

## Data Structures – DAST

Course #67109 and 67110

Spring 2004

**Prof. Leo Joskowitz**

School of Engineering and Computer Science

URL: <http://www.cs.huji.ac.il/~dast>

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## DAST 67109 and 67110

- DAST 67109 = 7 credits, DAST 67110 = 6 credits
- Course material, tirgulim, theoretical exercises and exam are IDENTICAL.
- Only difference is in the programming load: Programming homeworks 2 and 3 will be lighter for 67110 than for 67109.
- You can attend any exercise session regardless of where you were registered.

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## Course hours

### Lecture session 1

- Sun 12—12:45
- Tue 12—13:45

### Lecture session 2

- Sun 13—13:45
- Tue 14—15:45

### Exercise sessions:

- E1: Mon 16—17:45 (Shprinzak 27)
- E2: Tue 12—13:45 (Shprinzak 117)
- E3: Tue 16—17:45 (Shprinzak 29) Talpiot only
- E4: Wed 12—13:45 (Shprinzak 28)
- E5: Thu 9—10:45 (Shprinzak 215)

All sessions except Talpiot are open to all!

No more than 60 students per exercise session!

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## Course staff and office hours

**Lecturer:** Leo Joskowitz

- Email: [josko@cs](mailto:josko@cs)
- Phone: 02-658-6299
- Office: Ross 223
- Office Hours: Monday 10—12

**Teaching assistants (TAs—Metarguelim)**

- Yoad Lustig: Thu 11:15—12:15
- Ido Omer: Mon 12—13
- Noga Oron: Sun 16—17
- Ron Berman (Talpiot): [madar@talpiot.org](mailto:madar@talpiot.org) by appointment

*Please respect the office hours. If necessary, make an appointment by email. No walk-ins accepted!*

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## Course audience and requirements

- The course is required for all undergraduate Computer Science and Engineering students and for other qualified students.
- Prerequisites: Intro to CS, Intro to CS for Math, or suitable background (must consult with me).
- Assumptions: basic programming skills in JAVA, basic understanding of what is an algorithm and how to turn it into a program.
- Material covered last semester by Profs. Rosenchein and Weinshall.

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## Course goal

*The goal of the course is to teach students fundamental data structures and algorithms for data processing, and how to use them and adapt them effectively for solving problems.*

The course has two important aspects:

- **Theoretical**
  - Basic data structures and the operations on them
  - Complexity analysis of algorithms
- **Programming**
  - Program a mid-size project using JAVA and debugging tools

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## Course topics

- Asymptotic complexity analysis
- Solving recurrence equations
- Efficient sorting techniques
- Linked lists, priority queues, heaps, hash tables
- Search trees: binary trees, AVL trees
- Graphs and graph algorithms: Breath-First Search, Depth-First Search, Shortest Path, Minimum Spanning Trees
- Union-Find operations on sets
- Data structures design and analysis
- JAVA project programming

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## Course material

- All course material (lecture and exercise slides, newsgroups, submission guidelines, etc) is in:  
*<http://www.cs.huji.ac.il/~dast>*
- Course material is subject to modifications before and after the actual session (additions, corrections). Last update date appears for each file.
- Recommended book:  
“Introduction to Algorithms”, Second Edition  
T. Cormen, C. Leiserson, R. Rivest, C. Stein  
The MIT Press, 2001.  
See Web Page for JAVA links

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## Course grade

- Final grade:
  - 65% Exam
  - 25% Programming Homeworks
  - 10% Theoretical Homeworks
- All homeworks are MANDATORY. Not handing in a homework in time means “0” on that homework.
- Time investment in homeworks is NOT proportional to its contribution in the grade!
- Average grade: 82—84 (by Rector’s instructions).

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## Theoretical homeworks

- Five problem sets independent of each other
- Individual
- 10% of grade, 2% for each homework
- Clear writing and concise answers are a must!
- Submissions in the course mailbox by noon (12:00) of the due date
- No late submissions or unjustified extensions!
- Solutions published on the Web two weeks after the due date

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## Programming homeworks

- Three problem sets, building on each other
- Done in pairs—no switching partners after the first homework has been handed in!
- 25% of the grade, first 7%, second and third 9%
- Electronic submission AND printout in course mailbox by noon (12:00) of the due date
- Grading includes automatic test (50%) and evaluation of style, choice of data structures, and modularity (50%)
- Must carefully follow posted guidelines
- Late submission policy: at most 3 working days late, with a penalty of –5 credits per day (counted at noon)

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## Homework submission policy (1)

- All homeworks are MANDATORY. Not handing in a homework on time means getting a “0” for it.
- No late submissions of Theoretical homeworks; maximum of 3 working days for Programming homeworks with –5 credit penalty for each day
- Late submissions are only accepted for EXCEPTIONAL situations: milium, sickness, special personal circumstances.
- Must request by E-mail an extension from TA at least one working day BEFORE due date and obtain a written response. Oral consent is not accepted.

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## Homework submission policy (2)

- **Miluim:** an extension will be granted upon showing a copy of the “tzav miluim”. You must request by email the extension BEFORE your miluim. You will be granted an extension of one day per day of miluim. For miluim of more than 2 weeks, contact the TA.
- **Sickness, personal circumstances:** for sickness, bring an “ishur mahala”. Other circumstances dealt on an individual basis. Please inform the TAs in writing as soon as you can.

