CSCE 2110 Foundations of Data Structures

Instructor: Curtis Chambers

Office: See Canvas Course Page

E-mail Address: Curtis.Chambers@unt.edu

Class Times:

Lecture 2110.001   Lecture 2110.002
MoWe 10:00AM - 11:20AM   MoWe 1:00PM - 2:20PM
NTDP B185   NTDP B185
08/29/2022 - 12/16/2022   08/29/2022 - 12/16/2022

Office Hours:

TuTh 12:00PM - 2:00PM
NTDP E260L (or Zoom By Appointment)

Textbook:

We are using an E-Book this semester as the required textbook. Instructions for purchasing and using the textbook will be posted on Canvas, or a code can be purchased at the University Bookstore.

Teaching Assistants
Dey, Utpal-Kumar
Utpal-KumarDey@my.unt.edu

Instructional Assistants
Thummala, Sruthi Reddy
SruthiReddyThummala@my.unt.edu

Office Hours:
See Canvas Course Page

See Canvas Course Page
Kambhumpati, Krishna Sai Ujwal
KrishnaSaiUjwalKambhumpati@my.unt.edu
Office Hours: See Canvas Course Page

Nanu, Goutham Kumar Reddy
GouthamKumarReddyNanu@my.unt.edu
Office Hours: See Canvas Course Page

Aagiru, Lava Kumar
LavaKumarAagiru@my.unt.edu
Office Hours: See Canvas Course Page

Padala, Harika Naga Sai Sree Chandana
harikanagasschanpadala@my.unt.edu
Office Hours: See Canvas Course Page

Canvas:
This course will be using Canvas to distribute course materials, post grades, and submit assignments. Check regularly to course work and announcements.

Course Description
Data structures and formalisms used in computing, such as asymptotic behavior of algorithms, graph, table, relational and set data structures, context-free grammars to describe patterns, assertions in propositional logic form, amortized analysis to evaluate efficiency of data structures such as splay trees and O(1) expansion of tables.

Prerequisite(s): CSCE 1040 with a grade of C or better.

Introduces students to the basics of more organized software developments. This includes the basics of using Integrated Development Environments (IDE), proper debugging and testing strategies, and the use of code repositories. Students will be expected to work in teams to develop programming solutions in C or C++. Additionally, the effective use of regular expressions to parse text and the use of hash tables to store data will be covered. By the end of the foundation courses, each student will have a solid foundation in conceptual and formal models and levels of abstraction as used in the field of computer science, as well as greater proficiency in software development.

Course Outcomes

Student Outcomes are measurable achievements to be accomplished by the completion of the degree. These outcomes are evaluated as part of our ABET accreditation process.

**Computer Engineering Students:**

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

**Computer Science Students:**

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.
3. Apply computer science theory and software development fundamentals to produce computing-based solutions.

**Information Technology Students:**

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.
3. Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing-based systems.

**Expected Course Outcomes:**

1. Demonstrate the ability to use Integrated Development Environments (IDE) and use formal debugging tools and techniques to develop C/C++ programs.
2. Demonstrate the ability to develop unit tests and testing strategies for C/C++ programs.
3. Demonstrate the ability to use code repositories for project development.
4. Use abstraction in the design and implementation of algorithms, such as sorting and searching algorithms.
5. Design and implement programming solutions to problems in C or C++.
6. Collaborate with other students in a team towards the design and development of programming solutions.
7. Use regular expressions in C/C++ programs to match patterns.
8. Use of hash tables in design of software.

Course Requirements

**Attendance:** Required - student is responsible for all materials covered in lecture and class discussion and there will be occasional quizzes in class.

**Exams:** One Review Exam, One Final and 3 Assessment Exams

**Assignments:** There will be some larger programming assignments, quizzes, exams and laboratory exercises to complete.

Attendance Policy Detailed
Attendance is **required**.

**Lecture Session: Required.**

Should you miss class, you are responsible for the covered course material and assignments you may have missed. The instructor will not be responsible for re-teaching material missed by a student who did not attend class.

As always, if there are extenuating circumstances, please notify your instructor and course assistance staff (such as TAs and IAs) **via your UNT Email ASAP** so that you can work together to ensure your success in learning the material. Refer to the section “Contact Requirements” and subsection “Accommodations.”

Note that the TAs and IAs should only be notified. Do not expect a response from them outright.

