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: C- or better in Math 01.122 (Pre-Calculus), Math 01.123 (College Algebra) or Math 01.124 (Reasoning with Functions); or at least a 60 on the CLM exam

This course introduces students to the differential and integral calculus. Emphasis is placed on the practical use of limits, derivatives and integrals in various areas, with business applications highlighted. It is also intended to provide students with experience and information about the significant utilization 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 important concepts in Calculus, such as the limit, derivative and antiderivative of a function, and 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 Lines 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. **Derivative as a Rate of Changes**
   - 3.1 Applications of time rates
   - 3.2 Related rates
   - 3.3 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), 10th Ed, Soo Tan, Cengage.
- Applied Calculus, Hughes-Hallett, Gleson, Lock, Flath, et al., 6th Ed., Wiley

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