CSCE 3110.021/Data Structures and Algorithms

Instructor Contact

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Office Hours: MoWe 2:30 – 3:30 PM or by appointment
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Communication Expectations: This course will use the Canvas learning management system (LMS) to distribute course materials, communicate and collaborate online, post grades, and submit assignments. You are responsible for checking the Canvas course site regularly for class work and announcements. You may find the Online Communication Tips (https://clear.unt.edu/online-communication-tips) helpful. Should you have any questions about the course or material in general, you may attend your instructor’s virtual office hours (Zoom Meeting ID listed above) or e-mail your instructor directly at the e-mail address listed above with CSCE 3110.021 in the subject line. Every attempt will be made to answer e-mails within 24 hours, but if no reply is received within this time frame, please follow up with your instructor again to ensure a response.

For assistance with assignments or questions about grading of a particular assignment, you may contact the TAs directly via their Zoom Meeting ID during their office hours or e-mail, both of which will be posted as an announcement on Canvas for each TA.

Grades will be posted on Canvas throughout the semester to provide an ongoing assessment of student progress, but typically in about one week after the assignment was due. Grading disputes should first go to the TA that graded your assignment, but if a resolution cannot be reached between the student and the grader, then you should go to the instructor who will have the final say on the grade.

Course Description

Time complexity of algorithms; merge sort and heap sort; data structures for trees and graphs; elementary graph algorithms; breadth-first search; depth-first search; topological sorting; Prim’s algorithm and Kruskal’s algorithm.

Course Structure

This is an Internet course that is being delivered during the 8W1 Summer Session (May 11 – July 3) using Zoom lectures (Zoom Meeting ID: 954 803 57476) on Mondays and Wednesdays from 11:30 AM – 2:20 PM.

Course Prerequisites or Other Restrictions

Prerequisite(s): CSCE 2100 and CSCE 2110; each with a grade of C or better.

Course Objectives

Course outcomes are measurable achievements to be accomplished by the completion of a course. These outcomes are evaluated as part of our ABET accreditation process.
1. Understand time complexity of algorithms.
2. Be able to solve recurrence relations.
3. Understand and be able to analyze the performance of data structures for searching, including balanced trees, hash tables, and priority queues.
4. 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.
5. Be able to code the above-listed algorithms.

Materials


Teaching Philosophy

I believe that the best way to really learn and understand concepts in computer science is to implement the techniques and perform the operations in an applied manner. While the process of reading examples and proofs in textbooks and lecture notes is valuable, the real learning comes through one’s own efforts in debugging and solving logical and programming problems. I have a very hands-on approach to teaching, which includes coding-on-the-fly and describing how programs work, which typically requires students to be present in the lecture. I would encourage students to use this opportunity to really learn and develop the skills covered in this class that will prepare you for entering a career in industry or furthering your education.

Technical Requirements & Skills

Minimum Technology Requirements

- Computer
- Reliable internet access
- Speakers
- Microphone
- Plug-ins
- Microsoft Office Suite
- [Canvas Technical Requirements](https://clear.unt.edu/supported-technologies.Canvas/requirements)

Computer Skills & Digital Literacy

- Using Canvas
- Using email with attachments
- Downloading and installing software
- Using presentation and graphics programs
- Programming in C++
- PuTTY/WinSCP or similar software for remote access and transfer of files
- Use of CSE Linux machines (cse01, ..., cse06) to edit, compile, and run programs
Rules of Engagement

Rules of engagement refer to the way students are expected to interact with each other and with their instructors online. Here are some general guidelines:

- Treat your instructor and classmates with respect in email or any other communication.
- Always use your professors’ proper title: Dr. or Prof., or if in doubt use Mr. or Ms.
- Unless specifically invited, don’t refer to your instructor by first name.
- Use clear and concise language.
- Remember that all college level communication should have correct spelling and grammar (this includes discussion boards).
- Avoid slang terms such as “wassup?” and texting abbreviations such as “u” instead of “you.”
- Use standard fonts such as Arial, Calibri or Times new Roman and use a size 10 or 12 point font.
- Avoid using the caps lock feature AS IT CAN BE INTERPRETED AS YELLING.
- Limit and possibly avoid the use of emoticons like :) or 😊.
- Be cautious when using humor or sarcasm as tone is sometimes lost in an email or discussion post and your message might be taken seriously or sound offensive.
- Be careful with personal information (both yours and other’s).
- Do not send confidential information via e-mail.

