Course Type	Course Code	Name of Course	L	T	P	Credit
DP1	CSC204	**Data Structures Lab**	0	0	2	2

Course Objective
To make familiar with Theoretical concept and Practicals together hand to hand on the aspects of Data Structure programming. Representations and operations on various data structures such as array, stacks, queues, trees and graphs. Applications on the above with their application areas should also be explored.
Learning Outcomes
To make familiar with Theoretical concept and Practicals together hand to hand on the aspects of Data Structure programming.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Representations of Arrays: one dimensional, multi-dimensional, Sparse Matrix and various Elementary Operations	4	Basic overview and understanding about the topic
2	Stacks: Representation, elementary operations and applications such as infix to postfix, postfix evaluation, parenthesis matching; Queues: Simple queue, circular queue, dequeue, elementary operations and applications	4	Familiarity with Stack, queue and similar terminologies with basic operations
3	Linked lists: Linear, circular and doubly linked lists, elementary operations and applications such as polynomial manipulation	4	Basic understanding of dynamic allocation strategies and manipulations for the same.
4	Trees: Binary tree representation, tree traversal, complete binary tree, heap, binary search tree, height balanced trees like AVL tree, B-tree, other operations and applications of trees	6	Basic understanding of non-linear data structures and its operations such as various trees
5	Graphs: representation, Adjacency list, graph traversal, path matrix, connected components, DAG, topological sort, Spanning tree;	6	Basic understanding of non-linear data structures and its operations such as graphs
6	Sorting: Selection sort, bubble sort, quick sort, merge sort, heap sort, Radix sort; Searching: linear and binary search; Hashing: hash tables, hash functions, open addressing.	4	Basic understanding of Arranging numbers and hashing

Text Books:

1. Let Us C 16TH EDITION Paperback – 2017, Yashavant Kanetkar.

Reference Books:

1. An introduction to data structures with applications McGraw-Hill computer science series
2. Sartaj Sahni, 2000, Data structures, Algorithms and Applications in C++, McGraw Hill International Edition