

CS 14
Discrete Structures for Computer Science I
Syllabus, Fall 2026

Co-requisite: Math 50 (precalculus) or equivalent
Professor: Dr. Gretchen Ostheimer
Office: SIC 212
Phone: 516-463-6106
Email: Gretchen.Ostheimer@hofstra.edu
Web site: cs.hofstra.edu/~cscgzo
Office hours: MW 2:45-4:15pm
Text: Discrete Mathematics and its Applications, Kenneth Rosen,
Eighth Edition, McGraw Hill Publishing
Please note: There are several places to get the text.
We will discuss this in class at the start of the semester.

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: Most students will need to do 6 to 9 hours of homework a week to pass this class. Homework will *not* be collected or graded. I encourage each of you to form a study group that meets twice a week (preferably face-to-face) to work on homework together. I also encourage you to develop the habit of coming to each class meeting with at least one question about homework. Students are asked to write those questions on the board when they enter the classroom.

Definitions: In order to succeed in this class you need to be able to understand and use precise mathematical definitions of the terms introduced. Each of you is required to keep a stack of index cards with the relevant definitions from the class and from the text. You are encouraged to copy these definitions verbatim from the text or from class notes. You must not include any examples or theorems on your index cards. You are allowed to bring these index cards to every quiz and exam. You are not allowed to share index cards, and each student should prepare his or her own stack of index cards.

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

- Sunday, September 27: last day to withdraw without a "W"
- Sunday, November 8: last day to withdraw with a "W"
- Thursday, December 10 and Friday, December 11: snow days for makeup classes
- December 14-18 (TBD): final exam