Government college Aharwala, Bilaspur(Yamuna Nagar)

Lession Plan for the Session 2025-26 (Odd Semester)

Name and Desig. : Mohinder, Assistant Professor of Mathematics

Class : BCOM 1st Semester (NEP) {Minor Subject}

Subject: Business Mathematics-I

Month	Topic of the Lecture
July 2025	Set Theory: Representation of sets, equivalent sets, power set, Complement of a set.
August 2025	Venn Diagrams: Union and intersection of Sets, De-Morgan's laws; Logical statements and truth tables, Logarithms: Laws of operation, log tables; Arithmetic and Geometric Progression
September 2025	Matrices and Determinants: Definition of a matrix, order, equality, types of matrices; Operations on matrices: Addition, multiplication and multiplication with a scalar and their simple Properties.
October 2025	Determinant of a square matrix (up to 3x3 order): Properties of determinants, minors, co-factors and applications of determinants in finding the area of triangle, ad-joint and inverse of a square matrix, solutions of a system of linear equations by examples
November 2025	Compound interest and annuities: Different types of interest rates, types of annuities, present value and amount of an annuity (including the case of continuous compounding), valuation of Simple loans and debentures, problems related to sinking funds.

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Lession Plan for the Session 2025-26 (Odd Semester)

Name and Desig. : Mohinder, Assistant Professor of Mathematics

Class : BCA 1st Semester (NEP) {Minor Subject}

Subject: Mathematical Foundations for Computer Science-I

Month	Topic of the Lecture
July 2025	Set Theory: Representation of sets, equivalent sets, power set, Complement of a set.
August 2025	Venn Diagrams: Union and intersection of Sets, De-Morgan's laws; Logical statements and truth tables, Logarithms: Laws of operation, log tables; Arithmetic and Geometric Progression
September 2025	Matrices and Determinants: Definition of a matrix, order, equality, types of matrices; Operations on matrices: Addition, multiplication and multiplication with a scalar and their simple Properties, Determinant of a square matrix (up to 3x3 order): Properties of determinants, minors, co-factors and Applications of determinants
October 2025	Quadratic Equations & Its Solution, AP, GP, HP, AM, GM, HM & Their Relation
November 2025	Differentiation of Simple Functions, Solving Real Life Problems, Differentiation of Algebraic, Trigonometric & Exponential Function

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Lession Plan for the Session 2025-26 (Odd Semester)

Name and Desig. : Mohinder, Assistant Professor of Mathematics

Class : BA/BSc 1st Semester

Subject: Calculus [Major]

Month	Topic of the Lecture
July 2025	ε-δ definition of limit and continuity of a real valued function, Basic properties of limits, Types of discontinuities, Differentiability of functions, Application of L'Hospital rule to indeterminate forms, Successive differentiation, Leibnitz theorem, Taylor's and Maclaurin's series expansion with different forms of remainder
August 2025	Asymptotes: Horizontal, vertical and oblique asymptotes for algebraic curves, Asymptotes for polar curves, Intersection of a curve and its asymptotes, Curvature and radius of curvature of curves (cartesian, parametric, polar & intrinsic forms), Newton's method, Centre of curvature and circle of curvature
September 2025	Multiple points, Node, Cusp, Conjugate point, Tests for concavity and convexity, Points of inflexion, Tracing of curves,
October 2025	Reduction formulae, Rectification, intrinsic equation of a curve
November 2025	Quadrature, Area bounded by closed curves, Volumes and surfaces of solids of revolution

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Lession Plan for the Session 2025-26 (Odd Semester)

Name and Desig. : Mohinder, Assistant Professor of Mathematics

Class : BA/BSc 3rd Semester

Subject: Differential Equations [Major]

Month	Topic of the Lecture
July 2025	Basic concepts and genesis of ordinary differential equations, Order and degree of a differential equation, Solutions of differential equations of first order and first degree
August 2025	Exact differential equations, Integrating factor, First order higher degree equations solvable for x, y and p, Lagrange's equations, Clairaut's form and singular solutions. Orthogonal trajectories of one-parameter families of curves in a plane, Solutions of linear ordinary differential equations with constant coefficients, linear non-homogeneous differential equations.
September 2025	Linear differential equation of second order with variable coefficients. Method of reduction of order, method of undetermined coefficients, method of variation of parameters. Cauchy-Euler equation. Solution of simultaneous differential equations, total differential equations. Genesis of Partial differential equations (PDE), Concept of linear and non- linear PDEs.
October 2025	Complete solution, general solution and singular solution of a PDE. Linear PDE of first order. Lagrange's method for PDEs of the form: $P(x, y, z)\, p + Q(x, y, z)\, q = R(x, y, z)$, where $p=\partial z/\partial x$ and $q=\partial z/\partial y$.
November 2025	Integral surfaces passing through a given curve. Surfaces orthogonal to a given system of surfaces. Compatible systems of first order equations. Charpit's method, Special types of first order PDEs, Jacobi's method. Second Order Partial Differential Equations with Constant Coefficients

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Lession Plan for the Session 2025-26 (Odd Semester)

Name and Desig. : Mohinder, Assistant Professor of Mathematics

Class : BSc 3rd Semester

Subject: Quantative Aptitude [S.E.C.]

Month	Topic of the Lecture
July 2025	Linear Equations, Quadratic equations, System of algebraic equations in two variables and their applications in simple problems: Problems on ages
August 2025	Clocks, Time and distance: Problems based on trains, Boats and Streams, Pipes and Cistern.
September 2025	Work and time: Problems on work and time, Work and wages, Simple interest, Compound Interest, Partnership. Basic idea of set theory to solve practical problems.
October 2025	Trigonometric ratios and identities, Height and distance, Basic idea of Permutations and Combinations. Events and Sample space, Probability.
November 2025	Data interpretation: Raw and grouped data, Bar Graph, Pie Chart, Mean, Median and Mode.

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Lession Plan for the Session 2025-26 (Odd Semester)

Name and Desig. : Mohinder, Assistant Professor of Mathematics

Class : BA/BSc 5th Semester

Subject: Sequence & Series [Major]

Month	Topic of the Lecture
August 2025	Introduction of sets and some basic definitions, least upper bound and theorems, examples
	Greatest lower bound, Archimedean property of real and some theorems, neighborhood of a point, interior of a set and its related examples
	Open and Closed sets and their related theorems, discussion Limit points and its properties, theorems, Bolzano weirstrauss theorem
	Examples, compact sets, Heine-Borel theorem and its converse Discussion +test
September 2025	Sequence and other definitions, convergent seq and theorems, examples , basic theorems on limits
	Discussion day Test, cauchy's ist theroem on limits, examples,cauchy 2nd therorem
	Monotone convergence theorem and ither theorems ,limit point and theorems,examples +discussion
October 2025	Infinite series, examples, Cauchy's theorem on limit, basic theorem and results
	p series test , Comparison tests and theorems, ratio test
	Cauchy's root test and others test on convergence or divergence Discussion, other tests on convergence +test
November 2025	Abel's lemma test, Dirichlet's test and their related examples
	Cauchy product, product theorems, Abel's theorems and its examples, infinite product and examples, absolute convergence
	Assignment, Alternating series,leibnitz theorems and related examples, Riemann's rearrangement theorem and its examples, multiplication of two series