University of North Texas  
CSCE4110.021, Summer 2017  
Algorithms

Meetings  Tuesdays and Thursdays, 5:30pm–6:50pm, NTDP D201  
Instructor  Dr. Eduardo Blanco  
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Textbook

Course Contents
This course will cover algorithm analysis and design. The most common algorithms to solve real world problems will be introduced and their performance analyzed. Examples of problems we will study are sorting an array, distributing packages in boxes and planning routes.

The following topics will be covered:
• Introduction
• Algorithm Analysis, complexity
• Sorting
• Greedy Algorithms
• Divide and Conquer
• Dynamic Programming
• Graphs
• Approximation algorithms
• Backtracking, Branch and Bound

You are expected to check https://learn.unt.edu/ often for course material, homework assignments and grades.

Learning Outcomes
1. Be able to analyze the time and space complexity of a nontrivial algorithm, using mathematical tools, and prove/justify the correctness.
2. Understand the Divide and Conquer, Greedy, and Dynamic Programming strategies for algorithmic design.
3. Be familiar with the algorithms for Matrix Multiplication (Strassen’s), Activity Selection, Knapsack, Shortest Paths (single source, and all pairs), Minimum Spanning Tree (Prim’s and Kruskal’s), Matrix Chain, and Longest Common Subsequence problems.
4. Be exposed to approximation algorithms for solving NP-hard problems.
5. Be able to determine and measure the efficiency of a given algorithm, in practice, through different possible implementations, and by testing on suitable data sets.
6. Be able to communicate clearly and precisely in writing about the theoretical analysis of an algorithm and its efficiency in practice.

Prerequisites
Prerequisites: CSCE3110, CSCE2100, CSCE2110
Grading

<table>
<thead>
<tr>
<th>Homework</th>
<th>45%</th>
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<tbody>
<tr>
<td>Quizzes</td>
<td>15%</td>
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<tr>
<td>Midterm</td>
<td>20%</td>
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<tr>
<td>Final exam</td>
<td>20%</td>
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- There will be six homework assignments. Homework grade will be the average of the five highest-graded homework assignments. Homework is due at the beginning of class a week after it is assigned. Homework assignments may include both written and programming exercises. As a rule, late homework will not be accepted.
- There will be five quizzes. Quiz grade will be the average of the four highest-graded quizzes.
- The midterm exam will be on TBD.
- The final exam will be on TBD. The final exam will be comprehensive.

Academic Integrity

Academic Integrity is defined in the UNT Policy on Student Standards for Academic Integrity. Any suspected case of Academic Dishonesty will be handled in accordance with the University Policy and procedures. Possible academic penalties range from a verbal or written admonition to a grade of F in the course. Further sanctions may apply to incidents involving major violations. You will find the policy and procedures at: http://vpaa.unt.edu/academic-integrity.htm.

Each topic discussed in class will have associated homework. Students may discuss homework problems and approaches with each other, but must write their solutions individually. Students may not copy homework from any source, including other students or the internet. No collaboration is allowed in quizzes and exams.

Religious Observance

In accordance with state law, a Student absent due to the observance of a religious holiday may take examinations or complete assignments scheduled for the days missed, including those missed for travel, within a reasonable time after the absence. Students should notify the instructor in each course of the date of the anticipated absence as early in the semester as possible. Only holidays or holy days observed by a religion whose place of worship is exempt from property taxation under Section 11.20 of the Tax Code may be included. A student who is excused under this provision may not be penalized for the absence, but the instructor may appropriately respond if the student fails satisfactorily to complete the assignment or examination.

Check http://policy.unt.edu/policy/15-2-5 for more information.

Disability Accommodations

The University of North Texas makes reasonable academic reasonable accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time, however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy
of the student. For additional information see the Office of Disability Accommodation website at http://www.unt.edu/oda. You may also contact them by phone at 940.565.4323.