CS 300 – Data Structures
Summer 2023-2024
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.

Instructor
Gülşen Demiröz, Office: FENS G001C    E-mail: gulsen.demiroz@sabanciuniv.edu

Teaching Assistants
Ekin Marlalı        Mahdi Ali Pour

Schedule
- Lectures: Wednesday 11:40 – 14:30 (FENS 2019)
  Friday       10:40 – 13:30 (FENS L030)
- Recitations: Wednesday 15:40 – 18:30
- Office Hours: See SUCourse+ for schedule

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 (32%): 2 August Friday
- Final (35%): Scheduled by Student Resources
- Homeworks (27% total): 3 homework will be assigned
- Recitation Attendance (6%): Graded by your TA

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.

Textbook
We may not stick to the textbook all the time, you are responsible for all material covered in class.
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: Midterm
- Week 5_1: Heaps (Priority Queues)
- 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)