

Math 2414 Calculus II Course Document

Credit Hours

Four semester hours

Transferability

This course should transfer to all four year colleges and degree programs. If you are concerned about the transferability of this course you should contact the counseling center or the college / university to which you will transfer.

Prerequisites

Math 2413 Calculus I or Instructor / Departmental Approval

Course Description

Differentiation and integration of exponential and logarithmic functions, techniques of integration, applications of the definite integral, the calculus of transcendental functions, parametric equations, polar coordinates, indeterminate forms, improper integrals, L'Hôpital's Rule, sequences and series. The student may elect to include a technology lab component at some colleges.

Materials

Required Textbook and Scientific Calculator (Graphing Calculator Recommended)

Learning Outcomes

- Differentiate and integrate logarithmic, exponential, hyperbolic and inverse trigonometric functions.
- Use basic techniques of integration.
- Apply integration to solve additional real world problems.
- Evaluate improper integrals.
- Apply L'Hôpital's Rule to evaluate limits of indeterminate forms.
- Use differentiation and integration to explore parametric equations and polar coordinates.
- Apply various tests to determine convergence or divergence of infinite series.
- Represent functions using infinite series and determine Taylor Series representations of functions as well as the radius of convergence of these representations.

Textbook Sections

Calculus

James Stewart, 6th Edition

Thomson Brookes Cole

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- 7.1 Inverse Functions
- 7.2 Exponential Functions and Their Derivatives
- 7.3 Logarithmic Functions
- 7.4 Derivatives of Logarithmic Functions
- 7.5 Inverse Trigonometric Functions
- 7.6 Hyperbolic Functions
- 7.7 Indeterminate Forms and L'Hopital's Rule
- 8.1 Integration by Parts
- 8.2 Trigonometric Integrals
- 8.3 Trigonometric Substitutions
- 8.4 Integration Rational Functions & Partial Fractions
- 8.5 Strategy for Integration
- 8.6 Integration Using Tables
- 8.7 Approximate Integration (optional)
- 8.8 Improper Integrals
- 10.4 Exponential Growth and Decay
- 12.1 Sequences
- 12.2 Series
- 12.3 The Integral Test and Estimates of Sums
- 12.4 The Comparison Theorems
- 12.5 Alternating Series
- 12.6 Absolute Converge and the Ratio and Root Tests
- 12.7 Strategy for Testing Series
- 12.8 Power Series
- 12.9 Representation of Functions as Power Series
- 12.10 Taylor and Maclaurin Series
- 12.11 Binomial Series
- 12.12 Applications of Taylor Polynomials
- 11.1 Curves Defined by Parametric Equations
- 11.2 Calculus with Parametric Equations
- 11.3 Polar Coordinates
- 11.4 Areas and Lengths in Polar Coordinates