Annexure 2

DATA STRUCTURES THROUGH C++ LAB

Course Code: CSE 222 **Credit Unit: 01**

Total Hours: 20

Course Objective:

To write and execute programs in C++ to solve problems using data structures such as arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees. To write and execute write programs in C++ to implement various sorting and searching methods.

SOFTWARE REQUIREMENTS: Turbo C++ compiler or GCC compilers

Course Contents:

Lab Experiments are based on the course Data Structures Through C++ (CSE 202)

List of experiments / demonstrations: (Each experiment is of 2 Hours duration)

1. Write a C++ programs to implement recursive and non recursive i) Linear search ii) Binary search
2. Write a C++ programs to implement i) Bubble sort ii) Selection sort iii) quick sort iv) insertion sort
3. Write a C++ programs to implement the following using an array.
   (a) Stack ADT b) Queue ADT
4. Write a C++ programs to implement list ADT to perform following operations
   (a) Insert an element into a list.
   (b) Delete an element from list
   (c) Search for a key element in list
   (d) count number of nodes in list
5. Write C++ programs to implement the following using a singly linked list. Stack ADT b) Queue ADT
6. Write C++ programs to implement the deque (double ended queue) ADT using a doubly linked list and an array.
7. Write a C++ program to perform the following operations:
   (a) Insert an element into a binary search tree.
   (b) Delete an element from a binary search tree.
   (c) Search for a key element in a binary search tree.
8. Write C++ programs for implementing the following sorting methods:Merge sort b) Heap sort
9. Write C++ programs that use recursive functions to traverse the given binary tree in a) Preorder b) in order and c) post order
10. Write a C++ program to perform the following operations a) Insertion into a B-tree b) Deletion from a B-tree

Course Outcomes:

- Ability to identify the appropriate data structure for given problem.
- Graduate able to design and analyze the time and space complexity of algorithm or program.
- Ability to effectively use compilers includes library functions, debuggers and trouble shooting.

Examination Scheme:

IA			EE			
A	**PR**	**Practical Based Test**	**Major Experiment**	**Minor Experiment**	**LR**	**Viva**
5	10	15	35	15	10	10

Note: IA –Internal Assessment, EE- External Exam, A- Attendance PR- Performance, LR – Lab Record, V – Viva.

Text & References:

- Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India) Pvt.Ltd, 2nd edition, Universities Press Orient Longman Pvt. Ltd.
- Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and .Mount, Wiley student edition, John Wiley and Sons.
- Data structures using C and C++, Langsam, Augenstein and Tanenbaum, PHI