Syllabus – MATH 4530: Introduction to Topology
Fall 2025

Lecture: MWF 12:20-1:10pm, RCK112

Instructor:
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Office hours: MW 4-5pm

TA/Grader:
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Prerequisites:
MATH 2210, MATH 2230, MATH 2310, MATH 2940, or equivalent.

Course Description:
From Course Catalog: "Topology may be described briefly as qualitative geometry. This course begins with basic point-set topology, including connectedness, compactness, and metric spaces. Later topics may include the classification of surfaces (such as the Klein bottle and Möbius band), elementary knot theory, or the fundamental group and covering spaces. Students will be expected to be comfortable writing proofs. More experience with proofs may be gained by first taking a 3000-level MATH course."

The additional topics we cover this semester will likely include fundamental groups, covering spaces, the Brouwer fixed point theorem, and perhaps classification of surfaces.

Textbook:
Topology, 2nd ed, by James Munkres

Homework: There will be weekly homework assignments. These play a very important role in learning the material. You are allowed to work with others and use other resources, but I advise you to try the problems first by yourself. Struggling to solve a problem is how a great deal of learning happens, even if ultimately you need some help. You must write up solutions to the problems in your own words; direct copying is not allowed. You can produce them either electronically or by hand (and then scanned); they must be legible.

All homework will be submitted on Gradescope. We have configured it to accept submissions up to 2 hours after the deadline. Your submission will be marked late, but there will be no penalty. After these 2 hours have passed—even 1 second past it—no further submissions will be accepted by Gradescope. You will be granted a single 48 hour extension that you can use on one homework assignment of your choice – to use this, you must email the TA Xingzhe Li **before** 11:59pm on the day it is due.

Your lowest score will be dropped (even if it is zero).

Prelim: There will one in-class written prelim held on: **October 6**.

If you have a conflict with university-recognized religious holiday, please let me know as soon as possible. This is generally the only situation in which it will be possible to take a make-up prelim.

Final: There will be a written final during finals week in the registrar's allotted slot for this class.
Date: TBA (will be determined by university early/mid October)

Independent study component: For the independent study component of this course, you will write a paper on a topic in topology that we do not cover in lectures. I will give a list of suggested topics, and it will also be possible to write on some other topic of your choice. The paper will be around 1500 words and will balance rigorous presentation with intuitive motivation – including diagrams is recommended, depending on the topic. As part of the assignment, your paper will be given to another student in the class who will provide feedback. There will be several milestones associated with the project (picking a topic, writing the paper, providing feedback, revising based on feedback). A portion of the project grade will be associated with each of these milestones. More details will be given as the semester progresses.

Disability Accommodations: If you have an SDS accommodation, please have the letter sent to me as soon as possible.

Grading:

- Homework: 15%. The lowest score will be dropped (even if it is zero).
- Prelim 1: 20%
- Final: 45 %
- Independent study paper: 20 %