



LAM FAMILY
COLLEGE of BUSINESS
SAN FRANCISCO STATE UNIVERSITY

San Francisco State University
Lam Family College of Business
Undergraduate Curriculum Committee

DS 110 – Calculus with Business Applications
Undergraduate Curriculum Committee Course Outline

I. COURSE NUMBER and TITLE: Calculus with Business Applications

II. COURSE DESCRIPTION: *Prerequisite: Satisfactory completion of ELM requirement.* Basic quantitative reasoning and employment of fundamental mathematical principles to solve business problems. Elements of calculus, mathematics of finance, and decision-making. (Formerly BA 110)

III. EFFECTIVE DATE: Spring 2009

IV. COURSE OBJECTIVES: After successfully completing this course, the student should possess:

- A. Problem solving abilities using the content of the business environment. This includes both the critical thinking involved in the analysis of business problems (*e.g.*, ability to parse “word problems”) as well as the quantitative reasoning needed to identify potential solutions.
- B. Working knowledge of specific topics often required to solve business problems, such as:
 - 1. Prerequisite algebraic concepts
 - 2. Linear models and their usage
 - 3. Nonlinear functions commonly found in business
 - 4. Average and instantaneous rates of change (derivatives)
 - 5. Concepts related to the time value of money

V. COURSE CONTENT: (15 weeks)

- A. Review of Prerequisite Mathematics (3 weeks)
- B. Basic Differential Calculus: (9 weeks)
 - 1. Differentiation of polynomial, exponential, logarithmic, rational and composite functions
 - 2. Applications of differential calculus to optimization and marginal analysis problems
- C. The Mathematics of Finance: (3 weeks)
 - 1. Simple and compound interest
 - 2. Future and present value of an annuity
 - 3. Sinking funds and amortization
 - 4. Net present value and internal rate of return

VI. PREREQUISITE KNOWLEDGE: The student should possess mathematics skills equivalent to those normally acquired in two years of high school algebra.

VII. TEACHING METHODS and MATERIALS:

METHODS: Class discussion, problem solving, computer-based activity, and homework.

TEXTS: Lial, Hungerford & Holcomb, Mathematics with Applications, Pearson (2007);

Soo Tan, Calculus for the Managerial, Life, and Social Sciences, Cengage (2007).

VIII. GRADING: Examinations, quizzes, homework assignments.