Course program and reading list

Semester 1 Year 2016

School: Efi Arazi School of Computer Science M.Sc.

Advanced Algorithms

Lectures:

Dr. Shay Mozes smozes@idc.ac.il

Instructor Assistants:

Mr. Ori Ben Dor ori.bendor@post.idc.ac.il

Dr. Shay Mozes smozes@idc.ac.il

Course No.: 3501

Type Course: Lecture

Weekly Hours: 4

Credit Points: 4

Course Requirements: Exam

Group Code: 161350101

Language: Hebrew

Prerequisites

Prerequisite:

52 - Calculus I
53 - Calculus II
54 - Linear Algebra I
55 - Linear Algebra II
56 - Discrete Mathematics
59 - Data Structures
69 - Logic And Set Theory
77 - Algorithms
417 - Introduction To Computer Science

Course Details

An advanced course intended mainly for M.Sc. students. The course will cover a range of topics relating to algorithm design and analysis. The focus is more on breadth than on depth. As such we will cover many subjects that will give the students a taste of advanced and modern algorithmic techniques and approaches to solving problems algorithmically. Subjects covered include reviewing basic techniques such as greedy algorithms and dynamic programming, approximation algorithms for NP-hard problems, linear programming, randomized algorithms, online algorithms, parameterized complexity, and more.

Course Goals

The goal of this class is to introduce the students to various algorithmic techniques for solving problems, and to strengthen the students' ability to design, analyze and argue about algorithms.

Course Grading Method

The grade is composed of 30% homework assignments (about 6 biweekly problem sets)
The grade is composed of 30% homework assignments (about 6 biweekly problem sets) and 70% final written exam. Bonus points will be given to students preparing their problem sets using LaTeX.

📖 Lecture Reception Hours
Thursdays 17:00-18:00

⏰ Instr. Assistance Details
Mr. Ori Ben-Dor will be the grader for this class. He can be contacted by email orbendor@gmail.com

💭 Reading List
The course does not follow a single book. Relevant books for various topics we will cover are:

- Approximation Algorithms by Vijay V. Vazirani. Springer.
- Randomized Algorithms by Rajeev Motwani and Prabhakar Raghavan. Cambridge University Press.
- Linear Programming by Vasek Chvatal