CS 2413: DATA STRUCTURE
Fall 2020
MWF 8:15am-9:05am
Meeting ID (fixed): 9997004736, pwd:CS2413CL

Instructor: Chao Lan (clan@ou.edu)
Office Hour: M 9:10-10:20am, W 11-11:50am, F 10-11am

TA: Sanjana Mudduluru (sanjana@ou.edu)
Office Hour: TR 9-11am, Zoom ID: 5549939998, pwd: CS2413SM

TA: Jonathan Lesslie (jonathanlesslie@ou.edu)
Office Hour: TR 1-2:30pm, Zoom ID: 96671036135, pwd: CS2413JL

* Appointments for additional office hours are scheduled through email, preferably 24 hours in advance.
* It is recommended to email your questions or requests to: cs2413-fall20@groups.ou.edu.
* OU has a mandatory masking policy if you are on campus: https://ou.edu/coronavirus/masking-policy

Course Description

This course covers the representation, analysis and implementation of data structures and associated algorithms. The primary programming language is C++ with a debugging tool. Written communications are required in some projects. Ethical issues and tools and techniques used in writing secure applications will also be discussed. Detailed technical subjects are listed below.

(i) a brief introduction to C++
   - variable
   - instruction
   - function
   - class

(ii) basic search and sorting algorithms (and their Big O time complexities), including
   - linear search, binary search
   - bubble sort, insertion sort, selection sort
   - merge sort, quick sort
   - bucket sort, radix sort

(iii) basic data structures, including
   - linked list
   - stack and queue
   - hashing
   - binary search tree, AVL tree, red-black tree, splay tree, max/min heaps, deaps
   - B tree, 2-3 tree, 2-4 tree
   - graphs, depth-first search, breadth-first search
Prerequisites

- CS 2334 (Programming Structures and Abstractions)
- MATH 1823 (Calculus & Analytical Geometry I) or 1914 (Differential & Integral Calculus I)
- CS 2813 (Discrete Structures) or MATH 2513 (Discrete Mathematical Structures), or concurrent enrollment in one of these courses.

Reference

CS 2413: Data Structures with zyLabs. This online book is accessible through the following three steps.
- Sign in or create an account at learn.zybooks.com
- Enter zyBook code: OUCS2413LanFall2020
- Subscribe

Additional recommended reading materials include

Grading Policy

Assignment 50%, 1st Exam 15%, 2nd Exam 15%, Final Exam 20%.

Assignment Policy

Students are allowed to receive help from peers or online reference when completing assignments. In this case, the student must (i) clarify the source of help in submission, (ii) do the submitted work independently after consulting – copy and paste is strictly prohibited, and (iii) be ready to defend the submitted work independently to the grader. Example clarifications include
- I referred to the following online reference(s):
- I received help from the following peers:

Failure to list the source of help is a violation of academic integrity. If the grader identifies a submission that is similar to another or some online material but has no clarification, and the submitter cannot properly defend it, this submission will be voided and the submitter will face respective academic misconduct charges. See https://www.ou.edu/teachanywhere/best-practices/academic-integrity for more on academic integrity.

Please work on your assignments and get help as early as possible. It is unlikely the TAs and instructor can respond to your questions timely one hour before the due.

Please add as many comments as possible in your submitted code to improve its readability. Documentation also contributes to the final score of your submission.

Late submissions will be penalized 10% per day late. (All parts of days will be rounded up.) After seven days from the due, you will not be able to turn in that assignment for credit, unless further delay is caused by accidents closely related to the COVID pandemic.

Important Dates

Aug 24: First day of class.
Sep 07: No class. Labor Day.
Sep 28: 1st exam.

Oct 26: 2nd exam.

Nov 25 & 27: No class. Thanksgiving.

Dec 04: Last day of class.

Dec 6 - 13: Final exam preparation week.

Dec 16: Final exam. 10:30am - 12:30pm.

**Title IX Resources**

For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocate on call 24/7, counseling services, and mutual no contact orders, scheduling adjustments and sanctions against the perpetrator. Please contact the Sexual Misconduct Office 405-325-2215 (8-5) or the Sexual Assault Response Team 405-615-0013 (24/7) to learn more or to report an incident.

**Accommodation of Disabilities**

The University of Oklahoma and the instructor are both fully committed to providing reasonable accommodation for all students with disabilities, not only because it is legally required to do so but because it is morally correct too. Students with disabilities who require accommodations in this course are requested to speak with me as early in the semester as possible. Students with disabilities must be registered with the Disability Resource Center, (University Community Center, 730 College Ave, 325-3852).

**Adjustments for Pregnancy/Childbirth Related Issues**

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as possible to discuss. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Please see [http://www.ou.edu/eoo/faqs/pregnancy-faqs.html](http://www.ou.edu/eoo/faqs/pregnancy-faqs.html) for answers to commonly asked questions.