

CS2468: DATA STRUCTURES AND DATA MANAGEMENT

Effective Term

Semester A 2025/26

Part I Course Overview

Course Title

Data Structures and Data Management

Subject Code

CS - Computer Science

Course Number

2468

Academic Unit

Computer Science (CS)

College/School

College of Computing (CC)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

CS2360 Java Programming or equivalent

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

Data structures are essential in computer science. This course aims to let the student describe concepts and techniques of fundamental data structures, data management and simple file systems.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if DEC-A1 app.)		DEC-A2	DEC-A3
1	Describe the functionality of a data structure as an abstract data type.			x	
2	Implement an abstract data type in a programming language.			x	
3	Implement and test data structures for common structures; select an appropriate data structure from a given set of structures to solve a given problem.			x	
4	Develop the attitude to propose solutions through independent investigation.		x	x	
5	Develop the ability to design, implement, and apply data structures and data storage management to simple real life problems.		x	x	

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Students will engage in lectures that explain concepts, different kind of data structures, algorithms for data structures	1, 2, 3, 4, 5	3 hours per week
2	Tutorials	Students will do exercises about concepts, data structure algorithms and programming	1, 2, 3, 4, 5	8 hours per semester
3	Pre-mid-term	The students have to give narrative-type answers or write simple functions in a programming language to test their understanding of fundamental concepts.	1, 2, 3, 4, 5	1 hour per semester

4	Midterm	Students will be tested on all the contents we have learnt so far.	1, 2, 3, 4, 5	2 hour per semester
5	Assignments	The students have to finish two or three assignments through individual investigation. The first assignment is to apply the learnt data structures for problems, and the second is to let the student combine several data structures to solve problems.	1, 2, 3, 4, 5	

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks ("- for nil entry)	Allow Use of GenAI?
1	Assignments	1, 2, 3, 4, 5	8	2 assignments will be given.	No
2	Exercises (in-lecture and in-tutorial)	1, 2, 3, 4, 5	10	10 in-lectures exercises will be given in 10 weeks. 10 in-tutorial exercises will be given in 10 weeks .	No
3	Pre-mid-term test	1, 2, 3, 4, 5	4	-	No
4	Midterm	1, 2, 3, 4, 5	8	-	No

Continuous Assessment (%)

30

Examination (%)

70

Examination Duration (Hours)

2

Minimum Examination Passing Requirement (%)

30

Additional Information for ATs

For a student to pass the course, at least 30% of the maximum mark for the examination must be obtained.

Assessment Rubrics (AR)**Assessment Task**

Exercises (in-lecture and in-tutorial)

Criterion

Perfect answers full mark. 50% for in-perfect answers.

Assessment Task

Assignments

Criterion

Question has a score

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Pre-mid-term test

Criterion

Question has a score

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Midterm

Criterion

Question has a score

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Final exam

Criterion

Question has a score

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Abstract data types, data structures, linked lists, stacks, queues, binary trees, multiway trees, sorting, searching, file processing, and updating files.

Reading List

Compulsory Readings

Title	
1	Michael T. Goodrich and Roberto Tamassia. Data Structure and Algorithms in Java. John Wiley & Sons, Inc. 5th edition.

Additional Readings

Title	
1	Cormen, Thomas H., Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein. Introduction to Algorithms. Cambridge, MA: MIT Press, 3rd edition.