**Recitation Sections: Required**

Recitation is (generally) considered optional. I, however, **require** that you attend recitation.

Recitations will be used to facilitate development of the projects for this course. As such, they are mandatory and failure to attend recitations may result in overall poor project outcomes. Further, failure to attend recitation on time will result in a student not receiving credit for the recitation. Quizzes will occur during recitations.

**Accommodations:**

THIS DOES NOT APPLY TO ODA ACCOMODATIONS. (These are processed through the ODA Offices)

Should you want me to provide accommodations (such as make up work) for an unavoidable absence or impact, you must use this process:
1. Email me and your assigned TAs/IAs from your UNT email.

This is to notify us about the absence pending an excused document from the Dean of Students Offices.

2. Contact the Student Affairs Office

Email: DEANOFSTUDENTS@UNT.EDU
Phone: 940-565-2648

Note that the DoS offices only request accommodations and do not enforce it. Work with them to verify the validity of the excused absence or impact. Once their offices process the details with you, they should provide you with a document and/or contact me. Should you get a document, send it to me via email and keep the physical copy for your records.

I'll need these document(s) before I can provide accommodation. This process will keep us both in compliance with UNT standards, practices, policies, and procedures while being the most efficient and private method.

If you have questions, please visit me during my office hours or schedule a meeting with me.

Academic Misconduct & Integrity

- This course follows UNT’s policy for Student Academic Integrity that can be found at https://policy.unt.edu/policy/06-003 as well as the Cheating Policy for the Department of Computer Science and Engineering.
- The department, college, and university have very strict guidelines regarding academic misconduct. Students are expected to submit their own work on all individual
- You are allowed to discuss solutions, but do NOT work with other students on shared program/assignment solutions. Do NOT use even partial program solutions from the Internet without properly citing them. Do NOT recycle a complete assignment, this will result in a failing grade. The complexity of these assignments should not merit the
use of external resources. Failure to remain in compliance with the guidelines is considered cheating and will be reported.

- **You will be graded on your contribution to the code.** Be honest—attribute your work. Submitting code or work that you did not solely author (without acknowledging it to the instructor) is cheating and will be dealt with in accordance with the department cheating policy.

- If it is determined that you have cheated, the first instance of cheating in the class will result in a grade of **ZERO (0)** on the assignment in question and referral to the department chairman and dean of engineering. The second instance of cheating in the class will result in a grade of **F** in the class, and a dismissal hearing may be initiated by the dean of engineering.

- **You need to do your own work.** Here, there should be no ambiguity at all.

- In case the above description, and in-class discussion of my views on appropriate and inappropriate collaboration does not answer all your questions, please look at the university Student Rights and Responsibilities web page.

- You are responsible for the information covered in class, **whether you attend class or not.** Individualized lectures **will not be given.** Please check with other class members for any notes that might have been missed during an absence. Attendance won’t always be taken in lecture and your attendance is strongly recommended to improve your opportunity to meet course objectives.

- You should not work with other students on shared program solutions or use program solutions found on the Internet.

- Specifically, you should **never copy someone else’s solution or code,** and **never let a classmate examine your code.**

- A sophisticated program will be used to compare your work to the work of all other students (including students in past classes).

- If you are having trouble with an assignment, please consult with your instructor or course assistance staff (TAs, IAs, Graders, etc.).

- Failure to adhere to these strict standards may be cause for disciplinary action even leading to expulsion from the University.

- Each student should adhere to the university's student code of conduct. The Code of Student Conduct can be found at [http://deanofstudents.unt.edu](http://deanofstudents.unt.edu).

**Student Responsibilities**

Students are responsible for submitting the **correct assignments** for each applicable assignment submission. Submissions should include the **correct files** and submitted **prior to the deadline.** In certain cases, when an assignment is verified to be completed on time, but either was submitted to an incorrect assignment location or a wrong assignment was submitted instead, the assignment may be accepted, but **assessed a 50% reduction penalty** if the due date has passed. Verification of completion time stamp for assignments will be done using the CSE machines, so please make sure to save your work on these departmental servers to ensure that your work can be accepted. If you have any questions or concerns about your submission, please work with your instructor or TA/IA to ensure the correct file(s) is/are submitted.
Excused Absences Defined

Students are expected to schedule routine appointments and activities so as not to conflict with attending class. However, some absences cannot be prevented. In the event of a medical emergency or family death, etc., students must request an excused absence as quickly as feasible following the event. While it is preferred that I am notified prior to the event, that cannot always be the case. Send to me (ASAP) a brief email from your UNT provided email address. You need not go into detail as to the emergency, but you should schedule with me a meeting outside of lecture at your earliest convenience. Students must be able to provide documentation that verifies the reasoning for the excused absence. Above all else, this course is compliant with UNT Policy 06.039 “Student Attendance and Authorized Absences.” Please refer to this policy for more details/information.

