Analysis of Algorithms
Fall 2018
Course Information

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- **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 232NE.
Prerequisite Courses and Knowledge

- A course in data structure
- A course in discrete structures.
Textbooks

Main Textbook

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

- Video Lectures for the main text book from MIT:

- YouTube Lectures for another course on algorithms from Stanford:
  https://www.youtube.com/playlist?list=PLXFMmlk03Dt7Q0xr1PIAriY5623cKiH7V

- Problems on Algorithms book by I. Parberry and W. Gasarch:
  http://larc.unt.edu/ian/books/free/poa.pdf

- Video lectures for Mathematics for Computer Science from MIT:
  https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-042j-mathematics-for-computer-science-fall-2010/video-lectures/
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.
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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:
  - ≈ 40% – 60% final exam.
  - ≈ 20% – 30% mid-term exam.
  - ≈ 0% – 20% quizzes.
  - ≈ 10% – 10% assignments.
  - ≈ 0% – 20% programming project.
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  - \( \approx 0\% - 20\% \) quizzes.
  - \( \approx 10\% - 10\% \) assignments.
  - \( \approx 0\% - 20\% \) programming project.

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).
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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.

http://larc.unt.edu/ian/books/free/poa.pdf
Reading and Practicing Assignment

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