ANURAG ENGINEERING COLLEGE

(An Autonomous Institution)

II Year B.Tech. CSE - I Sem

L	T	P	C
0	0	3	1.5

(CS306PC) DATA STRUCTURES LABORATORY

Prerequisites:

- A Course on "Programming for problem solving".

Course Objectives:

The objectives of this course are to provide:

- It covers various concepts of C programming language
- It introduces searching and sorting algorithms
- It provides an understanding of data structures such as stacks and queues.
- It covers various concepts of search trees
- Knowledge on pattern matching algorithms

List of Experiments:

1. Write a program that uses functions to perform the following operations on singly linked list.:
   i) Creation ii) Insertion iii) Deletion iv) Traversal
2. Write a program that uses functions to perform the following operations on doubly linked list.:
   i) Creation ii) Insertion iii) Deletion iv) Traversal
3. Write a program that uses functions to perform the following operations on circular linked list.:
   i) Creation ii) Insertion iii) Deletion iv) Traversal
4. Write a program that implement stack (its operations) using
   i) Arrays ii) Pointers
5. Write a program that implement Queue (its operations) using
   i) Arrays ii) Pointers
6. Write a program that implements the following sorting methods to sort a given list of integersin ascending order
   i) Quick sort ii) Heap sort iii) Merge sort
7. Write a program to implement the tree traversal methods (Recursive and Non Recursive).
8. Write a program to implement
   i) Binary Search tree ii) B Trees iii) B+ Trees iv) AVL trees
   v) Red - Black trees
9. Write a program to implement the graph traversal methods.
10. Implement a Pattern matching algorithms using Boyer- Moore, Knuth-Morris-Pratt

Text Books:

1. Fundamentals of Data Structures in C, 2nd Edition, E. Horowitz, S. Sahni and Susan Anderson Freed, Universities Press.
2. Data Structures using C – A. S. Tanenbaum, Y. Langsam, and M. J. Augenstein, PHI/Pearson Education.

Reference Books:

1. Data Structures: A Pseudo code Approach with C, 2nd Edition, R. F. Gilberg and B. Forouzan, Cengage Learning.

Course Outcomes:

Upon the successful completion of this course, the student will be able to:

1. Ability to develop C programs for computing and real-life applications using basic elements like control statements, functions, pointers and structures and various linked lists.
2. Ability to develop data structures like stacks and queues using arrays and pointers.
3. Ability to implements the sorting methods like Quick sort, Heap sort and Merge sort.
4. Ability to implement various trees and tree traversal techniques in recursive and non-recursive manner.
5. Gain knowledge on implementing the graph traversal techniques and Pattern matching algorithms like Boyer- Moore, Knuth-Morris-Pratt

CO-PO-PSO Mapping:

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO-1	M	M	L	H							H		H	H
CO-2	M	H	M	M							H		H	H
CO-3	H	H	M	M							M		H	H
CO-4	M	M	M	H							M		M	M
CO-5	M	M	H	L							M		M	M

H-HIGH **M**-MODERATE **L**-LOW