San Francisco State University
Department of Mathematics
Course Syllabus

MATH 750
Algebraic Topology

Prerequisites

MATH 335 and 450 or equivalent.

Bulletin Description

Algebraic Topology: two-dimensional manifolds, the fundamental group, the Brouwer fixed point theorem, free groups and free products of groups, the Seifert and Van Kampen theorem, covering spaces.

Course Objectives

The main objective of Algebraic Topology is to give students an introduction to the main ideas and techniques of algebraic topology. Students will investigate some of the major topics of algebraic topology – two-dimensional manifolds, triangulations of surfaces, the Euler characteristic, homotopy, the fundamental group, free groups, free abelian groups, the Seifert and Van Kampen theorem, covering spaces, the fundamental group of a covering space. They will also apply these ideas to a wide range of problems that include the Brouwer fixed point theorem, an introduction to knot theory and the Borsak-Ulam theorem.

Evaluation of Students

Students will be evaluated on their ability to devise, organize and present complete solutions to problems. While instructors may design their own methods of evaluating student performance, these methods may include in-class examinations, homework assignments and a final exam.

Course Outline

Topics	Number of Weeks
Two-dimensional Manifolds	3.5
The Fundamental Group	3
Free Groups	2
The Seifert and Van Kampen Theorem	3
Covering Spaces	3.5

Textbooks and Software

Algebraic Topology: An Introduction, by William Massey
Elements of Algebraic Toplogy, by James Munkres

Submitted by: Alex Schuster Date: May 7, 2003