

Syllabus

Course Information

Course Number: CSCE 221
Course Title: Honors Data Structures and Algorithms
Section: 200
Time: Tuesday, Thursday 11:30 AM – 12:45 PM (lecture)
Monday, Wednesday 12:00 – 12:50 PM (lab)
Location: remote (lecture); ZACH 210 (lab). **Zoom links on Canvas.**
Credit Hours: 4 (3 lecture hours and 2 lab hours per week)

Instructor Details

Instructor: Prof. Jennifer Welch
Office: HRBB 425G
Phone: 979-845-5076
E-Mail: welch@cse.tamu.edu (best way to contact)
Office Hours: Monday, Wednesday 10:30 AM – 12:00 PM; other times by appointment. **Zoom link on Canvas.**

Teaching Assistant: Kexin Feng
E-Mail: kexin@tamu.edu
Office Hours: Tuesday, Thursday 1:30 – 3:00 PM; other times by appointment. **Zoom link on Canvas.**

Course Description

Specification and implementation of basic abstract data types and their associated algorithms including stacks, queues, lists, sorting and selection, searching, graphs, and hashing; performance tradeoffs of different implementations and asymptotic analysis of running time and memory usage; includes the execution of student programs written in C++.

Course Prerequisites

Prerequisite is CSCE 113 or CSCE 121 as well as honors eligibility. Corequisite is CSCE 222 / ECEN 222 (that is, you must have already taken this course or be taking it this semester).

Course Learning Outcomes

At the end of the semester, the student should be fluent in the use of the basic data structures and their associated algorithms; be familiar with the performance tradeoffs of different implementations of the data structures; understand and apply the principles of abstraction, modularity, and information hiding; appreciate and adhere to good software development practices; and be able to program competently in the subset of C++ covered in the course.

Textbook and/or Resource Materials

Required textbook: *Data Structures and Algorithm Analysis in C++ (Fourth Edition)*, Mark Allen Weiss, Addison-Wesley, 2013. ISBN: 978-0132847377. Webpage for the book, including errata (list of errors) is <https://users.cs.fiu.edu/~weiss/#dsaac++3>.

Required equipment: A computer with a webcam and microphone and Internet access.

Remote instruction: We will use Zoom: <https://tamu.zoom.us/>

Learning management system: We will use Canvas: <https://canvas.tamu.edu/courses/15462>

Grading Policy

Your grade will be based on these components:

- 30% Exams (15% for midterm, 15% for final)
- 15% Weekly Quizzes (12, two lowest grades will be dropped)
- 15% Homeworks (6)
- 25% Programming Assignments (5)
- 10% Culture Report (written report and oral presentation)
- 5% Participation (Zoom polls, etc.)

Course grades will be assigned according to this scale:

% total points	90–100	80–89	70–79	60–69	< 60
letter grade	A	B	C	D	F

Academic Integrity

Discussion of concepts with others is encouraged, but all assignments (homeworks, programs, and culture report) must be done on your own, unless otherwise instructed. If you use any source, you must reference it, whether it be a person, a paper, a book, a solution set, a webpage or whatever. You must write up the assignments in your own words. Copying is strictly forbidden. Every assignment must be turned in with a specific cover sheet, available on Canvas, which lists all sources you used. Quizzes and exams must be done strictly on your own.

Late Work Policy

10% of the maximum possible points will be deducted for each 24 hours that an assignment is late. For example, if the assignment is due at midnight on Sep 1, and you turn it in any time on Sep 2, 10% of the maximum points will be deducted; if you turn it in any time on Sep 3, 20% of the maximum points will be deducted; etc. Once solutions have been discussed or handed out, the assignment will not be accepted (grade of 0). Make-up assignments will only be available for university-excused absences; see Student Rule 7, Attendance (<http://student-rules.tamu.edu/rule07>). Since your lowest two quiz grades will be dropped, a make-up quiz will only be available if you have three or more *excused* absences on quiz days.

