

Math 121: General Course Outline

Catalog Description

121. Introduction to Topology. (4) Requisite: course 131A. Metric and topological spaces, completeness, compactness, connectedness, functions, continuity, homeomorphisms, topological properties.

Textbook

T. Gamelin and R. Greene, *Introduction to Topology*, 2nd Ed., Dover.

Reviews & Exams

The following sample schedule, with textbook sections and topics, is based on 25 lectures. Assigned homework problems play an important role in the course, and there is usually a midterm exam.

Schedule of Lectures

Lecture	Section	Topics
1-3	1.1-4	Metric spaces, open and closed sets; completeness, Baire category theorem; euclidean space
4-5	1.5	Compactness, characterization of compact metric spaces
6	1.6	Continuous functions
7-9	1.7-8	Normed linear spaces; linear operators, principle of uniform boundedness; contraction mapping principle
10	2.1-2	Topological spaces, subspaces
11	2.3	Continuous functions
12	2.4	Base for a topology
13	2.5	Separation axioms
14	2.6	Compactness
15	2.7	Locally compact spaces
16	2.8	Connectedness
17	2.9	Path connectedness
18	2.10	Finite product spaces
19-20	2.11-12	Transfinite induction; infinite product spaces, Tychonoff's theorem
21	2.13	Quotient spaces
22-23	3.1-4	Homotopic paths, fundamental group
24-25	3.5-6	Covering spaces; index of circle maps; applications of the index

Comments

Outline update: T. Gamelin, 5/96

NOTE: While this outline only suggests one midterm exam, it is strongly recommended that the instructor considers giving two. It is difficult to schedule a second midterm late in the quarter if it was not announced at the beginning of the course.

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