CS 300 – Data Structures

Spring 2021-2022
3 credits, prerequisites: CS 204

Description
The objective of this course is to introduce fundamental techniques of algorithm analysis, to introduce common data structures, their properties and implementation and to apply C++ programming skills to implement solutions using common data structures to practical problems. It is a “required” course for the CS program as well as it is a “core” or “elective” course for all FENS programs.

Topics to be Covered
- Week 1: Overview and Introduction
- Week 2: Algorithm Complexity Analysis
- Week 3: Linear Data Structures 1 (Linked Lists)
- Week 4: Linear Data Structures 2 (Stacks, Queues)
- Week 5: Trees 1 (Tries, Binary Search Trees)
- Week 6: Trees 2 (AVL Trees, Tree Traversals)
- Week 7: Hash Tables
- Week 8: Heaps (Priority Queues)
- Week 9: Midterm
- Week 10: Disjoint Sets
- Week 11: Sorting 1 (Insertion Sort, Shell Sort)
- Week 12: Sorting 2 (Heap Sort, Merge Sort, Quick Sort)
- Week 13: Graph Data Structures 1 (Representation)
- Week 14: Graph Data Structures 2 (Depth-First and Breadth-First Search)

Instructor
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Teaching Assistants
Ali Osman Berk Şapçı Mohsin Munawar
Mohammad Abdeh Görkem Yar (Student) Furkan Kerim Yıldırım (Student)

Textbook

We may not stick to the textbook all the time, you are responsible for all material covered in class.

Schedule
Lectures: Monday 13:40 – 15:30 in University Center G030
Tuesday 13:40 – 14:30 in Performing Arts Center HALL

Recitations: Section A1: Friday 16:40 – 18:30 online
Section A2: Friday 16:40 – 18:30 online
Section B1: Thursday 8:40 – 10:30 online
Section B2: Thursday 8:40 – 10:30 online

Office Hours: See schedule
**Homework**
There will be 4 homework assignments. They will be assigned and collected at **SUCourse**. Recitations will be used for clarification about the homework. Late penalty is 10% of full grade (only 1 late day is allowed). If the homework is not done by you, you will get **-100** (minus 100). If repeated, you fail.

**Grading Policy**
Midterm (32%): April 18 Monday 13:40-15:30  
Final (36%): TBD  
Homeworks (32% total): 4 homework will be assigned and they may not have equal weight

**Makeup Policy**
If you do miss an exam, you need to show a documented emergency situation (such as a medical report) and notify the instructor before or within 24 hours after the exam date. The instructor reserves the right as to when and how a makeup exam will be granted. The topics for the make-up exams are from everything that is covered in class at the time of the exam.