SWARNANDHRA
COLLEGE OF ENGINEEERING AND TECHNOLOGY
(AUTONOMOUS)

SEETHARAMPURAM, NARSAPUR-534280, WG- DT, AP

DEPARTMENT OF BACHELOR OF COMPUTER APPLICATIONS(Honours)

TEACHING PLAN

Course Code	Course Title	Year / Sem.	Branch	Contact Hr/ week	Academic Year
24BC2L01	DATA STRUCTURES THROUGH C LAB	I/II	BCA	3	2024-25

Course Objectives:

From the course the student will

• Solve problems using data structures such as linear lists, stacks, queues, hash tables

• Be familiar with advanced data structures such as balanced search trees, AVL Trees, and B Trees

Course Outcomes (Cos): At the end of the course, student will able to

CO No.	Course Outcome	Knowledge Level (K)
CO1	Understand and implement basic linked list operations, including singly, doubly, and circular linked lists	K3
CO2	Develop algorithms to reverse, sort, merge, and remove duplicates in linked lists.	K4
CO3	Implement and perform stack and queue operations using linked lists, including infix to postfix conversion and expression evaluation	K3
CO4	Apply recursive and non-recursive methods to implement Binary Search Trees and AVL Trees.	K4
CO5	Develop and implement sorting algorithms, including Selection, Insertion, Merge, Heap, and Quick Sort	K4

S.No	Program	Proposed Number of Labs
1	Write a C program to perform various operations on a single linked list.	1
2	Write a C program for the following: a) Reverse a linked list. b) Sort the data in a linked list Write a C program for the following: a) Remove duplicates from a linked list. b) Merge two linked lists	1
3	Write a C program to perform various operations on a doubly linked list.	1
4	Write a C program to perform various operations on a circular linked list.	1
5	Write a C program for performing various operations on a stack using a linked list. Write a C program for performing various operations on a queue using a linked list.	1
6	Write a C program for the following using a stack: a) Infix to postfix conversion. b) Expression evaluation. c) Obtain the binary number for a given decimal number	1
7	Write a C program to implement various operations on a Binary Search Tree using Recursive and Non-Recursive methods.	1
8	Write a C program to implement Selection Sort & Insertion Sort for given elements. Write a C program to implement Merge & Heap Sort for given elements	1
9	Write a C program to implement Quick Sort for given elements. Write a C program to implement various operations on AVL trees.	1
10	Write a C program to perform the following operations: a) Insertion into a B-tree. b) Searching in a B-tree. Write a C program for the implementation of recursive and non-recursive functions for Binary Tree Traversals.	1

References:

1. https://ds1-iiith.vlabs.ac.in/
2. https://profile.iiita.ac.in/bibhas.ghoshal/teaching_ds_lab.html
3. https://moodle.sit.ac.in/blog/data-structures-laboratory/
4. https://dsalab.netlify.app/
5. https://www.vtuloop.com/data-structure-lab-programs-all/

R.Sunitha

Faculty **Head of the Department** **Principal**