See these Engagement Guidelines (https://clear.unt.edu/online-communication-tips) for more information.

Success in an Online Course

While the online classroom shares many similarities with the face-to-face classroom, success in online education requires certain skills and expectations that students may not be aware of. Consider providing tips for success based on your own online teaching and learning experiences. You can also include a link to or adapt tips from this webpage for students, “How to Succeed as an Online Student” (https://clear.unt.edu/teaching-resources/online-teaching/succeed-online).

Getting Help

Technical Assistance

Part of working in the online environment involves dealing with the inconveniences and frustration that can arise when technology breaks down or does not perform as expected. Here at UNT we have a Student Help Desk that you can contact for help with Canvas or other technology issues.

UIT Help Desk: http://www.unt.edu/helpdesk/index.htm
Email: helpdesk@unt.edu
Phone: 940-565-2324
In Person: Sage Hall, Room 130
Walk-In Availability: 8am-9pm
Telephone Availability:
  • Sunday: noon-midnight
  • Monday-Thursday: 8am-midnight
  • Friday: 8am-8pm
  • Saturday: 9am-5pm
Laptop Checkout: 8am-7pm
Student Support Services
UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its severity. Listed below are several resources on campus that can support your academic success and mental well-being:

- Student Health and Wellness Center (https://studentaffairs.unt.edu/student-health-and-wellness-center)
- Counseling and Testing Services (https://studentaffairs.unt.edu/counseling-and-testing-services)
- UNT Care Team (https://studentaffairs.unt.edu/care)
- Individual Counseling (https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling)

Other student support services offered by UNT include

- Registrar (https://registrar.unt.edu/registration)
- Financial Aid (https://financialaid.unt.edu/)
- Student Legal Services (https://studentaffairs.unt.edu/student-legal-services)
- Career Center (https://studentaffairs.unt.edu/career-center)
- Multicultural Center (https://edo.unt.edu/multicultural-center)
- Counseling and Testing Services (https://studentaffairs.unt.edu/counseling-and-testing-services)
- Pride Alliance (https://edo.unt.edu/pridealliance)
- UNT Food Pantry (https://deanofstudents.unt.edu/resources/food-pantry)

Academic Support Services

- Academic Resource Center (https://clear.unt.edu/canvas/student-resources)
- Academic Success Center (https://success.unt.edu/asc)
- UNT Libraries (https://library.unt.edu/)
- Writing Lab (http://writingcenter.unt.edu/)
- MathLab (https://math.unt.edu/mathlab)

Course Requirements

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<thead>
<tr>
<th>Assignment</th>
<th>Points Possible</th>
<th>Percentage of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation/In-Class Assignments</td>
<td>Varies</td>
<td>5%</td>
</tr>
<tr>
<td>Homework</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 7 Assignments @ 100 points ea.</td>
<td>700 points</td>
<td>20%</td>
</tr>
<tr>
<td>Programming Assignments</td>
<td></td>
<td></td>
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<tr>
<td>• 4 Assignments @ 100 points ea.</td>
<td>400 points</td>
<td>25%</td>
</tr>
<tr>
<td>Assignment</td>
<td>Points Possible</td>
<td>Percentage of Final Grade</td>
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</tr>
<tr>
<td>Midterm Exam</td>
<td>100 points</td>
<td>25%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100 points</td>
<td>25%</td>
</tr>
<tr>
<td>Total Points Possible</td>
<td>TBD points</td>
<td>100%</td>
</tr>
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Grading

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

- Attendance/Participation/In-Class: 5.0%
- Homework: 20.0%
- Programming Assignments: 25.0%
- Midterm: 25.0%
- Comprehensive Final Exam: 25.0%
- Total: 100.0%

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., the TA) in an attempt to resolve the issue. 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.

