

GOVT SHIVALIK COLLEGE NAYA NANGAL

TEACHING PLAN (SESSION 20-21)

SUBJECT-MATHEMATICS

PAPER-DIFFERENTIAL EQUATIONS/LINEAR ALGEBRA

TEACHER NAME - PRIYA WADHWA

Class- B.Sc. I

Sem-I

Sr.no	Date	Subject Matter
1	1/09/2020-10/09/2020	DIFFERENTIAL EQUATIONS: First order differential equations : Order and degree of a differential equation, Separable differential equations. Homogeneous differential equations.
2	11/09/2020-20/09/2020	Equations reducible to Homogenous differential equations , Exact differential equations
3	21/092020-30/09/2020	Linear differential equations and equations reducible to linear differential equations. Higher order differential equations : Wronskian,
4	1/10/2020-10/10/2020	Solution of Linear homogeneous and non-homogeneous differential equations of higher order with constant coefficients and with variable coefficients, Method of Variation of Parameters.
5	11/10/2020-22/10/2020	Higher order differential equations : Differential operator method, Linear non-homogeneous differential equations with variable coefficients
6	23/10/2020-31/10/2020	Euler's Cauchy method. Frobenius method, Regular point, ordinary point, Power Series method.
7	1/11/2020-10/11/2020	Bessel and Legendre Equations, Legendre and Bessel functions and their properties , recurrence relations, orthogonality, Rodrigue formulae. MST WILL BE HELD
8	11/11/2020-20/11/2020	LINEAR ALGEBRA: Vector spaces, Examples, Linear Dependence, Linear Combinations Bases and Dimension, Subspaces, Linear transformation.
9	21/11/2020-30/11/2020	Algebra of linear transformations, Matrices as linear transformations, Matrices and change of basis, Kernel and image

GOVT SHIVALIK COLLEGE NAYA NANGAL

TEACHING PLAN (SESSION 20-21)

SUBJECT-MATHEMATICS

PAPER-PARTIAL DIFFERENTIAL EQUATIONS/ANALYTIC GEOMETRY

TEACHER NAME - PRIYA WADHWA

CLASS B.Sc. I

Sem-II

Sr.no	Date	Subject Matter
1	15/1/2021-25/01/2021	Partial differential equations : Partial differential equation of first order, Lagrange's solution,, Integral surfaces passing through a given curve,
2	26/01/2021-05/02/2021	surfaces orthogonal to a given system of surfaces, Partial differential equation of first order but of any degree , Charpit's general method of solution.
3	06/02/2021-15/02/2021	Partial differential equations of second and higher order : Partial differential equations of the second order and their classification into hyperbolic
4	16/02/2021-28/02/2021	elliptic and parabolic types, canonical forms.
5	1/03/2021-15/03/2021	Homogeneous and non-homogeneous partial differential equations with constant coefficients. One dimension Wave and Heat equations
6	16/03/2021-30/03/2021	Two dimensional Laplace equation by separation of variable method and D'Alembert's solution of wave equation.
7	01/04/2021-15/04/2021	Sphere: Section of a sphere by a plane. sphere through a given circle. Intersection of a line and sphere, tangent line, tangent plane, angle of intersection of two spheres and condition of orthogonality. MST WILL BE HELD
8	16/04/2021-30/04/2021	Cone: general second degree equation of a cone, its intersection with a plane and with a line, enveloping cone, right circular cone, the cone $ax^2 + by^2 + cz^2 = 0$
9	01/05/2021-31/05/2021	Cylinder: enveloping cylinder, right circular cylinder

GOVT SHIVALIK COLLEGE NAYA NANGAL

TEACHING PLAN (SESSION 20-21)

