Course program and reading list

Semester 1 Year 2024

School: Efi Arazi School of Computer Science B.Sc

Algorithms

Lecturer:

Prof. Tami Tamir tami@runi.ac.il

Tutors:

Mr. Roy Shafir roy.shafir@post.runi.ac.il

Mr. Yoval Belfair yuval.belfer@post.runi.ac.il

Mr. Shaul Rosner shaul.rosner@post.runi.ac.il

Teaching Assistant:

Prof. Tami Tamir tami@runi.ac.il

Mr. Alon Oring alon.oring@post.runi.ac.il

Mr. Maor Mizrachi maor.mizrachi@post.runi.ac.il

Course No.:	Course Type :	Weekly Hours :	Credit:
77	Lecture	5	5

Course Requirements :	Group Code :	Language:
Final Paper	241007701	Hebrew

Prerequisites

Prerequisite:

56 - Discrete Mathematics
59 - Data Structures
69 - Logic And Set Theory

Course Description

The course covers fundamental ideas in the design and analysis of Algorithms. A thorough knowledge of algorithms allows a computer scientist to determine what problems can be solved using a given amount of resources. The tools and techniques used for the basic algorithms covered in this course can be adapted to provide efficient solutions to novel problems.

Course Goals

1. To achieve the Learning Outcomes (see below)

2. Fun

Grading

Your final grade is based on three components:

- H = HWs
- M= Mid-term exam
- E = Final exam

Final grade calculation:

If (E<60) then FAIL (sorry), else 0.1H + 0.15M + 0.65E + 0.1max(M,E).

Good Luck!

Learning Outcomes

The students will be familiar with the following topics: Graphs - definitions and representations, Topological sort, Euler and Hamiltonian tours, Trees, Graph traversals:DFS, BFS, Shortest path algorithms, Minimum spanning trees, Maximum flow and matchings, Dynamic programming, Greedy Algorithms.

The students will have a good sense of how to model real-world problems as algorithmic

problems, and a deeper understanding of the issues and tradeoffs involved in algorithm design.

Reading List

Textbook: Cormen, Leiserson, Rivest and Stein - Introduction to Algorithms
Lecture notes and additional material - available in the course web-page.