SARDAR PATEL UNIVERSITY
Programme: BCA
Semester: IV
Syllabus with effect from: June 2019

Paper Code : **US04CBCA25**	**Total Credit: 4**
Title of Paper: **Data Structures- II**	

Lectures per week   : 4   **Exam Duration: 3hrs**

All units carry equal weightage.

Unit	Description in detail	Weightage

I	**Introduction to trees**
	    Definitions of basic terms : Tree, Directed Tree, Root, Leaf, Branch, Level, Node, Forest
	    Applications of a tree
	    Binary trees : introduction, linear and linked representations
	    Traversal of a binary tree: Preorder, Inorder and Postorder (Recursive)
	    Insertions and deletions in a lexically ordered binary tree
	    Types of Binary Tree : Full Binary Tree, Complete Binary Tree, Binary Search Tree
		25%

II	**Linked List** Introduction to linked lists Types of linked lists: Singly linked lists, Doubly linked lists, Circular linked lists, Circular Doubly linked list Operations on Singly Linked Lists: Insertion: At Front, At Any Position, At End Deletion: From Beginning, From Any Position,From End	**25%**

III	**Sorting and Searching techniques**
	    Sorting – Introduction, Applications of sorting
	    Sorting Techniques - Bubble Sort, Quick Sort and Merge Sort
	    Searching – Introduction, Applications of searching
	    Searching Techniques - Sequential search and Binary search
	    Sorting vs. searching
		25%

IV	**File Organization – II**
	    Hashing Functions: The Division Method, The Midsquare Method, The Folding Method, Digit Analysis, The length-Dependent Method
	    Collision-Resolution Techniques
	    Direct files, Processing direct files
	    The structure of indexed sequential files, Processing indexed sequential files
		25%

Basic Text & Reference Books :-

1. Tremblay J. & Sorenson P. G.: An Introduction to Data Structures with Applications, 2nd Edition, Tata McGraw-Hill Edition, 1991.
2. Singh Bhagat& Naps Thomas : Introduction to Data Structures, Tata McGraw-Hill Publishing Co.Ltd.,1985.
3. R. B. Patel: Data Structure using C – Khanna Publications. ISBN: 81-87522-41-0

4. D. Samanta - Classis Data Structures, 2nd Edition – PHI Publication
5. G. S. Baluja - Data Structures through C, 4th Edition – Dhanpat Rai & Co.