INTRODUCTION TO DATA STRUCTURES

Course Code	20CS2601A	**Year**	III	**Semester**	II
Course Category	OE-2	**Branch**	Other Branches	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	-
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.	**L2**
CO2	Apply suitable Linear Data Structures to solve problems.	**L3**
CO3	Apply suitable Non Linear data structures to solve problems.	**L3**
CO4	Analyze the problem and develop solution using suitable datastructures.	**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	3													
CO2	3													
CO3	3													
CO4		3							3	3				

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/