Math 191
Calculus and Analytic Geometry I
Spring 1998

Instructor: Dr. Patrick Morandi, WH 222, 646-2126 (Math dept: 646-3901), email: pmorandi.

Time and Location: T, Th 11:45 - 1:00, Science Hall 108.

	Tuesday	10:30 - 11:30
Office Hours:	Wednesday	12:00 - 1:30
	Thursday	1:30 - 3:00.

Textbook: Calculus and Analytic Geometry, 4th ed., Sherman K. Stein.

Material: Chapters 1, 2, 3, 4, 5 and 6 up to 6.4.

This course is an introduction to differential and integral calculus. The origins of calculus began over 2000 years ago in the time of the Greeks, who were interested in (among other things) areas and tangents. However it was not until Newton developed the essentials of calculus in the mid seventeenth century that the problems of finding areas of general shapes and finding tangents to curves were seen to be related. While Newton (and independently Leibniz) developed calculus in only a few years, it was not until the mid nineteenth century that calculus was put on the solid foundation that we know today. Applications of calculus include virtually every area of science along with business and economics.

Grading: There will be weekly assignments, a midterm exam and a final. They will count toward the grade as follows.

Assignments	60%
Midterm	15%
Final	25%.

Exams: The midterm exam will be on Thursday, February 27. The final exam is on Monday, May 4 from 3:30 to 5:30 p.m. This time is common to all 191 sections and is unchangeable.

In addition to these exams there will be a Differentiation Skills Exam (DSE) administered by the testing center. After you learn basic techniques of differentiation near the beginning of the semester, you will be ready to take the DSE. To pass the course you **MUST** pass this mastery exam by the deadline of April 6. If you have not passed the exam by this deadline, you will not pass the course, regardless of any of your other work. The DSE does not affect the grade you receive in the course, which will be determined by your other work. It is simply a basic calculational skills requirement for passing the course. The exam consists solely of routine differentiation calculations, and you must do perfect work on a calculation to receive credit for it. You must answer 9 out of 10 questions perfectly in order to pass the mastery exam. You may retake different versions of the exam a number of times if you need to in order to master these skills. Further information about the exam will be provided later.

You must also take the DSE at least once by the withdrawal date of March 6. Failure to do so will result in you being automatically dropped from the course. You are offered a special bonus for completing the exam in a timely fashion: up until March 6, only 8 questions need to be answered correctly to pass! After this date, up to the final deadline of April 6, passing the exam requires 9 questions perfectly correct.

Description of the Course

The course will be centered around several main topics covering the notion of function, continuity, derivatives with applications, the basics of integration and exponential and logarithmic functions with applications. Most every week a new assignment will be introduced on Thursday's class meeting. The assignment will include work for the following week usually consisting of a reading assignment and culminating in a written assignment to be handed in by Friday afternoon. The first assignment will be done individually and the other assignments will be done in groups of 3 or 4 students. Each group will turn in one write-up.

The purpose of written homework in this course is to develop skills in understanding and communicating mathematics. It is not to give you busy work or drill. Don't think of your homework paper as a certificate proving that you have done the assignment. Think of it as an exercise in learning and in reporting what you have learned. There is a lot of truth in the statement *if you can't explain it, you don't understand it.* Communicate with the reader. Don't write to the instructor (who already knows how to do the problems), but explain your solutions to someone who needs help, perhaps a classmate who has been sick. Start at the beginning and be clear, logical and complete. The ultimate test of what you write is this: can someone learn from your paper? Easily? Remember, the reader will see only what you wrote, not what you meant to say. So it must all be there, and be accurate. Make your paper reader friendly. We will talk some about this in class.

Class time will be divided between lecture, group work and group directed discussion. Since assignments will include reading assignments, the lecture will serve to elaborate on and clarify the readings. You will be expected to complete the reading assignment by the first class meeting of each week, where you often will either have to hand in a paragraph about the reading, write such a paragraph at the start of class or have a short quiz on the reading. During group directed discussion, you will be expected to report on your group's progress/difficulties and ask questions about the material on the assignment.

The purpose of working in groups is twofold. First, by sharing ideas you will be able to learn from each other, allowing you to clarify what you get out of the lecture and reading. Second is to get you accustomed to working with other people, a likely situation in your future jobs. The goal for an assignment is to get each group member to understand the entire assignment. Frequently a major part of an assignment will be to summarize the various components. In order to do this you will need to understand the entire assignment. Therefore you should not divide the problems among your group members, but have each person work on each part and discuss what you come up with.