

LESSON PLAN

CLASS: - M.Sc.(MATH)

SEMESTER:- 1stSem (2026-27)

Name : - Dr.Jinam

Designation: Extension lecturer

Paper: Advanced Discrete Mathematics

Time Period	Syllabus to be covered
August 31, 2026- Sept. 12, 2026.	Recurrence Relations and Generating Functions, Some number sequences, Linear homogeneous recurrence relations, Non-homogeneous recurrence relations, Generating functions, Recurrences and generating functions, Exponential generating functions.
September 14, 2026- sept.30, 2026	Statements Symbolic Representation and Tautologies, Quantifiers, Predicates and validity, Propositional Logic. Lattices as partially ordered sets, their properties, Lattices as Algebraic systems. Sub lattices, Direct products and Homomorphism, Some special lattices e.g. complete, Complemented and Distributive Lattices.
October	Boolean Algebras as Lattices, Various Boolean Identities, The switching Algebra. Example, Subalgebras, Direct Products and Homomorphism, Joint-irreducible elements, Atoms and Minterms, Boolean forms and their equivalence, Minterm Boolean forms, Sum of Products, Cononical forms, Minimization of Boolean functions, Applications of Boolean Algebra to Switching Theory (using AND, OR and NOT gates.) The Karnaugh method.
November	Finite state Machines and their Transition table diagrams, Equivalence of Finite State, Machines, Reduced Machines, Homomorphism. Finite automata, Acceptors, Non-deterministic, Finite Automata and equivalence of its power to that of deterministic Finite automata, Moore and Mealy Machines. Grammars and Language: Phrase-Structure Grammars, Requiring rules, Derivation, Sentential forms, Language generated by a Grammar, Regular, Context -Free and context sensitive grammars and Languages, Regular sets, Regular Expressions and the pumping Lemma.

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LESSON PLAN

CLASS: - M.Sc.(MATH)

SEMESTER:- 3rd. Sem (2026-27)

Name : - Dr.Jinam

Designation: Extension lecturer

Paper:MATLAB

Time Period	Syllabus to be covered
August	Introduction to MATLAB Programming: Basics of MATLAB programming, Anatomy of a program, Data types, Operators, Arithmetic operators with scalars, Display Formats, Mathematical operations, Scalar and assignments, Script Files, Complex Numbers and Commands related to Complex Numbers, Loops: For loops, While loops, Branching (conditional statements) - if statement, If else statement, Else if statement.
September	Introduction to Arrays: Creating one and two-dimensional arrays, Array addressing, Strings, String functions Mathematical Operations with Arrays, Cell array, Creating cell array, Using script files and Managing Data, Input/Output Commands, Save and Load Commands, Importing and Exporting Data.Executable files, Subroutines, Built in functions and user-defined functions, Function handles, Function handles in m-files, Inline functions.
October	Two-Dimensional Plots, Specialized 2-D plots, Formatting a Plot, Multiple Plots on same Plot, Plots with Logarithmic Axes, Error Bar Plots, Histograms, Polar Plots, Using subplots for multiple graphs, 3-D plots- Line lots, Mesh and Surface Plots, View Command, Interpolated surface plots, Overlay Plots, Saving and printing graphs, Mesh, Contour, Contourf.
November	Polynomials: Finding Value and Roots of Polynomials, Arithmetic operations with Polynomials Curve Fitting: Curve Fitting with Polynomials, Curve fitting with Functions other than Polynomials, Interpolation. Numerical Analysis: Solving an equation, Finding Minimum and Maximum of Function, Numerical Integration, Ordinary Differential Equations

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LESSON PLAN

CLASS: - B.A.\B.C.A.(MIC MATH)

SEMESTER:- 5th. Sem (2026-27)

Name : - Dr.Jinam

Designation: Extension lecturer

Paper:Mathematical Computing using MATLAB

Time Period	Syllabus to be covered
August	Introduction to MATLAB Programming: Basics of MATLAB programming, Variables and assignments, Data types, Operators, Working with complex numbers, Introduction to vectors in MATLAB: Defining a Vector, Accessing elements within a vector, Basic operations on vectors, Cell array, Creating cell array, Defining Matrices, Matrix functions, Matrix operations, Loops: For loops, While loops, Branching (conditional statements) - if statement, If else statement, Else if statement.
September	Solving Linear Systems of Equations, Inverse, Determinants, Cholesky Factorization, LU Factorization, QR Factorization, Eigenvalues, Eigen Vectors
October	Polynomials: Representing Polynomials, Polynomial roots, haracteristics, Evolutions, Convolution and deconvolution, Polynomial Derivatives, Curve Fitting, Partial Fraction Expansion
November	Interpolation: Definition, 1-D Interpolation, 2-D Interpolation, Comparing Interpolation Methods, Interpolation and Multidimensional Arrays, Triangulation and Interpolation of Scattered Data, Tessellation and Interpolation of Scattered Data, Higher Dimensions

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LESSON PLAN

CLASS: - B.Sc.(MATH)

SEMESTER:- 1st. Sem (2026-27)

Name : - Dr.Jinam

Designation: Extension lecturer

Paper: Vector Calculus

Time Period	Syllabus to be covered
August	Scalar and vector product of three vectors , product of four vectors. Reciprocal vectors. Partial derivative, Vector differentiation. Scalar Valued point functions, Vector valued point functions, derivative along a curve, directional derivatives. Gradient of a scalar point function, geometrical interpretation of grad, gradient as a point function. Tangent planes and Normal lines.
September	Divergence and curl of vector point function, characters of point function, examples. Gradient, divergence and curl of sums and product and their related vector identities. Laplacian operator. Double integrals, double integrals in polar co-ordinates, change of order, change in variable, Triple integrals, Triple integrals in Cylindrical co-ordinates and Spherical co- ordinates, Change of order in triple integral, Volume integral.
October	Line integrals, independent of the path, Green Theorem and problem based on Green Theorem
November	Surface integral, Stokes' theorem and problem based on Stokes' theorem, Gauss theorem and problems based on Gauss theorem.

LESSON PLAN

CLASS: - B.Sc.(MATH)

SEMESTER:- 5th. Sem (2026-27)

Name : - Dr.Jinam

Designation: Extension lecturer

Paper: Discrete Mathematics

Time Period	Syllabus to be covered
August	Discrete numeric functions, Generating functions, recurrence relations with constant coefficients. Homogeneous solution, particular relations, total rotation, Solution of recurrence relation by the method of generating functions.
September	Semigroups, Lattices and their properties, lattice as algebraic system, Bounded, Complement and distributive lattices.
October	Boolean algebra, definition and examples, properties, duality, distributive and complemented Calculus. Design and implementation of digital networks, switching circuits, Karnaugh map.
November	The division algorithm, different bases, the equation $ax + by = n$, the bracket function and binomial coefficients, the ϕ -function, the order of an integer modulo m , periodic decimals.

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