Advanced Data Structures Lab

Course Code	20CS3451	Year	II	Semester	II
Course Category	Professional Core Course Lab	**Branch**	CSE	**Course Type**	Practical
Credits	1.5	**L-T-P**	0-0-3	**Prerequisites**	Data Structures, Object Oriented Programming through C++
Continuous Internal Evaluation:	15	**Semester End Evaluation:**	35	**Total Marks:**	50

Course Outcomes		
Upon successful completion of the course, the student will be able to		
CO1	Apply Object oriented principles/ C++ constructs for solving problems.	**L3**
CO2	Implement programs as an individual on different IDEs/ online platforms.	**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)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2											2	2	2
CO2	3													
CO3	3								3	3				
CO4	3													
CO5		3												

	SYLLABUS	
Expt. No.	**CONTENTS**	**Mapped CO**
1	a) Implement various Hashing Techniques. b) Develop a solution to the given problem using Hashing Techniques.	**CO1,CO2,CO3, CO4,CO5**
2	a) Implement Binary Heap and its operations. b) Develop a solution to the given problem using Binary Heaps.	**CO1,CO2,CO3, CO4,CO5**
3	a) Implement AVL Trees and its operations. b) Develop a solution to the given problem using AVL Trees.	**CO1,CO2,CO3, CO4,CO5**
5	a) Implement 2-3 Trees and its operations. b) Develop a solution to the given problem using 2-3 Trees.	**CO1,CO2,CO3, CO4,CO5**
6	a) Implement disjoint sets and its operations. b) Develop a solution to the given problem by using Disjoint set.	**CO1,CO2,CO3, CO4,CO5**
7	Develop a solution to the given graph problem by choosing an effective algorithm.	**CO1,CO2,CO3, CO4,CO5**
8	Develop a solution to search for a pattern string using String Search Techniques.	**CO1,CO2,CO3, CO4,CO5**

Learning Resources
Text Books
1. Data Structures and Algorithm Analysis in C++, Mark Allen Weiss, Fourth Edition, 2014, Pearson.
2. Introduction to Algorithms, Thomas H Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, Third Edition, 2009, The MIT Press.
References
1. Advanced Data Structures, Reema Thareja, S. Rama Sree, Oxford University Press, 2018.
2. Data Structures and Algorithms Made Easy by Narasimha Karumanchi, 2020, CareerMonk Publications.
3. Advanced Data Structures, Peter Brass, Cambridge University Press, 2008.
e-Resources and other Digital Material
1. https://www.youtube.com/watch?v=T0yzrZL1py0&list=PLUl4u3cNGP61hsJNdULdudlRL493b -XZf (MITOPENSOURCEWARE)
2. http://ocw.mit.edu/6-851S12
3. https://nptel.ac.in/courses/106/106/106106133/
4. https://www.mooc-list.com/search/node?keys=Advanced+Data+Structures