

Math 131A: General Course Outline

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Catalog Description

131A. Analysis. (4) Lecture, three hours; discussion, one hour. Requisites: courses 32B, 33B. Recommended: course 115A. Rigorous introduction to foundations of real analysis; real numbers, point set topology in Euclidean space, functions, continuity.

Textbook

K.A. Ross, *Elementary Analysis: The Theory of Calculus*

Reviews & Exams

The following schedule, with textbook sections and topics, is based on 26 lectures. The remaining three classroom meetings are for leeway, reviews, and midterm exams. These are scheduled by the individual instructor. Often there are midterm exams about the beginning of the fourth and eighth weeks of instruction, plus reviews for the final exam.

Schedule of Lectures

Week	Section	Topics
1	1,2	Induction and Rational Numbers.
2	3,4,5	Real Numbers, Least Upper Bound Axiom, $\pm \infty$
3	7,8,9	Limits of Sequences, Limit Theorems.
4	10	Monotone Sequences, Cauchy Sequences, Midterm I.
5	11,12	Subsequences, Bolzano-Weierstrass, Limsup and Liminf.
6	14(*1),15,17	Convergence Tests, Continuous Functions.
7	18,19,20	Limit Theorems, Uniform Continuity.
8	28,29	Derivative, Mean Value Theorem, Midterm II.
9	31,32,33	Taylor's Theorem, Riemann Integral, Properties of Riemann Integral.
10	34	Fundamental Theorem of Calculus, Review of Course.

Comments

Outline update: J. Ralston, 8/08

(*1) Include Section 23, if time permits. The instructor can pick which convergence tests to cover in Sections 14 and 15.

For more information, please contact Student Services, ugrad@math.ucla.edu.