BHAI GURDAS INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Computer Science and Engineering

LESSON PLAN

Subject Name: -Design and Analysis of Algorithms   **Subject Code:** -BTCS403-18

Year: - 2nd Year   **Semester:** - 4th Semester

Lecture No.	Unit	Date/ Week	Topic	Teaching Aids	Reference
L-1	Unit-1 Introduction	Week-1	Introduction to Design and analysis of algorithms	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-2			Growth of Functions (Asymptotic notations)	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-3			Recurrences, Solution of Recurrences by substitution	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-4		Week-2	Recursion tree method, Master Theorm	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-5			Worst case analysis of merge sort, quick sort and binary search	Power point Presentation, Board and chalk	Algorithm, Richard Johnsonbaugh Marcus Schaefer, Pearson India
L-6			Design and analysis of Divide and Conquer Algorithms	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-7		Week-3	Time and space trade-offs	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E.

					Horowitz, Sartaj Saini, Galgota Publications.
L-8	Unit-2 Fundamental Algorithmic Strategies		Algorithmic Strategies: Brute-Force	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-9			Greedy Algorithms, Elements of Greedy Strategy	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-10		Week-4	Elements of Dynamic Programming	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-11			Knapsack Problem and 0/1 Knapsack Problem	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-12			Bin Packing Problem solving	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-13		Week-5	Backtracking Methodology	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-14			Branch and Bound Methodology	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-15			Traveling Sales Person Problem	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-16		Week-6	Huffman Codes	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-17			Problem Discussion	Power point	https://brpaper.com

				Presentation, Board and chalk	
L-18	Unit-3 Graph and Tree Algorithms		Traversal algorithms: Depth First Search (DFS)	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-19		Week-7	Traversal algorithms: Breadth First Search (BFS)	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-20			Minimum Spanning Trees, Kruskal algorithm	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-21			Prim's Algorithm	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-22		Week-8	Single Source Shortest paths, Dijkstra's Algorithm	Power point Presentation, Board and chalk	Fundamentals of Computer Algorithms – E. Horowitz, Sartaj Saini, Galgota Publications.
L-23			Topological sorting	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-24			Transitive closure	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-25		Week-9	Network Flow Algorithm.	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-26			Problem Discussion	Power point Presentation, Board and chalk	https://brpaper.com
L-27	Unit-4		Computability of	Power point	Algorithm Design,

			Algorithms,	Presentation, Board and chalk	Jon Kleinberg, Eva Tardos, Pearson India
L-28	Tractable and Intractable Problems	Week-10	Computability classes – P, NP, Standard NP-complete problems	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-29			Computability classes – NP-complete and NP-hard	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-30			Cook's theorem	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-31		Week-11	Reduction techniques,	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-32			Problem Discussion	Power point Presentation, Board and chalk	https://brpaper.com
L-33	Unit-5 Advanced Topics		Approximation algorithms	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-34		Week-12	Randomized algorithms	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-35			Heuristics and their characteristics.	Power point Presentation, Board and chalk	Algorithm Design, Jon Kleinberg, Eva Tardos, Pearson India
L-36			Problem Discussion	Power point Presentation, Board and chalk	https://brpaper.com
L-37		Week-13	Problem Discussion	Power point Presentation, Board and chalk	https://brpaper.com
L-38			Previous year question paper discussion	Power point Presentation, Board and chalk	https://brpaper.com