PVP23

PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY

(Autonomous)

Kanuru, Vijayawada-520007

DEPARTMENT OF CSE (AI & ML)

II B.Tech – I Semester CSE (AI & ML)

Advanced Data Structures and Algorithms Lab

Course Code	23AM3351	**Year**	II	**Semester**	I
Course Category	Professional Core	**Branch**	CSE (AI&ML)	**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	Demonstrate experimental procedures through oral communication and submit comprehensive documentation reports.	L2
CO2	Apply different advanced data structures and design techniques for solving problems.	L3
CO3	Implement programs as an individual on different IDEs/ online platforms.	L3
CO4	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	**2**									**2**				
CO2	**3**													
CO3	**3**				**3**									
CO4		**3**										**3**		

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

Learning Resources

Text Books

1. Fundamentals of Data Structures in C++, Ellis Horowitz, Sartaj Sahni, Dinesh Mehta , 2nd Edition Universities Press.
2. Computer Algorithms in C++, Ellis Horowitz, Sartaj Sahni, 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 , 2018 Career Monk Publications.

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