**Curriculum plan (Even Semester 2020-21)**

**Teacher Name: Neha Singh**

**Paper name: Design and Analysis of Algorithms**

**Class type: BSc. (h) Computer Science IV semester**

**Paper shared with: NIL**

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| **Unit to be taken** | **Month wise schedule to be followed** | **Tests/Assignments/ Revision/Presentations etc** |
| **Unit- 1** **Algorithm Design Techniques**: Iterative technique: Applications to Sorting and Searching (review), their correctness and analysis. Divide and Conquer: Application to Sorting and Searching (review of binary search), merge sort, quick sort, their correctness and analysis. | Jan (Week II, III)Jan (Week IV)  | Test Ch 2 |
| **Unit 2**More on Sorting and Searching: HeapsortLower Bounds using decision trees, sorting in Linear Time - Bucket Sort, Radix Sort and Count SortMedians & Order Statistics, complexity analysis and their correctness. | Jan (Week V)Feb (Week I, II)Feb (Week III, IV) | Assignment 1Test Ch7Test Ch 6 |
| **Unit 3****Advanced Analysis Technique:** Amortized analysis | March (Week I) | Assignment 2 |
| **Unit 4****Graphs**: Graph Algorithms - Breadth First Search, Depth First Search and itsApplications. | March (Week II,III) | Test Ch 8,9 |
| **Unit 1****Dynamic Programming**: Application to various problems (for reference; Weighted Interval Scheduling, Sequence Alignment, Knapsack), their correctness and analysis. Greedy Algorithms: Application to various problems, their correctness and analysis. | April (Week I, II)April (Week III,IV)April (Week IV, V) | Test Unit 3Test Unit 4Revision  |

**References**

1. **Cormen, T.H., Leiserson,C.E. Rivest, R.L., & Stein, C.(2015). Introduction to Algorithms. 3rd edition. PHI.**
2. **Kleinberg, J., & Tardos, E. (2013). Algorithm Design. 1st edition. Pearson Education India.**

**Name of teacher: Neha Singh**

**Signature**