

University of Mumbai			
Class: S.E.	Branch: Computer Engineering	Semester: III	
Subject : Data Structure and Files (Abbreviated as DSF)			
Periods per Week (each 60 min.)	Lecture	04	
	Practical	02	
	Tutorial	--	
		Hours	Marks
Evaluation System	Theory	03	100
	Practical & Oral	02	25
	Oral	---	---
	Term Work	---	25
	Total	05	150

Pre-requisites: A Course in Object Oriented Programming Language such as (Java)

Module	Contents	Hours
1	Introduction to Data Structures: <ul style="list-style-type: none"> • Definition • The Abstract Data Type(ADT) • Arrays • Strings • Recursion 	05
2	File Handling: <ul style="list-style-type: none"> • File Organization • Types of files • File Operations 	04
3	Sorting and Searching : <p>A. Sorting</p> <ul style="list-style-type: none"> • Insertion Sort • Selection Sort • Exchange Sort (Bubble, Quick) • Merge Sort • Heap Sort <p>B. Searching</p> <ul style="list-style-type: none"> • Linear Search • Binary Search • Hashing Techniques and Collision Handling 	07
4	Stack <ul style="list-style-type: none"> • The Stack as an ADT 	03

	<ul style="list-style-type: none"> • Representation • Stack Operation • Applications 	
5	Queue : <ul style="list-style-type: none"> • The Queue as an ADT • Representation • Queue Operations • Circular and Priority Queues • Applications 	03
6	Linked List: <ul style="list-style-type: none"> • The Linked List as an ADT • Operation on Linked List • Linked Stacks and Queues • The Linked List as a Data Structure • Array Implementation of Linked List • Linked List using Dynamic Variable • Comparison of Dynamic and Array Implementation Of Linked List • Doubly Linked List • Circular Linked list 	10
7	Trees : <ul style="list-style-type: none"> • Basic Tree Concepts • Binary Tree Operation and Applications • Binary Tree Representation • Binary Tree Traversals • Threaded Binary Tree • The Huffman Algorithm • Binary Search Tree Implementation • Expression Trees • Introduction of multiway Tree (B-Tree, B+ Tree ,AVL Tree) 	12
8	Graphs : <ul style="list-style-type: none"> • Graph as an ADT • Graph Representation • Graph Traversal(Depth First Search, Breadth First Search) 	04