COSC 2336.01W Data Structures and Algorithms

COURSE SYLLABUS: Spring 2024

INSTRUCTOR INFORMATION

Instructor:	Amy Hays M.S., Computer Science
Office Location:	RELLIS ACB1 335
https://tamuc.zoom.us/j/92711096337?pwd=cS9UZlIXb2xIc2V1dGtoNnArcDZ5UT09	
Office Hours:	Mondays, Wednesdays, and Thursdays 10 am to 12 pm Other times by appointment only via email
University Email Address:	amy.hays@tamuc.edu
Preferred Form of Communication:	For all emails, make sure the email the subject line reads: "COSC 2336.01W~~".
Communication Response Time:	48 hours

TEACHING ASSISTANT

Teaching Assistant:	TBA
TA Email:	TBA

COMPUTER LAB

Locations:	Journalism Rm. 101 & 200
Hours:	9 am to 9 pm, Monday – Friday

COURSE INFORMATION

Lecture: Online through D2L

Class Textbook:

The *syllabus/schedule are subject to change.*

- Malik, D. S. “C++ Programming: Program Design Including Data Structures”, 8th edition, Cengage Learning, 2018. ISBN: 9781337117562 or eBook ISBN: 9780357690321.

Other Optional Textbooks:

- Shaffer, C.A. “Data Structures and Algorithm Analysis”, Dover Publications. http://people.cs.vt.edu/~shaffer/Book/
- Algorithms in C++, Third Edition, Parts 1-4, Fundamentals, Data Structures, Sorting, Searching by Robert Sedgewick, Addison Wesley, ISBN 0-201-35088-2, 2009.

The professor will make other supplementary information for the course available online. These include class notes, assignments, PowerPoint slides, class announcements, the course syllabus, test dates, etc. The professor will announce in class when such information becomes available electronically. It is the student’s responsibility to follow these announcements.

Course Description

This course continues with the concept of abstract data structures (classes) began in COSC 1437 Programming II and concentrates on building programming tools known as container classes which can be used to store and manipulate data. Topics covered include address variables (pointers), dynamic memory management, linked lists, stacks, queues, recursion, analysis of algorithmic efficiency, binary search trees, and hashing and dictionary data structures.

Student Learning Outcomes

1. Use address variables.
2. Use the linked list data structure.
3. Use the stack data structure.
4. Use the queue data structure.
5. Design, code, and use recursive functions.
6. Understand Big-O notation (for algorithm efficiency): what it means, how it is determined, and why it should be considered ineffective programming.
7. Use the binary tree data structure and a hash table.
8. Integrate the use of container classes (user created or STL) into a moderately complex program solution.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

Prerequisites: CSCI 152 (Min Grade C), COSC 1337 (Min Grade C), or COSC 1437 (Min Grade C)

Instructional Methods

D2L will be the method of presentation for the entire course. Please go to myLeo and find D2L in Apps. All course materials will be found in D2L.

Student Responsibilities or Tips for Success in the Course

It is the students' responsibility to keep up with the schedule. Makeup work (exams, quizzes, discussions, or assignments) will only be permitted in cases of emergency with proper documentation, or prior rescheduling. To reschedule contact me before the due date with a valid reason and suggested make-up dates will be given.

Please feel free to contact me and come to office hours to ask questions and get clarifications or assistance.

GRADING

Final grades in this course will be based on the following scale:

A = 90%-100%
B = 80%-89%
C = 70%-79%
D = 60%-69%
F = 59% or Below

Assessments

Basis for Evaluation:

Assignments	30%
Quizzes	20%
Midterm Exam	25%
Final Exam	25%

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:
https://community.brightspace.com/s/article/Brightspace-Platform-Requirements

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LMS Browser Support:
https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

Zoom Video Conferencing Tool
https://inside.tamuc.edu/campuslife/CampusServices/CITESupportCenter/Zoom_Account.aspx?source=universalmenu

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu**.**

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

https://community.brightspace.com/support/s/contactsupport

Interaction with Instructor Statement

Office Location:	RELLIS ACB1 335 https://tamuc.zoom.us/j/92711096337?pwd=cS9UZllXb2xIc2V1dGtoNnArcDZ5UT09
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COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

Late Policies

Credit will be given for ONLY those exams, quizzes, and assignments turned in no later than the deadline as announced by the instructor of this class unless prior arrangement has been made with the instructor.

Late assignments can gain partial credit upon the following policy. As per University requirements, assignments submitted within 7 days after the deadline can receive up to 20% deduction, assignments submitted between 8-14 days after the deadline can receive up to 50% deduction.

- **No assignments will be accepted two weeks after the assigned due date.**
- **No assignment will be accepted after the term end day.**
- Exceptions to this policy will only be made in extraordinary circumstances. Please let me know your circumstances.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook.
http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum:
https://www.britannica.com/topic/netiquette

TAMUC Attendance

For more information about the attendance policy please visit the Attendance webpage and Procedures 13.99.99.R0.01
http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf

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Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

Undergraduate Academic Dishonesty 13.99.99.R0.03
Undergraduate Student Academic Dishonesty Form

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/documents/13.99.99.R0.03UndergraduateStudentAcademicDishonestyForm.pdf

Graduate Student Academic Dishonesty Form

http://www.tamuc.edu/academics/graduateschool/faculty/GraduateStudentAcademicDishonestyFormold.pdf

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf

Students with Disabilities-- ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Velma K. Waters Library Rm 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@tamuc.edu
Website: Office of Student Disability Resources and Services
http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

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Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the Carrying Concealed Handguns On Campus document and/or consult your event organizer.

Web url:
http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

A&M-Commerce Supports Students' Mental Health

The Counseling Center at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit **www.tamuc.edu/counsel**

AI use policy [Draft 2, May 25, 2023]

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

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Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors ' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty

13.99.99.R0.10 Graduate Student Academic Dishonesty

Department or Accrediting Agency Required Content

COURSE OUTLINE / CALENDAR

Week of	Topic	Textbook Reading
Jan 10	Review of Programming I & II – basic review	Chapters 1-3
Jan 15	Review of Programming I & II – control structures	Chapters 4-5 - **Jan 15 – MLK Holiday**
Jan 22	Review of Programming I & II – functions and arrays	Chapters 6-8 **(Quiz 1)**
Jan 29	Review of Programming I & II – structures and classes	Chapters 9 - 11
Feb 5	Pointers and dynamic variables	Chapters 12-13
Feb 12	Overloading and linked lists	Chapter 13, 16 **(Quiz 2)**
Feb 19	Linked lists – continued	Chapter 16
Feb 26	**Mid-term**	
Mar 4	Stacks	Chapter 17
Mar 11	**Spring Break**	
Mar 18	Recursion	Chapter 15
Mar 25	Queues	Chapter 17 **(Quiz 3)**
Apr 1	Trees	Chapter 19
Apr 8	Binary Search Trees	Chapter 19
Apr 15	Hash Tables	
Apr 22	Asymptotic Notation: Big-O Notation	Chapter 18 **(Quiz 4)**
Apr 29	Review	**3rd - Spring Last Class Day**
May 4 – May 10	Final Exams	

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