

# MATHEMATICS 145B

## INTRODUCTION TO TOPOLOGY- II

**Text:** *Topology, 2<sup>nd</sup> edition*, by J. Munkres

Topics covered include intermediate topics in point set theory, an introduction to the fundamental group and covering spaces, analysis of some examples, applications to the Fundamental Theorem of Algebra.

TOPICS	SUGGESTED NO. OF 50 MIN. CLASSES
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Further topics in point set topology.....4 (§§ 22, 24-29, the main results of 31-33 for metric spaces only)	
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The quotient topology and its applications, more on connectedness and compactness, local connectedness and compactness, existence theorems for continuous functions on metric spaces .

Homotopy and the fundamental group; basic concepts.....2 (§§ 51-54)	
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Homotopies of continuous mappings, definition and properties of the fundamental group, covering spaces and the fundamental group of a circle.

Determination of fundamental groups of examples, implications for algebra and calculus.....3 (§§ 55, 56, 58-60)	
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Homotopy equivalence, fundamental groups of spheres, punctured planes, surfaces, linear graphs and related spaces, the Fundamental Theorem of Algebra.