1.	Title of the course	Algebra
2.	Course number	MA515L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To MA5206/7
6.	To be offered by	Department of Mathematics and Statistics
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	**Course Objective(s):** To introduce the notions of Groups, Rings and Fields. Using these notions to study the structure theorem of finite Abelian groups, Chinese remainder theorem, Field extensions and Galois theory.	
10.	**Course Content:** Group Theory: Review of basic Group Theory, Normal Subgroups, Quotient Groups and Homomorpism Theorems, Group Actions with examples, Cayley's Theorem, The Class Equation and their application, Sylow's Theorems, Direct Products, Structure Theorem for Finite Abelian Groups, Existence and universal Properties of free Groups. Commutative Ring With Identity: Review of basic Ring Theory, Properties of Ideals, Prime and Maximal Ideals, Zorn's lemma and existence of maximal ideals, Quotient Rings and Localization, Chinese Reminder Theorem, Field of Fractions and Integral Domains, Euclidean Domain, Principal Ideal Domain(PID), Unique Factorization Domain(UFD), Irreducibility Criterion, Primes in Z[i] and Fermat's Two-Square Theorem, Definition and simple examples of modules over commutative and non-commutative rings. Field Theory: Finite and Algebraic Extensions, Existence and Cardinality of Algebraic Closure, Finite Fields, Galois Theory of Polynomial in characteristic zero and simple examples.	
11.	**Textbook(s):** 1. Dummit D S, and Foote R M, Abbstract Algebra, Wiley, (2003). 2. Gallian J A, Contemporary Abstract Algebra, Brooks/Cole, (2016).	
12.	**Reference(s):** 1. Lang S, lgebra, Springer-Verlag (2005). 2. Artin M, Algebra, Pearson, (2010). 3. Herstein I N, Topics in Algebra, Wiley, (2006). 4. Hungerford T A, Algebra, Springer, (2003).	