Curriculum plan (ODD Semester)

Teacher Name: Neha Singh

Paper name: Design and Analysis of Algorithm

Class type: B.Sc Physical Science/ BA (prog), Semester-III

Paper shared with:

S.No	Schedule (Approximate)	Topic
1	**August**	**Unit- 1 Searching, Sorting, Selection:** Linear Search, Binary Search, Insertion Sort, Selection Sort, Bubble Sort, Heapsort, Linear Time Sorting, running time analysis and correctness. **Unit-2 Graphs:** Review of graph traversals, graph connectivity, testing bipartiteness **Assignment 1, Test and Quizzes**
2	**September**	**Unit-2 Graphs:** Directed Acyclic Graphs and Topological Ordering, Minimum Spanning Trees. **Unit-3 Divide and Conquer:** Introduction to divide and conquer technique, Merge Sort, Quick Sort, Randomised quicksort, Maximum-subarray problem, Strassen's algorithm for matrix multiplication. **Assignment 2, Test and Quizzes**
3	**October**	**Unit- 4 Greedy algorithms:** Introduction to the Greedy algorithm design approach, application to minimum spanning trees, fractional knapsack problem, and analysis of time complexity. **Unit- 5 Dynamic Programming:** Introduction to the Dynamic Programming approach, application to subset sum, integer knapsack problems, and analysis of time complexity. **Test and Quizzes**
4	**November**	**Unit 6 Hash Tables** Hash Functions, Collision resolution schemes. **Revision, Doubts Clearing, Viva**

References

1. Cormen, T.H., Leiserson, C.E., Rivest, R. L., Stein C. Introduction to Algorithms, 4th edition, Prentice Hall of India, 2022.
2. 2. Kleinberg, J., Tardos, E. Algorithm Design, 1st edition, Pearson, 2013.