CS 206: Discrete Structures II - Syllabus

16:198:206

Rutgers CS Diversity and Inclusion Statement

Rutgers Computer Science Department is committed to creating a consciously anti-racist, inclusive community that welcomes diversity in various dimensions (e.g., race, national origin, gender, sexuality, disability status, class, or religious beliefs). We will not tolerate micro-aggressions and discrimination that creates a hostile atmosphere in the class and/or threatens the well-being of our students. We will continuously strive to create a safe learning environment that allows for the open exchange of ideas while also ensuring equitable opportunities and respect for all of us. Our goal is to maintain an environment where students, staff, and faculty can contribute without the fear of ridicule or intolerant or offensive language. If you witness or experience racism, discrimination micro-aggressions, or other offensive behavior, you are encouraged to bring it to the attention to the undergraduate program director, the graduate program director, or the department chair. You can also report it to the Bias Incident Reporting System `http://inclusion.rutgers.edu/report-bias-incident/`

Course Description: Discrete Structures II is primarily intended as an introduction to probability and probabilistic thinking, as well as providing an introduction to graph theory and some other topics in combinatorics (counting). What is probability? Why is it good? The world is an uncertain place, and probability gives you the tools to understand and operate within it. The groundwork laid here will help you in many areas to come, including data science, statistics, artificial intelligence, and machine learning. Combinatorics and discrete math provide the tools to understand a world of discrete items that can be counted or arranged. Graph theory will be vital to future work in computer science, as graphs allow us to model data and connections between the data, and provide the tools for understanding these connections. It provides the basis for numerous applications in data structures and algorithms.

Schedule and Modality: The course is intended to meet twice a week, in person, **Mon/Wed: 3:50 to 5:10**.

> **NOTE:** At this time, it is my understanding that the first two weeks of the course (through the end of January) will be held virtually. Links to the video lecture and password will be posted on Canvas as an announcement prior to each meeting. Recordings of the lectures will be posted within 24 hours of the lecture being given, for review and to let people ask any questions that come up after the fact.

Recitations will meet once a week, and will largely be problem solving sessions to put some of the more theoretical lecture work into practice.

I will also post regular discussion boards that summarize the lecture and provide an opportunity to ask questions that you could not in lecture.

Textbooks: There are no required texts for this class, but I strongly recommend Sheldon Ross' *'A First Course In Probability'* as well as *Mathematics for Computer Science* by Lehman Leighton and Meyer (which may or may not be available online via Google search, I would not know). I will also try to post my own notes regularly for the topics we discuss.

Contact Information: You can reach me by sending messages through Canvas, or sending an email to

cwcowan@cs.rutgers.edu

with '[CS 206]' in the subject line - I may miss your email if you do not include this. *I will not respond to emails at any other address.* The TAs will provide their own contact information soon.

Office Hours: Tentatively I am scheduling my office hours to be **Fridays, 10 AM - 12 PM**, held virtually. Link and password posted to Canvas prior to each office hours.

Grading and Assignments:

- **Quizzes:** An online quiz will be given roughly every 4 lectures (every two weeks), consisting of textbook style problems that require some understanding and experience calculating the things we've been discussing. Recitations are meant to be a good practice for the problems that show up on the quizzes. You'll have a day to do the quiz, but it must be completed within an hour. Your work must be your own. This works out to 7 quizzes total, and the lowest quiz will be dropped.
- **Assignments:** While the quizzes are meant to be more rote practice/calculation style problems to test understanding, I will also give four larger projects that are meant to tie more concepts together into a larger whole (for instance, using probabilistic algorithms to solve a problem in graph theory!). These may require some coding, and will generally be more involved. You'll have at least a week for these. These are meant to be done individually, and any indication of lifting your work from others or collaborating will be viewed as cheating. You are welcome and encouraged to talk to me and the TAs about these assignments as you work on them.
- **Exams:** There are no exams for this course. I only ask that you take the quizzes and assignments seriously as an opportunity to learn, practice, and grow.
- **Online Participation:** There will be three or four 'summary' discussion boards posted regularly through the semester, summarizing what we've seen so far and how it all fits together. These boards are a good opportunity to ask lingering questions or more speculative ones. As part of your grade, you're required to post two questions on each of these boards, and answer one of someone else's questions. This is meant to provide opportunities for participation other than simply speaking up in class, which can be difficult for many due to class size, remote format, personal anxiety, or any number of reasons.
- **Extra Credit:** Extra credit is available in the form of bonus questions scattered throughout the various assignments.
- **Cheating:** If you find yourself in a position where you feel pressured to cheat (because of time, lack of understanding, circumstance, or any external issues), *please come talk to me instead*, and we can work something out. I am here to help. Asking for help or answers online and submitting that work as your own is cheating. Working together on assignments or quizzes is cheating. Any work you submit that is not your own is cheating. If I have evidence that you cheated, I'll give you a zero on the assignment and report you to the department. **There is no negotiation on this.** I encourage you to come talk to me if you have any questions about this.
- **Late Work:** Quizzes cannot be made up without prior arrangement. Assignments will be docked 20% per day of lateness without prior arrangement.
- **Final Grading:** The components of your final grade will be quizzes, assignments, and online participation, roughly in a 40%, 50%, 10% split. Your grade for each component will be determined by points earned / points available, with any extra credit or bonus questions capable of pushing you above full credit for that component.