National Institute of Technology Karnataka

Department of Mathematical and Computational Sciences

Course Plan and Evaluation Plan

Odd Semester (2022-23)

Class : MCA (Semester I)
Course Code : MA602
Course Title : Discrete Mathematical Structures
L-T-P : 3-0-0
Credits : 3
Course Instructor : Dr. Srinivasa Rao Kola
Teaching Department : Mathematical and Computational Sciences
Objectives of the Course : To have an insight into the applications of Mathematics to Computer Science.

Syllabus

Propositional and Predicate Calculus

Introduction to Propositional Logic, Well- formed formulas – Tautology, Contingency, Contradiction, Normal forms, Predicates and Quantifiers, Types of Proof techniques, Validity of logical arguments.

Graph Theory

Introduction and basic properties, Subgraphs, Isomorphism, Eulerian and Hamiltonian graphs, Trees, Planar Graphs, Graph Coloring.

Lattice Theory

Equivalence relations, Partial order relations, Linear order relations, Hasse diagrams, Lattices, Special classes of Lattices, Recurrence relations and generating functions.

Group Theory

Groups and subgroups, Cyclic groups, Cosets, Lagrange's Theorem.

References

1. J.P. Tremblay and R. Manohar, Discrete Mathematical Structures with applications to Computer Science, McGraw Hill.

2. Ralph P. Grimaldi, Discrete and Combinatorial Mathematics, An Applied Introduction, Pearson Education, 4th Edition.

3. Douglas B. West; Introduction to Graph Theory, 2nd Ed., PHI, New Delhi, 2003.

4. Kenneth H. Rosen: Discrete Mathematics and its Applications, Seventh edition, McGraw Hill, 2012.

5. Herstein I. N, Topics in Algebra, Wiley.

Course Coverage: 40 Lectures

Topic	**Number of Lectures (approx.)**
Propositional and Predicate Calculus	11
Graph Theory	12
Lattice Theory	9
Group Theory	8

Evaluation Plan

Attendance Requirement: Minimum 75% (Eligibility to appear for End Semester exam).

Exam	Weightage	Tentative Date
Quiz 1	10	19-09-2022
Mid Semester	25	
Quiz 2	10	21-11-2022
Viva	5	
End Semester	50	