Data Structures and Algorithms  
CSCE 3110

Course Information & Syllabus (Fall 2021)

Instructor: Dr. XUAN GUO  
In-person Lectures: Mondays & Wednesdays & Fridays 1:30 pm – 2:20 pm, NTDP K150  
Office Hours: Wednesdays 2:30 – 4:00 pm or by appointment,  
Office: NTDP F290  
Phone: 940-565-2817  
E-mail: xuan.guo@unt.edu

TA: Shichao Feng  
Office: F296, Hours: Monday 2:30 - 4:00 pm  
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Grader: Sravani Vallabhaneni  
Office: F232, Hours: Thursday 1 – 2:30 pm  
E-mail: sravanivallabhaneni@my.unt.edu

Class Web Page: Canvas  
Recommended Textbooks:  

Prerequisites: CSCE 2100 and 2110 or equivalent. You need to know how to write C++ code and compile on your own, and basic knowledge of elementary data structures.

Course Objective: The course is intended to emphasize the understanding of non-linear data structures, and elementary graph algorithms, throughout theoretical analysis, as well as experimentation. The lectures will emphasis the theoretical aspects, whereas assignments will cover both theory and programming aspects. Course contents and topics may slightly vary at the instructor’s discretion.  
Topics include:  
• Time and Space analysis (Asymptotic notation)  
• Recursion and Recurrence relations  
• Review of Basic Data Structures (Lists, stacks, queues, etc.)  
• Tree-based data structure, including heaps, BSTs, union/find data structures and AVL trees  
• Hashing  
• Data structures for storing graphs, elementary graph algorithms (breadth-first search, depth-first search) and their applications
• Algorithms for solving minimum spanning tree problem (Prim’s and Kruskal’s) and their implementations
You are expected to check https://canvas.unt.edu/ often for course material, homework assignments and grades.

ABET outcomes:
• Understand time complexity of algorithms.
• Be able to solve recurrence relations.
• Understand and be able to analyze the performance of data structures for searching, including balanced trees, hash tables, and priority queues.
• Apply graphs in the context of data structures, including different representations, and analyze the usage of different data structures in the implementation of elementary graph algorithms including depth-first search, breadth-first search, topological ordering, Prim’s algorithm, and Kruskal’s algorithm.
• Be able to code the above-listed algorithms

Grading:
Assignments
(Mixed with written and programming exercises) 30%
In-class Quizzes 20%
Mid-term Exam 20%
Final Exam 25%
Attendance 5%
Challenging Projects 10% (Bonus)

• There will be six homework assignments. Homework grade will be the average of the five highest-graded homework assignments. Homework assignments will include both written and programming exercises.
• Students should expect at least five in-class quizzes. Quiz grade will be the average of all quizzes after dropping the lowest-graded quiz.
• The mid-term exam will be during class on TBD. The final exam will be on TBD.

Submission: All assignments, shall be turned in electronically using the Canvas. A late penalty of 10% will be applied to all late assignments for up to 3 calendar days. Assignments that are not turned in 3 days after the due date will not be accepted. All holidays and weekends will be counted as calendar days.

Attendance: Attendance may be taken on randomly selected days. Students are responsible for regular and punctual attendance. A student is responsible for requesting an excused absence in writing, providing satisfactory evidence to the faculty member to substantiate excused absence, and delivering the request personally to the faculty member assigned to the course for which the student will be absent. When an absence is excused, the faculty member will provide a reasonable time after the absence for the student to complete an assignment or examination missed. Any
Student who misses a class over two absences without informing the instructor of valid reasons, and obtaining approval, will lose one point (out of 5 possible points).

COVID-19 Impact on Attendance
While attendance is expected as outlined above, it is important for all of us to be mindful of the health and safety of everyone in our community, especially given concerns about COVID-19. Please contact me if you are unable to attend class because you are ill, or unable to attend class due to a related issue regarding COVID-19. It is important that you communicate with me prior to being absent so I may make a decision about accommodating your request to be excused from class.

If you are experiencing any symptoms of COVID-19 (https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html) please seek medical attention from the Student Health and Wellness Center (940-565-2333 or askSHWC@unt.edu) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Hotline at 844-366-5892 or COVID@unt.edu for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure. While attendance is an important part of succeeding in this class, your own health, and those of others in the community, is more important.

Plagiarism: Plagiarism of any kind will automatically result in a grade of F for the course.

Acceptable Student Behavior: Student behavior that interferes with an instructor’s ability to conduct a class or other students’ opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Center for Student Rights and Responsibilities to consider whether the student’s conduct violated the Code of Student Conduct. The university’s expectations for student conduct apply to all instructional forums, including university and electronic classroom, labs, discussion groups, field trips, etc.

Americans with Disabilities Act: We cooperate with the Office of Disability Accommodation to make reasonable accommodations for qualified students (cf. Americans with Disabilities Act and Section 504, Rehabilitation Act) with disabilities. If you have not registered with ODA, we encourage you to do so. If you have a disability for which you require accommodation, please discuss your needs with the instructor or submit a written Accommodation Request on or before the fourth-class day.