



Mathematics 625 Introduction to Algebraic Topology

Course Description: introduction to the algebraic invariants that distinguish topological spaces. Focus on the fundamental group and its applications, and homology. Introduction to the basics of homological algebra.

Prerequisites: Mathematics 445 or 447 and Pure Mathematics 431, or consent of Department.

Antirequisite: Pure Mathematics 607

Textbook: Algebraic Topology, Hatcher, Cambridge University Press. (Available for download from the author's webpage.)

(see Course Descriptions under the year applicable: <http://www.ucalgary.ca/pubs/calendar/>)

Syllabus

<u>Topics</u>	<u>Number of Hours</u>
Review of topological spaces, quotient spaces. Introduction to CW complexes, (cellular) maps. Deformation retracts.	5
The homotopy extension property	3
Paths and homotopies, the fundamental group, applications	4
The fundamental group of the circle	2
Covering spaces and applications	6
Simplicial complexes and simplicial homology	4
Singular homology, exact sequences and excision, equivalence of singular and simplicial homology	7
Computations and applications, Mayer-Vietoris	5
TOTAL HOURS	36

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Last modified on 2016-04-26

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