MATH 2242 (Calculus IV) Course Outline

- 1.2 The Inner Product, Length, and Distance
- 1.3 Matricies, Determinants, and the Cross Product
- 1.4 Cylindrical and Spherical Coordinates
- 1.5 n-Dimensional Euclidean Space
- 2.1 The Geometry of Real-Valued Functions
- 2.3 Differentiation
- 2.4 Introduction to Paths and Curves
- 2.5 Properties of the Derivative
- 2.6 Gradients and Directional Derivatives
- 3.2 Taylor's Theorem
- 4.1 Acceleration and Newton's Second Law
- 4.2 Arc Length
- 4.3 Vector Fields
- 4.4 Divergence and Curl
- 5.3 The Double Integral Over More General Regions
- 5.4 Changing the Order of Integration
- 5.5 The Triple Integral
- 6.1 The Geometry of Maps from $\mathbb{R}^2$ to $\mathbb{R}^2$
- 6.2 The Change of Variables Theorem
- 7.1 The Path Integral
- 7.2 Line Integrals
- 7.3 Parametrized Surfaces
- 7.4 Area of a Surface
- 7.5 Integrals of Scalar Functions Over Surfaces
- 7.6 Surface Integrals of Vector Fields

- 8.1 Green's Theorem
- 8.2 Stokes' Thoerem
- 8.3 Conservative Fields
- 8.4 Gauss' Theorem