Course Schedule

Week of	Lecture Topic	Lab Topic	Textbook
1: Jan 18	Introduction	C++ Review	Chap. 1
2: Jan 25	Algorithm Analysis	Code Asymptotic Analysis	Chap. 2
3: Feb 1	Lists	Pointers	Chap. 3
4: Feb 8	Stacks and Queues	Recursion	Chap. 3
5: Feb 15	Trees	Measuring Code Running Time	Chap. 4
6: Feb 22	Binary Search Trees	C++ STL Maps and Sets	Chap. 4
7: Mar 1	Hashing – Chaining	Debugging Tools	Chap. 5
8: Mar 8	Hashing – Probing	Debugging Exercises	Chap. 5
9: Mar 15	Priority Queues – Heaps	Make Files	Chap. 6
10: Mar 22	Priority Queues – Applications	Exceptions	Chap. 6
11: Mar 29	Sorting – Algorithms	C++ Templates	Chap. 7
12: Apr 5	Sorting – Lower Bounds	C++ Templates	Chap. 7
13: Apr 12	Graph Algorithms	Graph Data Structures Practice	Chap. 9
14: Apr 19	Graph Algorithms – Applications	Graph Data Structures Practice	Chap. 9
15: Apr 26	Review	Review	

Exam Dates: Tue, Mar 9 (midterm); Mon, May 3, 11:00 AM – 1:30 PM (final)

Quiz Dates (administered in lab): 1/25, 2/1, 2/8, 2/15, 2/22, 3/1, 3/15, 3/29, 4/5, 4/12, 4/19, 4/26

Homework Due Dates: 2/4, 2/18, 3/4, 4/1, 4/15, 4/29

Programming Assignment Due Dates: 2/9, 2/25, 3/23, 4/8, 4/27

University Policies

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" ([Student Rule 7, Section 7.4.1](#)).

“The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence” ([Student Rule 7, Section 7.4.2](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See [Student Rule 24](#).)

Academic Integrity Statement and Policy

“An Aggie does not lie, cheat or steal, or tolerate those who do.”

“Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one’s work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case” ([Section 20.1.2.3, Student Rule 20](#)).

You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu. Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](#)):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class

discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, you will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with [Counseling and Psychological Services](#) (CAPS).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's [Title IX webpage](#).

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling & Psychological Services (CAPS). Students who need someone to talk to can call the TAMU Helpline (979-845-2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends. 24-hour emergency help is also available through the National Suicide Prevention Hotline (800-273-8255) or at suicidepreventionlifeline.org.

COVID-19 Temporary Addendum to Minimum Syllabus Requirements

The Faculty Senate temporarily added the following statements to the minimum syllabus requirements in Spring 2021 as part of the university's COVID-19 response.

Campus Safety Measures

To promote public safety and protect students, faculty, and staff during the coronavirus pandemic, Texas A&M University has adopted policies and practices for the Spring 2021 academic term to limit virus transmission. Students must observe the following practices while participating in face-to-face courses and course-related activities (office hours, help sessions, transitioning to and between classes, study spaces, academic services, etc.):

- Self-monitoring—Students should follow CDC recommendations for self-monitoring. **Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely if that option is available, and should not participate in face-to-face instruction.**
- Face Coverings—[Face coverings](#) (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Description of face coverings and additional guidance are provided in the [Face Covering policy](#) and [Frequently Asked Questions \(FAQ\)](#) available on the [Provost website](#).
- Physical Distancing—Physical distancing must be maintained between students, instructors, and others in course and course-related activities.
- Classroom Ingress/Egress—Students must follow marked pathways for entering and exiting classrooms and other teaching spaces. Leave classrooms promptly after course activities have

concluded. Do not congregate in hallways and maintain 6-foot physical distancing when waiting to enter classrooms and other instructional spaces.

- To attend a face-to-face class, students must properly wear an approved face covering. If a student refuses to wear a face covering, the instructor should ask the student to leave and join the class remotely. If the student does not leave the class, the faculty member should report that student to the [Student Conduct office](#) for sanctions. Additionally, the faculty member may choose to teach that day's class remotely for all students, or dismiss the class in the case of a traditional face to face lecture.

Personal Illness and Quarantine

Students required to quarantine must participate in courses and course-related activities remotely, if that option is available, and **must not attend face-to-face course activities**. Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities.

Students experiencing personal injury or illness that is too severe for the student to attend class qualify for an excused absence (See [Student Rule 7, Section 7.2.2.](#)) To receive an excused absence, students must comply with the documentation and notification guidelines outlined in Student Rule 7.