SCHEME OF COURSE WORK

Department of Information Technology

Course Details:

COURSE TITLE	DATA STRUCTURES LAB		
COURSE CODE	13CT1107	L T P C	0 0 3 2
PROGRAM	B.TECH		
SPECIALIZATION	CSE, IT		
SEMESTER	III		
PRE REQUISITES	COMPUTER PROGRAMMING THROUGH C		
COURSES TO WHICH IT IS A PRE REQUISITE	N/A		

Course Outcomes (COs):

1	Gain knowledge on how to develop programs using c
2	Implement various data structures using arrays
3	Implement linked lists , queues, trees and graphs
4	To obtain minimum cost spanning tree
5	Find shortest path using algorithms

Course Outcome versus **Program Outcomes**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	M	S	S	S							M
CO2	S	M	S	S	S							M
CO3	S	M	S	S	S							M
CO4	S	M	S	S	S							M
CO5	S	M	S	S	S							M

S - Strongly correlated, *M - Moderately* correlated, *Blank - No correlation*

Assessment Methods	Assignment / Quiz / Mid-Test

PEO	**Program Educational Objective (PEO)**	**Correlation**
PEO1	Acquire the ability to learn independently by exhibiting effective scientific, technical, communication and project management skills and become a professional with in depth knowledge in the frontier areas of Software Engineering	M

PEO2	Demonstrate quantitative, analytical and appropriate research methodologies to solve problems relevant to the society.	S
PEO3	Participate in continuing education to expand the knowledge of contemporary professional issues to tackle inter-disciplinary problems upholding ethical practice.	

Teaching- Learning & Evaluation

Week	Topic/ Contents	Course Outcomes	Teaching learning strategy	Assessment method & schedule
1	Write C programs that uses recursive function to: i) Compute factorial of a given number ii) Solve the towers of Hanoi problem	CO1	Programming	Viva-1 Lab Internal-1
2	Write C programs that implement the following data structures using arrays: i) Stack ii) Queue	CO2	Programming	Viva-2 Lab Internal-1
3	Write C programs to implement the following Stack applications i) Factorial ii) Evaluations of postfix expression	CO2	Programming	Viva-3 Lab Internal-1
4	Write C program to implement the following types of queues i) Priority Queue ii) Circular Queue.	CO2	Programming	Viva-4 Lab Internal-1
5	Write C programs to implement the following types of Lists i) Singly linked list ii) Circularly Linked list iii) Doubly linked list.	CO3	Programming	Viva-5 Lab Internal-1
6	Write C programs to implement the following data structures using Lists i) Stack ii) Queue.	CO3	Programming	Viva-6 Lab Internal-1
7	Write C programs to implement the following search algorithms: i)Linear Search iv) Binary Search v) Fibonacci Search.	CO2	Programming	Viva-7 Lab Internal-1

8	Write C programs to implement the following sorting algorithms i)Bubble Sort ii) Insertion Sort iii) Selection Sort.	CO2	Programming	Viva-8 Lab Internal-1
9	Test-2			
10	Write C programs to implement the following sorting algorithms i)Merge Sort ii) Quick Sort.	CO2	Programming	Viva-10 Lab Internal-2
11	Write a C program to implement binary tree using arrays and to perform binary tree traversals i) in-order ii) post-order iii) preorder.	CO3	Programming	Viva-11 Lab Internal-2
12	Write a C program to perform the following operations using linked lists: i)insert an element into a binary search tree. ii) Delete an element from a binary search tree. iii) Search for a key element in a binary search tree	CO3	Programming	Viva-12 Lab Internal-2
13	Write a C program to perform the following operations using linked lists :i) Insert an element into an AVL tree. ii) Delete an element from an AVL tree	CO3	Programming	Viva-13 Lab Internal-2
14	Write C programs for the implementation of DFS and BFS for a given graph.	CO4	Programming	Viva-14 Lab Internal-2
15	Write a C program for the implementation of Prim's algorithm to obtain the minimum cost spanning tree from a connected undirected graph.	CO4	Programming	Viva-15 Lab Internal-2
16	Write a C program to implement Dijkstra's algorithm for the single source shortest path problem	CO5	Programming	Viva-16 Lab Internal-2
17	Program practice & Doubts	---	Programming	
18	Test-2			