CSE220 Theory Lecture Plan - Fall '25

Done?	Class	Topic	Class Discussion	Materials	Quiz (Tentative)	Lab	
BEORE MID TERM							
Done	Class 1 **[08/10/2025]**	0. Ice Breaking 1. Importance of Data Structure Course. 2. Data Structure Syllabus Discussion and Marks Distribution.	1. Introduction to DS, Time Complexity, Space Complexity 2. Wost case time and space complexity (Big O notation only)	**Book - Chapter 0** **Slide: [Chapter 0] An Introduction to Complexity Theory** **Java Code: Already in the slide** **Python Code: Time Complexity.ipynb**			**MARKS DISTRIBUTION** **Quiz (best 3 out of 4):** 15 marks **There will be no MAKEUP QUIZ* **Miderm :** 25 marks **Lab:** 25 marks **Final:** 35 marks
Done	Class 2 **[13/10/2025]**	Complexity Primer	1. Growth of function. Draw chart for function. Example function: Binary search and Linear search graph for time complexity. 2. For space give example reading a file word by word (close to constant space complexity) reading a file fully before operation (close to file length space complexity n).	**Book - Chapter 0** **Slide: [Chapter 0] An Introduction to Complexity Theory** **Java Code: Already in the slide** **Python Code: Time Complexity.ipynb**			**MID TERM SYLLABUS:** Complexity Theory, Matrix, LinkedList, Stack, Queue, HashTable. **FINAL SYLLABUS:** Complexity Theory, Matrix, LinkedList, Stack, Queue, HashTable, BT, BST, Heap, Graph. ** Everything that has been covered throughout the semester — mid + final.*
Done	Class 3 **[15/10/2025]**	2D array Basics and Operations	1. Basics of Array 2. What is 2D array 3. Creation iteration of 2D array 4. Basic Operations. E.g: summation, diagonal sum, printing 6. Index conversion between 1D and multidimensional array	**Book- Chapter 1** **Slide: [Chapter 1] Basics of Array** **[Chapter 1] Multidimensional Array** **Java Code: Linear Array** **Python Code: Basics of Linear Array.ipynb**			
Done	Class 4 **[20/10/2025]**	Linked List Primer	1. Matrix multiplication 2. Rotation Problem Discussion 3. Linked List Node Construction. 4. Linked List Traversal. 5. Linked List with only Head and then with Both Head and Tail.	**Book - Chapter 1, Chapter 2** . **Slide:** **[Chapter 1] Multidimensional Array** **[Chapter 02] Non Dummy Singly Linked List** **PREVIOUS RECORDING: Singly Linked List (Part 02)** **Java Code: Non Dummy Singly Linked List** **Python Code: Linked List All Variations**		LAB 1 - Topic: 2D Matrix Date? Based on your lab routine.	
Done	Class 5 **[22/10/2025]**	Linked List Operations	1. NodeAt 2. Insert, remove at particular index. 4. Append and Prepend in Linked List.	**Book - Chapter 2** **Slide: [Chapter 02] Non Dummy Singly Linked List** **PREVIOUS RECORDING:** **Singly Linked List (Part 02)** **Singly Linked List Lab 02** . **Java Code: Non Dummy Singly Linked List** **Python Code: Linked List All Variations**			
Done	Class 6 **[27/10/2025]**	List Variations (Class 1)	1. Linked List Rotation. 2. Introduce Double Linked List 3. Show Insert-remove in Double Linked List	**Book - Chapter 2** **Slide: [Chapter 02] Linked List Variations** **Java Code: Non Dummy Singly Linked List , Non Dummy Doubly Linked List** **Python Code: Linked List All Variations**	**QUIZ 01 - Topic: Complexity Thoery Non Dummy Singly Linked List (Short Ques+Coding Problem Analysis+Node Creation) Multidimensional Arrays (Short Ques+Coding).** **Solution? Will be uploaded soon.**	LAB 2 - Topic: Node & LinkedList Date? Based on your lab routine.	

