PMath 467/667: Algebraic Topology

Course Overview

We will study spaces by assigning algebraic objects to them. The course will begin with an introduction of the spaces involved, which will be primarily CW complexes and manifolds. The bulk of the class will be spent on assigning groups to these spaces which do not change under certain equivalence relationships. We will particularly focus on the fundamental group and homology groups. Topics will include covering spaces, surfaces, cut and paste operations, and the fundamental group of knot complements.

Books

The main textbook for the class is "Algebraic Topology" by Allen Hatcher. This book is freely available on Hatcher's website. John Lee's "Introduction to Topological Manifolds" is also a good reference for the earlier portions of the class.

Assessments

The following is subject to change, but will be finalized before the semester begins. There will be 6 assignments, due approximately every 2 weeks. There will also be an oral midterm exam, and a final presentation/project.

Prerequisites

PMATH 347 and PMATH 351 are prerequisites. Alternatively, familiarity with groups and topological spaces from other contexts could suffice.