MTH 141 - CALCULUS I

Course Description

This is the first course in a traditional calculus sequence, emphasizing the development of the mathematical thought process. The topics covered include limits (definitions and limit proofs), continuity, derivatives of algebraic and trigonometric functions, applications of the derivative, the indefinite and definite integral, the fundamental theorem of calculus, and applications of integration. Group 1 course.

Credit Hours

5

Contact Hours

5

Lecture Hours

5

Required Prerequisites

A grade of 2.0 or better in MTH 122 or higher (excluding MTH 131) or appropriate placement.

Recommended Prerequisites or Skills Competencies

Placement into ENG 111

General Education Outcomes supported by this course

Quantitative Reasoning

Course Learning Outcomes

Knowledge:

- Show proper usage of function notation, The Mean Value Theorem, The Intermediate Value Theorem, and The Fundamental Theorem of Calculus.
- Determine the proper usage of mathematical terminology and symbolization associated with: limits, continuity, differentiation and integration involving algebraic and trigonometric functions.
- Use procedures to: evaluate and verify limits, determine continuity and differentiability of functions, differentiate products, quotients and compositions of functions, evaluate definite and indefinite integrals, differentiate implicitly, and relate graphs to functions and their derivatives.

Application:

- Solve optimization and related rate problems.
- Use the integral to find areas, volumes and other applications.
- Discern between the usage of differentiation and integration.

Integration:

- Apply mathematical modeling to solve real world problems.
- Interpret the solution in the context of the problem and justify the results.

Human Dimension:

- Strive to improve areas of mathematical weakness based on feedback.
- Collaborate with peers during group work.

Caring - Civic Learning:

- Recognize the impact mathematics plays in civic situations such as politics, education and income.

Learning How to Learn:

- Relate mathematical skills to real-life situations.