

**SWARNANDHRA**  
**COLLEGE OF ENGINEERING AND TECHNOLOGY**  
**(AUTONOMOUS)**  
**SEETHARAMPURAM, NARSAPUR-534280, WG- DT, AP**  
**DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS**

**TEACHING PLAN**

Course Code	Course Title	Year / Sem.	Branch	Contact Hr/week	Academic Year	Date of Commencement of Semester
24MC1L02	Data Structures using C Lab	I/I	MCA	4	2024-25	16.09.2024

**Course Outcomes (COs):** At the end of the course, student will be able to

Course Outcomes		Knowledge Level (K)#
<b>CO1</b>	Implement various basic data structures and its operations.	<b>K2</b>
<b>CO2</b>	Apply sorting and searching algorithms to given numbers	<b>K3</b>
<b>CO3</b>	Implement various tree operations.	<b>K2</b>
<b>CO4</b>	Implement various graphs algorithms.	<b>K2</b>
<b>CO5</b>	Develop applications using various data structures.	<b>K6</b>

S.No	EXERCISE/PROGRAM	Proposed Number Labs
<b>EXERCISE-1</b>		
1	a) Write a program in C to display the n terms of even natural number and their sum. b) Write a program in C to display the n terms of harmonic series and their sum. $1 + 1/2 + 1/3 + 1/4 + 1/5 \dots 1/n$ terms. c) Write a C program to check whether a given number is an Armstrong number or not. d) Write a C program to calculate the factorial of a given number.	1

<b>EXERCISE-2</b>		
2	a) Write a program in C for multiplication of two square Matrices. b) Write a program in C to find transpose of a given matrix.	1
<b>EXERCISE-3</b>		
3	a) Write a program in C to check whether a number is a prime number or not using the function. b) Write recursive program which computes the nth Fibonacci number, for appropriate values of n. c) Write a program in C to add numbers using call by reference.	1
<b>EXERCISE-4</b>		
4	a) Write a program in C to append multiple lines at the end of a text file. b) Write a program in C to copy a file in another name.	1
<b>EXERCISE-5</b>		
5	Write recursive program for the following a) Write recursive and non recursive C program for calculation of Factorial of an integer. b) Write recursive and non recursive C program for calculation of GCD (n, m) c) Write recursive and non recursive C program for Towers of Hanoi: N disks are to be transferred from peg S to peg D with Peg I as the intermediate peg.	1
<b>EXERCISE-6</b>		
6	a) Write C program that use both recursive and non recursive functions to perform Linear search for a Key value in a given list. b) Write C program that use both recursive and non recursive functions to perform Binary search for a Key value in a given list.	1
<b>EXERCISE-7</b>		
7	a) Write C program that implement stack (its operations) using arrays. b) Write C program that implement stack (its operations) using Linked list	1
<b>EXERCISE-8</b>		

8	<ul style="list-style-type: none"> <li>a) Write a C program that uses Stack operations to convert infix expression into postfix expression.</li> <li>b) Write C program that implement Queue (its operations) using arrays.</li> <li>c) Write C program that implement Queue (its operations) using linked lists.</li> </ul>	1
<b>EXERCISE-9</b>		
9	<ul style="list-style-type: none"> <li>a) Write a C program that uses functions to create a singly linked list and perform various operations on it.</li> <li>b) Write a C program to store a polynomial expression in memory using linked list and perform polynomial addition.</li> </ul>	1
<b>EXERCISE-10</b>		
10	<ul style="list-style-type: none"> <li>a) Write a recursive C program for traversing a binary tree in preorder, inorder and postorder.</li> <li>b) Write a non recursive C program for traversing a binary tree in preorder, inorder and postorder</li> </ul>	1
<b>EXERCISE-11</b>		
11	<ul style="list-style-type: none"> <li>a) Write a C program to implement Prim's algorithm.</li> <li>b) Write a C program to implement Kruskal's algorithm.</li> </ul>	1
<b>EXERCISE-12</b>		
12	<ul style="list-style-type: none"> <li>a) Implementation of Hash table using double hashing as collision resolution function</li> <li>b) Implementation of Binary Search trees- Insertion and deletion</li> </ul>	1
<b>EXERCISE-13</b>		
13	<ul style="list-style-type: none"> <li>a) Implementation of AVL Tree – Insertion and Deletion</li> <li>b) Write C program that implement Bubble sort, to sort a given list of integers in ascending order.</li> <li>c) Write C program that implement Quick sort, to sort a given list of integers in ascending order.</li> <li>d) Write C program that implement merge sort, to sort a given list of integers in ascending order</li> </ul>	1
Lab Internal Examination		

  
Faculty

  
Head of the Department

  
Principal

