**Post Graduate Govt. College for Girls, Sector-42, Chandigarh**

**Teaching Plan (OddSemester) Session (2019-2020)**

**Class: M.Sc. IT (1st semester) Name of the Teacher: Ms. Nidhi Goyal**

**Subject: Computer Algorithms Period : 3rd**

**Paper : MS-62 Room No : BCA Lab 3 (IT Block)**

|  |  |  |
| --- | --- | --- |
| **S. No** | **Dates** | **Topics to be Covered** |
| Week 1 | 23-07-2019 to 27-07-2019 | Introduction to Data Structures: Definition, Types of Data Structures |
| Week 2 | 29-07-2019 to 03-08-2019 | Stacks and its operations(Push, Pop), Queue and its operations (Insert, Delete), Tree (Binary Tree, General Tree and its Traversal), Graph(Types and its Traversal) |
| Week 3 | 05-08-2019 to 10-08-2019 | Algorithms and Analysis: Definition; Analysing algorithms; space and time complexity, Asymptotic Notation (O, Ω,θ) practical complexities, |
| Week 4 | 13-08-2019 to 17-08-2019 | Best, average and worst case performance of algorithms, examples, Recursive algorithms, Introduction to recurrence  relations. |
| Week 5 | 19-08-2019 to 24-08-2019 | Divide and Conquer: General method, Binary search, |
| Week 6 | 26-08-2019 to 31-08-2019 | Merge sort, Quick sort, Selection problem, |
| Week 7 | 02-09-2019 to 07-09-2019 | Strassen's matrix multiplication and analysis of these problems. |
| Week 8 | 09-09-2019to 14-09-2019 | Back Tracking: General method, N queen's problem, |
| Week 9 | 16-09-2019 to 21-09-2019 | Graph coloring, Hamiltonian cycles, Analysis of these problems |
| Week 10 | 23-09-2019 to28-09-2019  (Youth Festival 24-09-2019 to 27-09-2019) | Branch-And-Bound: General Method, |
| Week 11 | 30-09-2019 to 05-10-2019 | 0/1 Knapsack, Traveling Salesperson problems. Revision of whole syllabus |
| Mid Semester Exams | | |
| Week 12 | 16-10-2019 to 19-10-2019 | Greedy Method: General Method, Knapsack problem, Job sequencing with deadlines |
| Week 13 | 21-10-2019 to 26-10-2019 | Minimum spanning Trees (Prim's Algorithm, Kruskal's Algorithm), Single source shortest paths and analysis of these problems. |
| Week 14 | 29-10-2019 to 02-11-2019 | Dynamic Programming: General method, Optimal binary search trees, 0/1 Knapsack, the traveling salesperson problem, |
| Week 15 | 04-11-2019 to 09-11-2019 | Dynamic Programming: Single Source Shortest Path Problem (Bellman Ford Algorithm), All pair shortest path problem (Floyd's  Algorithm). |
| Week 16 | 11-11-2019 to 16-11-2019 | NP-hard and NP-complete problems:  Basic concepts, Statement of Cook's Theorem, Satisfiability SAT, |
| Week 17 | 18-11-2019 to 23-11-2019 | Examples of NP-hard graph [Clique Decision Problem, Chromatic Number 8 Decision Problem] and NP-scheduling problems [Scheduling Identical Processors, Job Shop Scheduling]. |
| Week 18 | 25-11-2019 to 30-11-2019 | Revision of whole syllabus |