

**San Jose State University
Department of Mathematics**

MATH 071

Calculus for Business and Aviation

Catalog Description

Functions and graphs, limits, continuity, differentiation, integration, partial differentiation. Emphasis on business and economics applications. 3 units

Prerequisites

Satisfaction of the ELM requirement. A satisfactory score on the Calculus Placement Exam, or a grade of 'C-' or higher in MATH 008, or a SAT Math score of 550 or higher, or an ACT Math score of 23 or higher. Note: For students who pass this course with a grade of "C" or better ("C-" not accepted), Area B4 will be waived.

Grading

Normal Grade Rules

Text book

College Algebra and Calculus: An Applied Approach, Larson & Hodgkins, Brooks/Cole. (This book is also being used for Math 8) . A special custom paperback edition of this text titled College Algebra and Applied Calculus at SJSU, bundled with an Enhanced WebAssign access card, will be available in the SJSU bookstore.

Course Objectives

Computing interest and learning about limits, continuity, and derivatives of polynomials, rational functions, exponential and logarithmic functions. Using derivatives in applications to business and other fields. Also learning about integrals of functions and methods of integration such as the substitution rule. In addition students will learn about functions of several variables, their partial derivatives and Lagrange multipliers. In addition the student will learn about probability distributions.

Student Outcomes

A student should be able to:

1. Use the properties of exponential functions and logarithms
2. Compute simple, compound and continuous interest
3. Explain the meaning of the limit of a function.
4. Compute limits.
5. Find derivatives of functions.
6. Use the concept of the derivative in applications and to be able to solve problems on maxima and minima
7. Evaluate integrals using substitutions.
8. Compute partial derivatives.
9. Use Lagrange multipliers to find the extreme values of functions of several variables.
10. Understand probability density functions, properties of various continuous distributions including the mean and variance and CDF.

Outcome Assessment

Two or three exams and a **comprehensive** final should be given. Numerous homework problems should be assigned. Homework may be graded or quizzes should be given.

Topics and suggested time outline

<u>Sections in Text</u>	<u>Topics</u>	<u>Weeks</u>
1.2	Mathematical Modeling - Simple Interest	1/2
4.1 – 4.3	Exponential and Logarithmic Functions Compound and Continuous Interest	1
7.1-7.7	Limits and Derivatives.	3
8.2-8.5	Uses of Derivatives in Mathematics	1.5
9.1- 9.2	Applications of Derivatives	1.5
10.1-10.5	Derivatives of Exponential and Logarithmic Functions	1
11.1-11.4 11.5	Integration with Applications Optional	2
13.1-13.4,13.6	Partial derivatives. Lagrange Multipliers 13.2 (discuss planes only) 13.3 (discuss briefly)	2
16.3-16.4	Probability Distributions (Students will print the material from the web)	1
	Exams and Quizzes	1.5

Total time: 15 weeks

PLEASE PUT ON THE GREEN SHEET FOR THIS COURSE:

Students who intend to use this course to satisfy the Mathematical Concepts requirement for General Education must earn a C or higher grade.

NOTE TO INSTRUCTORS: Since a C indicates a minimal competence to continue or meet a requirement, and a C- indicates that the student performance is so low that the course should be repeated, your grading standards should reflect these judgments. Never change a grade from C- to C because the student "needs" the C. Your chair will not approve such changes and may ask for documentation of "clerical errors."

It is important in this course to cover interest, continuous probability distributions, and Lagrange Multipliers.

The text contains some difficult problems that are intended for math majors. Be aware of the type of problems you assign.