Course information

- Course: Mathematics 140C MWF 1:00–1:50 ET 204 FALL 2006
  Webpage for the course: *www.math.uci.edu/∼brusso*
- Prerequisite: Math 140AB. Rigorous study of differentiation and integration of real-valued functions of one real variable. All of this can be found in the six chapters of the recent text for 140AB, namely, *Elementary Analysis:The Theory of the Calculus*, by Kenneth A. Ross. This includes the set of real numbers and the completeness axiom; sequences of real numbers, continuity, uniform continuity, sequences and series of functions, differentiation and integration up to the fundamental theorem of calculus.
- Instructor: Bernard Russo MSTB 263 Office Hours M 2:30-3:30 W 10:30-11:30 and by appointment (a good time for short questions is right after class just outside the classroom; appointments can be arranged by email—*brusso@uci.edu*)
- Discussion section: TuTh 1:00–1:50 HICF 100M
- Teaching Assistant: TBA
- Homework: There will be approximately 35 to 40 assignments with about one week's notice before the due date. Most, but not all of these assignments will be from the textbook (Buck).
- Grading: The in-class exams are "closed book and notes." Homework and take home midterm are "open book and notes".

First midterm (in class)	October 20 (Friday of week 4)	20 percent
Second midterm (take home)	November 17 (Friday of week 8)	20 percent
Final Exam (in class)	December 6 (Wednesday)	40 percent
Homework	approximately 35-40 assignments	20 percent

- Holidays: November 10, 23, and 24
- Text: R. C. Buck, Advanced Calculus
- Material to be Covered. (Page numbers refer to the text Buck)

  Schwarz inequality Theorem 1, page 13 (1 lecture)

  topology §1.5 pp 28–33: open, closed, boundary, interior, exterior, closure, neighborhood, cluster point (5 lectures)

  compactness §1.8 pp 64–67: Heine-Borel and Bolzano-Weierstrass properties (Theorems 25,26,27, page 65) (3 lectures)

  continuity §§2.2–2.4: Uniform continuity, extreme value theorems (Theorems 1,2,6,10,11,13 on pages 73,74,,84,90,91,93) (3 lectures)

  differentiation (of functions) §3.3: Implies continuity, characterization by approximation (Corollary, page 129 and Theorem 8, page 131) (2 lectures)

  integration §4.2: Integrability of continuous functions (Theorems 1,4 on pages 169,176) (5 lectures)

  differentiation (of transformations) §§7.2–7.6: Boundedness of linear transformations, characterization by approximation, chain rule, mean value theorem, inverse function theorem, implicit function theorem (Theorems 5,8,10,11,12,16,17,18 on pages 335,338,344,346,350,358,363,364) (9 lectures)