



NATIONAL UNIVERSITY
of Computer & Emerging Sciences, Lahore

Department of Computer Science

CS-218 – Data Structures

Spring 2020

Instructor Name:	Hafiz Muhammad Hamza	TA Name:	Muhammad Kamran
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Office Location:	Exam Hall, old admin block		
Office Hours:	Tue & Thu 2:00 – 3:00 PM, Wed 12:00 – 1:00 PM		

Course Information

Program: BS (CS) **Credit Hours:** 3 **Type:** Core **Class Venue:** CS-8

Pre-requisites: Object Oriented Programming (CS-217)

Class Meeting Time: Mon & Wed, 02:00 – 3:20 PM

Course Description/Objectives:

The core objectives of this course are to

- Introduce students with data structures and their associated algorithms.
- Introduce the concept of efficient data structures and how their efficiency can be measured.
- Prepare students to select appropriate data structure for a given computational problem.

Course Textbooks:

Any one of these books is recommended as a text book:

1. Mark Allen Weiss, Data structures and algorithm analysis, Pearson Education, 2007.
2. Adam Drozdek, Data structures and algorithms in C++, Course technology, 2004.
3. Nell Dale, C++ Plus Data Structures, 3rd Edition, Jones and Bartlett, 2003.
4. Michael T. Goodrich, Roberto Tamassia and David M. Mount, Data structures and algorithms, 2nd Edition, John Wiley & Sons, 2011.

(Tentative) Grading Criteria:

Assignments + Home works + Project **(15 %)**

Quizzes **(15 %)**

Midterms **(30 %)**

Final Exam **(40 %)**

Course Policies:

- Switch off mobile phones in the class or put them on silent mode.
- Be on time in class. All late comers will be marked absent.
- Quizzes may be announced or surprise.
- There will be no late submission or makeup of any of the assessment.
- **Plagiarism** in any work (Quizzes, Assignments, Midterms and Final Exam) from any source (Internet or a Student) will result in **F** grade or deduction of **absolute marks**.
- **80%** attendance is required for appearing in the Final exam.
- Minimum requirement to pass this course is obtaining **50%** marks.
- All the CS department's grading policies apply.

Tentative Course Outline and Lecture Plan

NO. OF LECTURES	TOPICS
1	Introduction
2	Time Complexity Analysis and Asymptotic Bounds
4	Linked Lists Review of pointers Singly linked lists, doubly linked lists, circular lists and corresponding iterators
3	Stacks and Queues
MIDTERM 1	
2	Recursion
3	Trees Binary trees and their traversals Binary search trees (Insertion, Deletion and Search)
3	Height Balanced Binary Search Trees (AVL Trees)
2	Heaps and heap sort
MIDTERM 2	
1	Data compression and Huffman coding
2	Hashing Hash tables and hash functions Collision resolution
2	Graphs, Breadth first search and Depth first search
3	Advanced Topics