Math 147: Topology

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Office Hours:
MWF 2:30 - 3:30
many other times
drop in or by appointment

http://pages.pomona.edu/~elf04747/teaching.html

Goals of the Course:
When you complete this course you should be quite familiar with a collection of interesting topological spaces, be able to recognize topological properties, and be able to use topological invariants to distinguish spaces. In particular, you should be able to create new spaces by using products and quotients of known spaces, and use the properties of compactness, connectedness, path connectedness, the fundamental group, homotopy, and covering spaces to distinguish spaces. We will spend about half of the semester on point set topology and the other half of the semester on algebraic/geometric topology. You will find out what these terms mean as we are studying them.

Prerequisite:
Principles of Real Analysis I (Math 131) is a prerequisite for this class. I will assume that everyone in the class knows how to write a detailed rigorous proof and has the level of mathematical sophistication and knowledge of metric spaces that is normally developed in Math 131. In particular, I will make use of results about metric spaces that I will not repeat in this class.

Lectures and Textbook:
The text *A First Course in Algebraic Topology*, by Czes Kosniowski is recommended but not required for the course. Regular attendance and class participation are expected of all students. It is quite important to come to class, since my lectures will not duplicate the text. In particular, my lectures will present the geometric intuition that is omitted from the text.

My lecture notes for the whole semester from the last time I taught the course are posted on my website. I will update them to correspond to my current lectures once or twice a week. The notes are a good resource to read either before class to get some idea of what will be covered or after class if you feel like you missed something. They are not meant as a substitute for coming to class. In particular, my notes do not include everything that I will say in lecture.

Homework and exams:
There will be weekly homework assignments posted on my website. I strongly urge you to begin working on the homework the day you hand in the previous homework, as this is the only way to guarantee that you will have adequate time to think about the problems before they are due. Adam Waterbury is the mentor for this class. Mentor sessions will be 7:00 – 9:00 PM on Thursdays and Sundays. Needless to say, you won't get much out of the mentor sessions unless you have already worked on the problems.

I encourage you to work with other students and get help from Adam and me. However, **your final write-up of the solutions must be done by yourself**, with every written word coming directly from your own brain, not copied from another student, from Adam, or

from any other source. This means your homework should not be identical to that of any other student or be copied from a book or online resource. Your solutions to the homework can only make use of results that we have proved in the class or results that were proved in your Math 131. If you are using a theorem from Math 131, you must correctly state the theorem that you are using.

Homework is due at the beginning of class on the date specified. No late homework papers will be accepted. Because I hand out solutions, I will not give an extension to any individual (except under truly unusual circumstances). However, if the majority of students in the class send me a message asking for an extension, I am generally willing to negotiate the due date. However, any requests for an extension must be made at least 24 hours before the day a homework assignment is due.

The midterms and final are closed book and closed notes. The midterms will take a 2-hour block of time on February 26 and April 8 between 8:30 AM and noon. If you do not have a 2-hour block between 8:30 AM and noon, let me know and I will arrange another time. The final exam is on Wednesday May 11 from 9:00 AM to 12:00 PM.

Grades:

Homework	15%
Class participation	5%
Midterm Exams	22% each
Final Exam	36%

I hate giving grades, but since I have to do so I take it very seriously, and don't believe in grade inflation.

The meaning of letter grades in this course are as follows:

A means your performance in all areas is outstanding, demonstrating a thorough mastery of all of the concepts and techniques of topology.

B means your performance is consistently very good, demonstrating a solid understanding of the concepts and techniques of topology.

C means your performance is either consistently fair to good or is inconsistent, demonstrating a good understanding of some of the concepts and techniques of topology.

D means your performance is poor and does not demonstrate a good understanding of the concepts and techniques of topology.

F means your performance is unacceptable.