CS301 – Algorithms
2020-2021 Fall
Syllabus

Instructor
Name: Hüsnü Yenigün
Office: FENS 2054
Office Hours: TBA [ starts 2nd week ]

TAs
Furkan Reha Tutaş (Office hours: TBA) [ starts 2nd week ]
Berk Yağlıoğlu (Office hours: TBA) [ starts 2nd week ]

Time:
Monday 14:40-15:30
Tuesday 10:40-12:30
Room: [ https://sabanciuniv.zoom.us/j/93086589932?pwd=TjRiM0V5dnFOa0pxU1U4L1d5NFl1Zz09 ]

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 ---