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SEMESTER-III

INTER DEPARTMENTAL COURSE (MA/MSc)

FOUNDATIONS OF MATHEMATICS

CREDITS-3(weekly three hours of teaching)

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Objective:

The course is intended to be a first course in basic Mathematics for PG students of non Mathematics Departments. It will develop tools in logic,graph theory and basic calculus and will provide a common mathematics foundation for students of all the programs.

Outcome:

1. After reading the course the student will be able to do mathematicalreasoning
2. The student will be   able to handle basic problems in discrete mathematics and calculus

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UNIT-I

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Propositional Logic, Conditional Statements- Converse, Contra positive and Inverse,Truth Tables , Applications of Propotional Logic, Logical Equivalence, De Morgan Law, Basic Idea of Predicates and Quantifiers.

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UNIT-II

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Review of Sets, Relation, Functions, Equivalence Classes, Quotient Spaces, Cardinality of Sets, Countable and Uncountable Sets, Principle of Mathematical induction, Pigeonhole Principle, Principle of inclusion and exclusion.

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UNIT-III

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Graph and Graph Model, Terminology, Special   Graphs, Isomorphism, Planner Graphs,Introduction to tree

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UNIT-IV

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Concepts of Calculus, Limit, Continuity, derivatives, integration, partial derivatives, Roll"s Theorem, Mean value theorems(MVT),   Lagrange   MVT,Cauchy MVT   , Differentialequation,Applications to Mathematical Methods using First Order LinearDifferential Equations. The course is covered by
1. Rosen Kenneth, Discrete Mathematics & Applications, Mcgraw Hill.