Math 10A, <u>Vector Calculus</u>, by Susan Colley

Chapter 1, Vectors (6 lectures)
1.1 Vectors in Two and Three Dimensions
1.2 More about Vectors
1.3 The Dot Product
1.4 The Cross Product
1.5 Equations for Planes: Distance Problems
1.6 Some n—dimensional Geometry
1.7 New Coordinate Systems

Chapter 2, Differentiation in Several Variables (9 lectures)
2.1 Functions of Several Variables; Graphing Surfaces
2.2 Limits
2.3 The Derivative
2.4 Properties (of Derivatives); Higher order Partials
2.5 The Chain Rule
2.6 Directional Derivatives and the Gradient

Chapter 3, Vector Valued Functions (6 lectures)
3.1 Parameterized Curves
3.2 Arclength
3.3 Vector Fields, An Introduction
3.4 Gradient, Divergence, Curl, and the Del Operator

Chapter 4, Maxima and Minima in Several Variables (6 lectures)
4.1 Differentiation and Taylor's Theorem
4.2 Extrema of Functions
4.3 Lagrange Multipliers

Note—Instructors are urged to consider assigning a substantial number of the true/false problems that appear as a separate section at the end of each chapter.

The following "optional" parts of sections have been "left out"

"2.4 Newton's Method", "3.1--Kepler's Laws", "3.2--Differential Geometry"

The following "optional section" has been "left out"

4.4 Some Applications of Extrema