CS 501: Computer Algorithms II

Spring 2020: T-Th 9:30 am -10:45 am, Thomas Beckham Hall 180D
Course page: https://asudeh.github.io/teaching/cs501spring20/

Instructor: **Abolfazl Asudeh**, Assistant Professor
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Office Hours: TBA

GTA: TBA
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Prerequisites:

- CS/MCS 401, CS 251 or MCS 360

Course Description and Goals:

- The design of computer algorithms is a rich and heavily studied area in computer science, whose impact has been great in both the practical and theoretical aspects of the field. At a high level, this course aims exploring advanced computation models, theory and advanced algorithm design and analysis techniques that have broad applicability in solving real-life problems in cross-disciplinary areas such as data mining, big data exploration, data science, and social networking. The course will consist of three parts: (a) the theory of NP-completeness, (b) approximation techniques to cope with intractability, and (c) randomized techniques.

Textbook:

a) NP-completeness
- [CLRS] Cormen, Leiserson, Rivest, Stein, Introduction to Algorithms, 3rd ed., MIT Press, 2009.

b) Approximation Algorithms
- [Vazirani] Vijay V. Vazirani, Approximation algorithms. Springer Science & Business Media, 2013.

c) Randomized Algorithms
- [Motwani] Rajeev Motwani, Prabhakar Raghavan: Randomized Algorithms, 1995

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Additional References:

- [KT] Kleinberg and Tardos, Algorithm Design, Addison Wesley, 2006, ISBN 0-321-29535-8.
- [GJ] Michael R. Garey, David S. Johnson: Computers and Intractability: A guide to the theory of NP-completeness, 1979

Evaluation:

- 3 non-cumulative exams worth 30% weight each
- Active Participation in Class (APC): 10% weight

$$\textit{Final Grade} = 0.3\,\textit{Exam}_1 + 0.3\,\textit{Exam}_2 + 0.3\,\textit{Exam}_3 + 0.1\,\textit{APC}$$

Grades will be posted online on the UIC Blackboad system.

If you have a question or complaint about the way an exam was graded, then, *within one week* of the date the assignment is returned, you should either explain what it is on a separate piece of paper and give it to the TA along with the assignment or, better yet, come into office hours and get it straightened out then. We want everyone happy and satisfied, but we can't do much in the couple of minutes before and after class.

Rule, Academic Integrity

Incompleteness:

The UIC Undergraduate Catalog states that in addition to needing excellent justification for an incomplete, a student must also have been "making satisfactory progress in the course."

Therefore, no matter how good your excuse, I will not grant you an incomplete if you have less than a C average at the time you ask for an incomplete.

Academic Integrity:

You may discuss the homework problems with other students; in fact, I encourage you to do so, but you are expected to write up your solutions by yourself. If you do work on the problem sets with other students, please put the names of your group at the top of your problem set. If you consult any web page while working on an assignment, put the URL for the page on the homework. If your homework is highly similar to another students' homework (e.g., more than 50% as determined by the similarity checking software) then we will consider you to be guilty of cheating.

Cheating will not be tolerated!

Not only is cheating a violation of the campus code of integrity, which might incur a reduced grade, expulsion from the class or university, it is also a slight against the other students in the class who will give you dirty looks. Refer to the UIC Student Disciplinary Policy for guidlines and policy on student integrity and possible repercussions. Cheating is plagiarism, taking credit for somebody else's work and I take it very seriously.

The minimum penalty for any cheating will be a grade of zero for the homework, project, or exam in question, along with a warning. The minimum penalty for cheating after a warning has been given will be an F for the course. In both cases, the maximum penalty is expulsion from the University.

Keeping Documents Private:

You must keep private and not email, post on the web, or share in any way:

- Any solutions to homework problem sets of tests that we give you,
- Any lecture notes not posted on the class website.

Other Resources:

Information about how to interpret midterm grades
Statement about disability services
List of registration and records policies
http://www.uic.edu/ucat/catalog/CA.shtml#f