

# CS 300 – Data Structures

Summer 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\_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)

## Instructor

Gülşen Demiröz, E-mail: [gulsen.demiroz@sabanciuniv.edu](mailto:gulsen.demiroz@sabanciuniv.edu) Office: FENS L015

## Teaching Assistants

Mahdi Ali Pour

Mohammad Abdeh

## Schedule

**Lectures:** Thursday 11:40 – 14:30 and Friday 10:40 – 13:30 at FASS G062

**Recitations:** Section A1: Tuesday 08:40 – 11:30 at FENS L027

**Office Hours:** See [schedule](#)

## Textbook

*Data Structures & Algorithm Analysis in C++, (2<sup>nd</sup>, 3<sup>rd</sup>, or 4<sup>th</sup> edition)*, Mark Allen Weiss, Pearson, 2014, ISBN 0-273-76938-3 (4<sup>th</sup> edition).

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 12 Friday 10:40-13:30
  - 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.