20CS2601A - INTRODUCTION TO DATA STRUCTURES

Offering Branch	CSE			
Course Category:	Open Elective -II		Credits:	3
Course Type:	Theory		Lecture-Tutorial-Practical:	3-0-0
Prerequisites:	NIL		Continuous Evaluation:	30
			Semester End Evaluation:	70
			Total Marks:	100

Course Outcomes

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

CO1	**Understand** the basic concepts of data structures.	K2
CO2	**Apply** suitable Linear Data Structures to solve problems.	K3
CO3	**Apply** suitable Non Linear data structures to solve problems.	K3
CO4	**Analyze** the problem and develop solution using suitable data structures.	K4

Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3													
CO2	3													
CO3	3													
CO4		3							3	3				
Avg.	3	3							**3**	**3**				

1- Low	2-Medium	3-High

Course Content

UNIT-1	**Introduction:** Introduction to data structures, Abstract data types (ADT). **Array:** Array element identifier and addressing formulas, One-dimensional arrays, Applications. **Linked lists:** Introduction, Single linked list, double linked list, circular linked list, and operations on linked lists.	CO1 CO2 CO4
UNIT-2	**Linear Data Structures:** **Stacks:** Definition, operations, array implementation, linked list Implementation and applications.	CO1 CO2 CO4
UNIT-3	**Queues:** Definition, operations, array implementation and applications, Circular Queue and Double ended queue (DEQUE).	CO1 CO2 CO4
UNIT-4	**Sorting and Searching:** Searching - Linear and Binary search algorithms. Sorting - Bubble, Insertion, Selection, Merge, Quick sort algorithms.	CO1 CO2 CO4
UNIT-5	**Introduction to nonlinear data structure:** **Trees:** Definition, binary tree, Properties of Binary Trees, binary tree representation, binary tree traversal. **Graphs:** Definition, Representation of graph, graph traversals.	CO1 CO3 CO4

Learning Resources

Text Books	1. Data Structures and Algorithm Analysis in C, Mark Allen Weiss, Second Edition, 2002, Pearson.
Reference Books	1. Classic Data Structures, Debasis Samantha, Second Edition, 2009, PHI.

E-Resources & other digital material	1. https://www.javatpoint.com/data-structure-array 2. http://www.geeksforgeeks.org/data-structures/ 3. http://www.studytonight.com/data-structures/