Tentative Outline

Chapter 12: Vectors and the Geometry of Space
12.1: Three-Dimensional Coördinate Systems
12.2: Vectors
12.3: The Dot Product
12.4: The Cross Product
12.5: Equations of Lines and Planes
12.6: Cylinders and Quadric Surfaces

Chapter 13: Vector Functions
13.1: Vector Functions and Space Curves
13.2: Derivatives and Integrals of Vector Functions
13.3: Arc Length and Curvature
13.4: Motion in Space: Velocity and Acceleration

Chapter 14: Partial Derivatives
14.1: Functions of Several Variables
14.2: Limits and Continuity
14.3: Partial Derivatives
14.4: Tangent Planes and Linear Approximations
14.5: The Chain Rule
14.6: Directional Derivatives and the Gradient Vector
14.7: Maximum and Minimum Values
14.8: Lagrange Multipliers

Chapter 15: Multiple Integrals
15.1: Double Integrals over Rectangles
15.2: Double Integrals over General Regions
15.3: Double Integrals in Polar Coördinates
15.4: Applications of Double Integrals
15.5: Surface Area
15.6: Triple Integrals
15.7: Triple Integrals in Cylindrical Coördinates
15.8: Triple Integrals in Spherical Coördinates
15.9: Change of Variables in Multiple Integrals

Chapter 16: Vector Calculus
16.1: Vector Fields
16.2: Line Integrals
16.3: The Fundamental Theorem for Line Integrals
16.4: Green's Theorem
16.5: Curl and Divergence
(16.6: Parametric Surfaces and Their Areas — optional)
16.7: Surface Integrals
16.8: Stokes' Theorem
16.9: The Divergence Theorem
16.10: Summary