

**Govt. College Mandi Hariya (Ch. Dadri)**  
**Lesson Plan (2023-24 Odd sem.)**

Name:  
 Designation  
 Subject  
 Class

Dr Yogita Godara  
 Assistant Professor  
 Mathematics  
 B.A. 1<sup>st</sup> Sem. (Algebra)

SN	Weeks	Topic
1	1 <sup>st</sup> week of August	Review of matrices (Algebra of matrices, rank of a matrix, Inverse of a matrix )
2	2 <sup>nd</sup> week of August	Linear dependence and independence of rows and columns of matrices
3	3 <sup>rd</sup> week of August.	Eigenvalues, eigenvectors and the characteristic equation of a matrix.
4	4 <sup>th</sup> week of August	Minimal polynomial of a matrix. Cayley Hamilton theorem and its use in finding the inverse of a matrix
5	1 <sup>st</sup> week of September	Applications of matrices to a system of linear (both homogeneous and non homogeneous) equations. Theorems on consistency of a system of linear equations.
6	2 <sup>nd</sup> week of September	Unitary and Orthogonal Matrices. Diagonalization of a matrices. Bilinear and Quadratic forms.
7	3 <sup>rd</sup> week of September	Relations between the roots and coefficients of general polynomial equation in one variable.
8	4 <sup>th</sup> week of September	Solutions of polynomial equations having conditions on roots
9	1 <sup>st</sup> week of October	Common roots and multiple roots. Transformation of equations
10	2 <sup>nd</sup> week of October	Test, Assignments and short answer type questions
11	3 <sup>rd</sup> week of October	Nature of the roots of an equation. Descartes's rule of signs. Solutions of cubic equations (Cardon's method).
12	4 <sup>th</sup> week of October	Biquadratic equations and their solutions
13	1 <sup>st</sup> week of November	Test
14	2 <sup>nd</sup> week of November	Diwali Break (Assignments)
15	3 <sup>rd</sup> week of November	Test and Revision
16	4 <sup>th</sup> week of November	Test and Revision
17	1 <sup>st</sup> week of December	Practical
18	2 <sup>nd</sup> week of December	Practical



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Name:  
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Dr Yogita Godara  
 Assistant Professor  
 Mathematics  
 B.A. 1<sup>st</sup> Sem. (Calculus)

SN	Weeks	Topic
1	1 <sup>st</sup> week of August	Successive differentiation Leibnitz theorem Maclaurin and Taylor series expansions
2	2 <sup>nd</sup> week of August	Curvature radius of curvature for Cartesian curves parametric curves polar curves.
3	3 <sup>rd</sup> week of August.	Newton's method Radius of curvature for pedal curves. Tangential polar equations. Centre of curvature. Circle of curvature Chord of curvature, evolutes
4	4 <sup>th</sup> week of August	Asymptotes in Cartesian and polar coordinates, intersection of curve and its asymptotes.
5	1 <sup>st</sup> week of September	Tests for concavity and convexity. Points of inflexion. Multiple points.
6	2 <sup>nd</sup> week of September	Cusps, nodes & conjugate points. Type of cusps.
7	3 <sup>rd</sup> week of September	Reduction formulae Rectification intrinsic equations of curve
8	4 <sup>th</sup> week of September	Applications of single integration: Quadrature (area), Sectorial area
9	1 <sup>st</sup> week of October	Area bounded by closed curves Volumes and surfaces of solids of revolution / Applications Only) Theorems of Pappu's and Guilden
10	2 <sup>nd</sup> week of October	Test, Assignments and short answer type questions
11	3 <sup>rd</sup> week of October	Double integrals in cartesian and polar coordinates. area and volume by Double integrals,
12	4 <sup>th</sup> week of October	Triple integrals, Cartesian, cylindrical and spherical coordinates, volume of solids by Triple integrals
13	1 <sup>st</sup> week of November	Test
14	2 <sup>nd</sup> week of November	Diwali Break (Assignments)
15	3 <sup>rd</sup> week of November	Test and Revision
16	4 <sup>th</sup> week of November	Test and Revision
17	1 <sup>st</sup> week of December	Practical
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**Govt. College Mandi Hariya (Ch. Dadri)**  
**Lesson Plan (2023-24 Odd sem.)**

Name:

Dr Yogita Godara

Designation

Assistant Professor

Subject

Mathematics

Class

B.A. 3<sup>rd</sup> Sem. (Differential equations)

