

**Miami-Dade Community College**  
**MAC 2233 Business Calculus**

Course Description: This is a survey of differential and integral calculus. Topics include: Limits; continuity; differentiation and integration of polynomial, logarithmic and exponential functions; applications to business, life sciences, and social sciences. (3 hrs. lecture)

Pre-requisite: MAC 1105 with a grade of C or better or equivalent

Course Competencies:

Competency 1: The Student will demonstrate knowledge of limits by:

- a. Evaluating limits of algebraic, logarithmic, and exponential functions,
- b. Determining where a function is continuous or discontinuous.

Competency 2: The Student will demonstrate knowledge of differentiation of algebraic, logarithmic, and exponential functions by:

- a. Applying the fundamental rules of differentiation,
- b. Using derivatives to find the slope of a tangent line,
- c. Applying the chain rule for differentiation,
- d. Using implicit differentiation.

Competency 3: The Student will demonstrate knowledge of curve sketching of algebraic, logarithmic, and exponential functions by:

- a. using the first derivative to determine the intervals of increase or decrease as well as the relative extrema,
- b. using the second derivative to determine the concavity of functions,
- c. applying the second derivative test to determine absolute maxima and minima.
- d. using calculus to draw the graphs of functions.

Competency 4: The Student will demonstrate knowledge of applications of derivatives by:

- a. Solving rate of change problems,
- b. Solving optimization problems,
- c. Using differentials to approximate the change in functions,
- d. Solving problems involving marginal analysis,
- e. Solving problems involving related rates.

Competency 5: The Student will demonstrate knowledge of integration of algebraic, logarithmic, and exponential functions by:

- a. Applying the fundamental rules of integration,
- b. Using substitution to find indefinite integrals,
- c. Evaluating definite integrals,
- d. Using definite integrals to find areas between curves.