CS 300 – Data Structures

Summer 2022-2023
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_1: Overview and Introduction
- Week 1_2: Algorithm Complexity Analysis
- Week 2_1: Linear Data Structures 1 (Linked Lists)
- Week 2_2: Linear Data Structures 2 (Stacks, Queues)
- Week 3_1: Trees 1 (Tries, Binary Search Trees)
- Week 3_2: Trees 2 (AVL Trees, Tree Traversals)
- Week 4_1: Hash Tables
- Week 4_2: Heaps (Priority Queues)
- Week 5_1: MIDTERM
- Week 5_2: Disjoint Sets
- Week 6_1: Sorting 1 (Insertion Sort, Shell Sort)
- Week 6_2: Sorting 2 (Heap Sort, Merge Sort, Quick Sort)
- Week 7_1: Graph Data Structures 1 (Representation)
- Week 7_2: Graph Data Structures 2 (Depth-First and Breadth-First Search)

Instructor
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Teaching Assistants
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Schedule
Lectures: Thursday 11:40 – 14:30 and Friday 11:40 – 14:30 at FENS L055
Recitations: Tuesday 14:40 – 17:30 at FENS L045
Office Hours: See SUCourse+

Textbook
We may not stick to the textbook all the time, you are responsible for all material covered in class.
**Homework**
There will be 3 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 (34%): August 10 Thursday 11:40-14:30
- Final (34%): Scheduled by Student Resources
- Homeworks (27% total): 3 homework will be assigned and they have equal weight
- Recitation Attendance (5%)

➤ If you miss the midterm or the final exam and if you do not take the make-up exam for that missing exam; then you will directly get an F grade.
➤ If you miss all of the homework assignments, midterm and final exams as well; then you will get an NA grade.

**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.

**Expectations from Students**
- Students are expected to attend all lectures and recitations.
- Students are responsible for the material covered in class even if it is not part of the lecture notes published on the website.
- Students are responsible to check their emails (Sabanci University accounts), SUCourse and course website daily for any announcements related to this course.
- **PLAGIARISM WILL NOT BE TOLERATED.**
  - Any act of plagiarism may result in a direct fail (F) of the course.