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Done	Class 7 **[29/10/2025]**	List Variations (Class 2)	1. Circular Linked Lists 2. Dummy Headed Linked List	**Book - Chapter 2** **Slide: [Chapter 02] Linked List Variations** **PREVIOUS RECORDING:** **Dummy Headed Doubly Circular Linked List (Reverse Operation)** **Java Code: Try to implement the Insertion, Deletion, and Reverse functions by yourself. You may take help from the slides, GitHub repository (DH Doubly Circular Linked List), or the book.** **Python Code: Linked List All Variations**		
Done	Class 8 **[03/11/2025]**	Hashing and Hashtable	1. Hash functions. 2. Hash table implementation for forward chaining based implementation. 3. Insert, delete operation.	**Book - Chapter 4** **Slide: [Chapter 04] Hashing and Hashtable** **PREVIOUS RECORDING:** **Hashing & Hashtable and Stack** **Java Code: Hashing & HashTable** **Python Code: Hashing and Hashtable.ipynb**		LAB 3 - Topic: Singly & Doubly LinkedList Date? Based on your lab routine.
Done	Class 9 **[05/11/2025]**	Stack	1. Hashing one practise problem 2.Stack implementation using linked list	**Book - Chapter 4 ,Chapter 3** **Slide: [Chapter 04] Hashing and Hashtable , [Chapter 03] Stack** **PREVIOUS RECORDING: Hashing & Hashtable and Stack** **Java Code: Stack** **Python Code: Stack (Array + Linked List).ipynb**		
NOT Done	Class 10 **[10/11/2025]**	Queue	1. One or two programming problems using stacks among: (parenthesized expression validation, postfix arithmetic expression evaluation) 2. Linked List Based Implementation. 3. Problem solving using queue. E.g: remove odd number from a queue 4. Array based Queue	**Book - Chapter 3**	**QUIZ 02 - Topic: Complexity Thoery, Linked List All Variations, Hashing and Hashtable.**	LAB 4 - Topic: Secondary Data Structures Date? Based on your lab routine.
NOT Done	Class 11 **[12/11/2025]**	Problem solving & Review class	Any left out topic, general QnA, Problem solving.			
AFTER MID TERM						
NOT Done	Class 12 **[24/11/2025]**	Tree Terminologies	1. Basic concepts. 2. Recursion recap (will be done in lab) 3. Importance of recursion in tree programming			
NOT Done	Class 13 **[26/11/2025]**	Binary Tree 1	1. Binary Tree characteristics and creation using Array. 2. Tree Traversal 3. Types of Binary Tree	**Book - Chapter 5**		
NOT Done	Class 14 **[01/12/2025]**	Binary Tree 2 and BST 1	1. Binary Tree Coding (height, depth, level etc.) 2. Characteristics of BST	**Book - Chapter 5, Chapter 6**		
NOT Done	Class 15 **[03/12/2025]**	BST 2	1. BST insertion and deletion 2. BST balancing	**Book - Chapter 6**		
NOT Done	Class 16 **[08/12/2025]**	Heap 1	1. Heap characteristics (Max and Min) 2. Insertion and deletion	**Book - Chapter 6**		
NOT Done	Class 17 **[10/12/2025]**	Graph 1	1. Graph terminiology and types (weighted, unweighted; directed and undirected) 2. Graph representation (Adjacency Matrix and List)	**Book - Chapter 7**		
NOT Done	Class 18 **[15/12/2025]**	Graph 2	1. Graph programming of adjacency matrix and list) 2. Structuring a graph node for traversal (E.g: Adding the visited attribute) 3. Representation of weighted graph using adjacency list (use different edge class for connection)	**Book - Chapter 7**		
NOT Done	Class 19 **[17/12/2025]**	Graph traversal	1. Simulation and pseudocode / Code of BFS & DFS	**Book - Chapter 7**		
NOT Done	Class 20 **[22/12/2025]**	Review				
NOT Done	Class 21 **[24/12/2025]**	Review				
NOT Done	Class 22 **[28/12/2025]**	Review				
NOT Done	Class 23 **[07/01/2026]**	Review				

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			SECTION 18 LAB : SUNDAY: 8:00 AM-10:50 AM			
			SECTION 19 LAB : SUNDAY: 2:00 PM-4:50 PM			