

D.A.V. GIRLS COLLEGE, KOSLI, REWARI, HARYANA
LESSON PLAN FOR THE ODD SEMESTER

(2026–2027)

Name of the Teacher : Sunita Kalra
Class / Semester : B.A. Semester-I
Subject : Mathematics
Name of the Course : Calculus
Course Code : 24L4.5-MAT-101
Teaching Term : 20-07-2026 to 31-10-2026 and 10-11-2026 to 30-11-2026

Sr. No.	Month	Particulars
1	July	Unit I: ϵ - δ definition of limit and continuity of a real valued function; Basic properties of limits; Types of discontinuities; Differentiability of functions.
2	August	Unit I: Application of L'Hospital rule to indeterminate forms; Successive differentiation; Leibnitz theorem; Taylor's and Maclaurin's series expansion with different forms of remainder. Unit II: Asymptotes—horizontal, vertical and oblique asymptotes for algebraic curves.
3	September	Unit II: Asymptotes for polar curves; Intersection of a curve and its asymptotes; Curvature and radius of curvature of curves (Cartesian, parametric, polar and intrinsic forms); Newton's method; Centre of curvature and circle of curvature.
4	October	Unit III: Multiple points, Node, Cusp, Conjugate point; Tests for concavity and convexity; Points of inflexion; Tracing of curves; Reduction formulae.
5	November	Unit IV: Rectification; Intrinsic equation of a curve; Quadrature; Area bounded by closed curves; Volumes and surfaces of solids of revolution. Revision: Revision of the complete syllabus and important problems.

Teacher Name

D.A.V. GIRLS COLLEGE, KOSLI, REWARI, HARYANA
MONTHLY LESSON PLAN – ODD SEMESTER
(2026–2027)

Name of the Teacher	Sunita Kalra
Class / Semester	B.A. 2nd Year / Semester III
Subject	Mathematics
Paper Name	Differential Equations – I
Paper Code	24L5.0-MAT-301
Teaching Term	20-07-2026 to 31-10-2026 and 10-11-2026 to 30-11-2026

Sr. No.	Month	Particulars
1	July 2026	Unit I – Differential Equations: 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; exact differential equations; integrating factor; first-order higher-degree equations solvable for x , y and p .
2	August 2026	Unit I (continued): Lagrange's equations; Clairaut's form and singular solution; orthogonal trajectories of one-parameter families of curves in a plane. Unit II – Linear Ordinary Differential Equations: Linear ordinary differential equations with constant coefficients; linear non-homogeneous differential equations; linear differential equation of second order with variable coefficients.
3	September 2026	Unit II (continued): Method of reduction of order; method of undetermined coefficients; method of variation of parameters; Cauchy–Euler equation. Unit III – Partial Differential Equations: Solution of simultaneous differential equations; total differential equations; genesis of partial differential equations (PDE); concept of linear and non-linear PDEs; complete, general and singular solutions of a PDE.
4	October 2026	Unit III (continued): 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 $q = \partial z / \partial y$. Unit IV: Integral surfaces passing through a given curve; surfaces orthogonal to a given system of surfaces; compatible systems of first-order equations.

Sr. No.	Month	Particulars
5	November 2026	Unit IV (continued): Charpit's method; special types of first-order PDEs; Jacobi's method; second-order partial differential equations with constant coefficients. Revision of all units and course completion.

Signature of Teacher

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LESSON PLAN FOR THE ODD SEMESTER
(2026–2027)

Name of the Teacher : Sunita Kalra
Class / Semester : B.A. 3rd Year / Semester V
Subject : Mathematics
Paper Name : Sequence and Series
Paper Code : 24L5.5-MAT-501
Teaching Term : 20-07-2026 to 31-10-2026 and 10-11-2026 to 30-11-2026

Sr. No.	Month	Particulars
1	JULY	Introduction to Sequence and Series. Boundedness of the set of real numbers; least upper bound and greatest lower bound of a set. Archimedean property; algebraic and order properties in $\mathbb{R}$.
2	AUGUST	Real numbers as a complete ordered field. Neighbourhoods, interior points, isolated points, limit points, open sets, closed sets, interior and closure of a set. Bolzano-Weierstrass theorem, open covers, compact sets and Heine-Borel theorem. Denumerable and non-denumerable sets; denumerability of integers and rationals; non-denumerability of real numbers.
3	SEPTEMBER	Real sequences and their convergence; theorems on limit of sequence; bounded and monotonic sequences; Cauchy sequences; Cauchy general principle of convergence; subsequences and subsequential limits; limit superior and limit inferior.
4	OCTOBER	Infinite series: convergence and divergence of infinite series; comparison tests of positive-term infinite series; Cauchy's general principle of convergence of series; geometric series; hyperharmonic or p-series; D'Alembert's ratio test; Raabe's test; logarithmic test; Cauchy's nth root test; De-Morgan and Bertrand's test; Gauss test; Cauchy's integral test; Cauchy's condensation test.
5	NOVEMBER	Alternating series; absolute and conditional convergence; Leibnitz test. Arbitrary series; Abel's and Dirichlet's tests; insertion and removal of parenthesis; re-arrangement of terms in a series; Riemann's re-arrangement theorem and Pringsheim's theorem (statement only); Cauchy product of series (definition and examples only). Revision and course wrap-up.

Signature of Teacher