CSE 246 Analysis of Algorithms, Spring 2019

Instructor: Assist. Prof. Ömer Korçak  E-mail: omer.korcak@marmara.edu.tr

Office: 452  Office hours: Thursday 10:30-11:30, Friday 11:00-12:00

TA: Muhammed Nur Avcil


Lecture hours: Thursday 09:30 – 10:20 (MC 165), Friday 14:00 – 15:50 (MC 165)


Grading:
Midterm: 30%
Homeworks and Experiments: 30%
Final: 40%

Academic Integrity: Any kind of cheating and plagiarism will be severely penalized. Write everything in your own words and sentences (your own English, even if it is broken!).

Course Outline:
1. Introduction: The Notion of Algorithm, Fundamentals of Algorithmic Problem Solving, Important Problem Types, Fundamental Data Structures. (3 hours)
3. Brute Force and Exhaustive Search: Selection Sort and Bubble Sort, Sequential Search and Brute-Force String Matching, Exhaustive Search, Depth-First Search and Breath-First Search. (3 hours)
5. Divide-and-Conquer: Master Theorem, Mergesort, Quicksort, Binary Tree Traversals and Related Properties, Strassen's Matrix Multiplication, Closest-Pair Problem. (4 hours)
7. Space and Time Tradeoff in Algorithms, Sorting by Distribution Counting, String Matching Algorithms, Hashing. (4 hours)
10. Iterative Improvement: Maximum Flow Problem, Maximum Matching in Bipartite Graphs. (3 hours)
11. Limitations of Algorithm Power: Lower-Bound Arguments, Decision trees, P, NP, NP-Complete Problems. (3 hours)
12. Coping with the Limitations of Algorithm Power: Backtracking, Branch-and-Bound, Introduction to Approximation Algorithms. (4 hours)