**Attendance/Participation:** Attendance/Participation/In-Class grades will be based on attendance, contribution to in-class discussions, and in-class assignments. Disruptive behavior and absences deemed excessive will result in a lower attendance/participation grade.

**Homework:** Homework will be assigned based on material from the lectures and textbook. These assignments are meant for you to become familiar with the course material and this practice will aid you in mastering the concepts on the programming assignments and exams. **No late homework will be accepted**, so please make sure that you complete and submit all homework assignments on time.

**Programming Assignments:** There will be approximately three or four programming assignments assigned during the summer session. **Programming assignments will be completed solely by the individual outside of class**, though some in-class time may be dedicated to answering questions about or working on the programming assignments. **Programming assignments will be accepted up to 24 hours late and be assessed a 30% grade reduction penalty.** Programming assignments submitted more than 24 hours late will not be accepted and receive a grade of “0”. Partial credit will be given for programs that compile, but are not complete. Starting early on programming assignments is strongly encouraged as students typically have great difficulty in completing their programming assignments in one night the day before they are due. Instructions for submitting programming assignments will be made available for each project.

**Midterm Exam:** There will be a midterm examination given in this course. The date of this exam will be posted on Canvas and announced in class at least one week prior to the date of the exam. A make-up exam will be given at the discretion of the instructor when a student misses an exam with an excused
absence. Unexcused absences on the date of an exam may result in a grade of “0” for the missed exam, so every effort should be made to attend class on the day of a scheduled exam.

Final Exam: There will be a two-hour final exam on Friday, July 3, 2020, at the same time of our regularly scheduled lecture. All students are expected to take the final exam during the scheduled time period.

Course Evaluation

Student Perceptions of Teaching (SPOT) is the student evaluation system for UNT and allows students the ability to confidentially provide constructive feedback to their instructor and department to improve the quality of student experiences in the course. SPOT evaluations should become available in mid-June.

Course Policies

Assignment Policy

Assignments instructions will be posted on Canvas and be due at 11:59 PM with a date specific to that assignment. For homework assignments, please use Word (.docx), PDF (.pdf), or text (.txt) format only. If scanning or taking a digital picture of your solution, please make sure that it is readable by the grader or it will not be accepted. Image files, such as .jpg or .png, should be embedded inside a Word or PDF document for submission. Programming assignments should C++ (.cpp) files, but may also contain header (.h) files as appropriate. All assignments should be uploaded to the appropriate assignment drop box.

Students are responsible for submitting the correct assignments (i.e., uploading the proper files) for each applicable assignment submission on Canvas. In certain cases, when an assignment is verified to be completed on time, but either was submitted to an incorrect assignment location (e.g., submitting Homework 4 to Homework 5 location on Canvas) or a wrong assignment was submitted instead, the assignment may be assessed a 30% reduction penalty if the due date has passed. If you have any questions or concerns about your submission, please work with your instructor or TA to ensure the correct file(s) is/are submitted. Please note that verification of completion time must be on our CSE machines, so it may be in your best interest to download any submitted work to your directory on our CSE machines.

A plagiarism tool will be run for all programming assignments, so you should make sure that all work you submit is solely your own.

The University is committed to providing a reliable online course system to all users. For any unexpected server outage or any unusual technical difficulty that prevents students from completing a time sensitive assessment activity, the student must contact the instructor immediately with details (including confirmation of the issue with perhaps a screenshot) who will then assess the situation and provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and contact the UNT Student Help Desk: helpdesk@unt.edu or 940.565.2324 and obtain a ticket number. The instructor and the UNT Student Help Desk will work with the student to resolve any issues at the earliest possible time.

