

SYLLABUS: DATA STRUCTURES

COURSE & INSTRUCTOR INFORMATION

Course

Course Prefix, Number, Section, Title: COSC 20803-065 Data Structures Semester and Year: Spring 20XX

Number of Credits: 3

Course Component Type: Lecture

Class Location: TUC 138

Class Meeting Day(s) & Time(s): XXX

Instructor

Instructor Name: Dr. XXX

Office Hours: XXX

Preferred Method of Contact: Email

Email: XXX

Response Time: Emails will be responded within 24 hours including weekends.

Final Evaluative Exercise & Important Dates

FINAL EXAM: THURSDAY, MAY 8 2:00 – 4:30 PM AT TUC 138
EXAM 1 (TENTATIVE): THURSDAY, FEBRUARY 13 3:30 – 4:50 PM AT TUC 138
EXAM 2 (TENTATIVE): THURSDAY, 27 3:30 – 4:50 PM AT TUC 138
LAST DAY TO DROP: TUESDAY, APRIL 1
LAST DAY TO SELECT P/NC: MONDAY, APRIL 21

Note for students: The syllabus is your first course reading. It provides an orientation to, overview of the flow, and expectations of the course. You should turn to the syllabus for details on assignments and course policies.

Grader

XXX

Student Resources & Policy Information

Click or scan QR code for resources to support you as a TCU student. Please note section on [Student Access and Accommodation](#), [Academic Conduct & Course Materials Policies](#), and [Emergency Response & TCU Alert](#).



COURSE DESCRIPTION

Description

Formal specification of data structures and data structures in programming languages. Recursion and algorithm analysis. Lists, stacks and queues. Representation of trees and graphs. Searching and sorting algorithms and techniques.

Prerequisites & Concurrent Enrollment

COSC 20203 with a C- or better.

COURSE MATERIALS

Required Material

Textbook: Michael T. Goodrich, Roberto Tamassia and Michael H. Goldwasser, *Data Structures and Algorithms in Java*, 6th Edition, ISBN: 978-1118771334

Supplementary Resources

Slides: Lecture slides will be made available on TCU Online.

Device Information: Students **MUST** be able to access laptops or desktops to complete all assignments. The operating system can be Windows or macOS.

LEARNING OUTCOMES

1. Recognize the use of ADTs as a good design strategy for specifying the logical properties of a data type.
2. Be able to analyze sophisticated programming problems and choose appropriate algorithms for their solution.
3. Be able to demonstrate an understanding of how arrays are implemented and their associated mapping functions.
4. Be able to demonstrate familiarity with advanced data structures (stacks, queues, linked lists, trees (binary, balanced, search, threaded), hashing functions and collision resolution methods).
5. Express an understanding of the use of order analysis to evaluate competing data structures.

6. Design, implement, perform, and report on an experimental analysis of competing data structures or algorithms.
7. Analyze time-space tradeoffs, static-dynamic structure tradeoffs, and operation efficiency tradeoffs for common data structures.
8. Be familiar with sorting and searching concepts, algorithms, and their analysis and performance
9. Be able to apply data structure concepts to solving real-world problems.

COURSE REQUIREMENTS

Assessments

Assignments:

- There are six assignments. Assignments only contains programming questions.
- Late assignments are accepted with a penalty of 10% per calendar day up to a maximum of 5 days. Afterwards, the assignment is worth 0 points.
- Students are encouraged to share thoughts and ideas. However, a student should **NEVER** share his code to another student. It is **PROHIBITED** to even share one line of code.

Exams:

- There are three exams. All the exams are taken in the lecture classroom. Students are asked to handwrite the answers. Exams are not comprehensive.
- All the exams are closed book.
- **ONLY** the final exam can be rescheduled. Graduating students **MUST** reschedule the final exam. For non-graduating students, rescheduling is **ONLY** permitted to meet the 24-hour rule.

Grading Philosophy & Policy

Late Work: Late assignments are accepted with a penalty of 10% per calendar day up to a maximum of 5 days. Afterwards, the assignment is worth 0 points.

Coupon System:

- Each student has **ONE** coupon for the semester, which can be applied to one of the six assignments.
- If you receive a low grade for any reason, including but not limited to incorrect submission format, missed submission, incorrect files submitted, or incomplete work, you can submit the updated solution to Coupon Redemption on TCU Online.
- The grader will then regrade your updated solution with a 20% penalty applied.

Make-Up Work:

- Make-up work will **ONLY** be permitted for two reasons: an official university absence or documented medical appointments.
- A student who has an official university absence must contact the instructor **BEFORE THE ABSENCE** to schedule a make-up of any assessment that will be missed.
- Because it is considered an infringement on student privacy for me to have access to student medical records, I cannot accept medical documentation to justify absences. If you have a legitimate reason for your absence and want to provide verification, please access the Absence Documentation Form [here](#). Such medical-related absences will be rescheduled accordingly.

Extra Credits:

- Extra credits/work will **NOT** be given with no exceptions. This policy will be strictly enforced toward the end of the semester.
- The final course grades will **NOT** be curved with no exceptions.

Attendance: Attendance will not be taken. Students will be considered **RESPONSIBLE** for all material presented during their missed lectures.

Cheating and Plagiarism: Students are encouraged to share thoughts and ideas. However, a student should **NEVER** share his code to another student. It is **PROHIBITED** to even share one line of code.

Course Assignments & Final Grade

Assessment	Percent Per Instance	Quantity	Percent
Assignments	≈ 8.33%	6	50%
Exams	≈ 16.67%	3	50%

Grading Scale: The final course grades will **NOT** be curved with no exceptions. Please also be aware that extra work will **NOT** be given with no exceptions.

Grade	Score	Grade	Score
A	≥ 93	C	≥ 73 and < 77
A-	≥ 90 and < 93	C-	≥ 70 and < 73
B+	≥ 87 and < 90	D+	≥ 67 and < 70
B	≥ 83 and < 87	D	≥ 63 and < 67
B-	≥ 80 and < 83	D-	≥ 60 and < 63
C+	≥ 77 and < 80	F	< 60

COURSE SCHEDULE (TENTATIVE)

This schedule represents current course plans. Due to an increase in enrollment, the schedule is tentative. Due dates will be communicated and announced during lectures, and the definite due dates will be reflected on TCU Online.

Week	Topic	Due
1	Recursion	
2	Analysis of Algorithms	
3	Object-Oriented Programming	
4	Singly Linked Lists Doubly Linked Lists	Assignment 1
5	Doubly Linked Lists Exam 1	
6	Stacks	Assignment 2
7	Queues	
8	Trees	Assignment 3
9	Priority Queues Heaps	
10	<i>Spring Break</i>	
11	Heaps Exam 2	
12	Binary Search Trees	Assignment 4
13	Sorting	
14	Sorting	Assignment 5
15	Graphs	
16	Graphs	Assignment 6
17	Final Exam	