

CS 2413 (Sections B and D): Design and Analysis of Algorithms

Spring 2017

Instructor: Prof. Lisa Hellerstein

Office: 2 Metrotech, Rm. 10.092

Email: lisa.hellerstein@nyu.edu

Office Hours: Tues, and Thurs, 4:00 to 5:00

Prerequisites: CS-UY-2134 (Data Structures and Algorithms; C- or better) and MA-UY-2312/2322 / MA-UY-2314 (Discrete Mathematics I and II), or equivalent knowledge of basic data structures and discrete math.

Required Textbook: S. Dasgupta, C.H. Papadimitriou, and U.V. Vazirani, *Algorithms*, McGraw-Hill, 2006, ISBN 978-0073523408. A Kindle edition of the textbook is available.

Alternative algorithms texts:

Jon Kleinberg and Eva Tardos, *Algorithm Design*, Addison Wesley, 2006, ISBN 0-321-29535-8. Used for this course some semesters ago. Another solid algorithms book. Mostly focuses on optimization problems, but overall covers much of the same material.

Cormen, Leiserson, Rivest, and Stein, *Introduction to Algorithms*, 3rd Edition, MIT Press, 2009; ISBN-13: 9780262033848; ISBN: 0262033844. Poly students have free access to the second (but not the third) edition of this book in an electronic format on books24x7 (you need to go through the library web site for this). The classic text book and reference on fundamental algorithms. Used in Poly for two graduate courses. The book is very large. It includes much of that is in this course. A good reference or source of alternative explanation and/or examples.

Assignments and exams: There will be homeworks every one to two weeks, two midterm exams, and one final exam. Attendance at exams is mandatory. Make-up exams will only be given in the case of an emergency, such as illness, which must be documented, e.g. with a doctor's note. In such cases, you **must** notify Prof. Hellerstein as early as possible, preferably **before** the exam is given. If you miss an exam without a valid excuse, you will receive a grade of zero for that exam.

Course Work and Grading:

Your final grade will be determined roughly as follows:

Homeworks	15%
Two midterm exams	25% each
Final exam	35%

Important dates:

First class	Tues, Jan. 24
No class/spring break	Tues & Thurs, Mar. 14 and 16
Midterm 1 (tentative)	Thurs, March 9
Midterm 2 (tentative)	Tues. April 11
Last class	Thurs, May 4
Final exam	TBA in the period May 10-16

Tentative course outline: We will cover the book mostly in order, at a rate of roughly three subsections per lecture, on average, up to and including Chapter 10.

We have some flexibility in what to cover in the last few lectures of the course—any reasonable request will be considered.

Homework policy: A policy on homeworks will be posted as a separate document.

Class communication: NYU Classes—only for homework hand-in (where indicated) and the posting of grades. For everything else—course site on Piazza.

Changes: All the information in this syllabus is subject to change. Changes will be announced in class and on Piazza.

"It has often been said that a person does not really understand something until after teaching it to someone else. Actually a person does not really understand something until after teaching it to a computer, i.e., expressing it as an algorithm." --- Donald Knuth

Moses Center Statement of Disability: If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities (CSD) at 212-998-4980 or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations.

Information about CSD can be found at www.nyu.edu/csd. It is located at 726 Broadway on the 2nd floor.

NYU School of Engineering Policies and Procedures on Academic Misconduct

Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School's rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School's Policy on Academic Misconduct.

Denition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to inuence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:

1. **Cheating:** intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person's work during an exam; submitting work prepared in advance for an in-class

examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.

2. Fabrication: including but not limited to, falsifying experimental data and/or citations.

3. Plagiarism: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.

4. Unauthorized collaboration: working together on work that was meant to be done individually.

5. Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.

6. Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.

See <http://engineering.nyu.edu/files/SACCoFC9-14-15.pdf> for the Code of Conduct, which can be found here:

<http://engineering.nyu.edu/life/student-affairs/community-standards-procedures>