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## Appeals (Irurim)

- Must be in writing up to TWO WEEKS after the graded homework was returned.
- Appeals must be in the format specified in the course Web page and must include the original printout or text. Oral appeals and appeals in the wrong format will NOT be considered!
- In-person appeals must be during office hours or exceptionally, by prior appointment. No walk-ins will be accepted!

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## Final exam

- Mandatory for everyone. All questions must be answered!
- Grades will be handed within 2 weeks of the exam
- No “moed gimel”!
- Appeals to the exam grade must be in writing and should be filed at most 10 days after the grades are published. A written answer will be provided at most two weeks afterwards.
- All exam material, including the appeal will be kept and filed at the mazkirut (dean’s instructions).

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## Newsgroups

- **Student newsgroup:** *local.course.dast.stud*  
Not moderated, used for free discussion among students.
- **Course newsgroup:** *local.course.dast.ta*
  - Moderated, used for questions of general interest ONLY
  - Includes a FAQ (frequently asked questions) summary
  - Submission policy: read the FAQ before sending your question. If the answer appears there, or the question is not of general interest, it will not be answered.

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## Email: *dast@cs.huji.ac.il*

- Do NOT send e-mail to the TA’s personal addresses, as these will not be answered.
- Use the E-mail for the following items (specify in Subject)
  1. Request for an extension
  2. Request for meeting with TA –specify name
  3. Appeal to homework grade
  4. Clarification on homework which does not appear in the course newsgroup FAQ and is not of general interest
  5. Help with class material
- Reply policy: we will make our best effort to reply within 48—72 hours of your request, excluding Fri, Sat, and holidays. Expect further delays if volume increases
- E-mails and newsgroups should be used sparingly!!

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## Copying and cheating

- Don’t do it, its not worth it!
- Copying is regarded as a very serious offense and will be prosecuted according to the University rules
- We have means to check for copying: automatic program comparison, logs of computer usage, etc.
- Verbal communication is OK, as long as no written or electronic material is exchanged.
- Copying from the Web is also penalized!

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## Homework and exam schedule

ASSIGNED	DUE	TIME
• Tue Mar 2: Program HW1	Sun Mar 28	23 days
• Tue Mar 9: Theory HW1	Sun Mar 21	10 days
• Sun Mar 21: Theory HW2	Thu Apr 22	15 days
• Sun Mar 28: Program HW2	Thu May 13	25 days
• Thu Apr 22: Theory HW3	Thu May 6	14 days
• Thu May 6: Theory HW4	Sun May 23	14 days
• Thu May 13: Program HW3	Thu Jun 13	28 days
• Sun May 23: Theory HW5	Sun Jun 10	14 days
• Wed Jun 24: <b>FINAL EXAM</b>		

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## Schedule rationale

- Evenly spread load: about 14 days for theoretical homeworks, and 25 days for programming homeworks.
- Holidays (Pesach, Purim, Yom Hatzmaut) and Shabbat do not count as working days.
- Because the exam is the first day after the end of classes, the programming homework is due one week before!
- Plan your course load accordingly!!

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## Lecture and exercise schedule – exceptions

Lecture session 1:      Lecture session 2:

- La: Sun 12—12:45      Sun 13—13:45
- Lb: Tue 12—13:45      Tue 14—15:45

Exercise sessions:

- E1: Mon 16—17:45
- E2: Tue 12—13:45
- E3: Tue 16—17:45 Talpiot only
- E4: Wed 12—13:45
- E5: Thu 9—10:45

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## Lecture and exercise schedule (1)

Week	Exception	Lectures	Exercise
1. Feb 29 –Mar 4		L01a, L01b	
2. Mar 7—Mar 11	Purim (Sun,Mon)	L02b	E1 switch
3. Mar 14—Mar 18		L03a, L03b	
4. Mar 21—Mar 25		L04a, L04b	
5. Mar 28—Apr 1	Pesach (Thu)	L05a, L05b	E5 switch
Apr 4 – Apr 15			
6. Apr 18—Apr 22		L06a, L06b	
7. Apr 25—Apr 29	Hatzmaut (Sun, Mon)	NO LECTURES	Cancelled
8. May 2—May 6		L08a, L08b	

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## Lecture and exercise schedule (2)

Week	Exception	Lectures	Exercise
9. May 9—May 13	Yom Hastudent (Tue)	L09a	E2 switch E3 resched.
10. May 16—May 20		L10a, L10b	
11. May 23—May 27	Shavuot (Tue Wed)	L11a	Cancelled
12. May 30—Jun 3		L12a, L12b	
13. Jun 6—Jun 10		L13a, L13b	
14. Jun 13—Jun 17		L14a, L14b	
15. Jun 20—Jun 25	End Semester		Cancelled
MOED A: Wed Jun 24			
MOED B: Sun Aug 29			

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## Keeping a productive atmosphere

- We (Lecturer, TAs, and graders) are **committed** to provide you with the best possible learning environment.
- We will do our best to keep a positive and productive atmosphere.
- We work together, not one against each other!!

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