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);

VIII. **GRADING:** Examinations, quizzes, homework assignments.