

# Topology - Math 441-6937: Fall 2006 Syllabus



**Prof. Ilya Kofman**

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**Mondays:** 4:40pm - 6:20pm in 1S-218

**Course Time and Place:**

**Wednesdays:** 4:40pm - 6:20pm in 1S-218

**Textbook:** [Essential Topology by Martin D. Crossley](#) Available at the University Bookstore or [online](#).

**Goals:** The primary goal of this course is to introduce you to topology, which is a major branch of modern mathematics. Another goal is to learn how to do research in mathematics, including how to write concise but complete proofs, and how to present to others what you have learned.

**Homework:** Assignments will be announced in class, sometimes referring to this website. Incomplete work with good progress will be rewarded. *I highly recommend working jointly on homework problems with fellow students, but in the end you must hand in your own work.*

**Grading:** The course grade is apportioned as follows: homework 40%, midterm exam 30%, final in-class presentation and written report 30%.

**Help:** My office hours are before class on Mondays and Wednesdays, 3:00-4:30pm, or by appointment, in my office, 1S-209.

**Optimal Method of Study:** (1.) Come to class. (2.) Read the relevant sections after class. (3.) Do the homework. Leave time to think--do not put homework off until it is due! (4.) Compare your solutions with other students to improve what you hand in. (5.) Come to office hours with any remaining questions.

Topic	Reading
Fields Medal for Poincare Conjecture proof	<a href="#">Citation</a> , <a href="#">Background drama</a>
Euler's theorem for polyhedra	Handout, notes
Continuity, open sets, closed sets and limit points	Chapter 2, notes
Topological spaces, continuous maps, homeomorphisms	Chapter 3, <a href="#">Space-filling curve applet</a> , HW3 Solutions: <a href="#">p.1</a> , <a href="#">p.2</a> , <a href="#">p.3</a>

Connected, compact, Hausdorff spaces, path-connectedness	Chapter 4
Disjoint union, product spaces, quotient spaces	Chapter 5
Classification of surfaces (orientable and non-orientable)	<a href="#">ZIP proof</a> , <a href="#">online notes</a>
Invariance of Euler characteristic, surface symbols	Chapter 7, notes
Winding number, vector fields in the plane	Notes
Vector fields on surfaces, Poincare-Hopf Index Theorem	Notes
Knots and links	Notes, <a href="#">online1</a> , <a href="#">online2</a>