



Course Name: Data Structures

Course Code: T3209

(UG/PG): UG

Number of Credits: 2

Level: 2

Learning Objective(s): A systematic study of data structures and their algorithms organized around the unifying concept of data and code abstraction. Emphasis is placed on ADT-based. Topics include abstract data types (ADTs), objects. It enables to study specific data structures such as linear lists, stacks, queues, binary trees, binary search trees, sorting & searching algorithms.

Pedagogy:

Lectures
Class Work
Hands on Exercises

Pre-requisites: NIL

Courses Outline:

Sr. No.	Topics	Hours
1	Data Structure Concepts And Algorithm Concepts: Definition of Data Structures, Types of Data structures, Abstract Data Type (ADT), Definition of Algorithm	2
2	Arrays: Arrays Characteristics of an array, Definition of an Array, Indexing of an array, Base address of array, Implementation of 1-D arrays, Row and Column Major implementations of 2-D, 3-D arrays.	4
3	Stacks: Stack as ADT, operations on stack - PUSH and POP, Stack implementation - array and linked list (static / dynamic), Applications of Stack.	6
4	Queues: Queue as ADT, Operations on queue, Types of queues - Linear Queue, Circular Queue, Priority Queue	3
5	Linked Lists: Concept of a linked list, linear Linked list, Doubly linked list, Circular linked list.	3
6	Trees: Concepts of a Tree, Tree as ADT, definitions of Binary trees, Strictly Binary tree, Complete Binary tree, weight of a tree, level of a node, Height/Depth of a Tree, Operations on trees – Addition and Deletion	6

	of nodes, Tree Traversal Algorithms: Inorder, Preorder, Postorder,	
7	Sorting & Searching: Bubble sort, Insertion sort, Selection Sort Linear and Binary Search	6
	Total	30

Book Recommended:

1. Data Structures using C and C++ by Tanenbaum
2. Fundamentals of Data Structures by Horowitz and Sahni
3. Data Structure and Files using C by Abhay Abhyankar
4. Data Structures by Schaum Series

Research Papers/Articles recommended for reading:

Suggested Evaluation Methods:

Mid Term Exam
Quiz(Moodle)
Assignment
End Term Exam

Parallel/Similar courses in the existing curriculum:

S.No.	Name of the course	Institute where it was offered

Name of Member	Sonal Khosla				
Designation	Assistant Professor				
Org. / Inst.	SICSR				
Signature					

Name of the Expert:



Signature:

Date: