evaluate definite integrals.
Evaluate integrals by parts, if necessary.
Solve present value problems.
Evaluate integrals involving sine and cosine of the same angle.
Evaluate integrals involving sine and cosine of different angles.
Evaluate integrals involving secant and tangent.
Evaluate definite integrals involving trigonometric functions.
Evaluate integrals by choosing appropriate trigonometric substitutions.
Use linear factors in partial fractions to evaluate integrals.
Use linear and quadratic factors in partial fractions to evaluate integrals.
Solve application problems.
Evaluate integrals of the form:

a) $a + bu$
b) $(u^2 + a^2)^{(1/2)}$
c) $(a^2 - u^2)^{(1/2)}$
d) Trigonometric Functions
e) e^u
f) $\ln u$

Evaluate limits using L'Hopitals's Rule, if necessary.
Determine divergence or convergence of an improper integral.
Evaluate improper integrals that converge.

Chapter 8: Infinite Series

List the terms of a sequence
Determine whether a sequence converges or diverges.
Write a formula for the n*th* term of a sequence.
Understand the definition of a convergent infinite series.
Use properties of infinite geometric series.
Use the n*th* Term Test for divergence of an infinite series.
Use the Integral Test to determine whether an infinite series converges or diverges.
Use the Direct Comparison Test to determine whether a series converges or diverges.
Use the Limit Comparison Test to determine whether a series converges or diverges.
Use the Alternating Series Test to determine whether an infinite series converges.
Classify a convergent series as absolutely or conditionally convergent.

Proposed Schedule for Lectures:

Week		
	1	Chapter 4.6 & 5
	2	
	3	
	4	
	5	Chapter 6
	6	
	7	
	8	Chapter 7
	10	
	11	
	12	Chapter 8
	13	
	14	
	15	
	16	Final Exam Week

Tentative Test Schedule:

Unit #	Test By
1	02/04/2005
2	02/18/2005
3	03/04/2005
Mid-Sem Exam	03/11/2005
4	04/01/2005
5	04/15/2005
6	04/29/2005
Final Exam	05/17/2005