

Govt. College for Women, Gharaunda

LESSON PLAN

SESSION - 2022-23

Class - B.Sc/B.A

Sem - 3rd

Paper - Partial Differential Equations

Month - September

Week	Topic
1st week (1-3 Sep)	Partial differential equations: formation, order and degree
2nd Week (5-10 Sep)	Linear & Non linear partial differential equations of the first order: Complete solution, Singular solution, General solution
3rd Week (12-17 Sep)	Solution of Lagrange's linear equations, Charpit's general method of solution
4th Week (19-24 Sep)	Compatible systems of first order equations, Jacobi's method

Month - October

Week	Topic
1st Week (1-8 Oct)	Linear partial differential equations of second and higher orders
2nd Week (10-15 Oct)	Linear & Non-linear homogeneous & non homogeneous equations with constant co-efficients
3rd Week (17-22 Oct)	Partial differential equation with variable co-efficients reducible to equations with constant co-efficients

October

4th Week

(24-29 Oct & 31 Oct)

Equations reducible to linear equations
with constant co-efficients

Month - November

Week	Topic
1st week (1-5 Nov)	Classification of linear partial differential equations of second order, Hyperbolic, parabolic and elliptic types
2nd week (7-12 Nov)	Reduction of second order linear partial differential equations to Canonical forms Solution of linear hyperbolic equations
3rd week (14-19 Nov)	Monge's method for partial differential equations of second order
4th week (21-26 Nov & 28-30 Nov)	

Month - December

Week	Topic
1st week (1-3 Dec)	Cauchy's problem for second order partial differential equations
2nd week (5-10 Dec)	Characteristic equations & curves of second order partial diff. equations
3rd week (12-17 Dec)	Solution of Laplace's equation, wave equation
4th week (19-24 Dec)	Diffusion equation in Cartesian co-ordinate system

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LESSON PLAN

SESSION - 2022-23

Class - B.Sc/B.A

Sem. - 5th

Paper - Groups & Rings

Month - September

Week	Topic
1st Week (1-3 Sep.)	Definition of a group with example and simple properties of groups
2nd Week (5-10 Sep)	Examples & properties of groups
3rd Week (12-17 Sep)	Subgroups & Subgroups criteria
4th Week (19-24 Sep)	Subgroups and Generation of groups, cyclic groups
5th Week (26-30 Sep)	Cyclic groups

Month - October

Week	Topic
1st Week (1-8 Oct.)	Cosets, left and Right Cosets, Index of a subgroup
2nd Week (10-15 Oct.)	Coset decomposition, Lagrange's theorem and its consequences, Normal subgroups
3rd Week (17-22 Oct.)	Normal subgroups, Quotient groups
4th Week (24-29 Oct & 31 Oct)	Homomorphisms, isomorphisms, Automorphisms

Month - November

Week	Topic
1st Week (1-5 Nov.)	Automorphisms & Inner automorphisms of a group
2nd Week (7-12 Nov.)	Automorphisms of a cyclic groups, Permutation groups, Even and odd permutations.
3rd Week (14-19 Nov.)	Alternating groups, Cayley's theorem, Centre of a group and derived of a group.
4th Week (21-26 Nov & 28-30 Nov)	Introduction to rings, subring, integral domain & fields, characteristics of a ring

Month - December

Week	Topic
1st Week (1-3 Dec.)	Rings homomorphisms, ideals, Quotient rings, Euclidean rings
2nd Week (5-10 Dec.)	Polynomial rings, Polynomials over the rational field.
3rd Week (12-17 Dec.)	The Eisenstein criterion of irreducibility, Polynomials rings over commutative rings.
4th Week (19-24 Dec.)	Unique factorization domain

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LESSON PLAN

SESSION - 2022-23

Class - B.Com

Sem. - Ist

Paper - Business Mathematics

Month - September

Week	Topic
Ist week (1-3 Sep)	Definition of a matrix, Types of matrices
2nd week (5-10 Sep)	Algebra of matrices
3rd week (12-17 Sep)	Properties of determinants
4th week (19-24 Sep)	Calculation of values of determinants upto third order, Adjoint of a matrix
5th week (26-30 Sep)	Elementary row or column operations, Inverse of a matrix.

