CS301 – Algorithms
2023-2024 Spring
Syllabus

Version 1

Instructor

Name : Hüsnü Yenigün
Lectures : Wednesday 16:40-17:30 @ FENS G077
Friday 14:40-16:30 @ FENS G077
Office Hours : TBA

Recitations : Wednesday 18:40-19:30 @ FASS G062 & UC G030

TAs

Name : Atakan Saraçyakupoğlu
Office Hours : TBA

Name : Ayşegül Rana Erdemli
Office Hours : TBA

Name : Baturay Yılmaz
Office Hours : TBA

Name : Mohammad Yusaf Azimi
Office Hours : TBA

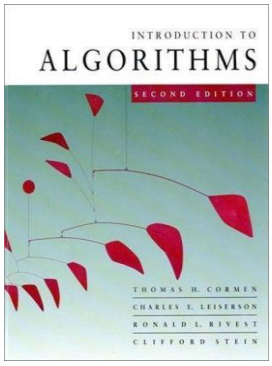
LAs

Name : TBA
Office Hours : TBA

Name : TBA
Office Hours : TBA

Textbook

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



Grading

- Midterm (30%) Date: TBA
- Final (40%) Date: TBA [within the finals' week] <<<<<<< **MUST SCORE AT LEAST 30**
- Homeworks (15%) 4-5 homeworks
- Project (15%) 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. The make-up exam grade is used as the grade of the exam you missed. Hence it has to be at least 30, if it is substituting the final exam. The make-up exam may be an oral exam, or may have an oral part (to be decided at the end of the semester).

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