Government College for Women, Mahendergarh

Lesson Plan for Session 2025-2026 (August 2025 – November 2025)

Name of Assistant Professor: Dr. Ravindra Yadav (Mathematics)

Class: BSc I / B.A.- I (First Semester)

Paper: Calculus

Duration	**Topic to be Covered**
1st Week of August	ε-δ definition of limit and continuity of a real valued function and related examples
2nd Week of August	Basic properties of limits, Types of discontinuities , related examples
3rd Week of August	Differentiability of functions, Application of L'Hospital rule to indeterminate forms
4th Week of August	Application of L'Hospital rule to indeterminate forms Class Test
1st Week of Sept.	Successive differentiation, Leibnitz theorem, Taylor's and Maclaurin's series expansion with different forms of remainder
2nd Week of Sept.	Leibnitz theorem, Taylor's and Maclaurin's series expansion with different forms of remainder
3rd Week of Sept.	Asymptotes: Horizontal, vertical and oblique asymptotes for algebraic curves, related exercise
4th Week of Sept.	Asymptotes for polar curves, Intersection of a curve and its asymptotes
1st Week of Oct.	Curvature and radius of curvature of curves (cartesian, parametric, polar & intrinsic forms)
2nd Week of Oct.	Newton's method, Centre of curvature and circle of curvature. Class Test
3rd Week of Oct.	Multiple points, Node, Cusp, Conjugate point, Tests for concavity and convexity
4th Week of Oct.	Points of inflexion, Tracing of curves, Reduction formulae.
1st Week of Nov.	Rectification, intrinsic equation of a curve Class Test
2nd Week of Nov.	Quadrature, Area bounded by closed curves
3rd Week of Nov.	Volumes and surfaces of solids of revolution
4th Week of Nov.	Doubt class and full syllabus test.

Lesson Plan for Session 2025-2026 (August 2025 – November 2025)

Name of Assistant Professor: Dr. Ravindra Yadav (Mathematics)

Class: BSc (Medical) I / B.A.- I (First Semester)

Paper: MDC

Duration	Topic to be Covered
1st Week of August	Sets and their representations, Empty set, Finite and infinite sets, Subsets.
2nd Week of August	Equal sets, Power sets, Universal set, Union and intersection of sets, Difference of two sets & Related examples
3rd Week of August	Complement of a set,Venn diagram, De-Morgan's laws and their applications, doubt class
4th Week of August	Venn diagram, De-Morgan's laws and their applications. An introduction to matrices and their types and related examples.
1st Week of Sept.	An introduction to matrices and their types, Operations on matrices, Symmetric and skew-symmetric matrices, Minors, Co-factors. Determinant of a square matrix.
2nd Week of Sept.	Determinant of a square matrix, Adjoint and inverse of a square matrix, Solutions of a system of linear equations up to order
3rd Week of Sept.	Complex numbers, Operations on complex numbers, Modulus and argument of a complex number. Class Test
4th Week of Sept.	Linear inequalities, Algebraic solutions of linear inequalities in two variables and their graphical representation. Quadratic equations, Solution of quadratic equations
1st Week of Oct.	Arithmetic progression, Geometric progression and related examples
2nd Week of Oct.	Harmonic progression, Arithmetic mean (A.M.), Geometric mean (G.M.), Harmonic mean (H.M.), Relation between A.M., G.M. and H.M
3rd Week of Oct.	Straight lines: Slope of a line and angle between two lines, related problems Class Test
4th Week of Oct.	Different forms of equation of a line: Parallel to co-ordinate axes, Point-slope form,
1st Week of Nov.	Slope-intercept form, Two-point form examples
2nd Week of Nov.	Two-point form, General form; Distance of a point from a straight line. Standard form of a circle and its properties
3rd Week of Nov.	Standard form of a circle and its Properties,related problems
4th Week of Nov.	Doubt class. Test & Revision.

Lesson Plan for Session 2025-2026 (August 2025 – November 2025)

Name of Assistant Professor: Dr. Ravindra Yadav (Mathematics)

Class: BSc (M & NM) / B.A./B.Com IInd - I (Third Semester)

Paper: SEC (Quantitative Aptitude)

Duration	Topic to be Covered
1st Week of August	Linear Equations
2nd Week of August	Quadratic equations
3rd Week of August	System of algebraic equations in two variables and their applications in simple problem: Problems on ages, Clocks
4th Week of August	Time and distance: Problems based on trains, Boats and Streams, Pipes and Cistern
1st Week of Sept.	Time and distance: Problems based on trains, Boats and Streams, Pipes and Cistern
2nd Week of Sept.	Time and distance: Problems based on trains, Boats and Streams, Pipes and Cistern
3rd Week of Sept.	Work and time:Problem on work and time Class Test
4th Week of Sept.	Work and time:Problem on work and wages
1st Week of Oct.	Simple interest, Compound Interest
2nd Week of Oct.	Partnership Class Test
3rd Week of Oct.	Basic idea of set theory to solve practical problems
4th Week of Oct.	Trigonometric ratios and identities, Height and distance
1st Week of Nov.	Basic idea of Permutations and Combinations. Events and sample space, Probability.
2nd Week of Nov.	Data interpretation: Raw and grouped data, Bar Graph, Pie Chart
3rd Week of Nov.	Mean, Median and Mode
4th Week of Nov.	Doubt class and full syllabus test.

