

**Department of Computer Engg.
Govt. Polytechnic for Women, Rehan
Distt. – Kangra (H.P.) - 176022**



LESSON PLAN

Program Name	Computer Engineering
Subject Name	Data Structures & Algorithms
Subject Code	COPC-204
Semester	4 th
Subject Teacher Name	Er. Rinkesh Chauhan

Evaluation Scheme

Sr. No.	Subject Name	Study scheme (Hrs/Week)		Marks in Evaluation Scheme					
				Internal Assessment			External Assessment		
		Th	Pr	Th	Pr	Total	Th	Pr	Total
1.	Operating System	4	4	40	40	80	60	60	120
Reference Books		(i) Data Structures, R.S. Salaria, Khanna Book Publishing, New Delhi (ii) Data Structures & Algorithm by tru education (iii) Data Structures, Samanta Debasis, Prentice Hall of India.							

Course Outcomes (COs)

CO – 1	To Understand the basic of data structures and algorithms where it is used
CO – 2	Select appropriate data structures to efficiently store and process data.
CO – 3	To write efficient algorithms for given problems.
CO – 4	To analyze the performance of various general algorithms
CO – 5	To describe sorting & searching techniques

Teaching Plan

Unit No.	Name of Topic	Proposed Date	Actual Date	Remarks
1	Unit 1: Introduction	12/02/2024		
	Objectives and Functions of data structures	13/02/2024		
	Algorithms-Definition, Characteristics	14/02/2024		
	Efficiency, Notations - Asymptotic, Big-Oh, Omega, Theta notation;	17/02/2024		
	Data Types,	19/02/2024		
	Data Structures - Characteristics, Types - Linear, Non-linear	20/02/2024		
	General Operations, Efficiency;	21/02/2024		
	Revision of important topics	26/02/2024		
2	Unit 2: Arrays, Structures and Pointers	27/02/2024		
	Arrays, One-Dimensional, One-Dimensional	28/02/2024		
	Insertion and Deletion,	2/03/2024		
	Arrays-Memory Representation, Traversal	4/03/2024		

(Handwritten Signature)

	Sorting and Searching	5/03/2024		
	Two-Dimensional Arrays–Memory Representation, Implement Matrices	6/03/2024		
	Matrix Operations-Addition, Subtraction,;	11/03/2024		
	Multiplication, Transpose	12/03/2024		
	Structure-Accessing structure members using (.) and (->) operators, selfreferencing structures,	13/03/2024		
	Pointers-Dynamic Memory Allocation using malloc(), calloc(),free() and realloc(),	16/03/2024		
	Manipulate Arrays using Pointers	18/03/2024		
	Revision of important topics	19/03/2024		
3	Unit 3: : Sorting and Searching	20/03/2024		
	Searching Techniques - Linear Search,	23/03/2024		
	Binary Search	26/03/2024		
	Sorting Techniques – Selection Sort, ,	27/03/2024		
	Bubble Sort,	30/03/2024		
	Insertion Sort	01/04/2024		
	Quick Sort,	02/04/2024		
	Merge Sort;	03/04/2024		
	Efficiencies of Sorting Algorithms	06/04/2024		
	Revision of important topics	08/04/2024		
4	Unit 4: Linear Data Structures	09/04/2024		
	Linked Lists - Representation, Advantages, Disadvantages	10/04/2024		
	Implementation, Operations;	16/04/2024		
	Doubly Linked List,	20/04/2024		
	Stacks, Stack Operations - Push, Pop;	22/04/2024		
	Implementation of Stack using Arrays	23/04/2024		
	Implementation of Stack using Linked list	27/04/2024		
	Queues, Queue Operations,	29/04/2024		
	Implementation of Queue using Arrays and Linked List	30/04/2024		
	Implementation of Queue using Linked List	01/05/2024		
Revision of important topics	04/05/2024			
5	Unit 5 Non-Linear Data Structures	06/05/2024		
	Tree Terminology - Node, Root, Parent, Children, Sibling, Edge, Leaves	07/05/2024		
	Binary Tree Representation,	08/05/2024		
	Binary Tree Traversal,	13/05/2024		

Handwritten signature

	Binary Search Tree	14/05/2024		
	Graphs, Graph Terminology, Directed Graphs,	15/05/2024		
	Graphs, Graph Terminology, Weighted Graphs	18/05/2024		
	Graph Implementation using Adjacency Matrix.	20/05/2024		
	Graph Implementation using Adjacency List.	21/05/2024		
	Revision of important topics	22/05/2024 to 1/6/2024		

Assignments

Assignment No	Contents of Syllabus Covered	Proposed Date	Actual Date	Remarks
A-1	Unit-1 and Unit-2	19/03/2024		
A-2	Unit-3 and Unit-4	04/05/2024		
A-3	Unit-5,	22/05/2024		

House Test/Class Test


Name of test	Syllabus for Tests	Proposed Date	Actual Date	Remarks
Class Test -1	Unit-1 and Unit-2	As per HPTSB Academic Schedule		
Class Test -2	Unit-3 and Unit-4			
House Test - 1	Unit-1- Unit-5 and unit -6 basics overview			

Lab Plan

Sr. No	Name of Practical	Proposed Date		Actual Date		Remarks
		G1	G2	G1	G2	
1	To insert and delete elements at specified location in an array.	08/02/2024 15/02/2024	08/02/2024 09/02/2024			
2	To search an element in an array using linear search.	17/02/2024 22/02/2024	15/02/2024 16/02/2024			
3	To search an element in a sorted array using binary search.	24/02/2024 29/02/2024	22/02/2024 23/02/2024			
4	To sort elements of a given array in ascending order using selection sort method.	29/02/2024 02/03/2024	29/02/2024 02/03/2024			
5	To sort elements of a given array in ascending order using bubble sort method.	02/03/2024 07/03/2024	07/03/2024 08/03/2024			


Ans

6	To sort elements of a given array in ascending order using quick sort method.	14/03/2024 16/03/2024	14/03/2024 15/03/2024			
7	To sort elements of a given array in descending order using insertion sort technique	21/03/2024 23/03/2024	21/03/2024 22/03/2024			
8	To sort elements of a given array in descending order using merge sort technique	28/03/2024 30/03/2024	28/03/2024 30/03/2024			
9	To implement a stack and demonstrate push, pop and peek operations on it	04/04/2024 06/04/2024	04/04/2024 05/04/2024			
10	To implement a queue and demonstrate various operations on it	11/04/2024 18/04/2024	11/04/2024 12/04/2024			
11	To implement a circular-queue and demonstrate various operations on it.	20/04/2024 25/04/2024	18/04/2024 19/04/2024			
12	To implement a linked list and demonstrate insertion, deletion and traversing operations on it.	27/04/2024 02/05/2024	25/04/2024 26/04/2024			
13	To implement a doubly linked list and demonstrate insertion, deletion and traversing operations.	09/05/2024 16/05/2024	02/05/2024 03/05/2024			
14	To implement a tree and perform in-order, pre-order and post-order traversals.	09/05/2024 16/05/2024	09/05/2024 16/05/2024			
15	To implement a binary search tree and perform insertion, deletion and search operations on it	18/05/2024 23/05/2024	23/05/2024 24/05/2024			


(Signature of Teacher)
Er. Rinkesh Chauhan


(Signature of HOD)

Approved


Principal
Govt. Polytechnic for Women Rehan