Teacher's Name—Satyender Singh Subject-Mathematics
LESSON PLAN SESSION 2025-2026 (Odd Sem)
Class-B.Sc-5th semester Paper-Real Analysis

S.No	WEEK	TOPIC
1	01.08.25-02.08.25	Riemann Integral-Partition of a closed interval, Norm & Refinement of a Partition, Upper & Lower Sums, Oscillatory Sum & all related theorems. Riemann Integral, Darboux's Theorem. Conditions of Integrability, Integrability of Continuous functions and all related theorems.
2	04.08.25-08.08.25	Integrability of Monotonic functions. Integral as a limit of Sum. Riemann Sum. Second definition of Integrability and all related theorems and Numerical Problems. Properties of Riemann Integral and all related theorems and Numerical Problems.
3	11.08.25-14.08.25	First Mean Value Theorem, Theorems on Continuity and Differentiability of Integrable Functions. Primitive of a Function.
4	18.08.25-23.08.25	Fundamental Theorem of Integral Calculus. Mean value Theorems of Integral Calculus. Second mean value theorem and all related Numerical Problems.
5	25.08.25-30.08.25	Improper Integral-Types of Improper Integral. Convergence of Improper Integral of First kind and Second Kind. Comparison Tests for Convergence of Integral. Comparison test I & II.
6	01.09.25-06.09.25	An Important Comparison Integral. Discussion of convergence of important function i.e. Beta function and all related problems.
7	08.09.25-13.09.25	General test for Convergence of Integral- Cauchy's Test. Absolute Convergence.
8	15.09.25-20.09.25	Comparison test for Convergence at Infinity, An Important Comparison Integral.
9	24.09.25-27.09.25	Convergence of Gamma Integral. General test for convergence at Infinity-Cauchy's Test. Abel's test for Convergence. Dirichlet's test for convergence. Frullani's Integral.
10	29.09.25-01.10.25	Integral as a function of a Parameter-Continuity of the Integral, Derivability of the Integral. Integrability of an Integral of a function of Parameter and all related problems.
11	03.10.25-04.10.25	Metric and Metric Spaces-it's all related examples and questions. Bounded Sequence and Bounded Functions. Induced Metric. Semi Metric Space. Diameter of a Subset. Bounded and unbounded Metric Spaces.
12	06.10.25	Open and Closed Sets in Metric Spaces-Open Sphere and Closed Sphere. Interior Point and Neighbourhood of a point. Interior of a Set. Open Set and it's all related theorems.
13	08.10.25-11.10.25	Adherent Point, Limit Point, Isolated point, Derived Set, Closure of a Set. Closed Set and related theorems. Exterior Points and Exterior of a set. Boundary points and Boundary of a set
14	13.10.25-18.10.25	Completeness in Metric Space-Sequences in Metric Spaces. Convergence in a Metric Space. Cauchy Sequence. Complete Metric Space. Subsequence and all its related theorems.
15	19.10.25-26.10.25	Diwali Break
16	03.11.25-04.11.25	Cantor's Intersection Theorem and it's Inverse. Nowhere Dense set. First Category Space. Baire's Category Theorem. Contraction Principle in a Metric Space. Banach's Fixed Point Theorem.
17	06.11.25-08.11.25	Continuity and uniform Continuity in Metric Spaces- Continuous function and it's all related theorems. Uniform Continuity and it's all related theorems. Isometry.
18	10.11.25-15.11.25	Compactness in Metric Spaces- Covers, Compact set and Compact Metric Space. Bolzano Weierstrass Property (BWP), Sequentially Compact Metric Space.
19	17.11.25-22.11.25	Countably Compact Spaces and it's all related theorems.Finite Intersection Property (FIP), Total Boundedness, Continuity and Compactness.
20	24.11.29-29.11.25	Connectedness in Metric Spaces- Separated Sets, Connected and Disconnected Sets and it's all related theorems.
21	01.12.2025	Component, Continuity and connectedness. Totally Disconnected Spaces.
22	02.12.25 onwards	Examinations

