

MATH 461 — TOPOLOGY I

Section 01

Fall 2022

Instructor: Dikran Karagueuzian

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Course Time: MWF 11:30-1:00

Course Location: S2 259

Office: WH 110

Office Hours: Mondays 4:00-5:30, Tuesdays 1:00-2:30, Wednesday 4:00-5:30, and by appointment

Prerequisite: C or better in each of Math 304, MATH 323, and MATH 330

Textbooks: *A First Course in Topology* by McCleary. *Introduction to Topology and Geometry*, by Stahl and Stenson, available for free online through the library

Complementary text: *Topology*, by Munkres. A classic reference for topology.

Website: people.math.binghamton.edu/dikran/461/

COURSE GOALS

This course will be an introduction to the basic concepts and methods in topology. Topology is a fundamental area in mathematics that complements geometry but uses significantly different tools and ideas. The subject deals with “shape” and “continuity” independent of geometric notions like “distance” and “angle”. The course will provide practice making precise arguments using basic definitions while introducing challenges that may require novel ways of thinking.

By the end of the course, students will be able to:

- give many interesting examples of topological spaces;
- use definitions to formulate proofs of topological facts;
- use topological notions, such as connectedness and compactness, to determine when two spaces have a different “shape”;
- construct homeomorphisms between spaces to show that have the same “shape”.

ASSIGNMENTS AND GRADING

Homework problems will typically be assigned on Wednesday, with written solutions due in Gradescope on the following Wednesday. Homework assignments will be posted on the course website.

Collaboration: If you find yourself unable to solve a homework problem after working for some time by yourself (as will certainly happen!), you are encouraged to work on your homework with other students. When you do, write the names of your collaborators at the top of your submitted solutions. However, *you must write up your solutions independently*. You may not directly copy solutions from any source, whether that be a solution manual, a fellow student, or a shared resource during collaboration or office hours.

Dropped Homeworks and Quizzes: Before computing the homework and quiz portions of your grade, I will drop your three lowest homework scores and your five lowest quiz scores.

Exams: There will be two in-class midterm exams and a final exam.

GRADE BREAKDOWN

Midterm Exams: 35% **Final Exam:** 25% **Homework:** 20% **Quizzes:** 20%

ACADEMIC HONESTY

Students are asked to practice care and attention in regard to academic honesty, with the understanding that all cases of plagiarism, cheating, multiple submission, and unauthorized collaboration are subject to penalty. Students must properly cite and attribute all sources used for assignments, including collaboration with other students. Students may not collaborate on exams, directly or through virtual consultation, unless the instructor gives specific permission to do so. Posting an exam, assignment, or answers to them on an online forum (before, during, or after the due date), in addition to consulting posted materials, constitutes a violation of the University's Honesty policy. Likewise, unauthorized use of live assistance websites, including seeking "expert" help for specific questions during an exam, can be construed as a violation of the honesty policy. All students should be familiar with the University's Student Academic Honesty Code.

TIME COMMITMENT

As this is a 4-credit course, you should expect to spend at least 12.5 hours per week on the course, including class meetings, studying notes, and doing homework.

ACCOMMODATIONS FOR DISABILITIES

Students requesting disability-related accommodations should register with the Services for Students with Disabilities office (SSD). They are the appropriate entity on campus to determine and authorize disability-related accommodations. The office is in the University Union, room 119. Phone number 607-777-2686. For students already registered with SSD, please provide your academic accommodation letter as soon as possible so that we can discuss the implementation of your accommodations.