

Syllabus CMSC 250H: Discrete Structures

This document has three parts with three very different functions. (1) **CONTENT**: What is the content of the course. (2) **POLICY**: How the course is run (office hours, tests, HW, etc). This will be particular to this course. (3) **GENERAL INFO**: This information is helpful for any course you take at UMCP.

1 Content of the Course

General Idea In this course we will learn how to prove simple and not-so-simple theorems in mathematics. Some of what we prove has direct relevance to computer science. The kind of math you learn is the kind of math that a computer scientist encounters.

All number-of-weeks are approx

1. Prop Logic and Circuits - 1 weeks
2. Pred Logic and Quantifiers and Order Notation - 1 weeks
3. Sets, functions, relations - 0.5 week
4. Proof Techniques, Mod Arithmetic, Basic Number Theory - 4 weeks
5. Induction - 3 weeks
6. Combinatorics, Probability, Bayes Theorem - 3 weeks
7. Pigeon Hole Principle, Muffin Mathematics - 2 weeks
8. Optional topics depending on time. Countable and Uncountable sets.

REQUIRED TEXT There is no text. There will be notes online and slides online.

PREREQUISITES CMSC 131 and MATH 141, and you must be in some Honors Program or have permission of the instructor.

POLICY

2 Basic Information

Course title and Number CMSC 250H

Term: Spring 2022

Credits: 4

Course Dates Jan 24-May 10. No class March 20,21,22,23,24,25,26,-27 (Spring break)

Lecture Time and Place Tu and Th 12:30-1:45. Room IRB 2207.

Recitation Time and Place M and W 9:00-9:50. Room IRB 1207.

Course Website <http://www.cs.umd.edu/~gasarch/COURSES/250/S22/index.html>

This will contain slides, notes, and HWs.

ELMS Elms will have the recordings of the lectures and recitations. However, you are advised to go to class and recitation.

Gradescope You will submit HW on gradescope and this is where you can see your grades and make regrade requests. Such requests must be made within a week of the HW being graded.

3 Course Guidelines

Academic Integrity

1. **Homework** You may talk to your fellow students about the problems, however you must hand in your own work and you must understand your own work.
2. **Exams** These must be solely your own work.

Communication from you to the instructor or TA You should feel free to email us or post things on piazza or meet us in office hours. You can also request a zoom meeting if that makes more sense.

Communication from us to you We will email you (1) when HWs are posted, (2) when HW solutions are posted, and (3) other things you need to know. We will respond to your piazza posts promptly.

4 Homework, Exams, Optional Project, and Grading

For all of the below see the Academic Integrity section above for guidance on how much help you can get on the Homework, Exams, and Optional Project.

1. **Homework** There will be problems based on the material. They will be roughly once a week. The Homework will be posted on the course website (NOT on elms) in three forms. We do an example with hw00.

hw00.pdf

hw00st.txt- this is plaintext

hw00st.tex- this is LaTeX

You may use the .txt or .tex to help you typeset your homework.

After the Dead-Cat day has passed (see later for what that means) I will post hw00sol.pdf- Solutions to some of the problems.

Typed Homework must be typed and submitted on gradescope. We strongly recommend that you use LaTeX (if you don't know it, learn it). If diagrams are needed to be drawn they can be handwritten.

2. **Honors Homework** In recitation you will sometimes learn **new** material. There will be *honors homeworks* on this material. Also needs to be **typed**.

Dead Cat Policy HW is posted on Monday and due the following Monday at 9:00AM (before recitation). But *everyone* gets an extension to Wednesday at 9:00AM. *Do not think the real deadline is Wednesday*. I have already given you an extension to Wednesday hence I am not going to give you another one. I use the phrase **Morally due Monday Jan 24, 9:00AM**.

3. **Midterm 1** In TWO parts. An untimed part (about a week to do it) and a timed part (about 2 hours to do it, which will begin at 8:00PM at night and be taken at home,

though we will be on zoom to answer questions). The untimed part will be MORALLY DUE Monday Feb 28 at 8:00AM (before recitation). The timed will be Wed March 9 at 8:00PM. Both the untimed and timed parts are open-book, open-notes, open-web. (If you are not free in the timeslot of the timed part, let me know ASAP.)

