



C. U. SHAH UNIVERSITY, WADHWAN CITY.

Faculty of: **Computer Science**
 Course: **Master of Computer Applications**
 Semester: **III**
 Subject Code: **5CS03CDS1 (Elective – II)**
 Subject Name: **Data Structures**

Sr. No	Subject Code	Subject Name	Teaching hours/ Week			Credit hours	Credit Points	Evaluation Scheme/ Semester								
			Th	Tu	Pr			Theory				Practical				Total
								Internal Assessment		End Semester Exams		Internal Assessment		End Semester Exams		
								Marks	Duration	Marks	Duration	Marks	Duration	Marks	Duration	
3	5CS03CDS1	Data Structures	2	--	2	4	3	10	½	70	2½	20	1	--	--	100

Objectives:

- The objective of this subject is to make student to use different type's data structure in software development. The students would be able to know searching and sorting mechanism. Student are familiar with stack, queue and tree type data structure for implementation in software development.

Prerequisite:

- Basic knowledge of C/C++ language is required.

Course Outline:

Sr. No.	Course Content	Hrs.
1	Memory Allocations and introduction to data structure Dynamic memory allocation in C, malloc() and calloc () function, realloc() and free() function., Characteristics of data structure, Types of data structure.	4
2	Searching and Sorting Linear search, Binary search Bubble sort, Selection sort, Insertion sort, Quick sort	6
3	Stack and Queue Introduction to stack. Stack representation and implementation Operations on stack, push, pop, peek. Application of stack. Introduction to Queue, Implementation of Queue using Array. Operations on Queue: Create, add, delete Introduction and implementation of Circular queue. Introduction to De-queue.	6

	Linked List	
4	Introduction to Linked List. Representation and implementation of Singly Linked List. Traversing and searching of singly Linked List. Insertion and deletion in singly linked list. Doubly linked list. Insertion and deletion in doubly linked list.	8
	TOTAL	24

REFERENCE BOOKS:

- “Data Structure through C/C++”, R.B.Patel, Khanna Publication
- “Data and File Structure”, Trembley & Sorenson, TMH Publication
- “Data Structure & algorithms Using C”, R.S.Salaria, Khanna Publication
- “Data structure through C/C++”, Tennaunbuam
- “Let us C”, Y Kanetkar, BPB Publication (3rd Edition).

NPTEL COURSE (<https://nptel.ac.in/>):

Introduction to data structure and algorithms. IIT Delhi, Prof. Naveen Garg
<https://nptel.ac.in/courses/106102064>