

Math 961, Spring 2007: Algebraic Topology

Lecture: MWF 11:30-12:20 in C-212 Wells Hall (WH).

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Office hours: By appointment.

Description: This is a year long course in Algebraic Topology : Topics will be selected from: Cohomology theory: (Dualities, Local coefficients, Kuneth Formula, universal coefficient Theorem. Examples and applications), homotopy theory, cellular and simplicial approximations, the Whitehead-Hurwitz theorem, fiber bundles, homology and homotopy exact sequences, relation of homotopy and cohomology for CW-complexes, Pottschnikov Towers , obstruction theory, characteristic classes and, time permitting, a few elements from spectral sequences. The material selected is presented with an eye towards knot and 3-manifold theory and complemented with a selection of topics from 3-dimensional topology aiming to indicate how some of the theories above reflect and are used in that dimension.

Textbook: The initial topics to be covered will be selected from A. Hatcher's book "Algebraic Topology". For information about the book, the publisher and how to obtain a copy visit the author's web page in Cornell: <http://www.math.cornell.edu/~hatcher/AT/ATpage.html>. Textbooks for additional topics will be introduced later.

Assignments/presentations: There will be some class presentations and a take home final exam. Some of the presentations might be combined with the Graduate student seminar.

Grading scheme/Determination of final grade: Your final grade will be based on the scores of your written exam, the presentations and class participation. As you know, or you'll soon discover, the class atmosphere

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is very casual and class discussion/participation is highly encouraged and nurtured.