

**Instructor:** Christy Hazel

**Email:** chazel@math.ucla.edu

**Instructor office hours:** TBD (see survey on course page). Office hours will be on Zoom.

**Lecture meetings:** Section 1 meets 9-9:50AM MWF in MS 4000A. Section 2 meets 2-2:50PM MWF in MS 4000A. The classroom MS 4000A has limited seating, so you should only attend your enrolled section. Lecture 2 will be recorded, and the recording will be available to both sections. **We will be remote during Weeks 1 and 2. Zoom links for lectures and discussions will be available on the course page. Lecture will be recorded, and recordings will be posted.**

**Discussion information:** (T=Tuesday, R=Thursday)

Section	TA	TA email	Discussion time and place
1A	Kedar Karhadkar	kedar@math.ucla.edu	T 9-9:50A MS 5138
1B	Kedar Karhadkar	kedar@math.ucla.edu	R 9-9:50A MS 5138
1C	Yan Tao	ytao@math.ucla.edu	T 9-9:50A Boelter 5419
1D	Yan Tao	ytao@math.ucla.edu	R 9-9:50A Boelter 5419
1E	Ben Spitz	benspitz@math.ucla.edu	T 9-9:50A Boelter 5280
1F	Ben Spitz	benspitz@math.ucla.edu	R 9-9:50A Boelter 5280
2A	Jung Joo Suh	jungjoos@math.ucla.edu	T 2-2:50PM MS 5147
2B	Jung Joo Suh	jungjoos@math.ucla.edu	R 2-2:50PM Geology 4645
2C	Alexander Nagel Tenenbaum	tenenbaum@math.ucla.edu	T 2-2:50PM Geology 4660
2D	Alexander Nagel Tenenbaum	tenenbaum@math.ucla.edu	R 2-2:50PM Kaufman 101
2E	Olha Shevchenko	olha@math.ucla.edu	T 2-2:50PM Kaufman 101
2F	Olha Shevchenko	olha@math.ucla.edu	R 2-2:50PM PAB 2434

**Textbook:** *Discrete Mathematics* by Richard Johnsonbaugh, 8th edition.

*This class participates in a textbook program called Inclusive Access. You should be receiving an email from the UCLA Store with instructions on how to digitally access the textbook. Everyone enrolled in the course will automatically be granted access to the digital course materials. You can opt out if you prefer to get the textbook elsewhere, but make sure you opt out by the end of the 2nd week or your account will be automatically charged. If you have questions or concerns, please e-mail the UCLA Store at inclusiveaccess@asucla.ucla.edu.*

**Prerequisites:** Math 31A and Math 31B

**Course goals/objectives:** In this course, we will study the basic tools in discrete mathematics. We will cover sets, functions, mathematical induction, equivalence relations, counting techniques (e.g. permutations and combinations), graphs, and trees. We will also learn basic proof writing skills in order to present these ideas in a mathematically rigorous fashion.

## Communication

Here's how to get ahold of us:

- *Office hours*: If you have math questions, you should make use of office hours. This is our designated time to help you! You are also welcome to come to the instructor's office hours and just quietly work on homework, and then you can ask questions if they come up.
- *Campuswire*: A Campuswire is set up for this course, and you should use this to ask any mathematical questions outside of office hours. You can post as yourself or post anonymously. Other students, the TAs, and I can then answer your question or provide some hints to get you started. Even if you don't have questions, I encourage you to regularly check the Campuswire to read other students' questions and responses. **If you have course policy questions**, then you should first see if the answer to your question is in this document or in the FAQ on the course page. If not, then direct message your TA or the instructor.
- *Email*: Campuswire is the preferred communication method, but you can also use email. If you do email us, make sure to include "MATH 61" in the subject. You should get a response within 1–2 business days. Do not expect email responses after 5pm or on the weekends.

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## Grading

Your course grade will be assigned using one of the following two schemes, whichever yields the higher numerical value:

<i>Scheme 1:</i>	Pre-lecture Assignments	9% (1% each week)
	Worksheets (5)	5% (1% each)
	Homework (8)	20% (2.5% each)
	Midterm Exams (2)	31% (15.5% each)
	Final Exam	35%
<i>Scheme 2:</i>	Pre-lecture Assignments	9% (1% each week)
	Worksheets (5)	5% (1% each)
	Homework (8)	20% (2.5% each)
	Best Midterm Exam	21%
	Final Exam	45%

Standard letter grade assignments will be made (97–100 is an A+, 93–96.9 is an A, 90–92.9 is an A–, 87–89.9 is a B+, 83–86.9 is a B, 80–82.9 is a B–, 77–79.9 is a C+, etc.)

I reserve the right to apply a course adjustment to grades at the end of the term. If there is any adjustment, it will happen at end of the term after the final exam has been graded, and it will only benefit students (so for example, if you earn an 85%, you are guaranteed at least a B). Though, *it is very unlikely there will be any major adjustments to the course grades. You should not expect any grade boosts at the end of the term.*

## Assignment Descriptions

**Pre-lecture assignments:** On lecture days (MWF, expect exam days), you will have a short reading assignment due at 5pm. You'll find these on Bruin Learn. You will be instructed to read a few pages and answer questions about the reading. It is best for your learning to do these *before you come to lecture*. But in case you need extra time some days, they are due at 5pm. Late submissions will not be accepted. Instead, *your lowest 3 pre-lecture assignments will be dropped*. [The three Week 1 pre-lecture assignments will be due Monday of Week 2 at 5pm \(this is to allow for people who might add the course late\)](#).