Teacher's Name—Satyender Singh Subject-Mathematics LESSON PLAN SESSION 2025-26 (Odd Sem) Class-B.Sc-5th semester Paper-Numerical Analysis		
S.No	**WEEK**	**TOPIC**
1	01.08.25-02.08.25	Finite Difference Operators-Argument and entry, interval of Differencing. Forward Differences, Backward Differences. Fundamental theorem of difference calculus. The operator E, Effect of an error in a Tabular Value. One or more Missing terms.
2	04.08.25-08.08.25	Interpolation with Equal Intervals-Newton Gregory formula for forward Interpolation and Backward Interpolation. Subdivision of Intervals.
3	11.08.25-14.08.25	Interpolation with Unequal Intervals-Divided Differences. Newton's divided Difference Interpolation Formula for Unequal Intervals.
4	18.08.25-23.08.25	Lagrange's Interpolation Formula. Hermite's Interpolation Formula.
5	25.08.25-30.08.25	Central Difference Interpolation Formulae-Gauss Forward & Backward Interpolation Formula. Sterling Formula. Bessel's Formula.
6	01.09.25-06.09.25	Probability Distributions-Events or Cases. Probability of Equally Likely Outcomes. Conditional Probability. Independent Events. Random Variable. Probability Distribution of a Random Variable. Mean and Variance of Random Variable.
7	08.09.25-13.09.25	Binomial Distribution-Mean and Variance of Binomial Distribution. Recurrence Formula. Fitting a Binomial Distribution.
8	15.09.25-20.09.25	Poisson Distribution- Mean and Variance of Poisson Distribution. Recurrence Formula. Fitting a Poisson Distribution.
9	24.09.25-27.09.25	Normal Distribution-Probability Density Function. Standard Normal Distribution. Fitting of a Normal Curve.
10	29.09.25-01.10.25	Numerical Distribution-Derivatives using Newton's Forward Interpolation Formula, Backward's Interpolation Formula, Sterling Central Interpolation Formula. Newton's Divided Difference Formula.
11	03.10.25-04.10.25	Eigen Value Problems-Eigen Values and Eigen Vectors. Power Method. Jacobi's Method for Symmetric Matrix.
12	06.10.25	Given's Method. House-Holder's Method. QR Method. Lanczo's Method.
13	08.10.25-11.10.25	Numerical Integral-Newton-Cotes Quadrature Formula. Trapezoidal Rule.
14	13.10.25-18.10.25	Simpson's One-Third Rule. Simpson's Three-Eighth Rule.
15	19.10.25-26.10.25	**Diwali Break**
16	03.11.25-04.11.25	Error in a Quadrature Formulae. Gauss Quadrature Formula. Chebyshev'sQuardrature Formula.
17	06.11.25-08.11.25	Numerical Solution of Ordinary Differential Equations-Solution of a Differential Equation, Initial Boundary Conditions.
18	10.11.25-15.11.25	Euler's Method. Modified Euler's Method.Taylor's Series Method.
19	17.11.25-22.11.25	Predictor-Corrector Method. Milne-Simpson's Method. Adams-Bashforth Method.
20	24.11.29-29.11.25	Runge-Kutta Method—R-K Method of First Order, Second order, Third Order, Fourth Order. Picard's Method.
	01.12.2025	Revision
	02.12.25 onwards	Examinations

