

The Maharaja Sayajirao University of Baroda Polytechnic Higher Payment Program Diploma in Computer Engineering			ACADEMIC YEAR 2021-2022		
Year	II	DATA STRUCTURES (CSE3328)	Lecture Hrs per week	4	
Semester	I		Max marks	100	
Pre-Requisite: Basics of C programming, Learn to classify, operate and store data in proper predefined way.					
CO1	Explain the fundamentals of data structures, algorithm performance, memory allocation, and abstract data types.				
CO2	Describe various operations on arrays and strings such as insertion, deletion, traversal, merging, and string manipulation using C.				
CO3	Implement and utilize stacks and queues using arrays and pointers, and apply them for expression conversion and evaluation.				
CO4	Illustrate linked lists by performing operations and solving problems.				
CO5	Describe various tree structures and evaluate searching, sorting, and hashing techniques for efficient data organization and retrieval.				
BT	1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation				
COURSE CONTENT/SYLLABUS					
Unit	Unit Name		Hrs	Weightage	CO
1	Overview Of Data Structures: Classification of Data Structure, Memory Allocation in C, Algorithms, Algorithm Performance, Algorithm Analysis, Categories of Algorithm, Data Structures Operations, Abstract Data Types.		4	12	CO1
2	Arrays and Strings :One–Dimensional Array, Accessing One–Dimensional Array Elements, Implementation Of One–Dimensional Array In Memory, Passing Array To Function, Insertion In One– Dimensional Array, Deletion Of An Element From One–Dimensional Array, Traversing Of An Array, Merging Of Two Array, Character String, Two String Storage Schemes, Library Functions For String Manipulation, Array Of Strings, Passing Strings To Function, String Matching.		10	18	CO1, CO2
3	Stacks : Stack Implementation, Operations On Stack, Algorithms For Push And Pop, Implementing Stack Using Pointers, Applications Of Stacks, Algorithm For Converting Infix Expression To Postfix Form, Converting Infix Expression To Prefix Expression, Algorithm To Evaluate A Postfix Expression. Queues: Implementation Of Queue, Algorithms For Insertion And Deletion In Queue (Using Arrays), Algorithm For Insertion And Deletion In A Queue (Using Pointers), A Circular Queue, Addition And Deletion In A Circular Queue (Using Arrays), Priority Queues, Application Of Queues.		14	16	CO1, CO2, CO3
4	Linked Lists :Advantages, Disadvantages, Representation Of Linear Linked List, Operations On Linked List, Types Of Linked List and Application: Addition of two Polynomials.		10	18	CO1, CO2, CO4
5	Trees: Binary Trees, Basic Terminologies, Binary Tree Representation, Binary tree traversal, Operations On Binary Trees, Technique Of Converting An Expression To Binary Tree, Binary Search Tree, conversion of general trees to binary trees, Threaded Binary Trees, Height Balanced Trees, Extended Binary Trees, Huffman Algorithm.		10	18	CO1, CO5
6	Searching, Sorting and Hashing: Linear Searching, Binary Searching, Hashing, Bucket Overflow, Advantages Of Chaining, Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Bucket Or Radix Sort, Merge Sort, Heap Sort and Shell Sort.		10	18	CO2, CO5
			58	100	

REFERENCE BOOKS:	
1.	Data Structure through 'C' By G.S Baluja
2.	Data and Fila Structure by Bhakti raul - Palkar
3.	Data Structures through C by Yashavant P. Kanetkar.