**Worksheets:** During each discussion, you will work on a worksheet in a small group. Starting in Week 2, you will turn in the worksheet at the end of discussion and receive a grade based on completion. There will be 9 total worksheets, but only your top 5 scores will count towards your worksheet grade. Thus you can miss up to 4 discussion meetings without your final course grade being affected.

*We will still be remote in Week 2, so rather than turning in the worksheet, the TA will just take attendance and everyone who attends will get full credit.*

**Homework:** Weekly homework assignments will be due every Wednesday starting in Week 2. You can find the assignments on Bruin Learn. You will submit the assignments on Gradescope. Late homework will not be accepted. Instead, *your lowest homework grade will be dropped*. Thus if you miss an assignment for whatever reason, your final course grade will not be affected.

**Exams:** There will be two midterm exams and one cumulative final exam. The midterm exams will take place on **Friday, January 28** (Week 4) and **Friday, February 18** (Week 7). The exams are planned to be held in person. The final exam will be **Sunday, March 13** from 11:30am-2:30pm. The location will be announced in Week 9.

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## University Resources

**Student Conduct:** All students are expected to adhere to the [Student Conduct Code](#).

**Title IX:** Title IX prohibits gender discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking. If you have experienced sexual harassment or sexual violence, you can receive confidential support and advocacy at the CARE Advocacy Office for Sexual and Gender-Based Violence, 1st Floor Wooden Center West, CAREadvocate@careprogram.ucla.edu, (310) 206-2465. In addition, Counseling and Psychological Services (CAPS) provides confidential counseling to all students and can be reached 24/7 at (310) 825-0768. You can also report sexual violence or sexual harassment directly to the University's Title IX Coordinator, 2241 Murphy Hall, titleix@conet.ucla.edu, (310) 206-3417. Reports to law enforcement can be made to UCPD at (310) 825-1491.

**Accessibility:** Any students seeking disability services should please register with the [Center for Accessible Education](#) as soon as possible. If you are already registered and require assistance for the quarter, please release your accommodation letters by the end of Week 1.

## The Learning Process

In order to learn and master a new topic, you must revisit the same material over several days. The different assignments and content delivery methods in this course are intended to break this up for you in a manageable fashion, where the level of understanding expected from you increases in each step. This is explained below.

### The Learning Process

#### 1. Pre-lecture HW

This is your first encounter with the new topic. You will read a few pages from the textbook and answer some basic reading comprehension questions. You will not be asked to apply material at this stage. It is likely you will be confused and have some questions. That is okay.

#### 2. Lecture

During class, you will hear a lecture that again introduces the new vocabulary and techniques from the pre-lecture homework. The lecture will expand on and clarify what you read. You will see examples and have a chance to ask questions. You should leave with a better understanding of the material.

#### 3. Worksheets

This is your first chance to apply what you've been learning. You will work on problems with the help of your peers. The TA and LAs will provide hints and answer questions. At this stage, you should have a basic understanding and begin to see how to apply concepts.

#### 4. Homework

Homework is your opportunity to really start applying the ideas and completing problems on your own. You will likely not know how to do every problem on your first attempt. That is okay—start early so you can make many passes through the assignment. By submission time, you should have a good grasp of the material.

#### 5. Exam Studying

You should revisit old homework problems, readings, and lecture notes. Take the time to fill in any gaps you missed. Learn from the mistakes you made on your homework. Ask questions and challenge yourself by trying new problems.

#### 6. Exam

At this stage, you will have had several opportunities to engage with and learn the material. You should have mastered the topics, and the exam is your time to demonstrate what you learned.

**Tentative Weekly Schedule:**

*Note this is a tentative schedule and is likely to be adjusted as the course progresses.*

Week	Date	Section covered
1*	M 01/03	2.4: Mathematical Induction
	W 01/05	1.1, 3.1: Sets, functions
	F 01/07	3.3: Relations
2*	M 01/10	3.4, 3.5: Equivalence relations, matrices of relations
	W 01/12	6.1: Basic counting principles
	F 01/14	6.2 Permutations and combinations
3	M 01/17	<i>No classes in observance of Martin Luther King Jr holiday</i>
	W 01/19	6.3: Generalized permutations and combinations
	F 01/21	6.7: Binomial coefficients
4	M 01/24	6.8 Pigeonhole principle
	W 01/26	7.1: Recurrence relations
	F 01/28	<b>Midterm 1</b>
5	M 01/31	7.2: Solving recurrence relations (and material in Exercises 40–46)
	W 02/02	7.2: Solving recurrence relations (and material in Exercises 40–46)
	F 02/04	8.1: Examples of graphs
6	M 02/07	8.2, 8.3: Paths and cycles
	W 02/09	8.4: Shortest-path algorithm
	F 02/11	8.5: Representations of graphs
7	M 02/14	8.6: Isomorphisms of graphs
	W 02/16	8.7: Planar graphs
	F 02/18	<b>Midterm 2</b>
8	M 02/21	9.1: Examples of trees
	W 02/23	9.2: More trees
	F 02/25	9.3, 9.4: Minimal spanning trees
9	M 02/28	9.5: Binary trees
	W 03/02	9.5: Binary trees
	F 03/04	7.3, 9.7: Decision trees, sorting, merge sort
10	M 03/07	7.3, 9.7: Decision trees, sorting, merge sort
	W 03/09	9.8: Isomorphic trees
	F 03/11	Review and catch-up
11	Su 03/13	<b>Final exam 11:30AM-2:30PM</b> Location TBD

\*The class will be remote during Week 1 and Week 2.