

University of Houston
Department of Mathematics
Math 2433

Text: *CALCULUS, 9th edition* . Authors: Salas, Hille, Etgen. Publisher: John Wiley & Sons, Inc.

Text is in [electronic form](#).

[Exam Calendar](#)

Homework Assignments: [html pdf](#)

Syllabus

Chapter 12. VECTORS

- Section 12.1 Cartesian Space Coordinates
- Section 12.2 Displacements and Forces
- Section 12.3 Vectors
- Section 12.4 The Dot Product
- Section 12.5 The Cross Product
- Section 12.6 Lines
- Section 12.7 Planes

Chapter 13. VECTOR CALCULUS

- Section 13.1 Vector Functions
- Section 13.2 Differentiation Formulas
- Section 13.3 Curves
- Section 13.4 Arc Length
- Section 13.5 Curvilinear Motion; Curvature

EXAM I

Chapter 14. FUNCTIONS OF SEVERAL VARIABLES

- Section 14.1 Elementary Examples
- Section 14.2 A Brief Catalogue of Quadric Surfaces; Projections
- Section 14.3 Graphs; Level Curves and Level surfaces
- Section 14.4 Partial Derivatives
- Section 14.5 Open and Closed Sets
- Section 14.6 Limits and Continuity; Equality of Mixed Partial

Chapter 15. GRADIENTS; EXTREME VALUES; DIFFERENTIALS

- Section 15.1 Differentiability and Gradient
- Section 15.2 Gradients and Directional Derivatives
- Section 15.3 The Mean-Value Theorem; Chain Rules
- Section 15.4 The Gradient as a Normal; Tangent Lines and Tangent Planes
- Section 15.5 Local Extreme Values
- Section 15.6 Absolute Extreme Values
- Section 15.7 Maxima and Minima with Side Conditions
- Section 15.8 Differentials
- Section 15.9 Reconstructing a Function from its Gradient

EXAM II

Chapter 16. DOUBLE AND TRIPLE INTEGRALS

- Section 16.2 The Double Integral
- Section 16.3 The Evaluation of Double Integrals by Repeated Integrals
- Section 16.4 Double Integrals in Polar Coordinates
- Section 16.6 Triple Integrals
- Section 16.7 Reduction to Repeated Integrals
- Section 16.8 Triple Integrals in Cylindrical Coordinates
- Section 16.9 The Triple Integral as a Limit of Riemann Sums; Spherical Coordinates
- Section 16.10 Jacobians; Changing Variables in Multiple Integration

Chapter 17. LINE INTEGRALS AND SURFACE INTEGRALS

- Section 17.1 Line Integrals
- Section 17.2 The Fundamental Theorem for Line Integrals
- Section 17.3 Work-Energy Formula; Conservation of Mechanical Energy
- Section 17.4 Line Integrals with Respect to Arc Length
- Section 17.5 Green's Theorem

EXAM III