CS 225 Syllabus

Fall 2021

Course Description

A study of the use of a high-level language to implement basic data structures such as strings, lists, arrays, objects, and hashes, and their application to searching, sorting, and hashing. Representation of numbers and strings at the machine level. The course will also include an introduction to the concepts of algorithm design and problem solving with an emphasis on algorithm development, analysis, and refinement. Offered every fall. Prerequisites: CS 126

Course Objectives

Students successfully completing this course should:

1. Be able to implement basic data structures in a high level language.
2. Be able to apply data structures to problems of searching and sorting.
3. Understand the machine representation of numbers and structures.
4. Understand basic algorithm analysis.

Textbooks

If you join the ACM (Association for Computing Machinery) with a student membership ($19/year) you will get access to the O'Reilly component of the ACM Learning Center, which has hundreds of online books, including all of the ones tagged O'Reilly below. It is a very valuable and inexpensive resource. To get access, log into the center first. Then the links below will work. The other books are free online.

Programming C# 8.0 by Ian Griffiths (O'Reilly)

C# 8.0 in a Nutshell by Joseph Albahari and Eric Johannsen (O'Reilly)

Object-Oriented Data Structures Using Java by Nell Dale, Daniel Joyce, and Chip Weems O'Reilly

Open Data Structures (in Java) by Pat Morin. (PDF) (HTML)

Open DSA CS3 Data Structures & Algorithms (HTML)

Grading

Homework	35%
Three Exams	15% Each
Final Exam	20%

In order to get grade of 2.0 or higher, you must have at least a 60% average for homework and a 60% average for exams (separately).

Exams

There will be no makeups for exams. Your low exam grade will be replaced by your final exam grade (if it helps).

Attendance

Attendance is required. If you have more than 3 unexcused absences you will receive a grade of 0.

Academic Honesty

Working together on programs is not allowed. Copying of programs from any source, including classmates and the Internet, is not allowed. You are allowed to talk to classmates and others about programs, but you are not allowed to look any anyone else's code, either to give or receive help, other than the textbook or code provided by the instructor.

For a first offense, your course grade will be reduced by 1.0. For a second offense, your course grade will be 0.

Cheating on exams will result in a 0 in the course for the first offense.

Help on Programs

If you need help, come to office hours. Make sure that you start programs early enough that you will have time to get help. Coming in for help an hour before a program is due is unlikely to be profitable. You can email for help, but an in person conversation is much more likely to be helpful.

The programming in this course will be more substantial than those in previous courses. *Do not expect to be able to start them the day before they are due and finish them.*

Covid-19

You are required to wear a mask properly (covering your mouth and nose) at all times in classrooms and in hallways. Eating in class is strictly forbidden. Drinking is allowed if you use a straw so that you do not have to remove your mask. If you do not follow these rules, you will be asked to leave and referred to student affairs for disciplinary action. Don't be a covidiot!