General Topology Syllabus

Course Number: Math 536-001  
Quarter: Fall 2010  
Teacher: Patrick Clarke  
Email: pclarke@math.drexel.edu  
Time: Tuesdays and Thursdays 3:30pm - 4:50pm  
Place: Curtis Hall Room 351  
Office Hours: Tuesdays 12:00pm - 1:30pm

**Objectives.** The purpose of this course is to learn the foundations of General Topology. General Topology is the study of convergence and continuity. It is a foundational subject in almost every branch of Mathematics.

The course will begin with a discussion of the Schröder-Bernstein theorem and its implications. We will then motivate the definition of a topological space and continuous function using Kuratowski’s Closure Axioms. After this we will use the text:


This book is widely accepted as the standard text from which to learn General Topology. It contains more than can be covered in one quarter, so we will focus on

- Chapter 2  Topological Spaces and Continuous Functions
- Chapter 3  Connectedness and Compactness
- Chapter 7  Complete Metric Spaces and Function Spaces.

We will discuss, perhaps without proof, the Separation Axioms, Urysohn’s Lemma, Urysohn’s Metrization Theorem, the Tychonoff Theorem, the Stone-Čech Compactification and the Nagata-Smirnov Metrization Theorem.

When possible, we will try to understand definitions, constructions, and theorems from both an intuitive and category-theoretic point of view.

In addition to covering the main topics required by algebraic, geometrical and analytical fields, we will prepare for Algebraic Topology which is the subject of the sequel to this course.

**Additional Resources.** Please make use any outside resources including:  
http://mathoverflow.net/  
http://en.wikibooks.org/wiki/Topology  
http://front.math.ucdavis.edu/math
**Important Dates.**
September 21: First Class  
October 1: Last day to Drop  
October 28: Midterm  
October 29: Last day to Withdraw  
November 25: Thanksgiving Holiday  
December 2: Last Class  
December 6-11: Final Week  

You must notify me and receive my approval by the end of the 3rd week if you will miss a class for any reason.

**Grading and Assignments.**
Attendance 13%  
Assignments 37%  
Midterm 25%  
Final 25%  

Assignments are due in the first 5 minutes of the class one week from the day they are given. Arriving more than 5 minutes late to, or leaving 5 minutes early from a class will deduct .5% from your grade.

**Expectations.** In class you are expected to be a positive influence, pay attention, answer questions, give feedback, and occasionally come to the board.

Your work should be clear and correct. Err on the side of more details rather than less, but don’t lose your train of thought.

If you solved a problem with the help of a website, paper, or friend, please cite them. For example, before the solution to a problem, you might write:

I used the approach to this problem found in Karen Uhlenbeck’s post on mathoverflow’s Closed-Sets thread,

or

I would like to thank Grigori Perelman for useful conversations about this problem.

You can consider yourself well-prepared for a class if you understand all the previous material in the course well enough to teach it, and have completed any homework due. Expect to dedicate 5 or more hours per week to the course outside of class.