

Topology Seminar Syllabus

Spring, 2010

Administrative Stuff

Instructor: Bill Kronholm
SC 152
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Class Hours: Thursdays, 1:15pm-5:30pm, SC 149

Textbooks: [M] James R. Munkres, *Topology, Second Edition*, Prentice Hall, 2000
[A] M. A. Armstrong, *Basic Topology*, Springer-Verlag, 1983

Office Hours: Each of you will schedule 15 minutes a week to meet with me one-on-one. Typically, if my door is open, I am available, although if you make an appointment I am sure to be available.

Coursework: 50% Weekly work (HW, presentations, discussion).
50% Final exam (two parts: take-home exam and honors exam).

Student Presentations

Each class will begin with student presentations of the reading material for the week. Expect to be presenting roughly every other class.

Homework

After student presentations, we will discuss the homework problems. Homework assignments will be posted on the course web page. Written homework is due each Friday by 4:30pm. Turn in two problems or three pages, whichever is more, of the work you are most proud of. Of course, it is a good idea to keep a record of all of the work you have done on all of the problems, but you only need to turn in the good stuff.

Exams

There will be two exams, both near the end of the semester. One exam will be a take home exam, which I will write and grade. The other exam is the honors exam, which will be written by the honors examiner. If you are standing for honors, the honors examiner will grade this exam. If you are not, I will grade this exam.

Grades

You will be evaluated for a grade based on the exams, homework, class presentations, and general participation.

Schedule

Below is a rough outline of the course. The readings are to be done before the scheduled meeting.

Meeting	Topic	Reading
Jan 21	Introduction Classification of Surfaces	[A] Ch. 1 "Conway's ZIP Proof" (http://www.jstor.org/stable/2589143)
Jan 28	Sets and Order Relations Topological Spaces	[M] §1 - §11 [M] §12 - §16
Feb 4	Continuous Functions; Metric Spaces	[M] §17 - §21
Feb 11	Quotient Topology; Connectedness	[M] §22 - §25
Feb 18	Compactness; Countability Axioms	[M] §26 - §29, §30
Feb 25	Separation Axioms Homotopy and π_1	[M] §31 [M] §51 - §54
Mar 4	Applications of π_1	[M] §55 - §60
Mar 18	The Seifert - van Kampen Theorem	[M] §67 - §73
Mar 25	The Jordan Curve Theorem Covering Spaces	[M] §61, §63, §64 [M] §79 - §80
Apr 1	Classification of Covering Spaces Simplicial Complexes	[M] §81 - §82 [A] 6.1 - 6.3
Apr 8	Simplicial Homology	[A] 6.4 - 6.5, 8.1 - 8.4
Apr 15	Homotopy Invariance of Simplicial Homology	[A] 8.5 - 8.6
Apr 22	Exact Sequences Brouwer Degree	Reading Supplement [A] 9.1
Apr 29	Applications of Homology	[A] 9.2 - 9.5

