

# Algorithms 1 (234247)

## Spring 2017 (אביב השע"ז) Syllabus

### 1 Staff

#### Lecturers

- Prof. Roy Schwartz

#### Teaching Assistants

- Itay Evron (TA in Charge)
- Yaron Fairstein
- Michal Friedman
- Elad Kravi
- Maya Levy

### 2 Course Material

Topic	Approx. Time
Breadth First Search (BFS)	2 hours
Depth First Search (DFS)	2 hours
Inseparable Components / Strongly Connected Components	2 hours
Minimum Spanning Trees (MST)	3 hours
Shortest Path Problem	3 hours
Greedy Algorithms	3 hours
Dynamic Programming	5 hours
<ul style="list-style-type: none"><li>• Including All-Pairs Shortest Path (APSP) Problem.</li></ul>	
Maximum Flow Problem	6 hours

### 3 Grading

The final exam will constitute 90%-100% of the grade, depending on the homework grades (see the details below). Only students who miss an exam due to reserve duty will be entitled for “Moed Gimel”. A student who wishes to attend Moed Gimel must provide the necessary documentation to the TA in charge.

### 4 Exam Dates

- **Moed A** will take place on Friday, July 7<sup>th</sup>, 2017.
- **Moed B** will take place on Monday, September 25<sup>th</sup>, 2017.

### 5 Homework Policy

- 5 problem sets will be given throughout the semester, each is 2% “magen” for computing the final grade (independently).
- In order to get a grade in the course, **you have to submit and pass at least 4 assignments**.
- **Both tests (Moed A and B) will include a question or a sub-question from the homework.**
- **Submission will be in pairs.** No other submissions will be graded, unless authorized by the TA in charge.
- In each home assignment, we will thoroughly examine **only one or two** questions (50 points), and the rest of them will only be briefly examined (50 points).
- Postponements will only be given for active reserve duty. No extensions will be granted due to illness or other issues.
- Every student registered to the course is expected to submit the home assignments, **including students repeating the course** (even those who already have a passing grade).

### 6 Workshops

In order to assist you with the home assignments, we will hold workshops in which you can consult the TAs **before** the assignment is due. We highly recommend that you take advantage of this opportunity to make the most out of the course!

### 7 Course Website

The course has an online website at <http://webcourse.cs.technion.ac.il/234247>. You are expected to visit the website and read updates frequently. The course also has a mailing list; make sure you are registered for receiving updates (Auto Update on the GR website).

## 8 Literature

The course textbooks are:

- **Introduction to Algorithms**, T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein, MIT Press, 2<sup>nd</sup> edition, 2001.
- **Graph Algorithms**, S. Even, Computer Science Press, 1979.
- **Algorithm Design**, J. Kleinberg , E. Tardos, Addison Wesley, 2006.

Notes regarding the books:

1. There is a third edition of the Introduction to Algorithms book. The course follows the *second* edition.
2. There is a Hebrew translation of Chapters 1-7 of the Algorithm Design book; it is called “פיתוח אלגוריתמים”.
3. On the course website you can find a lecture notes booklet. The booklet contains most of the studied material, although there may be some differences. **In any case, the exam is based on the material taught during the lectures and tutorials.**