

MTH 142 - CALCULUS II

Course Description

This course is a continuation of Calculus I. The topics include differentiation and integration involving exponential, logarithmic, and inverse trigonometric functions. There is an introduction of various integration methods. L'Hospital's Rule, improper integrals, parametric equations, polar coordinates, and infinite sequences and series are also investigated. Group 1 course.

Credit Hours

5

Contact Hours

5

Lecture Hours

5

Required Prerequisites

A grade of 2.0 or better in MTH 141 or equivalent.

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 Fundamental Theorem of Calculus, L'Hospital's Rule, Polar coordinates, integration techniques and tests for convergence.
- Determine the proper usage of mathematical terminology and symbolization associated with: differentiation and integration of algebraic, trigonometric, inverse trigonometric, exponential and logarithmic functions, limits, sequences, series, polar coordinates, parametrization.
- Use procedures to: evaluate limits using L'Hospital's Rule, evaluate definite, indefinite and improper integrals, define relations in parametric form, convert between polar and rectangular coordinates, and represent functions as infinite series.

Application:

- Use integrals to find volumes, centroids, arc length, fluid force, and surface area.
- Apply convergence tests to determine behavior of infinite series.
- Apply calculus concepts to infinite series representations of functions.

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.