4. **Midterm 2** In TWO parts. An untimed part (about a week to do it) and a timed part (about 2 hours to do it, which will begin at 8:00PM). The untimed part will be MORALLY DUE April 11. The timed will be Wed April 20 at 8:00PM. Both the untimed and timed parts are open-book, open-notes, open-web. (If you are not free in the timeslot of the timed part, let me know ASAP.)
5. **Untimed Final** The untimed (well- really about 2 weeks) final will be DUE on Monday May 9 before recitation. NO DEAD CAT- its really do that day. The exam will be are open-book, open-notes, open-web.
6. **Timed Final** The timed final WILL NOT be in the time given in the official University Schedule. It WILL BE Monday May 16, 8:00PM and you will take it in your house. The TAs and I will be available on Zoom for questions. It will be 2 hours for the exam and 15 minutes in case you have tech problems (though of course you can use the 2 hours 15 anyway you want). The exam will be are open-book, open-notes, open-web.

5 Grading Structure

We will make each HW worth 2% and each Honors HW worth 1% of the grade. We intend to have 10 HW and 10 honors hw. That leads to the following table; however, if we have a different number of HW this will change slightly.

Honors Homework	10%
Homework	20%
Midterms	35%
Final	35%

Grades will be ROUGHLY

- 90-100 is an A
- 80-89 is a B
- 70-79 is a C
- 60-69 is a D
- 0-59 is an F.

Notice that (1) this is ROUGH- there may be some adjustments in any direction, and (2) this will be further refined with + and - after the final. Academic dishonesty will be dealt with harshly.

Staff, Office Hours, email addresses

- Prof William Gasarch gasarch@umd.edu Office Hours Tu-Th 11:00-12:00, 2:00-3:15PM. in his office, IRIBE 2242. You can also make an appointment. This can be very flexible, even at night, since we can use zoom:

<https://umd.zoom.us/my/gasarch>

- TA Emily Kaplitz ekaplitz@umd.edu Office hours: Th 4:00PM-5:00PM. Location: IRB 1266 Open Area (Open area across from CS helpdesk).

Note on Location of TA office hours for CS TAs These are set by the dept and are here:

<http://www.cs.umd.edu/class/resources/cstarooms/fallspring/>

6 Course Evaluations

COURSE EVALUATIONS In May you will be asked to fill out course evals. I will urge you to fill out, not just the eval for me, but the eval for ALL of your courses. I have been on the committees that reads these evals and hence I can assure you that they are important.

7 GENERAL INFORMATION

UNIVERSITY POLICY We follow university policies. See

<https://www.ugst.umd.edu/courserelatedpolicies.html>

MASK POLICY Anyone in class must wear a mask that covers their nose and mouth. This is current university policy but also a very good idea. If the university policy changes then the class policy will also change.

Communication with the instructor or TAs You should feel free to email us or post things on piazza or meet us in office hours. You can also request a zoom meeting if that makes more sense.

8 UMD Policies and Resources for Undergraduate Courses

It is our shared responsibility to know and abide by the UMD policies that relate to all courses, which include topic like

- Academic Integrity
- Student and Instructor Conduct
- Accessibility and Accommodations
- Attendance and Excused Absences
- Grades and Appeals
- Copyright and Intellectual Property.

Please visit

<https://www.ugst.umd.edu/courserelatedpolicies.html>

for the UMCP policy on these issues.

9 Resources and Accommodations

9.1 Accessibility and Disability Services

The University of Maryland is committed to creating and maintaining a welcoming and inclusive educational, working, and living environment for people of all abilities. The University of Maryland is also committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the University, or be subjected to discrimination. The Accessibility & Disability Service (ADS) (see here:)

<https://www.counseling.umd.edu/ads/>

provides reasonable accommodations to qualified individuals to provide equal access to services, programs and activities. ADS cannot assist retroactively, so it is generally best to request accommodations several weeks before the semester begins or as soon as a disability becomes known. Any student who needs accommodations should contact me as soon as possible so that I have sufficient time to make arrangements. For assistance in obtaining an accommodation, contact Accessibility and Disability Service at 301-314-7682, or email them at adsfrontdesk@umd.edu. Information about sharing your accommodations with instructors, note taking assistance and more is available from the Counseling Center.

9.2 Student Resources and Services

If you are not doing well in the course and want to do better feel free to talk to me so we can see what we can do. There are also campus services that might be helpful:

Tutoring and Academic Success

<https://tutoring.umd.edu/>

UMD Writing Center

<https://english.umd.edu/writing-programs/writing-center>

Website of Heath Services Websites

<https://sph.umd.edu/academics/advising-resources/undergraduate-center-academic-success-and-achievement/casa-student-resources-and-information>

9.3 Basic Needs Security

If you have difficulty affording groceries or accessing sufficient food to eat every day or lack a safe and stable place to live, please visit

UMD Division of Student Affairs website

<https://studentaffairs.umd.edu/basic-needs-security>

for information about resources the campus offers you.