

Syllabus. Math 145B. Introduction to Topology II.

Topology. J. Munkres. The second edition.

- **Further topics in point set topology.** (*Sections 22, 24, 26, 33, 35.*)
 - Useful theorems about compact spaces,
 - path-connectedness versus connectedness,
 - quotient topology,
 - the Urysohn lemma, the Tietze extension theorem.

- **Homotopy and the fundamental group.** (*Sections 51-54, 58.*)
 - Homotopies of continuous mappings,
 - definition and properties of the fundamental group, homotopy equivalence,
 - covering spaces,
 - fundamental group of a circle.

- **Determination of fundamental groups of examples. Applications.** (*Sections 55, 56, 58-60, 70*)
 - fundamental groups of spheres, punctured planes and surfaces,
 - Fundamental Theorem of Algebra,
 - the Seifert-Van Kampen theorem.