

Queens College
Data Structures
CSCI 313
Fall 2019
Instructor: Zhenhua Cai

Course Description.

Fundamental data structures and their implementations: stacks, queues, trees (binary and AVL), heaps, hash tables. Searching and sorting algorithms. Runtime analysis. Examples of problem-solving using greedy algorithms, divide-and-conquer, and backtracking.

Prerequisites.

CSCI 211, 212 and 220.

Required text:

Michael T. Goodrich, Roberto Tamassia & Michael Goldwasser:
Data Structures & Algorithms in Java, 6th Edition
John Wiley, 2014, ISBN 978-1-118-77133-4.

Learning Goals.

A solid understanding of the fundamental concepts of data structures. Successful students will be able to write correct and complete Java implementations of homework projects. Successful students will also complete exam questions that test the uses, implementation and efficiency of data structures.

Course Topics:

Review of Java programming (Chapters 1 and 2)
Linked Lists (Chapter 3)
Algorithm Analysis (Chapter 4)
Stacks and Queues (Chapter 6)
Iterators (Section 7.4)
Trees and Binary Trees (Chapter 8)
Priority Queues and Heaps (Chapter 9)
Maps and Hash Tables (Chapter 10)
Binary Search Trees, AVL Trees (Chapter 11)
Sorting (Chapter 12)

Instructor:

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office hours: TBA

Course Website:

<http://venus.cs.qc.edu/~zcaic/cs313/>

Classes:

Tuesday, Thursday,
3:10 pm - 4:25 pm, SB B141
5:00 pm - 6:15 pm, SB D133

Requirements:

One in-class midterm exam and the final exam (cumulative).
After each chapter or unit of chapters there will be a quiz.
Dates for quizzes will be announced in advance.
In total there will be 8 quizzes and 3 lowest quizzes will be dropped.
There will be 3 projects.

The final counts for 35% of the course grade.
The midterm counts for 25% of the grade.
Quizzes count for 15% of the course grade.
Projects count for 25% of the course grade.

Exam dates:

Midterm: TBA

Final:

Section: 3:10 - 4:25

Tuesday, December 17 from 1:45 pm to 3:45 pm

Section: 5:00 - 6:15

Thursday, December 19 from 4:00 pm to 6:00 pm

The date of the final might be changed by the College during the semester

Policies:

Academic dishonesty such as plagiarism or cheating will be dealt with seriously in accord with the University's policy on academic integrity.

Homework must be submitted on or before the published deadline. The homework project is important for your learning of the course material. You are to do it on your own without help from other students. Homework is to be submitted through BLACKBOARD. If two or more students submit copied work, all students involved will fail the homework component of the course.

No make up quizzes will be given.

No make up exams will be given. If you miss a midterm, your final exam score will be used in its place. If you miss the final you will fail the course, or only in the case of good, sufficient and unforeseen reasons you might qualify for an incomplete grade for the course.

IDs will be checked in all exams.