**Lecture Plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Topic** | **Teaching Hours** | **Teaching Learning Practices** |
| **Unit-1(Foundations and Elementary Combinatorics)** | | | |
| 1 | Basics, Sets | 1 | Minute Paper |
| 2 | Fundamentals of Logic | 1 | Muddiest Point |
| 3 | Logical Inferences | 2 | Muddiest Point |
| 4 | First Order Logic and Other Methods of Proof | 2 | Concept Mapping |
| 5 | Rules of Inference for Quantified Propositions | 2 | Concept Mapping |
| 6 | Basics of Counting | 1 | Minute Paper |
| 7 | Combination and Permutations | 1 | Minute Paper |
| 8 | Enumerating Combinations and Permutations with Repetitions | 2 | Muddiest Point |
| 9 | Enumerating Combinations and Permutations without Repetitions | 1 | Muddiest Point |
| 10 | Constrained Repetitions | 1 | Muddiest Point |
| 11 | Principle of Inclusion and Exclusion. | 1 | Documented Problem Solutions. |
| **Unit-2(Recurrence Relations)** | | | |  | | 29-07-2013 | |
| 1 | Generating Functions | 2 | Minute Paper |
| 2 | Calculating Coefficients of Generating Functions | 2 | Minute Paper |
| 3 | Solving Recurrence Relations by Substitution method and Generating Functions | 2 | Documented Problem Solutions |
| 4 | The Method of Characteristic Roots | 2 | Documented Problem Solutions |
| 5 | Solutions of Inhomogeneous Recurrence Relations. | 2 | Documented Problem Solutions |
| **Unit-3(Relations and Lattices)** | | | |  | 27-08-2013 | |
| 1 | Relations and Directed Graphs | 1 | Minute Paper |
| 2 | Special Properties of Binary Relations | 1 | Concept Mapping |
| 3 | Equivalence Relations, Ordering Relations | 1 | Problem Recognition Tasks |
| 4 | Lattice and Enumerations | 1 | Documented Problem Solutions |
| 5 | Operations on Relations | 1 | Concept Mapping |
| 6 | Paths and Closures | 1 | Concept Mapping |
| 7 | Directed Graphs and adjacency matrices | 1 | Concept Mapping |
| 8 | Topological Sorting | 1 | Documented Problem Solutions |
| **Unit-4(Graphs)** | | | |  | 07-09-2013 | |
| 1 | Basic Concepts | 1 | Minute Paper |
| 2 | Isomorphism’s and Sub-graphs | 2 | Muddiest Point & Concept Mapping |
| 3 | Planar Graphs | 1 | Muddiest Point & Concept Mapping |
| 4 | Euler’s Formula | 1 | Documented Problem Solutions |
| 5 | Multi-graphs and Euler Circuits | 1 | Documented Problem Solutions |
| 6 | Hamiltonian Graphs | 1 | Concept Mapping |
| **Unit-5(Algebraic structures)** | | | |  | 03-10-2013 | |
| 1 | Introduction to Algebraic structures and Algebraic Systems | 1 | Concept Mapping |
| 2 | Algebraic SystemsExamples and General Properties | 1 | Documented Problem Solutions |
| 3 | Semi Groups And Monoids | 1 | Documented Problem Solutions |
| 4 | Groups | 1 | Concept Mapping |
| 5 | Sub Groups | 1 | Concept Mapping |
| 6 | Homomorphism | 1 | Concept Mapping |
| 7 | Isomorphism | 2 | Concept Mapping |
| 8 | Rings | 1 | Concept Mapping |