Examination Policy

Exams will be open-book and open-note and be completed using the Respondus LockDown Browser, but be aware that accessing material can be time consuming and may result in you running out of time to
properly complete the exam. If you have connectivity issues during the exam, please contact your instructor immediately via e-mail so that it can be resolved during the exam window. Your instructor will be continuously monitoring e-mail during this time. A make-up exam will be given at the discretion of the instructor when a student misses an exam with a documented excused absence.

Instructor Responsibilities and Feedback

Your instructor is committed to providing a quality course that includes clear instructions for projects and assignments as well as an appropriate amount of time to complete the assignments. Questions about an assignment may be addressed to the instructor or the TAs supporting this course. Study guides for exams will be made available to students.

Late Work

No late homework or participation/in-class assignments will be accepted. Programming assignments will be accepted up to 24 hours late and assessed with a 30% grade reduction penalty. Programming assignments submitted more than 24 hours late will not be accepted and receive a grade of 0.

Attendance Policy

This course follows UNT’s policy on Student Attendance and Authorized Absences. Although attendance will not be strictly taken, except for the audit roll, in-class assignments will be submitted during the class time may impact the student’s grade if not present. See University of North Texas’ Attendance Policy to learn more.

Class attendance is regarded as an obligation as well as a privilege, especially as some of the homework and laboratory assignments require specific software or hardware that is provided by the instructor on a particular date. All students are therefore expected to attend each class meeting. A student who misses class is still responsible to find out what was discussed and to learn the material that was covered and obtain the homework that was assigned on the missed day. The instructor is not responsible for re-teaching material missed by a student who did not attend class. Therefore, each student is accountable for and will be evaluated on all material covered in this course, regardless of attendance. Excessive student absences may have a negative impact on a student’s comprehension and learning and result in a lower grade than expected. If there are extenuating circumstances, please notify your instructor so that you can work together to ensure your success in learning the material.

Class Participation

In-class assignments will be assigned on random days and be used as part of the class participation grade.

Syllabus Change Policy

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 announcement.
UNT Policies

Academic Integrity Policy

Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

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 (posted on Canvas). Specifically, the first instance of a student found to have violated the academic integrity (i.e., cheating) policy will result in a grade of “F” for the course and have a report filed into the Academic Integrity Database, which may include additional sanctions.

Individual assignments must be the sole work of the individual student. For individual assignments, you should not work with other students on a shared solution or acquire a solution from the Internet. This includes sharing your solutions (i.e., for homework or programming assignments) that will be construed as cheating as well. If you are having trouble with an assignment, please consult with your instructor or TA. Failure to adhere to these strict standards may be cause for disciplinary action even leading to expulsion from the University.

In case the above description and in-class discussion of appropriate and inappropriate collaboration do not answer all of your questions, please meet with your instructor and look at the university Student Rights and Responsibilities web page.

ADA Policy

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 Access (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 Access website at http://www.unt.edu/oda. You may also contact ODA by phone at (940) 565-4323.

Emergency Notification & Procedures

UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course materials.
Retention of Student Records

Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Blackboard online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student’s records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University’s policy. See UNT Policy 10.10, Records Management and Retention for additional information.

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 Dean of Students 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. Visit UNT’s Code of Student Conduct (https://deanofstudents.unt.edu/conduct) to learn more.

Access to Information - Eagle Connect

Students’ access point for business and academic services at UNT is located at: my.unt.edu. All official communication from the University will be delivered to a student’s Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail Eagle Connect (https://it.unt.edu/eagleconnect).

Student Evaluation Administration Dates

Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 7 and 8 to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the SPOT website (http://spot.unt.edu/) or email spot@unt.edu.

