LESSON PLAN (FROM JULY 2025 To NOV. 2025)

Name: Dr. Sarita Gulia

Subject: Mathematics

Class: BSc/BA - Ist year

Paper Name: Function & Analysi

Semester: Ist

1. July 15 to July 25, 2025 :- Relations, functions along with domain and range, composition of functions. Types of Relations :- (i) Identity Relation, (ii) Universal Relation. (iii) Void or Empty Relation. Function of mappings, Image and Pre-Image, Equal functions, Real functions
   Example & Exercise - 1.1.

2. July 26 to August 05, 2025 :- Invertibility and inverse of function, One to One corresponding and the cardinality of a set. Into function, Onto function, One-One function, Many-one function, One-one into function Many-one into function. Example & Exercise - 1.2, 1.3.

3. August 06 to August 16, 2025 :- Relations b/w the roots and coefficients of general polynomial equation in one variable. Solutions of polynomial equation having conditions on roots. Theorem $f(x)=0$ of the nth degree has nth degree.
   Example & 2.1, 2.2,

4. August 17 to August 27, 2025 :- Transformation of equation. Nature of the roots of an equation, Descarte's rule of signs. Reciprocal Roots, Reciprocal eq., Roots Diminished By a Given Number, Practical Method.
   Example & Exercise. 3.1.

5. August 28 to Sep. 08, 2025 :- Solution of cubic equation (Cardon's Method). Biquadratic equation & their solution. Cardon Method of Solving a Cubic equation, Roots of the Cubic $z^3+3Hz+G=0$
   Example & Exercise - 5.1.

6. Sep.09 to Sep.19, 2025 :- Matrix and its type - Symmetric, Skew-symmetric, Hermition and skew Hermitian matrices. ORthogonal matrix. Example & Exercise - 6.1, Unitary matrix Example & Exercise - 6.2. Idempotent, Involutory and Nilpotent matrices. Assignment.

7. Sep.20 to Sep.30, 2025:- Rank of a Matrix and its applications: Sub Matrix of a Matrix, Minor of a Matrix, Example & Exercise - 7.1.
Elementary operations on Matrics, Theorem, Equivalent Matrics.

8. Oct.01 to Oct.10, 2025:- Linear dependence and independence of rows and colums of matrices, Application of matrics to a system of linear (both homogenous and non-homogeneous) eq., theorem on consistency of a system of linear equations.

9. Oct.11 to Oct.19, 2025:- Eigen values, Eigen vectors and the characteristics eq" of a matrix, Theorem on characteristics Roots & characteristics vectors Examples & Exercise - 9.1.

[Diwali Break - 20 Oct.25 - 26 Oct.2025].

10. Oct.27 to NOV.7, 2025 :- Minimal polynomial of a matrics. Cayley-Hamilton theorem and its use in finding the inverse of a matrix. Diagonalization of matrix.

Principal

LESSON PLAN (FROM JULY 2025 to NOV. 2025)

Name: Dr. Santa Gulia

Class: B.Sc/BA - Ist year

Semester - Ist

Subject : Mathematics (Minor)

Paper Name : Basic Mathematics

1. July 15 to July 25, 2025 :- Calculus (Problems and theorems involving trigonometrical ratios are not to be done. Differentiation : Partial derivatives up to second order.

2. July 26 to August 5, 2025 :- Homogeneity of functions and euler's theorem, total differential, Differentiation of implict function with the help of total differentials. Maxima and minima.

3. August 6 to August 16, 2025 :- Maxima and minima Cases of one variable involving second or higher order derivatives. Gt theorms, all of the example with its exercises.

4. August 17 to August 27, 2025 :- Integration as anti derivative proces; standard forms, its theorem, examples and exercises. Methods of integration by substitution, by parts, and by use of partial fractions.

5. August 28 to Sep. 08, 2025 :- Definite Integration, finding area in simple cases, consumers and producers surplus.

6. Sep. 09 to Sep. 19, 2025 :- Nature of commodities learning curve ; leontiff input - output model. its rules and its problem. complete unit - Test its examples, exercise question complete.

7. Sep. 20 to sep. 30, 2025 :- Matrices : Definition of matrix, Types of matrices (Null matrix, Skew symmetric matrix, Hermition matrix etc.) Algebra of matrices.

8. october 1 to october 10 :- Determinants : Properties of determinants ; calculation of value of determinants up to third. its theorm, all of its example with its exercises.

9. october 11 to october 21 :- Adjoint of a matrix through adjoint and elementary row of column operations. its complete exercises and examples.

{DIWALI BREAK Oct 20, 2025 — Oct 26, 2025

10. october 27 to November 07 :- Solution of system of linea equation, its assignments. unique solution and involving not more than three variable.

SSON PLAN (FROM July 2025 to Nov. 2025)

: Dr. Sarita Guha

Subject : Mathematics

ass: - B.Sc./BA - 2nd year

Paper Name : O.D.E

Semester: 3rd.

July 15 to July 25, 2025 Chapter-1 (Introduction to diff. eqⁿ.)
Exact differntial equation & Theorms, Examples, ex-1.1, Integration factor & their rules & examples. Example with ex-1.2 example with ex-1.2 examples with ex-1.3. 1.4, rules. examples with exercise 1.5, 1.6, 1.7.

