# MATH 8200 SYLLABUS

Fall 2006

**Instructor:** William Graham
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**Office hours:** To be announced.

**Text:** Allen Hatcher, *Algebraic Topology*. (This is published by Cambridge University Press, but it may be downloaded free of charge from Hatcher's web page.)

**Problem session:** In conjunction with this course there is a problem session, Math 8205, which will meet for 2 hours a week at a time and place to be determined. This is optional but recommended, especially for graduate students who will be taking the prelim exam.

**Grading:** Homework will be assigned regularly, and selected problems will be graded. There will be a midterm and a final exam. Your final grade will be determined by:

Homework: 40 % Midterm: 20 % Final: 40 %

**Purpose of the course:** Algebraic topology is one of the fundamental topics in modern mathematics. Many results in topology have been proved using the tools of algebraic topology to reduce a topological problem to an algebraic one, and then solving the algebra problem. Because topology is so central to mathematics, the results and techniques of this course play a role in many other areas of mathematics, for example, algebra, representation theory, geometry, and number theory. One of the goals of this course is to introduce some of the ideas of algebraic topology; topics covered will include cell complexes; classification of surfaces; the fundamental group and covering spaces; van Kampen's theorem, and homology and cohomology. This course is also intended to prepare for the graduate preliminary exam in algebraic topology.

This course syllabus provides a general plan for the course; deviations may be necessary.