SYLLABUS: Math 163 **Don Faust**

The Calculus provides, fundamentally, solutions to two problems: the development of a fruitful concept of the slope of a curve at a point on the curve; and, the development of a fruitful concept of the area bounded by a curve. After two millennia of struggle with these problems, solutions were basically constructed by the seventeenth century. But possibly what makes the Calculus so central to mathematics (and to the wide range of disciplines which make daily use of mathematics) is the great number and variety of ways which have been found in the last three hundred years, and which are continuing to be found, to make productive use of these solutions in successfully attacking many practical problems.

In your first semester of the Calculus sequence, you looked carefully at the concept of the derivative (which addresses the first problem) and the concept of the integral (which addresses the second problem), and began to see how these concepts provide powerful problem-solving tools.

In your second semester of the Calculus sequence, you will extend the family of functions, and the toolbox of techniques, to which these concepts of derivative and integral can be applied. Further, especially driven by the problem of the lack of certain definite integrals, you will learn about the machinery of infinite series, how to represent a function f(x) by a power series s(x) (where, for each x, s(x) is an infinite series), and how to use the Taylor Theory of these power series to generate approximations which attack this problem.

More generally, the following broad perspective may be helpful to you. The fundamental tools of continuous mathematics provide a rich storehouse of models for the representation and solution of many problems. Making intelligent use of these models involves both (1) developing a facility for analyzing problems and casting them in ways which, where appropriate, make good use of these models of mathematics, and (2) developing a facility for working with these models themselves. Our course will take us through a representative sample of these tools of mathematics, and will concentrate on both aspects (1) and (2) delineated above. It can be a very exciting journey (if your involvement is sincere and includes both good class attendance and a parallel daily commitment to hammering things out on your own through daily study and problem-solving), at the end of which you will find not

only that your mathematical maturity has been substantially enriched, but also that the general analytical skills you bring to bear in the broader arena of your daily professional and personal life will be substantially enriched as well.

Text: CALCULUS by Stewart et al

Evaluation:

Firstly, in addition to ungraded daily assignments, there will be a sequence of graded SUBMITTED ASSIGNMENTS which can be resubmitted repeatedly until satisfactory.

Secondly, there will be four mid-semester exams and a final exam. Only very exceptional circumstances could justify missing an exam; in these rare cases, permission must be requested in advance, and a make-up exam **(**usually oral) will be arranged for later in the semester.

The evaluation framework is as follows (please note especially the dates, already fixed, when the four mid-semester exams will take place):

Exam 1:	Wed	12 Feb	150 points
Exam 2:	Wed	12 Mar	150 points
Exam 3:	Wed	2 Apr	150 points
Exam 4:	Wed	16 Apr	150 points
Final Exam:			350 points
Submitted Assignments:			
to be submitted en masse on			
Fri 18 Apr for grade recording			50 points
		Total:	1000 points

Grading: 90-100%, A; 80-89%, B; 70-79%, C; 60-69%, D; 0-59%, F. The grading may be less stringent, but not more stringent, than this.

Note regarding special needs:

If you have a need for any disability-related accommodations or services, please inform the Coordinator of Disability Services Office in 405 Cohodas (227-1550). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and university guidelines.