

MATH 299C: Proofs from THE BOOK

Location: TBA Time: TBA

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Office Hours: TBA

Mid-term exams: Week 9

Final Exam: None, replaced by a final presentation

Textbook: Proofs from The Book – Aigner and Zeigler

Course Description

Combinatorics is the study of counting. Despite its deceptively simple name, it is one of the most active areas of research in modern mathematics. We discuss some of the basic ideas behind combinatorics, and their unexpected applications. The proofs we discuss are so elegant that Paul Erdos once said they are from “The Book” – God’s book of the most elegant proof of each theorem.

Homework

There will be several problem sets. After having attempted to solve the homework problems on your own, it is fine though to discuss homework problems with your classmates – you just have to write a solution from your own understanding, without simply copying.

Problem sets will be assigned at the end of lecture, and are due at the beginning of the next lecture.

Grading

The course will be graded out of 100 points, with a possible curve at the end. If you get less than 65 out of 100 points you will get a D or F. If you get at least 65 points you will get C. If you get at least 75 points you will get a B. If you get at least 90 points you will get an A.

Percentage	Title	Description
15%	Homework	Problem sets
15%	Midterm	Examination
50%	Participation	
20%	Final project	Presentation on student chosen topic

Week	Topic	Assignment
1	Pigeonhole principle	Problem set 1
2	Double counting and bijections	Problem set 2
3	Tiling problems	Problem set 3
4	The Lindstrom-Gessel lemma	Problem set 4
5	Cayley's Theorem	Problem set 5
6	Sperner's Theorem (Posets)	Problem set 6
7	Sperner's Theorem (Graph colorings)	Problem set 7
8	Partitions	
9	Midterm	Problem set 8
10	The Buffon needle problem	Problem set 9
11	Generating functions and transformations	Problem set 10
12	Open problems in combinatorics	Problem set 11
13	Presentations	
14	Presentations	

Outside-of-class communication with course staff

We will interact with students outside of class in primarily during office hours. Email should only be used for emergencies and not class related questions (e.g., projects).

Excused Absence and Academic Accommodations

See the section titled "Attendance, Absences, or Missed Assignments" available at [Course Related Policies](#).

Disability Support Accommodations

See the section titled "Accessibility" available at [Course Related Policies](#).

Academic Integrity

Note that academic dishonesty includes not only cheating, fabrication, and plagiarism, but also includes helping other students commit acts of academic dishonesty by allowing them to obtain copies of your work. In short, all submitted work must be your own. Cases of academic dishonesty will be pursued to the fullest extent possible as stipulated by the [Office of Student Conduct](#).

It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.shc.umd.edu>.

Course Evaluations

If you have a suggestion for improving this class, don't hesitate to tell the instructor or TAs during the semester. At the end of the semester, please don't forget to provide your feedback using the campus-wide CourseEvalUM system. Your comments will help make this class better.