



**Catalog Description:**

Multivariable differential and integral calculus.

**Prerequisites:**

C- or better in 1152, 1172, 1534, 1544, 1181H, or 4181H; or credit for 153.xx, 154, 162.xx, or 162.01H.

**Exclusions:**

Not open to students with credit for any higher numbered math class, or for any quarter math class numbered 254 or higher.

**Text:**

*Calculus for Scientists and Engineers: Early Transcendentals*, 2<sup>nd</sup> OSU custom edition, by Briggs, Cochran, Gillett, published by Pearson, ISBN: 9781256776468

**Topics:**

CHAPTER 12. Vectors and Vector-Valued Functions

- Section 1. Vectors in the Plane
- Section 2. Vectors in Three Dimensions
- Section 3. Dot Products
- Section 4. Cross Products
- Section 5. Lines and Curves in Space
- Section 6. Calculus of Vector-Valued Functions
- Section 7. Motion in Space
- Section 8. Length of Curves
- Section 9. Curvature and Normal Vectors

CHAPTER 13. Functions of Several Variables

- Section 1. Planes and Surfaces, and brief conic section review  
via pages 761 to 766 of Section 11.4
- Section 2. Graphs and Level Curves
- Section 3. Limits and Continuity
- Section 4. Partial Derivatives
- Section 5. The Chain Rule
- Section 6. Directional Derivatives and the Gradient
- Section 7. Tangent Planes and Linear Approximation
- Section 8. Maximum/Minimum Problems
- Section 9. Lagrange Multipliers



CHAPTER 14. Multiple Integration

- Section 1. Double Integrals over Rectangular Regions
- Section 2. Double Integrals over General Regions
- Section 3. Double Integrals in Polar Coordinates
- Section 4. Triple Integrals
- Section 5. Triple Integrals in Cylindrical and Spherical Coordinates
- Section 6. Integrals for Mass Calculations
- Section 7. Change of Variables in Multiple Integrals

CHAPTER 15. Vector Calculus

- Section 1. Vector Fields
- Section 2. Line Integrals
- Section 3. Conservative Vector Fields
- Section 4. Green's Theorem
- Section 5. Divergence and Curl
- Section 6. Surface Integrals
- Section 7. Stokes' Theorem
- Section 8. Divergence Theorem