Curriculum Delivery for 2nd Semester
Four-Year Undergraduate Program (FYUP)
Mathematics
Session: 2025-2026

B.Sc. Mathematics (Major) and Skill Enhancement Course
SEMESTER-II
Course Code: **MATH-M-T-02**
Course Title: **Algebra-I (Major Course)** and
Course Code: **MATH-SEC-T-02**
Course Title: **Fuzzy Set Theory**

Name of the teacher	Paper	Unit	Subject	Classes
Md. MeezanurRahaman	**MATH-M-T-02**	1	● Polar representation of complex numbers, nth roots of unity, De Moivre's theorem for rational indices and its applications. Direct and inverse circular form of trigonometric and hyperbolic functions. Exponential & Logarithm of a complex number. Definition of a^z. ● Relation between roots and coefficients, transformation of equation, Descartes rule of signs, solution of cubic equation (Cardan's method), solution of biquadratic equation (Ferrari's method). ● Well-ordering property of positive integers, division algorithm, divisibility and Euclidean algorithm. Congruence relation between integers. Principles of mathematical induction, statement of fundamental theorem of arithmetic.	20
Dr. Sarifuddin	**MATH-M-T-02**	**2**	● Equivalence relations and partitions. Functions, composition of functions, Invertible functions, one to one correspondence and cardinality of a set. ● Permutations, cycle notation for permutations, even and odd permutations.	10
		2	● Subgroups and examples of subgroups. Product of two subgroups. ● Cyclic group. Properties of cyclic groups. ● Classification of subgroups of cyclic groups	10

BabulalTudu	**MATH-M-T-02**	2	● Definition and elementary properties of groups. Symmetries of a square, dihedral groups. quaternion groups (through matrices). Permutation group, alternating group, finite groups: $S3$, $V4$. The group Zn of integers under addition modulo n and the group Un of units under multiplication modulo n. ● Order of an element, order of a group, simple properties.	20
Ariful Islam	**SEC-T-02**	1	● Fuzzy Sets: Basic concepts, α-cuts and its properties ● Representations of fuzzy sets, decomposition theorems. ● Support, convexity, normality, cardinality of fuzzy sets. ● Standard set-theoretic operations on fuzzy sets. ● Zadeh's extension principle.	20
		2	● Interval numbers, arithmetic operations on interval numbers, ● Fuzzy numbers. 3 Credits (2+1) (Theory + Tutorial) ● Arithmetic operations on fuzzy numbers (multiplication and division on $\mathbb{R}$+ only). ● Fuzzy equations**.**	
Gaurab Mitra	**MATH-M-T-02**	3	● Rank of a matrix, inverse of a matrix, characterizations of invertible matrices. Row reduced and echelon forms, Normal form and congruence operations.	15
BilkisKhatun	**MATH-M-T-02**	3	● Solutions of systems of linear equations of the form $x = b$ and their applications.	10
	SEC-T-02		● Crisp versus fuzzy relations. ● Fuzzy matrices and fuzzy graphs. ● Composition of fuzzy relations, relational joins. ● Binary fuzzy relations.	10