19BSM604 –Modern Algebra										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	--	4	4	25	50	25	--	--	100

OBJECTIVES

1. To introduce students to the Algebra of number system.
2. To equip students with necessary knowledge and skills to enable them handle mathematical operations, analyses and problems involving Algebra.
3. To introduce the use of Abstract Algebra in Real world.

SYLLABUS

Unit-I	**10**

Some Basic Set theory concepts, Binary operation on a set, Algebraic structure, Group, Abelian Group, finite and infinite groups, order of a finite group, general properties of a group, addition modulo m, multiplication modulo p, residue classes of the set of integers. Permutations, Groups of permutations.

UNIT II	**10**

Order of an element of a group, isomorphism of groups, complexes and subgroups of a group, intersection of subgroups, cosets, relation of congruence modulo. Cayley's theorem, Cyclic groups, Normal Subgroup. Quotient Group, Homomorphism of groups.

UNIT III	**10**

Definition of Ring, Elementary properties of a ring, Rings with or without zero divisors, Integral domain, field, division ring or skew field, isomorphism of rings, Subrings, Subfields, Characteristic of a ring.

UNIT IV	**9**

Ordered integral domains, the field of quotients, Ideals, Principal ideal, Principal ideal ring, polynomial rings, Homomorphism of rings, Kernel of a ring homomorphism, Maximal Ideals. Application of Group, Ring, Field in Real world problem.

APPROXIMATE TOTAL	**39 Hours**

OUTCOMES

1. Understand the basic idea of algebra of numbers in the form of Group, Ring and Field.
2. Define the properties of Group, Ring and Field.
3. Define the type of Group, Ring and Field.
4. Define different example of Group, Ring and Field from real world.

5. Understand the application of abstract algebra in different field of science and engineering.

TEXTS AND REFERENCES

1. Modern Algebra by A. R. Vasishtha, Krishna Prakashan Media (P) Ltd.,2002.
2. Abstract AlgebraTheory and Applicationsby Thomas W. Judson, Orthogonal Publishing.
3. Topics in Algebra by I. N. Herstein, second edition, John Wiley and Sons.