Lesson Plan for Session 2025-2026 (August 2025 – November 2025)

Name of Assistant Professor: Dr. Ravindra Yadav (Mathematics)

Class: BSc III / B.A.- III (5th Semester)

Paper: Groups and Rings

Duration	Topic to be Covered
1st Week of August	Groups and Subgroups- Introduction, Binary composition, Properties of Binary operation, definition of Group, Examples of Group
2nd Week of August	Theorems on Group, Theorems on order of Group/ Element, Examples
3rd Week of August	Definition of Subgroup and Theorems on subgroup, Examples on subgroup, Definition- Cyclic group and Examples, Theorems on Cyclic groups
4th Week of August	Cosets- Definition, Examples on Cosets, Theorems on Cosets, Equivalence Class and Lagrange's Theorem Class Test
1st Week of Sept.	Normal subgroup, Quotient groups, theorems on Normal subgroup, Quotient groups,Theorems on Quotient groups
2nd Week of Sept.	Homomorphisms and Automorphisms,Theorems and Examples ,Kernelof Homomorphisms , Assignment 1.
3rd Week of Sept.	Isomorphism, Theorems and Examples on Isomorphism, Automorphism and related Theorems, Group of Automorphisms, Inner Automorphisms and related examples.
4th Week of Sept.	Inner Automorphisms- Definition and Examples Inner Automorphisms, Group of Automorphisms of Cyclic groups, Centre of Group, Characteristic subgroups and Normalizer of an Element, Class Test. Class Test
1st Week of Oct.	Permutation Groups- Commutator, Cyclic Permutation, Transposition and Disjoint Cycles, Even and Odd permutation, Alternating Group.
2nd Week of Oct.	Cayley's Theorem Rings, Integral Domain, Field, Subring ,Centre of a Ring, Characteristic of a Ring, Examples
3rd Week of Oct.	Ideals, Product of Ideals, Simple Ring, Principal Ideal, Theorems - Principal Ideal Ring and Principal Ideal Domain, Maximal Ideal and Prime Ideal, Examples, Quotient Rings, Assignment 2
4th Week of Oct.	Ring Homomorphism, Kernal of Ring Homomorphism, Examples, Theorems and Embedding of Rings Euclidean Rings- Definitions and Theorems, Principal Ideal Domain .
1st Week of Nov.	Polynomial Rings ,Polynomial Ring over a Ring, Emdedding of Ring into Polynomial Ring, Polynomials over a Field, Divisibility of Polynomials
2nd Week of Nov.	Unique Factorization Domain- Definition and Theorems, Theorems on UFD, Primitive Polynomial.
3rd Week of Nov.	Gauss Lemma, Related Theorems, Eisenstein's Irreducibility Criterion,
4th Week of Nov.	Polynomial Rings ,Revision and Test.

Lesson Plan for Session 2025-2026 (August 2025 – November 2025)

Name of Assistant Professor: Dr. Ravindra Yadav (Mathematics)

Class: BSc III / B.A.- III (5th Semester)

Paper: Numerical Analysis

Duration	Topic to be Covered
1st Week of August	Finite Difference Operators- Function, Argument, Entry, Interval of difference
2nd Week of August	Forward and Backward differences & related questions, Fundamental Theorem of Difference Calculus Class Test
3rd Week of August	Properties of operator Δ, Difference of functions and related question, Shift operator E, properties, Relation between E &∇, Problems & Exercise
4th Week of August	Effect of error in tabular value, Taking queries of students, Class Test
1st Week of Sept.	Finite difference operators, Interpolation , Newton – Gregory formula for forward & interpolation, Questions, Subdivision of intervals, Problems & Exercise
2nd Week of Sept.	Newton Backward difference, Divided difference, Theorems. Assignment I
3rd Week of Sept.	Newton divided difference formula for unequal interval, Relation between Δ , Class Test
4th Week of Sept.	Lagrange's interpolation formula , Hermite's formula, Sterling formula, Examples
1st Week of Oct.	Bessel's formula, Examples , Probability Distributions – Introduction, Review of probability
2nd Week of Oct.	Mean & Variance of a random variable, Binomial distribution, Examples, Mean & Variance of Binomial distribution, Examples, Fitting a Binomial distribution
3rd Week of Oct.	Poission Distribution, Mean & variance, Practical on Given' s method, Class Test
4th Week of Oct.	Normal Distribution, Examples, Presentation- Normal distribution, Practical on Newton's divided difference, Assignment II.
1st Week of Nov.	Numerical differentiation: Derivatives using Newton Forward & Backward formula, Derivatives using Sterling , Bessel's Central Diff. formula, Derivative using Newton's Divided Diff. formula.
2nd Week of Nov.	Eigen Values & Eigen Vectors, Power method, Jacobi's method, Given method Examples
3rd Week of Nov.	House- Holder's Method, QR &Lanczo Method, Numerical integration- Trapezoidal rule, Examples
4th Week of Nov.	Revision & Test