

**UCSB Department of Mathematics**  
**Course Outline**  
**MATH 6B: Vector Calculus with Applications, Second Course**

The following is a typical outline of MATH 6B at UCSB. Instructors will generally cover the content described here, but the pacing and structure of the course may vary.

The suggested text is the UCSB Math 6A/6B Materials, 13th Edition, prepared by Wiley from Lovric's Text.

Week 1:

- Vector Fields
- Vector Fields, Examples
- Line and path Integrals

Week 2:

- Line and path Integrals
- Fundamental Theorem for Line Integrals
- Fundamental Theorem for Line Integrals, Applications

Week 3:

- Green's Theorem
- Green's Theorem
- Applications and Review

Week 4:

- Midterm
- Parametric Surfaces and Surface Area
- Surface Integrals

Week 5:

- Orientable Surfaces and Stokes's Theorem
- Stokes Theorem (continued)
- Conservative Fields

Week 6:

- Curl and Divergence Theorems
- Curl and Divergence Theorems (continued)
- Applications to physics and differential equations, differential forms

Week 7:

- Applications to physics and differential equations, differential forms
- Applications to physics and differential equations, differential forms
- Review

Week 8:

- Midterm
- Review of Sequences and Series
- Fourier Series

Week 9:

- Fourier Series
- Introduction to Partial Differential Equations
- Introduction to Partial Differential Equations

Week 10:

- Introduction to Partial Differential Equations
- Applications, Connections and Review
- Applications, Connections and Review