

CS 14
Discrete Structures for Computer Science I
Syllabus, Fall 2025

Co-requisite: Math 50 (precalculus) or equivalent
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Please consult my office door for details.
Text: Discrete Mathematics and its Applications, Kenneth Rosen,
Eighth Edition, McGraw Hill Publishing

1 Overview

This is the first of a two-semester sequence focused on the mathematics behind computer science. We will develop skills in logic, sets, functions, recursion, algorithms, proof methods and counting which will be needed throughout your computer science studies. Along the way, we will relate all of this to cryptography, the science of making and breaking codes.

2 Learning Objectives

Liberal Arts Objectives: The most important objectives for this course are those which are common to all computer science courses:

1. to learn to solve unfamiliar problems (without being taught how to solve them!);
2. to think clearly and analytically;
3. to work cooperatively;
4. to read closely;
5. to write and speak precisely;
6. to reflect on the role of the university and liberal arts education in society.

Computer Science Objectives: Here are some specific things you will be able to do by the end of the semester.

1. Understand mathematical sentences written in logical notation.
2. Understand and write logically complex English sentences with full understanding of the subtleties of what is being said, using mathematical notation to aid in this process.
3. Use set notation to express mathematical ideas succinctly and precisely.
4. Employ basic counting techniques.
5. Calculate basic discrete probabilities.
6. Understand functions, and some of their basic properties.
7. Understand recursively defined functions.
8. Understand how mathematical knowledge is built up from definitions, examples and theorems.
9. Analyze a mathematical proof for correctness.
10. Understand the distinction between private and public key cryptography.
11. Using the mathematics you have learned in this class, develop a critical understanding of one of the classic cryptography systems.

3 Graded Work

Your grade in this class will be based on your quizzes, your two midterm exams, and your final exam.

Grade Breakdown:

1. quizzes **30%**
2. midterms and final **70%**

Quizzes: Regular quizzes will be used to test your understanding of all the concepts discussed in class. Quizzes will be announced ahead of time. The lowest quiz grade will be dropped when calculating the average quiz grade. There will be no makeup quizzes: if you miss a quiz, that will be the one that is dropped.

Midterm and Final Exams: There will be two midterm exams and one final exam. The average exam grade will be calculated as follows: each midterm grade will be written down once, and the final exam grade will be written down twice. The lowest grade will be dropped, and the remaining three grades will be averaged. If you miss a midterm, you will not have an opportunity to make it up; rather, this will be the grade that is dropped.

If you are unable to take the final, you must notify me ahead of time. In this case you will be given an incomplete, and you will be required to take the final exam at the start of the next semester.

Homework: Homework will *not* be collected or graded *even though in one sense it is the most important learning activity for this class*. Students are encouraged to ask questions about the homework at the start of every class. I encourage each of you to form a study group that meets twice a week (either face-to-face with social distance, or remotely) to work on homework together, and to develop the habit of coming with at least one question about homework to each class meeting. It is important to understand that most of the learning for this class takes place at home when working on homework problems by yourself, or with other students, as this is the setting in which you are most actively engaged with the material.

4 Policies

Attendance: Students are expected to attend every class, and are expected to attend office hours regularly as well.

If you miss a class, please reach out to a member of your class for lecture notes and announcements.

Email Policy: The best way to contact me is to speak to me after class or come to office hours. We can set up an appointment at that time if needed. If that is not possible, you can email me to set up an appointment, but please understand it typically takes me several days to get back to you in email. Please do not use email to ask for announcements and materials from a class you missed: use your peer study group for that. All handouts will be posted on my website. I cannot answer technical questions over email: ask questions in lecture and in office hours.

Academic Honesty: Students enrolled in this class implicitly promise to adhere to Hofstra's policies regarding academic honesty. Students who are found to have violated their promise (either by cheating or by assisting another student in cheating) are given a 0 on the given assignment, are reported to the dean, and may, furthermore, receive an automatic F in the class.

5 Important Dates

- Monday, September 29: last day to withdraw without a “W”
- Monday, November 10: last day to withdraw with a “W”
- Thursday, December 11 and Friday, December 12: snow days for makeup classes
- December 13-19 (TBD): final exam