

ROWAN UNIVERSITY  
Department of Mathematics

Syllabus

**Math 03.125 - Calculus Techniques and Applications**

**CATALOG DESCRIPTION:**

**Math 03.125 Calculus Techniques and Applications 3 s.h.**

**Prerequisites:** Math 01123 or Math 01124 or 60 on the CLM exam

Introduces students to the techniques of differential and integral calculus. Emphasis is placed on practical applications of limits, derivatives and integrals with business applications highlighted. This course also provides experience with and information about the significance and specific uses of the calculus in today's world. A graphing calculator is required.

**OBJECTIVES:**

This course serves general education, technology, business, and economics students in achieving the following objectives.

1. To develop the concepts of the limit, derivative and antiderivative of a function, and also of the definite integral.
2. To consider applications, and particularly business applications of the derivative and definite integral.
3. To provide information on the significance of Calculus in today's world.

**CONTENT:**

1. Functions
  - 1.1 Functional Notation
  - 1.2 Straight Line and Slopes
  - 1.3 Limits
2. Differentiation
  - 2.1 Definition of the Derivative
  - 2.2 Rules for Differentiation
  - 2.3 Special methods of Differentiation
  - 2.4 Derivatives of special functions
  - 2.5 Higher derivatives

3. The interpretation of the derivative as a rate of change, applications of time rates, related rates and percentage changes.

4. Applications Involving Maxima and Minima

5. Integration

5.1 Anti-differentiation

5.2 The Definite Integral

5.3 Area Under the Curve

5.4 Volumes

5.5 Applications Involving Integration

6. Additional Applications to Various Disciplines and Fields of Study.

**POSSIBLE TEXTBOOK(S):**

- Applied Calculus for the Managerial, Life, and Social Sciences (A Brief Approach), 10<sup>th</sup> Ed, Soo Tan, Cengage.
- Applied Calculus, Hughes-Hallett, Gleason, Lock, Flath, et al., 4<sup>th</sup> Ed., Wiley