

Meetings: Mondays and Wednesdays, 9am-12pm
Problem Session: Thursdays, 5-8pm
Coordinator: Maia Averett
Office Hours: Tuesdays 12-2pm in AP&M 6351
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Welcome to the Summer 2007 topology qual prep session. We have nine meetings spread out over four and a half weeks, plus five problem sessions. Our meetings will be part mini-lectures reviewing material when necessary, but mostly we'll focus on working problems. You will be expected to work together in groups and present problems on the board. Here is an approximate outline of topics to be covered.

- Week 1: Fundamental group, Homotopy groups, Covering spaces (use in calculating fundamental group, group actions, classification of covering spaces), CW complexes
- Week 2: Simplicial homology, Singular homology, Homology of spheres, degree of maps, Cellular computation of homology
- Week 3: Cohomology and products, Universal coefficient and Kunnetth theorems
- Week 4: Manifolds, Poincare duality and its consequences (intersection theory), Whitehead's theorem, Hurewicz's theorem

This "course" is intended to help you prepare for the qualifying exam in the fall, though you should not expect that simply attending the sessions will suffice. You will need to work on problems alone and with others outside of class. No amount of watching other people solve problems will prepare you for an exam like actually solving problems for yourself, so plenty of your time outside of these meetings should be spent thinking about problems on your own. You will get a problem sheet every Wednesday (except the last week). I would strongly advise that you work on the problems on your own on Wednesday afternoon, before working on them with your friends. In the problem session on Thursday, please discuss the problems with your classmates. On Monday and Wednesday the following week, you will be expected to present selected problems on the board. Here is a suggested weekly study schedule:

- W*: Class. Get problem sheet. Work on problem sheet on your own.
- Th*: Work with your friends on the problem sheet. Problem session.
- F-S*: Prepare to present your solutions, note concepts you don't quite understand.
- M*: Class.
- Tu*: Review weak concepts (office hours!!) and topics for the next week.

Resources:

- Justin's course syllabus: <http://www.math.ucsd.edu/~justin/290F06.html>
- *Algebraic Topology* by Allen Hatcher.
<http://www.math.cornell.edu/~hatcher/AT/ATpage.html>
- *A Concise Course in Algebraic Topology* by Peter May.
<http://www.math.uchicago.edu/~may/CONCISE/ConciseRevised.pdf>