Math 154: Discrete Math & Graph Theory

Spring 2023

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Course Description

Math 154 is an introduction to graph theory. We will cover a number of topics including basic definitions, trees, coloring, planarity, matchings, and some algorithms related to these topics. There is a tentative lecture schedule with a more detailed list of topics posted on the course webpage.

Textbook

Introduction to Graph Theory (Course Notes) by Professor Jacques Verstraete.

The book is available for free on the course webpage, and as a physical book from the UCSD Bookstore for $17.50 (spiral bound, in color). It is still a draft, and you may find some typos or gaps – if you do, please let us know! I will try to maintain an "errata" page on the course website. I also recommend having another book available as a reference (this is always a good habit in math courses). There is a list of possible references on the course webpage; several are free to download through the UCSD library.

Homework

There will be weekly homework assignments, due on **Wednesdays** at 11:59pm Pacific Time. They will be posted on the course webpage, and submitted through Gradescope.

- Collaboration on homework is encouraged. However, you should think about the problems yourself before discussing them with others, and **you must write up your solutions by yourself and understand anything that you hand in.**

- Unless otherwise specified, you should always show your work/fully justify your answers.

- Do not look for solutions to the homework problems online or in other textbooks/sources. **In particular, the use of solution manuals, homework from previous quarters, and "homework help" resources like Chegg is not permitted.** If you accidentally find a solution to a homework problem in an outside source, you need to cite that source, and you still need to explain the solution in your own words.

Quizzes and Exams

Quizzes: There will be three online Canvas quizzes, held on the following dates.

Fri, Apr 21	(Week 3)
Fri, May 5	(Week 5)
Fri, Jun 2	(Week 9)

Each quiz will be available during a **24-hour window** (12am-11:59pm Pacific Time on the listed date), and you will have **30 minutes** to finish the quiz once you have begun. The quizzes will be multiple-choice and randomized. You will be allowed to use the textbook, your lecture and discussion session notes (including any slides posted on the course webpage), and homework solutions, but no other resources.

Exams: There will be one in-person midterm exam (held in class) and an in-person final exam, on the following dates:

Midterm:	**Wed, May 10**	(Week 6)
Final:	**Thu, Jun 15**	(11:30am-2:30pm, location TBA)

For the midterm and the final exam:

- You may bring one 8.5 x 11 inch sheet of *handwritten* notes (double-sided).
- Calculators and other electronic devices are not allowed.
- Bring your student ID.

Grading

Your final numerical grade will be computed as follows.

25% Homework (drop 1), **6%** Quizzes (drop 1), **25%** Midterm Exam, **44%** Final Exam

There are no makeup quizzes or exams, but your lowest quiz score will automatically be dropped; this grading scheme is intended to accommodate emergencies or technical difficulties that require missing a quiz. If, due to truly exceptional circumstances, you must miss an exam (or two quizzes), please contact the course staff as soon as possible.

Letter grade: your course grade will be determined by your numerical grade at the end of the quarter, and will be based on the following scale. This scale is guaranteed, but may be adjusted to be more generous; for example, if your cumulative average is 80, your final grade will be *at least* B-.

A+	A	A-	B+	B	B-	C+	C	C-
97	93	90	87	83	80	77	73	70

Grading errors: homework and exams will be graded and returned on Gradescope. Regrade requests can be made directly on Gradescope **during a specified 60-hour window of time**; no requests will be accepted afterward. In order for a request to be considered, you will need to explain clearly and politely why you think an error was made. Also, although we will correct errors in grading, we will not modify our rubrics or negotiate about partial credit.

Miscellany

If you miss class: there is a rough schedule on the course webpage of what will be covered in each lecture, together with the corresponding sections of the book. There are also lecture videos from Spring 2022 posted on Canvas. If you need to miss a lecture for any reason, I recommend reading from the book or watching the videos. With that being said, I'll put in my personal plug: YOU are an important part of this class, both to me and to your classmates – I love having you in class, and I encourage you to come!

Also, as a note: the content in the videos will typically be pretty close to what we're doing in class, but it won't line up exactly (the pacing will vary, and there may be some differences in the content); the videos also have a few errors. If you do miss a class, I recommend discussing what was covered in the lecture and asking questions of one of your classmates – so be sure to make a friend and get the contact information of a fellow student during the first week of classes!

If disaster strikes: in the event that the public health situation necessitates a return to remote learning (either temporarily or for the remainder of the quarter), I may make changes to the course, including to the length, format, and number of exams. In making such a decision, I would follow university guidance and the recommendation of the mathematics department. In any event, we will try to give as much advance notice as possible.

Accommodations

Students requesting accommodations for this course due to a disability need to provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD). You should make arrangements in advance to discuss your accommodations with me no later than the end of Week 2. We will make every effort to arrange for whatever accommodations are recommended by the OSD.

Academic Integrity

UC San Diego's Policy on Integrity of Scholarship outlines the academic honesty expected of all students, and details the consequences for academic dishonesty. Your integrity has great value: always cultivate and protect it.

Typo Bounty

If you find an error on the syllabus, website, homework assignments, etc., let me know! You will receive a small prize, redeemable in office hours ☺