CS301 – Algorithms
2021-2022 Fall
Syllabus

Instructor

Name : Hüsnü Yenigün
Lectures : Tuesday 18:40-19:30 [PAC & Online]
Friday 14:40-16:30 [FENS G032 & Online]
Office Hours : Tuesday 15:40-16:30, Wednesday 10:40-11:30 [Online]

TAs

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

Name : Ali Osman Berk Şapcı
Recitation A2 : Friday 16:40-17:30 [Online]
Office Hours : Tuesday 16:40-18:30 [Online]

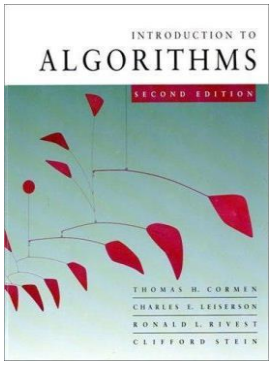
LAs

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

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

Textbook

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



Grading

- Midterm (30%) Date: 18.11.2021 Thursday @ 20:00-21:30
- 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)

Week 10: Approximation Algorithms, Flow Networks

-- PROJECT PROGRESS PRESENTATIONS (within Week 10) --

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 (within Week 14) --

--- FINAL EXAM (within Final's Weeks) ---