CALCULUS 2

MATH 1720.620

SPRING 2012

Instructor: Dr. J. Iaia
Office: GAB 420
Office Hours: TTH 11-1, or by appt.
Webpage: http://www.math.unt.edu/~iaia

Time: MWF 10:00-10:50
Place: WH 110
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Text: Briggs and Cochran, *Calculus*

Prerequisites: Math 1710 - Calculus 1

GRADING POLICY

Exam 1 - Feb. 10 - 16.66%

Exam 2 - Mar. 9 - 16.66%

Project - Mar. 16 - 16.66 %

Exam 3 - Apr. 13 - 16.66%

Final - May 7 - 16.66 % 8am-10am

Homework - weekly - 16.66 %

Exams: Exams **must** be taken on the dates listed above. Exceptions will be considered *only* if one has **written documentation** certifying one's absence.

Homework: Homework will be assigned each class and collected weekly. Five problems will be chosen at random and graded. Homework is extremely important and students are highly encouraged to spend a lot of time working on the homework problems.

Attendance: **Students are responsible** for **all** work assigned and announcements made during any absence.

Code of Conduct: Students are expected to be *respectful of others* at all times. This includes keeping talk and other noise to a minimum while a lecture is in progress or an exam is being taken. Any student being disruptive may be dismissed from the class meeting. **Cheating** will **not** be tolerated and anyone found guilty of cheating may receive an F for the semester.

The **Student Evaluation of Teaching Effectiveness (SETE)** is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in feedback from students, as I work to continually improve my teaching. I consider the SETE to be an important part of your participation in this class.

Students with disabilities: It is the responsibility of students with disabilities to provide the instructor with appropriate documentation from the Dean of Students Office.

Semester grades are determined by averaging the grades on the 3 exams, the project, the final exam, and the homework. Letter grades will be based on this average and will follow this scheme: **A 90- ;B 80-89; C 70-79; D 60-69; F -59**

Course Description

In this course we will study the functions e^x, $\ln(x)$, and we will also study the inverse trig functions. Next we will study infinite series and define what it means to say a series converges or diverges. We will talk about geometric series and telescoping series. We will discuss various tests which can help determine whether a series converges or diverges. These include the nth term test for divergence, the comparison and limit comparison tests, the ratio test, the root test, and the alternating series test. Next we will discuss power series and Maclaurin series. We will determine the Maclaurin series for a number of functions including e^x, $\sin(x)$, $\cos(x)$, and $\frac{1}{1-x}$. Finally we will discuss various methods of finding antiderivatives including integration by parts, partial fractions, and trig substitution.

Course Objectives

At the end of this course students should be familiar with the functions e^x, $\ln(x)$ and the inverse trig functions. This includes being familiar with the graphs of these functions as well as their derivatives and antiderivatives. Students should also be familiar with a given infinite series and whether the series converges or diverges. Students should be familiar with power series and the Maclaurin series for functions including e^x, $\sin(x)$, $\cos(x)$, and $\frac{1}{1-x}$. Finally, students should be familiar with various methods of integration including integration by parts, partial fractions, substitution, and trig substitution.

Course Outline

Meeting 1 - the natural logarithm function

Meeting 2 - the exponential function

Meeting 3 - exponentials and logarithms with different bases

Meeting 4 - inverse trig functions and their derivatives

Meeting 5 - continuation of inverse trig functions

Meeting 6 - functions and their inverses

Meeting 7 - L'Hopital's Rule

Meeting 8 - first order differential equations

Meeting 9 - growth and decay

Meeting 10 - review for exam 1

Meeting 11 - exam 1

Meeting 12 - limits of sequences

Meeting 13 - infinite series, geometric series

Meeting 14 - nth term test for divergence, integral test

Meeting 15 - comparison test and limit comparison test

Meeting 16- ratio and root test

Meeting 17 - alternating series test

Meeting 18 - absolute and conditional convergence

Meeting 19 - power series, interval of convergence

Meeting 20 - differentiation and integration of infinite series

Meeting 21 - Maclaurin and Taylor series

Meeting 22 - review for exam 2

Meeting 23 - exam 2

Meeting 24 - continuation of Maclaurin and Taylor series

Meeting 25 - estimating the error term in Maclaurin and Taylor series

Meeting 26 - explanation of project about infinite series

Meeting 27 - substitution and integration by parts

Meeting 28 - continuation of integration by parts

Meeting 29 - partial fractions

Meeting 30 - continuation of partial fractions

Meeting 31 - continuation of partial fractions

Meeting 32 - trig substitution

Meeting 33 - continuation of trig substitution

Meeting 34 - review for exam 3

Meeting 35 - exam 3

Meeting 36 - improper integrals

Meeting 37 - other techniques of integration

Meeting 38 - applications of power series

Meeting 39 - continuation of application of power series

Meeting 40 - continuation of application of power series

Meeting 41 - estimating the error term for some infinite series

Meeting 42 - estimating the error term for some alternating series

Meeting 43 - review for final exam

Meeting 44 - final exam