Teacher's Name—Satyender Singh Subject-Mathematics LESSON PLAN SESSION 2025-26 (Odd Sem) (Based on Latest NEP Pattern) Class-B.Sc-1st semester Paper-Calculus(4-6days : 3 Credits in a week)		
S.No	**WEEK**	**TOPIC**
1	01.08.25-02.08.25	Limit of a Function, Left hand &Right hand limit, Uniqueness, Infinite Limits, Squeeze Principle, Continuous and Discontinuous functions, Kinds of Discontinuity all it's related problems. Derivability at an Interior Point.
2	07.08.25-08.08.25	Indeterminate forms-L'Hospital rule for evaluation of various types of Indeterminate forms.
3	14.08.25	Successive Differentiation, Standard results for nth derivatives. Find nth derivative using Partial fractions.
4	12.08.24-14.08.24	Leibnitz's Theorem and all it's related problems. Calculation of nth derivative at x=0 and all it's related problems.
5	21.08.25-23.08.25	General theorems on Differentiable functions and expansions- Taylor's Theorem with Lagrange's form of remainder after 'n' terms. Maclaurin's Theorem with Lagrange's form of remainder. Taylor's Theorem with Cauchy's form of remainder.
6	28.08.25-30.08.25	Taylor's Infinite Series and all it's related problems. Expansion by Differential Equations. Method of Differentiation and Integration.
7	04.09.25-06.09.25	Asymptotes-Finite and infinite branches of a curve. Asymptotes, Horizontal and Vertical asymptotes. Asymptotes parallel to Axes of Co-ordinates. Oblique Asymptotes. Oblique asymptotes of the general algebraic curve.
8	11.09.25-13.09.25	Alternative methods of finding asymptotes of algebraic curves. Intersection of the curve and its asymptotes. Asymptotes of polar curve. Position of the curve with respect to the asymptotes.
9	18.09.25-20.09.25	Curvature-Intrinsic equation of a curve. Curvature in Intrinsic form, Radius of curvature. Curvature of circle. Radius of curvature for Cartesian equations, for Parametric equations, for Polar equations, for Pedal equations.
10	25.09.25-27.09.25	Radius of curvature for Polar tangential equations. Radius of curvature at the origin. Centre of curvature, circle of curvature and evolute of a curve. Chord of curvature.
11	03.10.25-04.10.25	Singular Points-Multiple Points, Points of inflexion. Types of double points-Node, Cusp, Conjugate or Isolated points. Condition for the existence of a double point on a curve. Species of Cusps. Concavity and Convexity. Point of Inflexion.
12	09.10.25-11.10.25	Curve Tracing-Tracing of Cartesian Curves,Parametric equations. Tracing of polar curves and all it's related problems.
13	16.10.25-18.10.25	Reduction Formula- for different trigonometric functions, Exponential functions.
14	19.10.25-26.10.26	**Diwali Break**
15	30.10.25-31.11.25	Rectification-Fundamental Theorem about Rectification. Length of the Parametric curves and all it's related problems.
16	06.11.25-08.11.25	Length of Polar Curves and all it's related problems. Intrinsic equation of a curve.
17	13.11.25-15.11.25	Quadrature, Area between two curves. Area Formula for Parametric Curves. Area between two polar curves.
18	20.11.25-22.11.25	Volumes and Surfaces of Solids of Revolution. Volume of a solid of revolution. Volume formula for polar curves.
19	27.11.25-29.11.25	Any Axis of Revolution. Volume formula for two solids. Volume formula for parametric curves.
20	01.12.25	Area of a surface of revolution. Centroid.
21	02.12.25	**Examinations**

Teacher's Name—Satyender Singh Subject-Mathematics

LESSON PLAN SESSION 2024-2025 (Odd Sem) (Based on Latest NEP Pattern)

Class-B.Com-1st semester Paper-Business Mathematics(5-6days : 2 Credits in a week)

S.No	WEEK	TOPIC
1	04.07.25-05.08.25	Set Theory- Sets, Various types of sets, Venn Diagrams, Union and Intersection of sets,
2	11.08.25-12.08.25	Disjoint sets, Difference of sets, Symmetric difference of sets, De-Morgan's Laws.
3	18.08.25-19.08.25	Logarithms-Product formula, Quotient formula, Power formula, Base change formula,
4	25.08.25-26.08.25	Natural Logarithms, Common Logarithms, Characteristic and Mantissa, Anti-logarithms.
5	01.09.25-02.09.25	Sequences, Series, Arithmetic Progression (A.P) Geometric Progression (G.P)
6	08.09.25-09.09.25	Algebra of Matrices-Matrix, Notation, order, types of Matrices. Basic operations on Matrices.
7	15.09.25-16.09.25	Multiplication of Matrices. Transpose of a matrix. Symmetric and Skew-symmetric matrices.
8	29.09.25-30.09.25	Determinants. Minors and Co-factors. Singular and Nonsingular matrices.Properties of Determinants numerical problems
9	06.10.25	Application of determinants in finding area of a triangle.Adjoint of a Matrix. Inverse of a square matrix with complete numerical problems.
10	13.10.25-14.10.25	Inverse of a matrix by using elementary operations.Solution of system of Linear equations-(i) using determinants (ii) using matrices with all practical problems.
11	19.10.25-26.10.25	**Diwali Break**
12	27.10.25-28.10.25	Simple Interest, Compound Interest, General formulae for determination of Compound Interest.
13	03.11.25-04.11.25	Continuous compounding of Interest. Problems on effective rate of interest, Depreciation and Population.
14	10.11.25-11.11.25	Annuities, types of annuities, Amount of an annuity.
15	17.11.25-18.11.25	Present value of an annuity, Solution of practical problems related to annuities.
16	24.11.25-25.11.25	Revision of Unit I & II
17	01.12.25	Revision of unit III & IV
18	02.12.25 onwards	**Examinations**