2.) July 26 to August 5, 2025. Equation solvable, Introduction Ch-2, Ex 2.1 equation solvable for Y with examples, ex-2.1, equation ex-2.1 & 2.2, Revision, equation solvable for x with example. ex-2.3, Lagrangles equation with example clairaut's, equation with example.

3.) August 06 to August 16, 2025 Eq. Reducible to clairaut's eqⁿ. with example, singular sol. & Discriminate, exercise revision, test Ch-1, Orthogonal trajection i.e. Ch-3, Orthagonal trajectory in carterian & polar co-ordinates with examples, Ex-3.1. Revision test Ch-2, Ch-4 (Linear coeff. eqⁿ with const. coeff.)

4.) August 17 to August 27, 2025. Ex- 4.1, complete function & particular Integral with examples, ex-4.2, 4.3, 4.4, 4.5, Revision of all cases & ex-4.6, chapter-5 (Homogerious linear eqⁿ). eqⁿ reducible to homogenous linear from with example & ex-5.1. Revision of ex-5.1 & Test Ch-5.1, ex-5.2.

5.) August 28 to Sep. 08, 2025 Method of finding particular integral, example solve linear diff eq. ex-6.1 example & ex-6.2, 6.3 H.W assignment. variation of parameter with example.

6. Sept. 09 to Sept 19, 2025 :→ Ex. 4. ex-6.4 solution of diff. eqⁿ. by method of undetermined coeffⁿ. ex-6.5, Revision ch-6, Revision Test-6.

7.→ Sept. 20 to Sept. 30, 2025 :→ ch-7 (Introduction - ordinary simultaneous diff. eqⁿ. method of solving diff eqⁿ with cont. coeff.

8.→ October, 1 to October 10 :→ Example, method of differentiation & ex-7.1, general interpretation of eqⁿ. example practice.

9.→ October 11 to October 21 :→ Example with ex-7.2, second Integral example practice.

{DIWALI BREAK.
Oct 20, 2025 – Oct 26, 2025}

10.→ October 27 to November 07 :→ Revision, ch-8 (Total diff. eqⁿ) method of solve eqⁿ on variable as constant out of three variable Test-7 & 8. Revise, ex-8.1, 8.2, 8.3 with example.

Principal

LESSON PLAN (FROM JULY 2025 to NOV. 2025)

Name: Dr. Samta Gulia — Subject: Mathematics

Class: BA./BSc. - 3rd year — Paper Name: Numerical Analysis

Semester: 5th

Sr. No.	Time Period	Syllabus

1) July 15 to July 25, 2025 – Define basic concepts of Maths. i.e function, relations, term etc. finite difference operators and their relations. finding the missing terms and effect of error in a difference tabular values. Interpolation with equal intervals: Examples & Exercises. Theorem based on Δ, e, E & its question.

2) July 26 to August 05, 2025 - Newton's forward and Newton's backward interpolation formula. Interpolation with equal intervals; Newton's divided difference. Lagrange's Interpolation formula, Hermite formula. Revise chapter-I & complete Unit - I.

3) August 06 to August 16, 2025– Test of Unit - Ist, stout central Differences: Gauss forward and Gauss's backward interplation formula. Sterling formula. Its theorem & based all Examples. Problems Discussion.

4) August 17 to August 27, 2025– Bessel formula and its based all examples. Complete Exercise 4.1. chapter-5 Probability Distribution. Define all important terms & solve all based questions. Binomial Distribution, Recurrence formula; Ex. 5.1.

5) August 28 to Sep. 05, 2025 – Poisson Distribution & Normal Distribution. Its passed all examples and complete exercise 5.2, 5.3. Revise chapter 4 also. complete Unit - I & II.

6) Sep.09 to Sep.19, 2025 – Chapter-6 Numerical Diffuentiation Start Deive by using Newton's Forward Interpolation & backward interpolation formula, Bessel's central Difference formula. Its examples and Exercise 6.1 Complete. Problem Discuss of Unit - I, II. Make Assignment.

7) Sep 20 to Sep 30, 2025 – Test of Unit - 1st & 2nd, chapter-7 Eigen value problem start. Define all definations Power method, Jacobi's Method. Its based all examples and exercise 7.1 (half). Given's Method, House-Holder's Method.

8) Oct.01 to Oct.10, 2025 – Complete Exercise 7.1. Unit-3 complete Problems Discuss of Unit-3, chapter-8 start Numerical Integration: Newton-Cote's Quadrature formula, Trapezoidal rule. Simpson's 1/3 & 3/8 rule, Chebychev formula, Gauss Quadrature formula.

9) Oct.11 to Oct 19, 2025 – Solve all examples related above method Chapter-8 complete. Chapter 9. Numerical Sol'n of ODE single step-Method – Picard's Method, Taylor's Series method. Euler's method, Runge-Kutta Method, Multiple Step Method. etc. Solved its examples & exercises.

{DIWALI BREAK.
Oct. 20, 2025 - Oct. 26, 2025}

10) Oct. 27 to Nov. 7, 2025 – Problem discuss on ch-7 & 8. Unit-4 Complete. Revision & Test Unit-3 & 4 also. Quiz competition of Maths (Basic). Tentative lectures plan.

Principal.
Govt. College, Badli