

**ST. ANN'S COLLEGE OF ENGINEERING & TECHNOLOGY, CHIRALA**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**LECTURE SCHEDULE**

**Subject: Data Structures Through C++**  
**Name: T.Y.Srinivasa Rao**  
**No. of Lectures per Week: 4+1\* (Tutorial)**

**Academic Year: 2019 – 2020**  
**Year & Sem/Section: II - I 'C'**

S. No.	Date	Unit No.	Topics to be Covered
1	10-Jun-19	UNIT - I	Introduction to Class
2	11-Jun-19		Data Abstraction & Encapsulation
3	12-Jun-19		Declaring Class Objects and Invoking Member Functions
4	13-Jun-19		Special Class Operations
5	14-Jun-19		ADTs and C++Classes
6	15-Jun-19		Tutorial
7	17-Jun-19		The Array as an Abstract Data Type
8	18-Jun-19		The Polynomial ADT - Its Representation & Addition
9	19-Jun-19		Sparse Matrices, Introduction - Its Representation
10	20-Jun-19		Transposing a Matrix
11	21-Jun-19		Matrix Multiplication
12	22-Jun-19		Tutorial
13	24-Jun-19		Representation of Arrays
14	25-Jun-19		Revision
15	26-Jun-19		Unit – I Test
16	27-Jun-19	UNIT - II	Templates in C++
17	28-Jun-19		Template Functions
18	29-Jun-19		Tutorial
19	1-Jul-19		Using Templates to Represent Container Classes
20	2-Jul-19		The Stack Abstract Data Type
21	3-Jul-19		Stack Operations
22	4-Jul-19		The Queue Abstract Data Type
23	5-Jul-19		Queue Operations
24	6-Jul-19		Tutorial
25	8-Jul-19		Subtyping in C++
26	9-Jul-19		Inheritance in C++
27	10-Jul-19		Evaluation of Expressions, Postfix Notation
28	11-Jul-19		Infix to Postfix
29	12-Jul-19		Revision
30	15-Jul-19	Unit – II Test	
31	16-Jul-19	UNIT - III	SLL and Chains, Representing Chains in C++
32	17-Jul-19		Defining a Node in C++, Designing a Chain Class in C++
33	18-Jul-19		Pointer manipulation in C++
34	19-Jul-19		Chain Manipulation Operations, The Template Class Chain, Implementing Chains with Templates
35	20-Jul-19		Tutorial
36	22-Jul-19		Chain Iterators- Chain Operations- Reusing a Class
37	23-Jul-19		CLL, Available Space Lists
38	24-Jul-19		Linked Stacks and Queues
39	25-Jul-19		Polynomials, Polynomial Representation- Adding Polynomials- Circular List Representation of Polynomials
40	26-Jul-19		Equivalence Classes, Sparse Matrices, Sparse Matrix Representation - Sparse Matrix Input- Deleting a Sparse Matrix
41	27-Jul-19		Tutorial
42	29-Jul-19		Doubly Linked Lists
43	30-Jul-19		Generalized Lists, Representation of Generalized Lists
44	31-Jul-19		Recursive Algorithms for Lists- Reference Counts, Shared and Recursive Lists
45	1-Aug-19		Revision
46	2-Aug-19	UNIT - IV	Trees Introduction, Terminology, Representation
47	3-Aug-19		Tutorial
48	5-Aug-19		Revision
49	6-Aug-19		Revision
50	7-Aug-19		Revision
51	8-Aug-19		Revision
52	9-Aug-19		Revision
53	10-Aug-19		Revision

54	13-Aug-19		Binary Trees, The ADT, Properties of Binary Trees
55	14-Aug-19		Binary Tree Representations
56	16-Aug-19		Binary Tree Traversal and Tree Iterators
57	17-Aug-19		Tutorial
58	19-Aug-19		In-order, Preorder and Post-order Traversals
59	20-Aug-19		Threaded Binary Trees, Threads
60	21-Aug-19		In-order Traversal of a Threaded Binary Tree
61	22-Aug-19		Inserting a Node into a Threaded Binary Tree
62	26-Aug-19		Heaps, Priority Queues, Definition of a Max Heap
63	27-Aug-19		Insertion into a Max Heap, Deletion from a Max Heap
64	28-Aug-19		Binary Search Trees Definition, Searching a BST
65	29-Aug-19		Insertion into a Binary Search Tree
66	30-Aug-19		Deletion from a BST
67	31-Aug-19		Tutorial
68	3-Sep-19		Height of Binary Search Tree
69	4-Sep-19		Revision
70	5-Sep-19		Unit – IV Test
71	6-Sep-19	<b>UNIT - V</b>	The Graph ADT, Introduction, Definition
72	7-Sep-19		Tutorial
73	9-Sep-19		Graph Representation, Elementary Graph Operation
74	11-Sep-19		Depth First Search
75	12-Sep-19		Breadth First Search
76	13-Sep-19		Connected Components, Spanning Trees
77	16-Sep-19		Biconnected Components
78	17-Sep-19		Tutorial
79	18-Sep-19		Minimum Cost Spanning Trees, Kruskal's Algorithm
80	19-Sep-19		Prim's Algorithm, Sollin's Algorithm
81	20-Sep-19		Single Source/All Destination: Nonnegative Edge Cost
82	21-Sep-19		Tutorial
83	23-Sep-19		Single Source/All Destination: General Weights
84	24-Sep-19		All-Pairs Shortest Path
85	25-Sep-19		Transitive Closure
86	26-Sep-19		Revision
87	27-Sep-19		Unit – V Test
88	28-Sep-19		<b>UNIT - VI</b>
89	30-Sep-19	Quick Sort	
90	1-Oct-19	Merge Sort Merging, Iterative Merge Sort	
91	3-Oct-19	Recursive Merge Sort	
92	4-Oct-19	Heap Sort	
93	5-Oct-19	Tutorial	
94	7-Oct-19	Revision	
95	9-Oct-19	Revision	
96	10-Oct-19	Revision	
97	11-Oct-19	Revision	
98	12-Oct-19	Revision	

**TEXT BOOKS:**

1. Fundamentals of Data Structures in C++, Ellis Horowitz, Sartaj Sahni and Dinesh Mehta, 2<sup>nd</sup> Edition, Universities Press (India) Pvt. Ltd.
2. Data structures and Algorithm Analysis in C++, Mark Allen Weiss, Pearson Education. Ltd., Second Edition.
3. Data structures and Algorithms in C++, Michael T. Goodrich, R. Tamassia and Mount, Wiley student edition, John Wiley and Sons.

**REFERENCE BOOKS:**

1. Data structures and algorithms in C++, 3rd Edition, Adam Drozdek, Thomson.
2. Data structures using C and C++, Langsam, Augenstein and Tanenbaum, PHI.
3. Problem solving with C++, The OOP, Fourth edition, W. Savitch, Pearson education.

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