



K. S. INSTITUTE OF TECHNOLOGY

An Autonomous Institution under VTU, Approved by AICTE
Department of Master of Computer Applications
SECOND SEMESTER SYLLABUS

Course Data Structures with Algorithms Laboratory		Semester	II
Course Code	25MML207	CIE Marks	50
Teaching Hours/Week (L:P:T)	0:2:2	SEE Marks	50
Total Hours of Pedagogy	42	Total Marks	100
Credits	02	Exam Hours	03
Examination type (SEE)	Lab		

Course Objectives (Course Skill Set)

1. Evaluate the Expressions like postfix, prefix conversions.
2. Implementing various data structures viz. Stacks, Queues, Linked Lists, Trees and Graphs.

Sl.No	Experiments
1	Implement a Program in C for converting an Infix Expression to Postfix Expression.
2	Design, develop, and execute a program in C to evaluate a valid postfix expression using stack. Assume that the postfix expression is read as a single line consisting of non-negative single digit operands and binary arithmetic Operators. The arithmetic operators are + (add), - (subtract), * (multiply) and / (divide).
3	Design, develop, and execute a program in C to simulate the working of a queue of integers using an array. Provide the following operations: a. Insert b. Delete c. Display
4	Write a C program to simulate the working of a singly linked list providing the following operations: a. Display & Insert b. Delete from the beginning/end c. Delete a given element
5	Develop a menu driven Program in C for the following operations on Binary Search Tree (BST) of Integers . a. Create a BST of N Integers: 6, 9, 5, 2, 8, 15, 24, 14, 7, 8, 5, 2 b. Traverse the BST in Inorder, Preorder and Post Order c. Exit.
6	Write a C program to sort n numbers using merge sort.
7	Find Minimum Cost Spanning Tree of a given undirected graph using Kruskal's algorithm (C programming)
8	From a given vertex in a weighted connected graph, find shortest paths to other vertices Using Dijkstra's algorithm
9	Develop a Program in C for the following operations on Graph (G) of Cities a. Create a Graph of N cities using Adjacency Matrix. b. Print all the nodes reachable from a given starting node in a digraph using DFS/BFS method
10	Implement 0/1 Knapsack problem using Dynamic Programming method

Course outcome (Course Skill Set)

At the end of the course, the student will be able to:

CO1: Select an appropriate data structure to solve real world problems

CO2: Develop C programs using Linear data structures.

CO3: Make use of Non-Linear data structures to develop C programs.

CO4: Apply Sorting and Searching techniques to construct C programs

CO5: Apply Dynamic Programming and Greedy techniques to solve real world problems.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each course. The student has to secure not less than 40% of maximum marks in the semester- end examination(SEE). In total of CIE and SEE student has to secure 50% maximum marks of the course.

Continuous Internal Evaluation (CIE):

CIE marks for the practical course is **50 Marks**.

The split-up of CIE marks for record/ journal and test are in the ratio **60:40**.

Each experiment to be evaluated for conduction with observation sheet and record write- up. Rubrics for the evaluation of the journal/write-up for hardware/software experiments designed by the faculty who is handling the laboratory session and is made known to students at the beginning of the practical session. 10 marks will be allocated for mini project.

Record should contain all the specified experiments in the syllabus and each experiment write-up will be evaluated for 10 marks.

Total marks scored by the students are scaled down to 30 marks (60% of maximum marks).

Weightage to be given for neatness and submission of record/write-up on time. Department shall conduct 02 tests for 50 marks each, In each test, test write-up, conduction of experiment, acceptable result, and procedural knowledge will carry a weightage of 60% and the rest 40% for viva-voce.

The suitable rubrics can be designed to evaluate each student's performance and learning ability. The average of 02 tests is scaled down to **20 marks** (40% of the maximum marks).

The Sum of scaled-down marks scored in the report write-up/journal and average marks of two tests is the total CIE marks scored by the student.

Semester End Evaluation

SEE marks for the practical course is 100 marks scaled down to 50 Marks.

SEE shall be conducted jointly by the two examiners. (One Internal and One External)

All laboratory experiments are to be included for practical examination.

(Rubrics) Breakup of marks and the instructions printed on the cover page of the answer script to be strictly adhered to by the examiners. **OR** based on the course requirement evaluation rubrics shall be decided jointly by examiners.

Students can pick one question (experiment) from the questions lot prepared by the internal /external examiners jointly.

Evaluation of test write-up/ conduction procedure and result/viva will be conducted jointly by examiners.

General rubrics suggested for SEE are mentioned here, writeup-20%, Conduction procedure and result in -60%, Viva-voce 20% of maximum marks. SEE for practical shall be evaluated for 100 marks and scored marks shall be scaled down to 50 marks (however, based on course type, rubrics shall be decided by the examiners)

Change of experiment is allowed only once and 10% Marks allotted to the procedure part to be made zero.

The duration for SEE is 03 hours.