GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Bachelor of Vocation (D.Voc), 6th Semester
Branch: Software Development
Subject Name: Data Structures
Subject Code: 1260201

With effective from academic year 2019-20

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
3	-	0	3	50	-	-	-	50

Course Content:

Unit No.	Content	Hrs
1	**UNIT–I** An Overview of Computers and Programming-Simple program logic, The steps involved in the program development cycle, Pseudo code statements and flowchart symbols, Using a sentinel value to end a program, Programming and user environments, The evolution of programming models.	6
2	**UNIT–II** The concept of data structure, Abstract data structure, Analysis of Algorithm, The concept of List Introduction to stack & primitive operation on stack, Stack as an abstract data type, Multiple Stack, Stacks application: Infix, post fix, Prefix and Recursion, Introduction to queues, Primitive Operations on the Queues, Queues an abstract data type, Circular queue, Dequeue, Priority queue, Applications of queue	10
3	**UNIT–III** Introduction to the Linked List of Stacks, Basic operations on linked list, Stacks and queues as a circular linked list, Header nodes, Doubly Linked List, Circular Linked List, Stacks & Queues as a Circular Linked List, Application of Linked List.	10
4	**UNIT–IV** TREES - Basic Terminology, Binary Trees, Tree Representations as Array & Linked List, Basic operation on Binary tree, Traversal of binary trees: - In order, Preorder & post order, Application of Binary tree, threaded binary tree, B- tree & Height balanced tree, B+ & B* trees, 2-3 trees, Binary tree representation of trees, Counting binary trees	8
5	**UNIT–V** Sequential Searching, Binary search, Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods Hash Table, Collision resolution Techniques, Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs, Graph Traversal-Depth first & Breadth first search, Spanning Trees, minimum spanning Tree, Shortest path algorithm	8
	Total Hours:	42

Suggested Specification table with Marks (Theory):

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Distribution of Theory Marks				
R Level	U Level	A Level	N Level	E Level
5	25	25	10	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate and above Levels (Bloom's Taxonomy)

Reference Books:
1. Data Structures, R.S. Salaria, Khanna Publishing House
2. An Introduction to Data Structures with Applications. by Jean-Paul Tremblay & Paul G. Sorenson Publisher-Tata McGraw Hill. Web Technologies, Black Book, dreamtech Press
3. Data and File Structures using C, Thareja,Reema Oxford University Press New Delhi 2011