Spring 2024

CS 114-006: Introduction to Computer Science II

Jonathan Kapleau

CS 114H: Honors Introduction To Computer Science II

Syllabus

Instructor Info

Instructor:	Jonathan Kapleau
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Course Description

Fundamentals of computer science are introduced, with emphasis on programming methodology and problem solving. Topics include basic concepts of computer systems, software engineering, algorithm design, programming languages and data abstraction, with applications. A high level language is fully discussed and serves as the vehicle to illustrate many of the concepts. Java is used in this course.

Learning Objectives

- The student will be able to write computer programs using standard data structures and algorithms.
- The student will be able to bound the resources used by an algorithm.

Textbooks

Data Abstraction and Problem Solving With Java: Walls and Mirrors
Frank M. Carrano, Janet J. Prichard
ISBN: 0-321-30428-4

Grading Scheme

Midterm	20%
Final	30%
Projects	40%
Miscellaneous	10%

Topics

- Recursion
- Data Abstraction

- Linked Lists
- More Recursion
- Stacks
- Queues
- Algorithm Efficiency & Sorting
- Trees
- Tables & Priority Queues
- More Trees
- Graphs

Attendance Policy

Attendance in every lecture is mandatory. If a student is absent from lecture five times (the first day counts), the student's name will be recommended for withdrawal to the Dean of Freshman Studies. Two lates is equivalent to one absence. Make sure that you fully understand this attendance policy.

Cheating Policy

Cheating on a programming assignment results in zero credit for all students involved. Programming assignments may **NOT** be solved in collaboration, unless specifically stated in the assignment. Cheating on an exam will result in an "F" in the course.

You may discuss problems with each other. Where does discussion end and cheating start? You may **NOT** copy lines of code from anybody or anywhere. You may **NOT** use code in your assignments that you did not write. As a general rule: If you don't understand the code and can't explain the code, you can't use the code.

Please familiarize yourself with the NJIT Honor Code. Violations of the honor code will be dealt with seriously and reported immediately to the Dean of Students.

Late Policy

To receive full credit all programming assignments must be handed in on time. Assignments that are not submitted on time will be penalized for each day that they are late. The type and severity of the penalty will be determined by the assignment. In general, a deduction of 10 points (out of 100) for the first day, 20 additional points for the second day, 30 additional points for the third day, and 40 additional points for the fourth day late will be subtracted from the final grade of the assignment.

Prerequisites

This course requires that you have an understanding of the basics of Java as well as the basics of Computer Science. These are things that you should have learned in CIS 113 or similar.

There are "absolute" and "recommended" prerequisites. Ignorance of any "absolute" prerequisite will most likely result in an "F". These topics will not be covered in class as it is assumed that you are already familiar with them. The "recommended" prerequisites may be quickly reviewed in class, but you should already have some familiarity with these topics. If you are unfamiliar with these topics you will most likely have a difficult time understanding the covered material.

Absolute Prerequisites:

- Chapter 1 of the textbook.

- basics of editing, compiling, and executing Java programs.
- elementary data types and common operations on them.
- basic input & output
- all control structures including `switch` and `do...while`
- method declarations and definitions.
- one-dimensional arrays.
- constants and variable declarations.
- good style.
- the concept of an algorithm.

Recommended Prerequisites:

- classes.
- two-dimensional arrays.
- enumerations.
- simple recursion.

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