UT Tyler SOULES COLLEGE OF BUSINESS

COSC 2336 – Data Structures and Algorithms

Syllabus

Catalog Description:

Topics include recursion, the underlying philosophy of object-based and object-oriented programming, fundamental data structures (including stacks, queues, linked lists, hash tables, trees, and graphs), the basics of algorithm analysis, and an introduction to the principles of language translation.

Text Books:
Required:

None

Class Times:
COSC 2336.001 Lecture: MWF 10:10am-11:05am COB211

Prerequisites or co-requisites:
COSC 1337, MATH 2413

Grading Policy:

Tests (2)	40% (20% each)
Final Report	20%
Homework/Projects	40%

Homework/Project online submissions will be due via Canvas by 11:59PM on designated nights unless otherwise stated. .
No late submissions will be accepted.

Late Submissions and Tests:
Assignments/Labs/Projects/Presentations will not be accepted after the due date.

Homework Policy:
All homework must be self-generated. No AI or downloaded solutions will be accepted. The use of Java Libraries outside those taught in class will not be used unless for added functionality beyond the purpose of the programming assignment (such as java.util.ArrayList, java.util.LInkedLIst, java.util.Stack, etc). The purpose of this class is to get the experience and knowledge of how these structures work, rather than how to use libraries that already do the work for you. Use of these libraries before introduced in class will result in a '0' grade.

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Homework Policy (cont):
Group projects will be submitted individually by each team member to their Canvas portal. Files should all be submitted individually and not in a zip file, as the grading system cannot properly display zip file contents.

Expected Homework/Project Schedule
Project plans are for one (1) programming project per week, due on Sunday nights at 11:59pm, with one major written report due on the final day of classes

Academic Dishonesty: You are expected to do your own work. You may assist each other with general concepts, but direct assistance with a particular assignment or any attempts to gain an unfair academic advantage will not be tolerated. Cheating is considered a serious academic offense both by the department and the University. It may result in a failing grade from this course for all parties involved. The instructor reserves the right to ask you to explain any assignment that you turn in to judge if the work is actually yours. AI generated work will not be accepted.

Use of Artificial Intelligence (AI)

You can use AI such as Grok, ChatGPT, etc and websites such as Reddit, W3 Schools, etc. to find code examples for solutions that you "hit a brick wall" when trying to solve. When doing so, you MUST do the following for credit:

1. Comment above methods that you import (copy) from outside sources with the issue you were having, a description of this solution, and the source of the solution. If AI generated, include the prompt in the comments

2. Comment on each line of code in the imported method so I can see you understand what is happening (do not just have AI generate the comments. I may have you appear personally to explain how a method works and what individual lines do)

3. Try to rewrite the code into your own style with level-appropriate coding (code that another person at your programming level can easily interpret)

Failure to follow the above rules will result in your work considered as "plagiarism" and receive a '0'. Repeated plagiarism may result in University disciplinary action.

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Contact Information:

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Office Hours: MWF 9:00am-10:00am, 11:15am – 12:15pm, 1:30pm – 3:45pm
TTH, 1:00pm-2:00pm (Robotics Team 2:00-5:00)
And by Appointment

Course Topics:

Topic	Hours
Introduction to Data Structures	3
Brief Review of Java Fundamentals	3
Overview of Programming Principles and Software Engineering	3
Abstract Data Types	3
Linked Lists and List Processing	6
Introduction to Stacks and Queues	6
Algorithm Efficiency and Sorting	9
Introduction to Trees	6
Introduction to Graphs and Databases	3

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Course Objectives:

1. Describe how the data structures in the topic list are allocated and managed in memory.
2. Describe common applications for each data structure in the topic list.
3. Write programs that implement the basic operations of each of the following data structures: array, records, strings, linked lists, stacks, and queues.
4. Compare and contrast the costs and benefits of dynamic and static data structures.
5. Differentiate the computational efficiency of the main algorithms for sorting and searching.
6. Model problems in computer science using graphs and trees.
7. Implement the most common sorting algorithms.
8. Be familiar with factors other than computational efficiency that influence the choice of algorithms, such as programming time, space overhead, maintainability, and the use of application specific patterns in the input data

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Est. Course Timeline:

Course Time Room	COSC2336 MWF 10:10-11:05 COB211
1/12/26	Intro, Hello World, Primitive Data Types
1/19/26	**NO CLASS MONDAY 2/19** Arrays Min/Max
1/26/26	Arrays - Reading Files, CSV
2/2/26	Linked Lists - World Temps
2/9/26	Queues - Banker
2/16/26	Queues - Banker Stacks - Hanoi
2/23/26	Stacks - War Card Game **Fri, 2/27 Test 1 (Data Types, Arrays, Linked Lists, Queues)**
3/2/26	**MidTerm Grades** Binary Tree - Animal Guessing Game
3/9/26	**Spring Break**
3/16/26	Binary Search Tree, Heaps
3/23/26	Bubble Sort, Graphing Data in Excel, Report 1
3/30/26	Selection Sort, Insertion Sort
4/6/26	Report 2, Merge Sort, Heap Sort, Performance based on pre-sort order
4/13/26	Quick Sort **Fri, 4/17 Test 2 (Binary Trees, Heaps, Sorting)**
4/20/26	Introduction to Databases
4/27/26	Final Exams **Final Report Due 4/27**

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Additional Policies:

Students Rights and Responsibilities
To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: http://www.uttyler.edu/wellness/StudentRightsandResponsibilities.html

Grade Replacement/Forgiveness
If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to do so will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates will receive grade forgiveness (grade replacement) for only three course repeats; graduates, for two course repeats during his/her career at UT Tyler.

State-Mandated Course Drop Policy
Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the 12th day of class (See Schedule of Classes for the specific date).
Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Registrar's Office and must be accompanied by documentation of the extenuating circumstance. Please contact the Registrar's Office if you have any questions.

Disability Services
If you have a disability, including a learning disability, for which you request disability support services/accommodation(s), please contact Ida MacDonald in the Disability Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting disability services/accommodation(s) must provide appropriate documentation of his/her disability to the Disability Services counselor. In order to assure approved services the first week of class, diagnostic, prognostic, and prescriptive information should be received 30 days prior to the beginning of the semester services are requested. For more information, call or visit Disability Services located in the University Center, Room 3150. The telephone number is (903) 566-7079. Additional information may also be obtained at the following UT Tyler Web address: http://www.uttyler.edu/disabilityservices.

Student Absence due to Religious Observance
Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

Student Absence for University-Sponsored Events and Activities
If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement:
It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

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Emergency Exits and Evacuation:

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do Not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.