

Math 361: Undergraduate Topology Syllabus, Spring 2012

Professor: **Dr. Jason Parsley**

Office: 330 Manchester Hall

Office hours: MW 10-11, W 3:30-4, Th 2-4; and also by appointment

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Course website: <http://www.wfu.edu/~parslerj/math361/>

1. Course Time & Location: MWF 11, Manchester 125

2. Text: *Topology Now!*, by Robert Messer and Philip Straffin, 2006.

3. Topics: Topology is the study of the shape of objects in one, two, three, ... dimensions, where we are not concerned with their precise geometry. Rather, a topologist considers two objects the same if one can be 'nicely' deformed to another. The word 'nicely' can assume different meanings depending on the context.

We will cover the first four chapters of Messer and Straffin's book and possibly some of chapter 6.

1. Deformations [2-3 weeks]
2. Knot Theory [3-5 weeks]
3. Classification of Surfaces [3 weeks]
4. Three-dimensional manifolds [2-3 weeks]
6. The fundamental group [2+ weeks]

4. Assignments: Working problems, both individually and together, is fundamentally important in learning mathematics well. Since this is a topics course, we require a baseline amount of work to be submitted. I will suggest many other exercises; my hope is that you will choose to work on additional exercises that are not required.

Written assignments will be due on Fridays at the start of class. Late work is not accepted. (Everyone in the class gets one exception to this policy.) I'm willing to work with you – if there are circumstances which will not allow you to submit homework on time, let me know and we can work something out.

This class is going to be highly interactive; you will work in groups at times, you may work as a class sometimes, your work will be peer reviewed. You will learn a lot from each other.

The written homework should be neatly written using proper English grammar. I anticipate using the following grading system: most graded problems are worth 5 points or more; problems which are ungraded are checked for 'completeness' – whether you have made an honest attempt; these are worth 2 points.

Academic integrity is something I take quite seriously. Here are my expectations: you may discuss course material freely with each other. The written assignments that you submit must be your original work, i.e., when writing your solutions, you should be working independently, not

together, you should not have anyone's work or notes in front of you. You should cite any extra sources you use, even for homework.

5. Presentations Each of you will present solutions to certain homework problems during class. Each week, I will choose certain students to present certain problems at the board; I will notify you in advance. The rest of us will listen and ask constructive questions. Each presentation is worth 20 points. There may be 'mini-presentations' worth fewer points.

6. Midterm Exams Two of the assignments will be designated as midterm exams. These will be open-book, open-notes take-home exams, possibly with an in-class component.

- 1st midterm: *Feb. 8-10*
- 2nd midterm: *Apr. 18-20*

7. Problem Sessions. I am open to the idea of holding optional problem sessions where we talk about some of the exercises and concepts.

8. Final Project: A final project forms the capstone of this course. You will select a topic from topology, explore it using some external references, and write a 6-12 page report on it with significant mathematical content. You will also prepare a 15-minute presentation about your project. The default date for the final presentations is our scheduled exam period: *Tu., May 8, 2pm.*

9. Grade Calculation:

Homework	30%
Presentations	10%
Midterm Exam 1	15%
Midterm Exam 2	15%
Final Project	30%

10. Gold Stars: Throughout the semester, I will award 'gold stars' to recognize achievements. These function as extra credit; the current exchange rate, which may fluctuate, is roughly

$$25 \text{ gold stars} \approx 1.00 \text{ point on your final average.}$$

You may earn these for things like going to talks, finding errors in the text, finding errors on relevant Wikipedia pages (and fixing them), saying particularly insightful comments in class, solving difficult problems. I reserve the right to award these in many different, unspecified ways.

There is only one way in which you can lose stars – you must be respectful during other students' presentations.

If you have a disability which may require an accommodation for taking this course, please contact the Learning Assistance Center (758 5929), then contact me, within the first 2 weeks of the semester.