CS301 – Algorithms
2021-2022 Fall
Syllabus

Instructor
Name: Hüsnü Yenigün
Lectures: Tuesday 18:40-19:30, Friday 14:40-16:30
Office Hours: Tuesday 15:40-16:30, Wednesday 10:40-11:30

TAs
Name: Furkan Reha Tutaş
Recitation A1: Friday 16:40-17:30
Office Hours: Monday 19:40-20:30, Friday 17:40-18:30

Name: Ali Osman Berk Şapçı
Recitation A2: Friday 16:40-17:30
Office Hours: Tuesday 16:40-18:30

LAs
Name: Emre Vardar
Office Hours: Monday 18:40-19:30, Wednesday 16:40-17:30

Name: Efe Öztaban
Office Hours: Monday 10:40-11:30, Thursday 10:40-11:30

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

Grading
- Midterm (30%) Date: TBA [typically 8th week]
- Final (30%) Date: TBA [within the finals’ week]
- Homeworks (20%) 5-7 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

--- MIDTERM EXAM ---

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

-- PROJECT PROGRESS PRESENTATIONS --

**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

-- PROJECT FINAL PRESENTATIONS --

--- FINAL EXAM ---