CS301 – Algorithms
2020-2021 Fall
Syllabus

Instructor

Name : Hüsnü Yenigün
Lectures : Monday 14:40-15:30, Tuesday 10:40-15:30 [Link]
Office Hours : Monday 15:40-16:30, Friday 12:40-13:30 [Link]

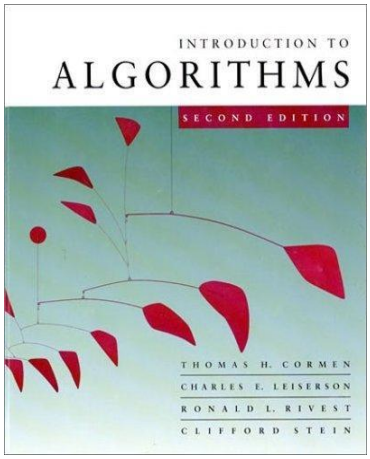
TAs

Name : Furkan Reha Tutaş
Recitation A1 : Monday 17:40-18:30 [Link]
Office Hours : Monday 19:40-20:30, Friday 18:40-19:30 [Link]

Name : Berk Yağlıoğlu
Recitation A2 : Monday 17:40-18:30 [Link]
Office Hours : Monday 19:40-20:30, Friday 18:40-19:30 [Link]

Textbook [order from Homer]

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



Grading

- Quizzes (15%) worst 20% is dropped, no make-up, 0 for missed quizzes
- Midterm (25%) Date: TBA [typically 8th week]
- Final (25%) Date: TBA [within the finals' week]
- Homeworks (20%) 5-7 homeworks
- Project (15%) group project, analysis and implementation of an algorithm
- 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)

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

--- FINAL EXAM ---