CSCE 411: Design and Analysis of Algorithms
Spring 2014

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Lectures: Mondays, Wednesdays, Fridays 11:30 am - 12:20 pm, HRBB 113


Course Webpage: https://parasol.tamu.edu/people/hcchung/teaching/411s14.html

Prerequisites: CSCE 221, CSCE 222, and CSCE 315. See course webpage for more details about required background and resources.

Course Goals: At the end of the semester, you should:
- be familiar with fundamental algorithms and algorithmic techniques;
- given a particular application, be able to decide which algorithm among a set of possible choices is best;
- be able to prove correctness and analyze the running time and space complexity of a given algorithm;
- be able to design efficient algorithms for new situations using the techniques learned;
- be able to prove a problem is NP-complete using reduction and understand the implications;
- understand the notion of undecidability, know that some problems are undecidable and the implications thereof.

Course Content and Tentative Schedule: The course will cover the following topics. The relevant chapters of the textbook are indicated.

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<td>introduction and brute force algorithms</td>
<td>Chs 1-3</td>
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<td>divide and conquer algorithms</td>
<td>Chs 4, 30, and 33</td>
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<td>2/3, 2/10</td>
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<td>greedy algorithms</td>
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<td>maximum flow</td>
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<td>NP-completeness and approximation</td>
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Assignments and Grading: All assignments will be announced in class and posted on the course web page. If you cannot turn in an assignment on time, discuss the situation in advance with the instructor. Your grade will be based on these components:

- quizzes 10% – Quizzes will be given in class. Your lowest quiz grade will not count towards your final grade.
- homeworks 25% – Homework will consist of written problems. More details will be available on the course web page.
- project 15% – You will implement and compare two algorithms that solve the same non-trivial problem. More details will be available on the course web page.
- exams 45% – There will be two exams: midterm (20%), final exam (25%, comprehensive).
- culture reports 5% – This component is to round out your classwork. Write two short reports on aspects of computer science and engineering that relate to algorithms. More details will be available on the course web page.

Late Policy: An assignment turned in late will lose 10% of the maximum possible points for each 24 hours that it is late. Once solutions have been posted/distributed/discussed, the assignment will not be accepted.

Course grades will be assigned according to this scale:

A: 90-100%, B: 80-89%, C: 70-79%, D: 60-69%, F: < 60%

Academic Integrity Statement and Policy: The Aggie Honor Code states “An Aggie does not lie, cheat or steal or tolerate those who do”. More information on academic integrity, plagiarism, etc. is available at the Aggie Honor System Office web site http://aggiehonor.tamu.edu, including:

- Definitions of academic misconduct, which includes plagiarism
- List of sanctions that can be applied if academic misconduct is found.

Please review this material.

For the assignments in this class, discussion of concepts with others is encouraged, but all assignments must be done on your own, unless otherwise instructed. If you use any source other than the text, reference it/him/her, whether it be a person, a book, a solution set, a web page or whatever. You MUST write up the solutions in your own words. Copying is strictly forbidden. Every assignment must be turned in with a cover sheet (available on the course web page), which lists all sources you used.

Americans with Disabilities Act (ADA) Policy Statement: The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities (http://disability.tamu.edu) in Cain Hall, Rm. B118, or call 845-1637.