

MATH 220B : TOPICS IN TOPOLOGY

California State University, Sacramento · Department of Mathematics & Statistics

Metric spaces; Function spaces; Homotopy theory.

CATALOG DESCRIPTION

Continuation of MATH 220A with topics selected from: General topology/Foundations, Geometric Topology, Continuum Theory, Homology Theory, Homotopy Theory, Topological Dynamics. Note: May be taken twice with approval of the graduate coordinator. **Graded:** Graded Student. **Units:** 3.0.

PREREQUISITES

Math 110A and Math 220A, Spring only.

COURSE OUTLINE

I. More on Metric Spaces and Function Spaces (2 Weeks)

- A. Complete metric spaces
- B. Function spaces with topologies
 - 1. pointwise convergence
 - 2. uniform convergence
 - 3. compact-open

II. Homotopy Theory (9 Weeks)

- A. Paths
- B. The fundamental group
- C. Covering spaces
- D. Essential and inessential mappings
- E. Surfaces
- F. Homotopy type
- G. Fixed points ¹
- H. Vector fields ¹

III. Higher Dimensional Homotopy (4 Weeks)

- A. Homotopy groups
- B. Simplexes ¹
- C. Barycentric subdivisions ¹
- D. Induced homomorphisms ¹

¹Optional