Month - October

Week	Topic
Ist week (1-8 Oct)	Solution of a system of linear equations having unique solution
2nd week (10-15 Oct)	Logarithms
3rd week (17-22 Oct)	Anti-logarithms
4th week (24-29 & 31 Oct)	Arithmetic & Geometric Progressions

Month - November

Week	Topic
1st week (1-5 Nov.)	Differentiation
2nd week (7-12 Nov.)	Differentiation
3rd week (14-19 Nov.)	Certain different types of interest rates
4th week (21-26 Nov. & 28-30 Nov.)	Concept of present value & amount of a sum

Month - December

Week	Topic
1st week (1-3 Dec.)	Types of annuities, Present value & amount of an annuity
2nd week (5-10 Dec.)	Valuation of simple loans & debentures
3rd week (12-17 Dec.)	Revision
4th week (19-24 Dec.)	Revision

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LESSON PLAN

SESSION - 2022-23

Class - B.A./B.Sc

Sem. - 3rd

Paper - Advanced Calculus

Month - September

Week	Topic
1st Week (1-3 Sep)	Continuity, Sequential Continuity, Properties of Continuous functions
2nd Week (5-10 Sep)	Properties of Continuous functions, Uniform Continuity, Chain rule of differentiability
3rd Week (12-17 Sep)	Mean Value theorems; Rolle's theorem & Lagrange's mean value theorem and their geometrical interpretations
4th Week (19-24 Sep)	Taylor's theorem with various form of remainders, Darboux intermediate value theorem for derivatives
5th Week (26-30 Sep)	Indeterminate forms

Month - October

Week	Topic
1st Week (1-8 Oct)	Limit & Continuity of real valued functions of two variables, Partial Differentiation
2nd Week (10-15 Oct)	Partial Differentiation, Total differentials; Composite functions & Implicit functions

3rd Week
(17-22 Oct)

Change of Variables, Homogeneous functions and Euler's theorem on homogeneous functions

4th Week
(24-29 Oct & 31 Oct)

Taylor's theorem for functions of two variables and revision.

Month - November

Week

Topic

1st Week
(1-5 Nov)

Differentiability of real valued functions of two variables

2nd Week
(7-12 Nov)

Schwarz and Young's theorem, Implicit function theorem

3rd Week
(14-19 Nov)

Maxima, Minima and Saddle points of two variables

4th Week
(21-26 Nov & 28-30 Nov)

Lagrange's method of multipliers, Curves: Tangents, Principal Normals

Month - December

Week

Topic

1st Week (1-3 Dec)

Tangents, Principal normals, Binormals
Serret-Frenet formulae

2nd Week (5-10 Dec)

Revision

3rd Week (12-17 Dec)

Revision

4th Week (19-24 Dec)

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LESSON PLAN

SESSION - 2022-23

Class - B.Sc/B.A

Sem. - Ist

Paper - Algebra

Month - September

Week	Topic
1st week (1-3 Sep.)	Symmetric, Skew-symmetric matrices
2nd week (5-10 Sep.)	Hermitian & Skew Hermitian matrices, Elementary operations on matrices.
3rd week (12-17 Sep.)	Rank of matrices, Inverse of a matrix, Linear dependence & Independence of rows & columns of matrices
4th week (19-24 Sep.)	Row rank & column rank of a matrix. Eigen values, eigen vectors and the characteristic equation of a matrix.
5th week (26-30 Sep.)	Characteristic equation, Minimal poly- nomial of a matrix, Cayley-Hamilton theorem.

Month - October

Week	Topic
1st week (1-8 Oct.)	Applications of matrices to a system of linear equations
2nd week (10-15 Oct.)	Consistency of a system of linear equations.
3rd week (17-22 Oct.)	Unitary & Orthogonal matrices
4th week (24-29 & 31 Oct.)	Bilinear & Quadratic forms

Month - November

Week	Topic
1st Week (1-5 Nov.)	Relations between the roots of and co-efficients of general polynomial equations in one variable.
2nd Week (7-12 Nov.)	Solutions of polynomial equations having conditions on roots.
3rd Week (14-19 Nov.)	Common roots & multiple roots
4th Week (21-26 Nov. & 28-30 Nov.)	Transformation of equations

Month - December

Week	Topic
1st Week (1-3 Dec.)	Nature of roots of an equations
2nd Week (5-10 Dec.)	Descarte's rule of signs. Solutions of cubic equations (Cardon's method)
3rd Week (12-17 Dec.)	Cardon's method, Biquadratic equations and their solutions
4th Week (19-24 Dec.)	Biquadratic equations & their solutions

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