

FIRST SEMESTER

MT501: ADVANCED ALGEBRA-I

Syllabus: Direct Products of Groups (external and internal); Isomorphism Theorems, Conjugacy and the class equation of a group; Commutators, Derived subgroups, Solvable Groups; Subnormal Series; Refinement theorem; Composition series; Jordan-Holder Theorem; Euclidean Rings; Division in Commutative ring; Units; Associates and prime elements; Unique factorization domain; Modules; submodules; Quotient Modules; Direct Sum; Modules Homomorphisms; Generation of Modules; Cyclic Modules; Linear Transformations of Vector space; Dual Spaces; Dual Basis and their properties; Dual maps; Basic; Basic Theory of fields Extensions, Simple field Extensions, Algebraic and Transcendental Extensions

UNIT SCHEDULE

- Unit 1** Direct Products of Groups
- Unit 2** Isomorphism Theorems, Conjugacy and the class equation of a group
- Unit 3** Commutators, Derived subgroups, Solvable Groups and Composition Series
- Unit 4** Euclidean Ring
- Unit 5** Modules
- Unit 6** Linear Transformations of Vector space
- Unit 7** Basic Theory of fields Extensions, Simple Extensions, Algebraic and Transcendental Extensions.