San Francisco State University
Department of Mathematics
Course Syllabus

MATH 226
Calculus I

Prerequisites

MATH 109 with a grade of C or better.

Bulletin Description

The first semester of Calculus: limits, continuity, derivatives, rules of differentiation, applications of differentiation, optimization, L'Hospital's rule, curve sketching, integration, the Fundamental Theorem of Calculus.

Course Objectives

Students entering Calculus I should have a firm grasp of algebra and trigonometry. They should be able to graph elementary functions and solve both linear equations and inequalities.

The main objective of Calculus I is for students to learn the basics of the calculus of functions of one variable. They will study transcendental functions, limits, differentiation and an introduction to the Riemann integral, culminating with the Fundamental Theorem of Calculus. They will also apply these ideas to a wide range of problems that include the equations of motion, related rates, curve sketching and optimization. The students should be able to interpret the concepts of Calculus algebraically, graphically and verbally.

More generally, the students will improve their ability to think critically, to analyze a problem and solve it using a wide array of tools. These skills will be invaluable to them in whatever path they choose to follow, be it as a mathematics major or in pursuit of a career in one of the other sciences.

Upon successful completion of the course, students should be able to

- Calculate limits
- Calculate derivatives of complicated functions
- Apply differentiation to problems such as related rates, graphing and optimization
- Compute basic integrals

Evaluation of Students

Students will be evaluated on their ability to devise, organize and present complete solutions to problems. While instructors may design their own methods of evaluating student performance, these methods must include in-class examinations, frequent homework assignments and a final exam.

Course Outline

Topics	Number of Weeks
Exponential and Logarithmic Functions	1
Limits and Derivatives	3.5
Rules of Differentiation	4
Applications of Differentiation	4.5
Integration	2

Textbooks and Software

Calculus: Early Transcendentals, by James Stewart, 4th Edition.

Submitted by: Alex Schuster Date: May 7, 2003