Prasad.V.Potluri Siddhartha Institute of Technology, Kanuru, Vijayawada

Data Structures Lab
(Common with CSE)

Course Code	19IT3352	Year	II	Semester	I
Course Category	PC	Branch	IT	Course Type	Lab
Credits	1.5	L-T-P	0-0-3	Prerequisites	C Language
Continuous Internal Evaluation :	25	Semester End Evaluation:	50	Total Marks:	75

Course Outcomes		Blooms Taxonomy Level
Upon successful completion of the course, the student will be able to		
CO1	Demonstrate the concept of Recursion for solving a problem.	L2
CO2	Develop programs for searching and sorting algorithms.	L3
CO3	Choose and implement linear data structure to solve problems.	L3
CO4	Select and implement suitable nonlinear data structure for solving a problem.	L3

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2									1	2	2
CO2	2	2	2									1	2	2
CO3	2	2	2									1	2	2
CO4	2	2	2									1	2	2

Syllabus		
Exercises	**Contents**	**Mapped CO**
1.	Demonstrate recursive algorithms with examples.	**CO1**
2.	Implement various searching techniques.	**CO2**
3.	Develop programs for different sorting techniques	**CO2**
4.	Implement and perform different operations on Single, Double and Circular Linked Lists.	**CO3**
5.	Develop a program to perform operations of a Stack using arrays and linked Lists.	**CO3**
6.	Develop programs to implement Stack applications.	**CO3**
7.	Develop a program to perform operations of Linear Queue using arrays and linked Lists.	**CO3**
8.	Implement Circular Queues.	**CO3**
9.	Develop a program to represent a tree data structure.	**CO4**
10.	Develop a program to demonstrate operations on Binary Search Tree.	**CO4**
11.	Demonstrate Graph Traversal Techniques.	**CO4**
12.	Develop a program to find Minimum cost Spanning tree.	**CO4**

Learning Resources
Text Books
1. Data Structures and Algorithm Analysis in C, Mark Allen Weiss, Second Edition, 2002, Pearson.   2. Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, Third Edition, 2010, PHI.   3. Data Structures and Algorithms Made Easy by Narasimha Karumanchi, 2020, CareerMonk Publications.
e-Resources & other digital material
1. https://www.cs.usfca.edu/~galles/visualization/Algorithms.html   2. http://www.algomation.com/algorithm/single-linked-list-insert-delete   3. http://www.algomation.com/algorithm/binary-tree-insert-delete-display   4. https://www.youtube.com/watch?v=AfYqN3fGapc   5. https://www.youtube.com/watch?v=7vw2iIdqHlM   6. http://littlesvr.ca/dsa-html5-animations/sorting.php