

Course Syllabus

Text: “Calculus”, by James Stewart, 5th edition, Brooks/Cole Publishing

The following sections from the text will be covered:

Parametric Equations and Polar Coordinates

11.1 Curves Defined by Parametric Equations

11.2 Calculus with Parametric Curves

11.3 Polar Coordinates

11.4 Areas and Lengths in Polar Coordinates

Vectors and the Geometry of Space

13.1 Three Dimensional Coordinate Systems

13.2 Vectors

13.3 The Dot Product

13.4 The Cross Product

13.5 Equations of Lines and Planes

13.6 Cylinders and Quadratic Surfaces

13.7 Cylindrical and Spherical Coordinates

Vector Functions

14.1 Vector Functions and Space Curves

14.2 Derivatives and Integrals of vector Functions

14.3 Arc Length and Curvature

14.4 Motion in Space: Velocity and Acceleration

Partial Derivatives

15.1 Functions of Several Variables

15.2 Limits and continuity

15.3 Partial Derivatives

- 15.4 Tangent Planes and Linear Approximations
- 15.5 The Chain Rule
- 15.6 Directional Derivatives and the Gradient Vector
- 15.7 Maximum and Minimum Values
- 15.8 Lagrange Multipliers

Multiple Integrals

- 16.1 Double Integrals over Rectangles
- 16.2 Iterated Integrals
- 16.3 Double Integrals over General Regions
- 16.4 Double Integrals in Polar Coordinates
- 16.5 Applications of Double Integrals
- 16.6 Surface Area
- 16.7 Triple Integrals
- 16.8 Triple Integrals in Spherical and Cylindrical Coordinates
- 16.9 Change of Variables in Multiple Integrals

Vector Calculus

- 17.1 Vector Fields
- 17.2 Line Integrals
- 17.3 The Fundamental Theorem of line Integrals
- 17.4 Green's Theorem
- 17.5 Curl and Divergence
- 17.6 Parametric Surfaces and their Areas
- 17.7 Surface Integrals
- 17.8 Stokes' Theorem
- 17.9 The Divergence Theorem