

CALCULUS II

Math 1960

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1.0 Course Description

- 1.1 **Overview of Content and Purpose:** Techniques of integration, indeterminate forms, infinite series, applications of integration and vectors in the plane.
- 1.2 **For Whom Intended:** Science, math, computer science, and engineering majors, or anyone requiring the topics covered.
- 1.3 **Prerequisites:** MATH 1950

2.0 Objectives: The second semester of three semesters of calculus. This semester emphasizes techniques of integration, applications of integration, sequences and series, and vectors in the plane. Students are introduced to MAPLE as a tool in this course.

3.0 Content and Organization:

Applications of the Integral

- 1. Volumes
- 2. Arc Length
- 3. Work
- 4. Centers of Mass
- 5. Hydrostatic force

Techniques of Integration

- 1. Integration by parts
- 2. Trigonometric integrals
- 3. Trigonometric substitution
- 4. Partial Fractions
- 5. Numerical integration
- 6. Improper integrals

Sequences and Series

- 1. Sequences and iterates of functions
- 2. Series and convergence tests
- 3. Power series and Taylor's Series
- 4. Binomial series

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Vectors in the plane

1. Vector algebra operations
2. Dot Products
3. Vector-values functions
4. Projectile motion
5. Polar Coordinates and graphs
6. Calculus of polar curves

4.0 Teaching Methodology:

Methods to be used: Traditional lecture-discussion in sections not exceeding 50 students.

Contact hours: 5 hour course

5.0 Evaluation: Usually 4-5 test, MAPLE projects, and comprehensive final exam. Homework and projects may be included in the evaluation.

6.0 Textbook(s) or other required readings: Anton, Bivens, Davis' Calculus Early Transcendentals, 8th Edition, Wiley & Sons, Inc, 2005. ***NOTICE** - 1960 will cover chapter 7-11, omitting 9.2 & 9.4, including 5 MAPLE projects.