

MATH 443 201 Graph Theory

Welcome to Math 443, Graph Theory for honours students!

Overview

From the [calendar](#):

Introductory course in mostly non-algorithmic topics including: planarity and Kuratowski's theorem, graph colouring, graph minors, random graphs, cycles in graphs, Ramsey theory, extremal graph theory. Proofs emphasized. Intended for Honours students.

A graph is a way of representing discrete objects and their connections to one another. Examples of what the "objects" could be include molecules, people, tasks, countries; examples of their "connections" are physical connections, friendships, disease-sharing contact, direct flight connections, conflicts. Being mathematicians, however, we treat graphs as purely mathematical objects. That is, we focus on their theory, not their application.

In this course, we'll cover foundational topics in graph theory. Our treatment will be proof-heavy.

Office Hours

Starting the second week of classes, office hours will be held Fridays after class (4-5pm) in room 229F of the math building.

Assessment

30% Weekly homework

You'll have homework assignments due most Mondays *before* class. Submit your solutions as a pdf online to Canvas. (LaTeX is the gold standard, but you can also export a different file type as a pdf, or scan handwritten work.) Some (but maybe not all) of the problems will be graded by our graduate TA. Your work will be judged on its entire explanation, not just the final answer, so make sure you justify and show your work. Lowest HW score will be dropped.

You may work in groups of at most three people. If you work in a group, put all three names at the top of your paper. Only one person then needs to upload the paper (but if you're worried you can all upload a copy).

Homework will be accepted up to a day late with a 5% penalty. In other words, you really have one day's grace period.

30% Midterms

There will be two in-class midterms: Friday February 1, and Friday, March 15. Each midterm will be worth 15% of your final mark.

10% Presentations

You will be responsible for giving two in-class presentations. You'll solve an extra homework-style problem and present its solution on the board. The presentation should be 5-10 minutes. This is an opportunity for you to practice giving technical talks to an audience of your peers. You can find the rubric on the assignment on Canvas.

I prefer you work in pairs, but you may work alone.

30% Final Exam

2.5-hour exam, to be scheduled later by the university.