DATA STRUCTURES LAB

II B. TECH- I SEMESTER – CSE/IT/CSIT

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIE	SEE	Total
A5CS04	ESC	-	-	3	1.5	30	70	100

COURSE OBJECTIVES:

The course should enable the students to:

1. Ability to identify the appropriate data structure for given problem.
2. Effectively use compilers include library functions, debuggers and trouble shooting.
3. Write and execute programs using data structures such as arrays, linked lists to implement stacks, queues.
4. Write and execute programs in C to implement various sorting and searching.

COURSE OUTCOMES:

The course should enable the students to:

1. Use appropriate data structure for given problem.
2. Use compilers include library functions, debuggers and trouble shooting.
3. Execute write programs in C to implement various types Linked Lists.
4. Execute programs using data structures such as arrays, linked lists to implement stacks.
5. Execute programs using data structures such as arrays, linked lists to implement queues.
6. Execute write programs in C to implement various sorting and searching.

LIST OF EXPERIMENTS

WEEK-1 STRUTCURES

Write a C Program using functions to

a. Reading a complex number
b. Writing a complex number
c. Add two complex numbers
d. Multiply two complex numbers

Note: represent complex number using structure.

WEEK-2 ARRAYS

a. Write a C program
    i. To add two matrices
    ii. To multiply two matrices
b. Write a C program to implement Sparse Matrices.

WEEK-3 SINGLE LINKED LIST

Write a C program that uses functions to perform the following:

a. Create a singly linked list of integers.
b. Delete a given integer from the above linked list.
c. Display the contents of the above list after deletion.

WEEK-4 **SINGLE LINKED LIST**

Write a C program that uses functions to perform the following:

a. Create TWO singly linked list of integers.
b. Concatenate TWO Singly Linked Lists.
c. Display the contents of the above list after concatenation.

WEEK-5 **DOUBLE LINKED LIST**

Write a C program that uses functions to perform the following:

a. Create a doubly linked list of integers.
b. Delete a given integer from the above doubly linked list.
c. c) Display the contents of the above list after deletion.

WEEK-6 **STACK**

Write C programs to implement a Queue ADT using
i) array ii) linked list

WEEK-7 **STACK APPLICATION**

a. Write a C program that uses stack operations to convert a given infix expression into its postfix Equivalent, Implement the stack using an array.
b. Write a C program that uses Stack to evaluate Postfix Expression.

WEEK-8 **QUEUE**

Write C programs to implement a Queue ADT using
i) array ii) linked list

WEEK-9 **DOUBLE ENDED QUEUE**

Write C programs to implement a double ended queue ADT using

i) array
ii) doubly linked list

WEEK-10 **SEARCHING**

Write C programs for implementing the following searching methods:
a) Linear Search b) Binary Search

WEEK-11 **SORTING**

Write C programs for implementing the following sorting methods to arrange a list of integers in Ascending order :
a) Insertion sort b) Merge sort

Week-12 **SORTING**

Write C programs for implementing the following sorting methods to arrange a list of integers in ascending order:
a) Quick sort b) Selection sort

TEXT BOOKS:

1. C and Data Structures, Prof. P.S.Deshpande and Prof. O.G. Kakde, Dreamtech Press.
2. Data structures using C, A.K.Sharma, 2nd edition, Pearson.
3. Data Structures using C, R.Thareja, Oxford University Press.

WEB REFERENCES:

1. http://www.sanfoundry.com/data structures-examples
2. http://www.geeksforgeeks.org/c
3. http://www.cs.princeton.edu