UCSB Department of Mathematics
Course Outline
MATH 3B: Calculus with Applications, Second Course

The following is a typical outline of MATH 3B at UCSB. Instructors will generally cover the content described here, but the pacing and structure of the course may vary.

(Parentheses indicate sections from the required textbook, <u>Calculus with Early Transcendentals, 8th Ed.</u> by Stewart.)

Week 1:
• Review of Integration (Chap 5.)
• Review of Integration – Focus on Slicing
• Approximation: Left/Right/Midpoint/Trapezoid Rules (7.7)

Week 2:
• Area Between Curves (6.1)
• Volume: Discs & Washers (6.2)
• Volume: Known Cross-Sections (6.2)

Week 3:
• Volume: Cylindrical Shells (6.3)
• Work (6.4)
• Average Value (6.5)

Week 4:
• Midterm
• Integration by Parts (7.1)
• Trigonometric Integrals, Basic Example Only (7.2)

Week 5:
• Trigonometric Substitution (7.3)
• Integrals Using Partial Fractions, Basic Examples (7.4)
• Strategies for Integration (7.5)

Week 6:
• Improper Integrals (7.6)
• Midterm
• Sequences (11.1)

Week 7:
- Series (11.2)
- Integral Test and Estimates of Sums (11.3)
- Comparison Tests (11.4)

Week 8:
- Alternating Series (11.5)
- Absolute Convergence, Ratio/Root Tests (11.6)
- Strategies for Testing Series (11.7)

Week 9:
- Power Series (11.8)
- Functions as Power Series (11.9)
- Taylor and Maclaurin Series (11.10)

Week 10:
- Applications of Taylor Polynomials
- Applications and Review
- Applications and Review