Teacher's Name—Satyender Singh Subject-Mathematics LESSON PLAN SESSION 2024-2025 (Odd Sem) Class-B.Sc-3rd semester Paper-Differential Equations-1		
S.No	**WEEK**	**TOPIC**
1	01.08.25-02.08.25	Introduction to Differential Equations, it's types, Order & degree of D.E's, Solution of a D.E & it's formation, Geometrical meaning of D.E, Exact Differential equations & it's Solution with numerical problems, Integrating Factor & rules for finding the Integrating Factor with Numerical Problems.
2	07.08.25-08.08.25	Equations of First Order but Not of First Degree, Equations solvable for 'p', solvable for 'y', solvable for 'x' with Numerical Problems. Lagrange's Equation with solution, Clairaut's Equation, Equations reducible to Clairaut's form, Singular Solution, p-discriminant and c-discriminent
3	14.08.25	Trajectories-oblique& orthogonal, Orthogonal trajectories in Cartesian co-ordinates, polar co-ordinates with all Numerical problems
4	12.08.24-14.08.24	Linear Differential Equations with Constant Coefficients, it's standard form, Differential operator 'D', Complete solution of Linear Differential equation.
5	21.08.25-23.08.25	Auxiliary Equation (A.E) and it's complete solution with different cases. Solution of Linear Differential Equations with Constant Coefficients-Complementary function, Particular Integral and it's related theorems
6	28.08.25-30.08.25	Particular Integral in some special cases i.e exponential function, trigonometric function etc. with it's all related problems.
7	04.09.25-06.09.25	Homogenous Linear Differential equations. Reduction of homogenous linear equation into linear equation with constant coefficients. Solution of Linear Differential Equations reducible to homogenous linear form.
8	11.09.25-13.09.25	Linear Differential Equation of Second Order. Solution of Linear Differential Equation (i) by changing the dependent variable when an integral included in the C.F. is known with problems. (ii) By removing the first derivative and changing the dependent variable with Numerical problems.
9	18.09.25-20.09.25	Solution of Linear Differential Equation (iii) by changing the independent variable with Numerical problems (iv) by the method of variation of parameters with Numerical problems.
10	25.09.25-27.09.25	Solution of Linear Differential Equation (iii) by the methods of undetermined coefficients with Numerical problems. Revision of all above five techniques.
11	03.10.25-04.10.25	Ordinary Simultaneous Differential Equations. Methods of Solving Simultaneous Linear Differential Equations with constant coefficients-(i) Use of operator 'D' (ii) Methods of Differentiation.
12	09.10.25-11.10.25	Simultaneous Equations of different forms-methods of solving with Problems.
13	16.10.25-18.10.25	Total differential Equations, Necessary and sufficient Condition for the Integrability. Different methods of solving Total differential Equations
14	19.10.25-26.10.26	**Diwali breaks**
15	30.10.25-31.11.25	Partial Differential equations-order and degree, classification and solution of PDE, Standard form of a Linear PDE of first order, Solution of Lagrange's linear equations.
16	06.11.25-08.11.25	Integral surfaces passes through a given curve, Surfaces orthogonal to a given system of surfaces.
17	13.11.25-15.11.25	First order Non-Linear PDE, Compatible system of PDE of order one, General methods of solutions-Charpit's methods
18	20.11.25-22.11.25	Some standard forms, Jacobi's methods
19	27.11.25-29.11.25	Linear PDE of second and higher order, Solution of Homogenous linear PDE with constant coefficients.
20	01.12.25	Solution of non-Homogenous linear PDE with constant coefficients
21	02.12.25	Examinations