Refer to the section “Contact Requirements” and subsection “Accommodations.”

Emergencies

By definition, emergencies cannot be planned for. Your instructor attempts to make accommodations in these instances that allow for making up missed work and completion of the course in a timely manner. Students must provide documentation that verifies the emergency.

Refer to the section “Contact Requirements” and subsection “Accommodations.”

Disability Accommodation

The University of North Texas makes reasonable academic 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, refer to the Office of Disability Accommodation website at http://www.unt.edu/oda. You may also contact ODA by phone at (940) 565-4323.

Academic Integrity

*Below I have taken out two paragraphs from UNT Policy 06.003 Student Academic Integrity.*

“UNT promotes the integrity of learning processed and embraces the core values of trust and honesty. Academic integrity is based on educational principles and procedures that protect the rights of all participants in the educational process and validate the legitimacy of degrees awarded by the university. In the investigation and resolution of allegations of student academic dishonesty, the university’s actions are intended to be corrective, educationally sound, fundamentally fair, and based on reliable evidence.”

“Students are expected to conduct themselves in a manner consistent with the university's status as an institution of higher education. In the class setting, students shall follow their instructors’ directions and observe all academic requirements published in course syllabi and other course materials. A student is responsible for responding to an academic dishonesty report issued by an instructor or other university official. If a student fails to respond after proper attempt at notification, the university may take appropriate academic actions in the absence of the student.”

UNT policy 06.003 defines the following breaches of academic integrity:

**A. Cheating**. The use of unauthorized assistance in an academic exercise, including but not limited to:

1. use of any unauthorized assistance to take exams, tests, quizzes or other assessments;
2. usage of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; usage without permission, of tests, notes, or other academic materials belonging to instructors, staff members, or other students of the university;
3. dual submission of a paper or project, or resubmission of a paper or project to a different class without express permission from the instructor;  
4. any other act designed to give a student an unfair advantage on an academic assignment.

B. Plagiarism. Use of another’s thoughts or words without proper attribution in any academic exercise, regardless of the student’s intent, including but not limited to:

1. the knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgement or citation.
2. the knowing or negligent unacknowledged use of materials prepared by another person or by an agency engaged in selling term papers or other academic materials.

C. Forgery. Altering a score, grade or official academic university record; or forging the signature of an instructor or other student.

D. Fabrication. Falsifying or inventing any information, data or research as part of an academic exercise.

E. Facilitating Academic Dishonesty. Helping or assisting another in the commission of academic dishonesty.

F. Sabotage. Acting to prevent others from completing their work or willfully disrupting the academic work of others.

Cheating of any sort will not be tolerated in this course. All submissions must be your own original work. Taking information or code from the internet or other students is considered a breach of academic integrity. Failure to adhere to these strict standards will be cause for disciplinary action that could be as severe as expulsion from the university. If it is determined a student cheated on any assignment in this course they will receive an F for their final course grade and an academic integrity report will be filed with the Office of Academic Integrity.

Further, UNT is now maintaining a database recording any acts of academic dishonesty that is available to employers. Additionally, because these are group projects, if one group member is caught cheating the consequences of their actions will extend to the group (as a whole). It is the responsibility of all group members to ensure that when they put their names on their submission as a whole and submit it, the submission does not contain any instances of cheating. Failure to report known instances of cheating within a group will be deemed facilitation of academic
dishonesty and reported as such. For more information see the UNT Student Academic Integrity Policy.

**Collaboration Policy:**

For each project submission, all work is expected to be your own. While you should be working with your group members, you are not to collaborate with other groups for projects, provide solutions to other groups, search for solutions on the internet, or purchase solutions. Doing so will be deemed a breach of academic integrity. However, for any non-graded, practice assignments students are encouraged to work together to solve problems.