Sexual Assault Prevention

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking, and/or sexual assault, there are campus resources available to provide support and assistance. UNT’s Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim’s compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off
campus. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-565-2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at oeo@unt.edu or at (940) 565 2759.

Important Notice for F-1 Students taking Distance Education Courses

Federal Regulation

To read detailed Immigration and Customs Enforcement regulations for F-1 students taking online courses, please go to the Electronic Code of Federal Regulations website (http://www.ecfr.gov/). The specific portion concerning distance education courses is located at Title 8 CFR 214.2 Paragraph (f)(6)(i)(G).

The paragraph reads:

(G) For F-1 students enrolled in classes for credit or classroom hours, no more than the equivalent of one class or three credits per session, term, semester, trimester, or quarter may be counted toward the full course of study requirement if the class is taken on-line or through distance education and does not require the student's physical attendance for classes, examination or other purposes integral to completion of the class. An on-line or distance education course is a course that is offered principally through the use of television, audio, or computer transmission including open broadcast, closed circuit, cable, microwave, or satellite, audio conferencing, or computer conferencing. If the F-1 student's course of study is in a language study program, no on-line or distance education classes may be considered to count toward a student's full course of study requirement.

University of North Texas Compliance

To comply with immigration regulations, an F-1 visa holder within the United States may need to engage in an on-campus experiential component for this course. This component (which must be approved in advance by the instructor) can include activities such as taking an on-campus exam, participating in an on-campus lecture or lab activity, or other on-campus experience integral to the completion of this course.

If such an on-campus activity is required, it is the student’s responsibility to do the following:

(1) Submit a written request to the instructor for an on-campus experiential component within one week of the start of the course.

(2) Ensure that the activity on campus takes place and the instructor documents it in writing with a notice sent to the International Student and Scholar Services Office. ISSS has a form available that you may use for this purpose.

Because the decision may have serious immigration consequences, if an F-1 student is unsure about his or her need to participate in an on-campus experiential component for this course, s/he should contact the UNT International Student and Scholar Services Office (telephone 940-565-2195 or email internationaladvising@unt.edu) to get clarification before the one-week deadline.

Student Verification

UNT takes measures to protect the integrity of educational credentials awarded to students enrolled in distance education courses by verifying student identity, protecting student privacy, and notifying
students of any special meeting times/locations or additional charges associated with student identity verification in distance education courses.

See UNT Policy 07-002 Student Identity Verification, Privacy, and Notification and Distance Education Courses (https://policy.unt.edu/policy/07-002).

Use of Student Work
A student owns the copyright for all work (e.g. software, photographs, reports, presentations, and email postings) he or she creates within a class and the University is not entitled to use any student work without the student’s permission unless all of the following criteria are met:

• The work is used only once.
• The work is not used in its entirety.
• Use of the work does not affect any potential profits from the work.
• The student is not identified.
• The work is identified as student work.

If the use of the work does not meet all of the above criteria, then the University office or department using the work must obtain the student’s written permission.

Download the UNT System Permission, Waiver and Release Form

Transmission and Recording of Student Images in Electronically-Delivered Courses

1. No permission is needed from a student for his or her image or voice to be transmitted live via videoconference or streaming media, but all students should be informed when courses are to be conducted using either method of delivery.

2. In the event an instructor records student presentations, he or she must obtain permission from the student using a signed release in order to use the recording for future classes in accordance with the Use of Student-Created Work guidelines above.

3. Instructors who video-record their class lectures with the intention of re-using some or all of recordings for future class offerings must notify students on the course syllabus if students' images may appear on video. Instructors are also advised to provide accommodation for students who do not wish to appear in class recordings.

   Example: This course employs lecture capture technology to record class sessions. Students may occasionally appear on video. The lecture recordings will be available to you for study purposes and may also be reused in future course offerings.

No notification is needed if only audio and slide capture is used or if the video only records the instructor's image. However, the instructor is encouraged to let students know the recordings will be available to them for study purposes.