PRASAD V POTLURI SIDDHATHA INSTITUTE OF TECHNOLOGY
(AUTONOMUS)
INFORMATION TECHNOLOGY
ADVANCED DATA STRUCTURES LAB

Course Code:	23IT3351	Year:	II	Semester:	I
Course Category:	Professional Core Course	Branch:	IT	Course Type:	Practical
Credits:	1.5	L-T-P:	0-0-3	Prerequisites:	Data Structures Through C / Object Oriented Programming
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

COURSE OUTCOMES		
Upon successful completion of the course, Student will be able to		
CO1	Implement programs as an individual on different IDEs/ online platforms.	**L3**
CO2	Apply different design techniques for solving problems.	**L3**
CO3	Develop an effective report based on various programs implemented.	**L3**
CO4	Apply technical knowledge for a given problem and express with an effective oral communication.	**L3**
CO5	Analyze outputs using given constraints/test cases.	**L4**

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)													
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											3	3	3
CO2	3											3	3	3
CO3	3								3	3		3	3	3
CO4		3								3		3	3	3
CO5		3										3	3	3

Unit No.	SYLLABUS CONTENTS	Mapped CO
1	Implement AVL Trees and its operations.	CO1, CO2, CO3, CO4, CO5
2	Implement B- Trees and its operations.	CO1, CO2, CO3, CO4, CO5
3	Implement Binary Heap and its operations.	CO1, CO2, CO3, CO4, CO5
4	Implement Graph and its operations.	CO1, CO2, CO3, CO4, CO5
5	Develop and implement an algorithm using Divide and Conquer strategy for a given set of problems.	CO1, CO2, CO3, CO4, CO5
6	Make use of Greedy method to implement a solution for a given problem.	CO1, CO2, CO3, CO4, CO5
7	Develop and implement an efficient solution using Dynamic Programming.	CO1, CO2, CO3, CO4, CO5
8	Use Backtracking design technique to implement a solution for a given problem.	CO1, CO2, CO3, CO4, CO5
9	Develop and implement an algorithm using Branch and Bound technique for solving a given problem.	CO1, CO2, CO3, CO4, CO5
10	**Case Study-1:** Apply the most appropriate design technique to develop and implement an efficient solution for a given problem.	CO1, CO2, CO3, CO4, CO5
11	**Case Study-2:** Develop and implement an optimal solution for a given problem by applying a suitable design technique.	CO1, CO2, CO3, CO4, CO5

Learning Resources
Text Books
1. Fundamentals of Data Structures in C++, Horowitz, Ellis; Sahni, Sartaj; Mehta, Dinesh, 2nd Edition Universities Press 2. Computer Algorithms in C++, Ellis Horowitz, SartajSahni, Sanguthevar Rajasekaran, 2nd Edition University Press
References Text Book
1. Introduction to the Design & Analysis of Algorithms, Anany Levitin, Third Edition, 2011, Pearson Education. 2. Data Structures and Algorithm Analysis in C, Mark Allen Weiss, 2002, Pearson. 3. Algorithm Design Techniques, Narasimha Karumanchi, CareerMonk Publications, 2018.
e-Resources and other Digital Material
1. https://www.cs.usfca.edu/~galles/visualization/Algorithms.html 2. http://littlesvr.ca/dsa-html5-animations/sorting.php 3. https://www.youtube.com/watch?v=AfYqN3fGapc 4. https://www.youtube.com/@takeUforward