**Academic Freedom and Academic Responsibility**

*Refer to UNT Policy 06.035*

Academic freedom and academic responsibility give vitality to the UNT and its mission. As such, the academic freedom to be able to freely consider or investigate important, and, perhaps, controversial questions are essential to the education of students and advancement of knowledge. Faculty have the academic responsibility to subject their knowledge and postulates to rigorous review by peers who are experts in the relevant subject material, to have a firm foundation of their postulates in the most relevant and suitable available evidence, and to work with one another to provide the best education possible for our students.

**Syllabus Revisions**

This syllabus may be modified as the course progresses should the instructor deem it necessary. Notice of changes to the syllabus shall be made through Canvas and/or class announcements.

**Tentative Lecture Schedule (subject to change)**

See Canvas Course Page.
Grading Policy

**You must complete all tasks required on time.** Late assignments will not be accepted without appropriate excused documentation. You have **1 week to dispute a grade** after it’s posted date.

After receiving your grade for an assignment, you must email the grader (TA or IA) and myself **within 7 days** should you wish to discuss/dispute it. I recommend that you email me and CC the TA and Grader.

The above is to avoid “end of the semester” rush to alter grade penalties. Each student should keep track of their grades **throughout the semester**. Note that as we near the end of the semester, the time to adjust assignments gets shorter.

Each assignment will have varying requirements. **Pay very close attention** to what I am asking you to deliver in every assignment, program, and exam. Uploads may be on SVN, Canvas, GitLab, in person, or (in many cases) more than one.

Your final grade will be a weighted average according to the following:

<table>
<thead>
<tr>
<th>Items</th>
<th>Total Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>5%</td>
</tr>
<tr>
<td>Zybooks Participation and Challenge</td>
<td>10%</td>
</tr>
<tr>
<td>Projects 1 and 2</td>
<td>30% (15% each)</td>
</tr>
<tr>
<td>Assessment Exams</td>
<td>40% (total)</td>
</tr>
<tr>
<td>Labs</td>
<td>15%</td>
</tr>
</tbody>
</table>

Grades will be posted on Canvas throughout the semester to provide an ongoing assessment of student progress, though final assessment will be measured using the weighted average above.
Once a grade is assigned on Canvas, students have one (1) week to dispute the grade. The proper channel for grade disputes is to first go to the original grader (i.e., TA/IA) to resolve the issue (*don’t forget to include me in the email so I may monitor the exchange*). If, however, a resolution cannot be reached between the student and the grader, the student shall then go to the instructor who will have the final say on the grade.

Most assignments will be due at 11:59 PM on the specified due date to Canvas. All assignments must be completed and submitted according to their specific directives. Programming assignments will be accepted up to 24 hours late and assessed a **50% grade reduction penalty**. Any programming assignment submitted more than 24 hours late will **not be accepted and receive a grade of 0**.

**Submission Policy:**

All projects are expected to be submitted on time with all the correct parts through the Canvas system. The project documentation must be created as a wiki page in GitLab, and no photographed or scanned content will be scored. Further, any content that is deemed illegible will not be scored. The program must be coded in C or C++ and contain ample comments and descriptions. All programs will be compiled and executed on the department’s CSE servers, and any that fail to compile or execute on that system will lose points. Additionally, a README file, in .txt format, with clear instructions on how to compile and execute your program must be included.

**Recitation Assignments:**

Recitation assignments are meant to serve as preparatory assignments for upcoming assignments that can be completed in a relatively short amount of time. Students may complete these assignments by attending their scheduled recitation where they may receive guidance from a TA/IA on completing. **No late recitation assignments will be accepted without excused documentation.**

**Exams:**

By the end of the course, you must have earned **at least a 60% average from the exams**. Failure to do so will result in a **final grade of an F**, despite having a potentially passing course average. Additionally, if there are questions about posted grades, they must be discussed with the instructor **within two weeks** of the grades being posted. After two weeks, barring an exceptional circumstance, grades will not be altered.
Contacting Requirements

When contacting the instructor or course assistance staff (TA, IA, etc.), the following is required:

- Sent from a **UNT Provided** Email
- Must have the Course Number AND Section (i.e., 2110.212) in the Subject Line or appropriate field.
- Subject should be short and to the point.
- Body must be detailed, legible, and respectful.
- Please give at least 24 hours for a response, prior to any follow up email.

Emails, messages, and the like that fail to remain in compliance with the above standards may impact **efficiency of communication** or (in the worst case) result in **no reply**.