Analysis of Algorithms
Fall 2017
Course Information

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Instructor — Amotz Bar-Noy

- **E-mail:** amotz@sci.brooklyn.cuny.edu.
- **Internet:** http://www.sci.brooklyn.cuny.edu/~amotz/bc-algorithms.html
- **Office Hours:** Tuesday 3:00pm–4:00pm, Room 2112a.
- **Class Hours:** Tuesday 6:05pm–8:10pm, Room 236NE.
Prerequisite Courses and Knowledge

- A course in data structure
  - Computer and Information Science 6006X [622X]
- A course in discrete structures.
  - 6004X [611X]
Main Textbook

  - 2nd edition and even 1st edition are also good.
Textbooks

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Other Books

- “Algorithm Design,” Kleinberg and Tardos, Addison Wesley.
- “Algorithm Design,” Goodrich and Tamassia, Wiley.
- “Introduction to Algorithms a Creative Approach,” Manber, Addison-Wesley.
Online Resources

- Lecture notes from MIT:

- Problems on Algorithms:
  http://larc.unt.edu/ian/books/free/poa.pdf

- Mathematics for Computer Science:
  http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-042j-mathematics-for-computer-science-fall-2010/
Tentative Syllabus

- Introduction; Mathematical Background; Analysis of Algorithms.
- Searching; Order Statistics; Sorting.
- Divide & Conquer; Greedy Algorithms; Dynamic Programming.
- Graphs; Graph Traversals; Minimum Spanning Trees.
- NP-Completeness.
01. 08/29/2017 Mathematical Background
02. 09/05/2017 Analysis of Algorithms
03. 09/12/2017 Order Statistics
04. 09/26/2017 Order Statistics/Sorting
05. 10/03/2017 Sorting
06. 10/10/2017 **Midterm Exam**
07. 10/17/2017 Divide and Conquer
08. 10/24/2017 Greedy Algorithms
09. 10/31/2017 Dynamic Programming
10. 11/07/2017 Graphs
11. 11/14/2017 Graph Traversals
12. 11/28/2017 Minimum Spanning Trees
13. 12/05/2017 NP-Completeness
14. 12/12/2017 To Be Determined
15. 12/19/2017 **Final Exam**
Grading

Percentages

This is only a **guideline**, percentages and rules may change during the semester as needed.

The final grade will be composed of the following 5 components:

- \( \approx 40\% - 60\% \) final exam.
- \( \approx 20\% - 30\% \) mid-term exam.
- \( \approx 0\% - 20\% \) quizzes.
- \( \approx 10\% - 10\% \) assignments.
- \( \approx 0\% - 20\% \) programming project.

General Formula

\[
\text{final\%} = 100 - \text{midterm\%} - \text{assignments\%} - \text{quizzes\%} - \text{project\%}.
\]

Final exam grade dominates: only grades that are greater than the final exam grade count!
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General Formula

- final% = 100 - midterm% - assignments% - quizzes% - project%.
- Final exam grade dominates: only grades that are greater than the final exam grade count!
There could be two types of quizzes:

- At the beginning of the class to check what you learned in the previous week.
- At the end of the class to check what you learned during the class.

There might be no announcements regarding quizzes.

The number of quizzes has not yet been determined.
Answering a question

- Answer a question in an **exam**, in a **quiz**, or in an **assignment**:  
  - Only within the given space for the answer.
  - Using a readable text with normal size font.
  - You get 20% of the value if you leave the answer blank.
  - You get no points for a wrong answer.
Preparing Assignments

- Type the answers or use a *readable* hand writing.
- Do the assignments alone if you can.
- Get help if necessary.
- You **must** understand everything you write.
Refresh your algorithmic knowledge and mathematical foundations.


In the second edition read Chapters 1–4 (without 4.4) and Appendices A–D (without C.5). In the first edition read Chapters 1–5 (without 4.4).
Reading and Practicing Assignment

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- Practice by solving some or all of the problems in the books and online resources.
  - Solve problems in Chapters 1–5 of the online book “Problems on Algorithms,” by Ian Parberry.
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