LESSON PLAN

CLASS- B.Sc. (PS), BA · SEMESTER-3rd

Subject/Paper - Ordinary Differential Equation

Name of Assistant/Associate- Dr. JaiBhagwan

Sr. No.	Duration	Subject Matter/ Syllabus
Unit-1	August 2026	Geometrical meaning of a differential equation. Exact differential equations. Integrating factors. First order higher degree equations solvable for x,y,p. Lagrange's equations, Clairaut's equations. Equation reducible to Clairaut's form. Singular solutions.
Unit-2	September 2026	Orthogonal trajectories: Cartesian coordinates and polar coordinates. Self-orthogonal family of curves. Linear ordinary differential equations with constant coefficients. Homogeneous linear ordinary differential equations. Equations reducible to homogeneous.
Unit-3	October 2026	Linear differential equations of second order: Reduction to normal form. Transformation of the equation by changing the dependent variable/the independent variable. Solution by operators of non-homogeneous linear differential equations. Reduction of order of a differential equation. Method of variations of parameters.
Unit-4	November 2026	Ordinary simultaneous differential equations. Solution of simultaneous differential equations involving operators x (d/dx) or t (d/dt) etc. Simultaneous equation of the form dx/P = dy/Q = dz/R. Total differential equations. Condition for Pdx + Qdy + Rdz = 0 to be exact. General method of solving Pdx + Qdy + Rdz = 0 by taking one variable constant. Method of auxiliary equations

Signature

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LESSON PLAN

CLASS- B.Sc.(Hons).

SEMESTER- 3rd

Name of Assistant/Associate- Dr. JaiBhagwan

Subject/Paper - Advance Calculus

Sr. No.	Duration	Subject Matter/ Syllabus
Unit-1	August 2026	Continuity, Sequential Continuity, properties of continuous functions, Uniform continuity, chain rule of differentiability. Mean value theorems; Rolle's Theorem and Lagrange's mean value theorem and their geometrical interpretations. Geometrical interpretations of Lagrange's mean value theorem Taylor's Theorem with various forms of remainders, Darboux intermediate value theorem for derivatives, Indeterminate forms.
Unit-2	September 2026	Limit and continuity of real valued functions of two variables. Partial differentiation. Total Differentials; Composite functions & implicit functions. Change of variables. Homogenous functions & Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables.
Unit-3	October 2026	Differentiability of real valued functions of two variables Schwarz and Young's theorem. Implicit function theorem. Maxima, Minima and saddle points of two variables. Lagrange's method of multipliers.
Unit-4	November 2026	Curves: Tangents, Principal normals, Binormals, Serret-Frenet formulae. Locus of the centre of curvature, Spherical curvature, Locus of centre of Spherical curvature, Involutes, evolutes, Bertrand Curves. Surfaces: Tangent planes, one parameter family of surfaces, Envelopes.

Signature

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LESSON PLAN

CLASS- B.Sc.(PS), B.Sc.(Hons.), BA SEMESTER- 5th

Name of Assistant/Associate- Dr. JaiBhagwan

Subject/Paper - Groups and Rings

Sr. No.	Duration	Subject Matter/ Syllabus
Unit-1	August 2026	Definition of a group with example and simple properties of groups, Subgroups and Subgroup criteria, Generation of groups, cyclic groups, Cosets, Left and right cosets, Index of a sub-group Coset decomposition, Largrage's theorem and its consequences, Normal subgroups, Quotient groups,
Unit-2	September 2026	Homoomorphisms, isomophisms, automorphisms and inner automorphisms of a group. Automorphisms of cyclic groups. Permutations groups. Even and odd permutations. Alternating groups, Cayley's theorem, Center of a group and derived group of a group.
Unit-3	October 2026	Introduction to rings, subrings, integral domains and fields. Characteristics of a ring. Ring homomorphisms, ideals (principle, prime and Maximal) and Quotient rings. Field of quotients of an integral domain.
Unit-4	November 2026	Euclidean rings, Polynomial rings, Polynomials over the rational field, The Eisenstein's criterion, Polynomial rings over commutative rings. Unique factorization domain, R unique factorization domain implies so is R[X1 , X2,……Xn]

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