# CS301 – Algorithms
# 2022-2023 Spring
# Syllabus

Version 4

*We may have to revise the course plan according to the countrywide reassessment to be made regarding higher education. This is expected to happen at the beginning of April. The content to be delivered is certain but the method of course delivery, the number and dates of exams, and some other details are subject to change.*

## Instructor

Name : Hüsnü Yenigün
Lectures : Monday 12:40-14:30 Online (streaming from UC G030 – Cinema Hall)
Friday 09:40-10:30 Online (streaming from FENS G077)
Office Hours : Thursday 16.40-18.30 Online

## TAs

Name : Atakan Saraçyakupoğlu
Office Hours : Tuesday 12.40-14.30 Online

Name : Ayşegül Rana Erdemli
Office Hours : Monday 17.40-18.30 Online

Name : Emine Ayşe Sunar
Office Hours : Thursday 10.40-12.30 Online

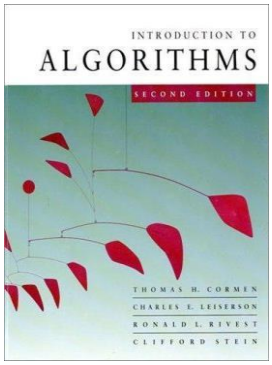
## LAs

Name : Hasan Berkay Kürkçü
Office Hours : Tuesday 16.40-17.30 Online

Name : Mustafa Yağız Kılıçarslan
Office Hours : Tuesday 11.40-12.30 Online

## Textbook

Introduction to Algorithms
Thomas H. Cormen,
Charles E. Leiserson,
Ronald L. Rivest
Clifford Stein



## Grading

- Midterm (20%) Date: May 05, 2023 (Friday) @ 09.40-10.30 [ ONLINE ]
- Final (40%) Date: TBA [ within the finals' week ]
- Homeworks (20%) ~5 homeworks
- Project (20%) group project
- Make-up Date: TBA [ after the final exam ]
  - Policy: If you miss the midterm or final exam (but not both), and if you have a valid excuse (e.g. a medical condition, an official university event participation, etc.), then you can take the make-up exam.

## Tentative Outline

**Week 01:** Introduction, Algorithm Design Techniques, Growth of Functions

**Week 02:** Background, Recurrences, Substitution Method, Iteration Method, Master Method, Lower Bounds, Sorting in Linear Time

**Week 03:** Stability of Sorting Algorithms, Radix Sort, Medians and Order Statistics, Dynamic Sets on Binary Search Trees

**Week 04:** Dynamic Sets, on Binary Search Trees, Red-Black Trees

**Week 05:** Augmenting Data Structures, Dynamic Programming

**Week 06:** Dynamic Programming, Greedy Algorithms

**Week 07:** Amortized Analysis, Graphs

**Week 08:** Minimum Spanning Tree, Shortest Path Problems

**Week 09:** NP-Completeness, Test Design (Functional and Performance Tests)

**Week 10:** Approximation Algorithms, Flow Networks

**Week 11:** Maximum Bipartite Matching, Sorting Networks

**Week 12:** Computational Geometry

**Week 13:** Randomized Algorithms

**Week 14:** coNP and PSPACE Complexity Classes