SN	Weeks	Topic
1	1 <sup>st</sup> week of August	Geometrical meaning of a differential equation.
2	2 <sup>nd</sup> week of August	Exact differential equations, integrating factors
3	3 <sup>rd</sup> week of August.	Reduction to Exact differential equations, First order higher degree equations solvable for x, y, dy/dx
4	4 <sup>th</sup> week of August	Lagrange's equations, Clairaut's equations. Equation reducible to Clairaut's form.
5	1 <sup>st</sup> week of September	Singular solutions and Test
6	2 <sup>nd</sup> week of September	Orthogonal trajectories: in Cartesian coordinates and polar coordinates.
7	3 <sup>rd</sup> week of September	Self-orthogonal family of curves.
8	4 <sup>th</sup> week of September	Linear differential equations with constant coefficients..
9	1 <sup>st</sup> week of October	Solution by variation of parameters.
10	2 <sup>nd</sup> week of October	Homogeneous linear ordinary differential equations.
11	3 <sup>rd</sup> week of October	Equations reducible to homogeneous linear ordinary differential equations. And Test
12	4 <sup>th</sup> week of October	Partial differential equations: Formation, order and degree, Linear and Non-Linear Partial differential equations of the first order: Complete solution, singular solution, General solution.
13	1 <sup>st</sup> week of November	Solution of Lagrange's linear equations, Charpit's general method of solution.
14	2 <sup>nd</sup> week of November	Diwali Break (Assignments)
15	3 <sup>rd</sup> week of November	Compatible systems of first order equations, Jacobi's method.
16	4 <sup>th</sup> week of November	Linear partial differential equations of second and higher orders, Linear and non-linear homogenous and non-homogenous equations with constant co-efficients,
17	1 <sup>st</sup> week of December	Revision and Practical
18	2 <sup>nd</sup> week of December	Practical

*Yogita*

**Govt. College Mandi Hariya (Ch. Dadri)**  
**Lesson Plan (2023-24 Odd sem.)**

Name:  
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 Class

Dr Yogita Godara  
 Assistant Professor  
 Mathematics  
 B.A. 5<sup>th</sup> Sem. (Statics & Dynamics)  
 (20UMTH504)

SN	Weeks	Topic
1	1 <sup>st</sup> week of August	Vector spaces, subspaces, Sum and Direct sum of subspaces, Linear span, Linearly Independent and dependent subsets of a vector space.
2	2 <sup>nd</sup> week of August	Finitely generated vector space, Existence theorem for basis of a finitely generated vector space, Finite dimensional vector spaces,
3	3 <sup>rd</sup> week of August.	Invariance of the number of elements of bases sets, Dimensions, Quotient space and its dimension
4	4 <sup>th</sup> week of August	Test and Revision
5	1 <sup>st</sup> week of September	Homomorphism and isomorphism of vector spaces, linear transformations and linear forms on vector spaces,
6	2 <sup>nd</sup> week of September	Vector space of all the linear transformations, Dual Spaces, Null Space,
7	3 <sup>rd</sup> week of September	Range space of a linear transformation, Rank and Nullity Theorem(Statement and applications).
8	4 <sup>th</sup> week of September	Test and Revision
9	1 <sup>st</sup> week of October	Algebra of Liner Transformation, Minimal Polynomial of a linear transformation,
10	2 <sup>nd</sup> week of October	Singular and non-singular linear transformations,
11	3 <sup>rd</sup> week of October	Matrix of a linear Transformation, Change of basis,
12	4 <sup>th</sup> week of October	Eigen values and Eigen vectors of linear transformations.
13	1 <sup>st</sup> week of November	Inner product spaces, Cauchy-Schwarz inequality, orthogonal vectors, orthogonal complements
14	2 <sup>nd</sup> week of November	Diwali Break (Assignments)
15	3 <sup>rd</sup> week of November	Orthogonal sets and Basis, Bessel's inequality for finite dimensional vector spaces(Statement only), Gram-Schmidt, Orthogonalization process.
16	4 <sup>th</sup> week of November	Test and Revision
17	1 <sup>st</sup> week of December	Revision and Practical
18	2 <sup>nd</sup> week of December	Practical

*Yogita*

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**Lesson Plan (2023-24 Odd sem.)**

Name:  
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Class

Dr Yogita Godara  
Assistant Professor  
Mathematics  
B.A. 5<sup>th</sup> Sem. (Statics & Dynamics)  
(20UMTH501)

SN	Weeks	Topic
1	1 <sup>st</sup> week of August	Friction, Centre of Gravity. Virtual work.
2	2 <sup>nd</sup> week of August	Centre of Gravity. Virtual work.
3	3 <sup>rd</sup> week of August.	Virtual work.
4	4 <sup>th</sup> week of August	Test and Revision
5	1 <sup>st</sup> week of September	Forces in three dimensions,
6	2 <sup>nd</sup> week of September	Poinsot's central axis.
7	3 <sup>rd</sup> week of September	Wrenches,
8	4 <sup>th</sup> week of September	Null lines and planes
9	1 <sup>st</sup> week of October	Test and Revision
10	2 <sup>nd</sup> week of October	Definitions of Conservative forces and Impulsive forces.
11	3 <sup>rd</sup> week of October	Projectile motion of a particle in a plane. Vector angular velocity.
12	4 <sup>th</sup> week of October	General motion of a rigid body. Central Orbits,
13	1 <sup>st</sup> week of November	Kepler laws of motion.
14	2 <sup>nd</sup> week of November	Diwali Break (Assignments)
15	3 <sup>rd</sup> week of November	Motion of a particle in three dimensions
16	4 <sup>th</sup> week of November	Test and Revision
17	1 <sup>st</sup> week of December	Revision and Practical
18	2 <sup>nd</sup> week of December	Practical

