Programme: Certificate Class: B.Sc.	Year: I	Semester: II

Subject: Mathematics

Course Code: BMA-211 | **Course Title: Algebra**

Course Outcome	**CO1:**Understanding theory of equations. **CO2:**Knowledge ofbasic concepts of Groups, Rings, Fields and their properties. **CO3:**Foundation for higher course in algebra.

Unit No.	Course Content	Hours
I	Algebraic Solution of cubic and bi-quadratic equations, Descarte's rule of signs, Relation between the roots and coefficients of equations.	12
II	Binary operations, Relation, Equivalence relations and partitions, Congruence modulo n, Definition of a group with examples and simple properties, Abelian group, Finite and infinite group, Order of a finite group, General properties of groups, Composition table for finite groups, Order of an element of a group.	12
III	Complexes and subgroups of a group, Theorems on subgroups, Cosets, Coset decomposition, Lagrange's theorem, Cyclic groups.	12
IV	Permutations, Cyclic Permutations, Even and odd permutations, Group of Permutations, Alternating group.	12
V	Rings, Elementary properties of Rings, Rings with or without zero divisors, Integral domains and fields, Division ring or skew fields, Subrings, Subfields.	12

Suggested Readings:

1. B. Fraleigh, A first course in Abstract Algebra, Addison-wiley, 2003
2. I. N. Herstein, Topics in Algebra, John Wiley & Sons, 2006
3. Thomas W Hungerford, Abstract Algebra – An Introduction, Sauders College Publishing 1990
4. Joseph A Gallian, Contemporary Abstract Algebra, Brooks/Cole Cengage Learning, 2016
5. Suggested digital platform: NPTEL/SWAYAM/MOOCS

Mapping of course outcomes with program outcomes & program specific outcomes

CO's No.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	3	3	2	2	2	2	1	1	1
CO2	3	3	2	3	2	3	---	1	1
CO3	3	2	3	3	1	2	1	1	---