

# Math 232, Fall 2023 (CRN 13078)

**Instructor:** Ryan Takahashi

**Class Meetings:** MTWR 4:00-4:50

**Office:** McArthur Court 104B

**Office Hours:** M 2:00-3:30, R 2:45-3:45, or by appointment

**E-mail:** rtakahas@uoregon.edu

## Learning Outcomes

This course aims to build on the foundational mathematical ideas from Math 231, including logic, language of sets and functions, mathematical proofs, and recursive algorithms. It also develops important new concepts and tools, including the theory of linear recurrence relations via generating functions, and some of the combinatorial mathematics arising from graphs and trees. A successful student should:

- consolidate the accurate usage of the language of mathematics initiated in Math 231;
- gain more proof-writing experience and see some more significant proofs in the various applications;
- learn new tools for solving recurrence relations and gain more familiarity with the method of proof by induction;
- understand some of the mathematics of networks, graphs, planar graphs and trees

## Text

Rosen, *Discrete Mathematics and Applications*, 7th or 8th ed. Homework will be posted on Canvas, so the text isn't strictly required, but is recommended as a resource.

## Homework

Homework will typically be due once a week, by the beginning of class on Tuesdays. All assignments will be posted on Canvas. You should write (or type) up your solutions neatly on a separate page from the problem statements and submit them on Canvas (pdf is the safest choice, but any format that can be opened in the Canvas grader will be accepted).

## Exams

There will be two 50-minute midterm exams, given during class time on Tuesday, October 17 (Week 4) and Thursday, November 9 (Week 7). There will also be a cumulative two-hour final exam from 2:45-4:45 on Tuesday, December 5 in our usual classroom.

## Absences

Attendance is not mandated except on the above exam dates. If you miss class, you should first borrow notes from a classmate, then set up a meeting with me if you have further questions about the missed content. Apart from absences due to university-sanctioned events, I am not permitted to distinguish between “excused” and “unexcused” absences. Because of this, I am not able to give makeup exams. To mitigate the penalty for missing a midterm (for example, due to illness), I will drop your lower midterm score and replace it with your final exam score (if this works in your favor).

## Grading

Course grades are weighted according to the following scheme:

|               |          |
|---------------|----------|
| Homework      | 20%      |
| Midterm Exams | 25% each |
| Final Exam    | 30%      |

Standard grade assignments will be made (i.e. grades in the 80% to 90% range are B's, those in the 70% to 80% range are C's, and so on). A+ grades are awarded at my discretion to students who have excelled in all aspects of the course. Other plus and minus grades will be awarded in the upper and lower 3% of a bracket (e.g. a grade of B+ is awarded between 87% and 90%; B- between 80% and 83%). I reserve the right to apply a course adjustment to grades at the end of the term.

Departmental standards for grading can be found at

<https://math.uoregon.edu/wp-content/uploads/2014/12/MathGradingStandards-1tli4lj.pdf>

## General University Policies

The following are standard university policies, not specific to this class.

**Academic Misconduct:** The University Student Conduct Code, available at

<https://conduct.uoregon.edu>,

defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students' obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a common form of academic misconduct, plagiarism, is available at

<https://researchguides.uoregon.edu/citing-plagiarism>.

**Accessible Education:** The University of Oregon is working to create inclusive learning environments. Please notify me if there are aspects of the instruction or design of this course that result in disability-related barriers to your participation. You are also encouraged to contact the Accessible Education Center in 360 Oregon Hall at 541-346-1155 or [uoaec@uoregon.edu](mailto:uoaec@uoregon.edu).

**Accommodation for Religious Observances:** The university makes reasonable accommodations, upon request, for students who are unable to attend a class for religious obligations or observance reasons, in accordance with the university discrimination policy which says "Any student who, because of religious beliefs, is unable to attend classes on a particular day shall be excused from attendance requirements and

from any examination or other assignment on that day. The student shall make up the examination or other assignment missed because of the absence.” To request accommodations for this course for religious observance, visit the Office of the Registrar’s website

<https://registrar.uoregon.edu/calendars/religious-observances>

and complete and submit to the instructor the “Student Religious Accommodation Request” form prior to the end of the second week of the term.

**Basic Needs:** Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live and believes this may affect their performance in the course is urged to contact the Dean of Students Office (346-3216, 164 Oregon Hall) for support. This UO webpage includes resources for food, housing, healthcare, childcare, transportation, technology, finances, and legal support:

<https://blogs.uoregon.edu/basicneeds/food>.

**Inclement Weather:** It is generally expected that class will meet unless the University is officially closed for inclement weather. If it becomes necessary to cancel class while the University remains open, this will be announced on Canvas and by email. Updates on inclement weather and closure are also communicated in other ways described here:

<https://hr.uoregon.edu/about-hr/campus-notifications/inclement-weather>.

**Mental Health and Wellness:** Life at college can be very complicated. Students often feel overwhelmed or stressed, experience anxiety or depression, struggle with relationships, or just need help navigating challenges in their life. If you’re facing such challenges, you don’t need to handle them on your own—there’s help and support on campus.

As your instructor if I believe you may need additional support, I will express my concerns, the reasons for them, and refer you to resources that might be helpful. It is not my intention to know the details of what might be bothering you, but simply to let you know I care and that help is available. Getting help is a courageous thing to do—for yourself and those you care about.

University Health Services help students cope with difficult emotions and life stressors. If you need general resources on coping with stress or want to talk with another student who has been in the same place as you, visit the Duck Nest (located in the EMU on the ground floor) and get help from one of the specially trained Peer Wellness Advocates. Find out more at [health.uoregon.edu/ducknest](http://health.uoregon.edu/ducknest).

University Counseling Services (UCS) has a team of dedicated staff members to support you with your concerns, many of whom can provide identity-based support. All clinical services are free and confidential. Find out more at [counseling.uoregon.edu](http://counseling.uoregon.edu) or by calling 541-346-3227 (anytime UCS is closed, the After-Hours Support and Crisis Line is available by calling this same number).

**Reporting Obligations:** I am an assisting employee. For information about my reporting obligations as an employee, please see Employee Reporting Obligations on the Office of Investigations and Civil Rights Com-

pliance (OICRC) website. Students experiencing sex or gender-based discrimination, harassment or violence should call the 24-7 hotline 541-346-SAFE [7244] or visit [safe.uoregon.edu](https://safe.uoregon.edu) for help. Students experiencing all forms of prohibited discrimination or harassment may contact the Dean of Students Office at 541-346-3216 or the non-confidential Title IX Coordinator/OICRC at 541-346-3123. Additional resources are available at

<https://investigations.uoregon.edu/how-get-support>.

I am also a mandatory reporter of child abuse. Please find more information at Mandatory Reporting of Child Abuse and Neglect.