

MATH 10B Calculus of Several Variables II

Textbook: Vector Calculus by Marsden and Tromba, 6E.

Suggested number of 50-minute lectures:

- 1.0 lecture: 5.1 Introduction (to double integral as volumes.)
- 1.0 lecture: 5.2 The Double Integral Over a Rectangle
- 1.5 lectures: 5.3 The Double Integral Over More General Regions
5.4 Changing the Order of Integration
- 2.0 lectures: 5.5 The Triple Integral
- 2.0 lectures: 6.1 The Geometry of Maps from R^2 to R^2
- 4.0 lectures: 6.2 The Change of Variables Theorem
- 0.5 lecture: 7.1 The Path Integral
- 1.5 lectures: 7.2 Line Integrals
- 2.0 lectures: 7.3 Parametrized Surfaces
- 1.5 lectures: 7.4 Area of a Surface
7.5 Integrals of Scalar Functions over Surfaces
- 1.0 lecture: 7.6 Surface Integrals of Vector Fields
- 2.0 lectures: 8.1 Green's Theorem
- 3.0 lectures: 8.2 Stokes' Theorem
- 2.0 lecture: 8.3 Conservative Fields
- 3.0 lecture: 8.4 Gauss' Theorem

Sections Omitted:

- 6.3 Applications
- 6.4 Improper Integrals
- 7.7 Application to Differential Geometry, Physics, and Forms of Life
- 8.5 Differential Forms