SUBJECT-MATHEMATICS

PAPER-ANALYSIS I/STATICS

TEACHER NAME - PRIYA WADHWA

CLASS- B.Sc- II

SEM - 03

Sr.no	Date	Subject Matter
1	1/09/2020-10/09/2020	ANALYSIS: Definition of a sequence, Bounded and Monotonic sequences, Convergent sequence, Cauchy sequences, Cauchy's Convergence Criterion.
2	11/09/2020-20/09/2020	Theorems on limits of sequences. Subsequence, Sequential continuity, Definition of a series, Test's of convergence (Without proofs) Comparison test.
3	21/09/2020-30/09/2020	Cauchy's integral Ratio tests. Raabe's, Logarithmic, Gauss Test, Cauchy's root test, Alternating series. Leibnitz's test. Absolute and conditional convergence.
4	1/10/2020-10/10/2020	Definition and existence of Riemann integrals. Properties of integrals. Integrability of continuous and monotonic functions.
5	11/10/2020-22/10/2020	The fundamental theorem of integral calculus. Mean value theorems of integral calculus. Functions of bounded variations and rectifiable curves; properties of monotonic functions.
6	23/10/2020-31/10/2020	Functions of Bounded Variation, Total variation, Additive property of total variation.
7	1/11/2020-10/11/2020	Total Variation on $[a, x]$ as a function of x , functions of bounded variation expressed as the difference of increasing functions, continuous functions of bounded variation, rectifiable curves and arc MST WILL BE HELD
8	11/11/2020-20/11/2020	STATICS: Equilibrium of two concurrent forces, equilibrium condition for any number of coplanar concurrent forces, Lami's theorem. $\lambda - \mu$ theorem.
9	21/11/2020-30/11/2020	resultant of a force and a couple. Equilibrium conditions for coplanar non-concurrent forces. Definition and nature of friction, laws of friction, Centre of gravity.

GOVT SHIVALIK COLLEGE NAYA NANGAL

TEACHING PLAN (Session- 2020-21)

SUBJECT-MATHEMATICS

PAPER – ANALYSIS I/DYNAMICS

Teacher Name – Priya Wadhwa

Class- B.sc- II

Sem-04

Sr.no	Date	Subject Matter
1	15/1/2021- 25/01/2021	ANALYSIS: Concept of Point-wise and Uniform convergence of sequence of functions and series of functions with special reference to power Series.
2	26/01/2021- 5/02/2021	Statement of Weierstrass M-Tests for Uniform convergence of sequence of functions and of series of functions. Simple applications
3	06/02/2021- 15/02/2021	Determination of Radius of convergence of power series. Term by term integration and Term by term differentiation of power Series.
4	16/02/2021- 28/02/2021	Scalar and vector fields, differentiation of vectors, velocity and acceleration. Vector differential operators: Del, Gradient.
5	1/03/2021- 15/03/2021	Divergence and Curl, their physical interpretations. Formulae involving Del applied to point functions and their products. Line, surface and volume integrals.
6	16/03/2021- 30/03/2021	Stokes Theorem and the Divergence Theorem. Applications of Green's, Stoke's and Divergence theorem.
7	01/04/2021- 15/04/2021	Greens Theorem in the Plane Parameterized Surface. MST WILL BE HELD
8	16/04/2021- 30/04/2021	Projectile, Work, Power, conservative fields and potential energy, work done against gravity, potential energy of a gravitational field.
9	01/05/2021- 31/05/2021	Relative motion, relative displacement, velocity and acceleration, motion relative to a rotating frame of reference. Linear momentum, angular momentum, conservation of angular momentum, impulsive forces, principle of impulse

		and momentum.
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GOVT SHIVALIK COLLEGE NAYA NANGAL

TEACHING PLAN (SESSION 20-21)

SUBJECT-MATHEMATICS

PAPER-ALGEBRA/DISCRETE MATHEMATICS

TEACHER NAME PRIYA WADHWA

CLASS B.Sc III

Sem-05

Sr.no	Date	Subject Matter
1	1/09/2020-10/09/2020	ALGEBRA: Group: definition, examples, subgroups, counting Principle, Langrange's theorem
2	11/09/2020-20/09/2020	Normal subgroups, Quotient groups, Homomorphisms.
3	21/092020-30/09/2020	Fundamental theorem of homomorphism and related theorems. Cyclic Groups.
4	1/10/2020-10/10/2020	Rings: Definition and examples of Rings, Elementary properties of Rings.
5	11/10/2020-20/10/2020	Sub-rings, Homomorphism, ideals and Quotient Rings
6	21/10/2020 30/10/20	Field of Quotient of Integral domain,division rings
7	1/11/2020-10/11/2020	Euclidean Rings, Principal ideals, examples. Discrete Mathematics : Graphs and Planar Graphs-Basic Terminology. MST WILL BE HELD
8	11/11/2020-20/11/2020	Multigraphs. Weighted Graphs. Paths and Circuits Shortest paths. Eulerian Paths and Circuits. Travelling Salesman Problem.
9	21/11/2020-30/11/2020	Definition and Examples of Finite State Machines-Equivalent Machines and Finite State Machines as Language Recognizers.

GOVT SHIVALIK COLLEGE NAYA NANGAL

TEACHING PLAN (SESSION 20-21)

SUBJECT-MATHEMATICS

PAPER-ALGEBRAII/DISCRETE MATHEMATICS II

TEACHER NAME PRIYA WADHWA

CLASS B.Sc III

Sem-06

Sr.no	Date	Subject Matter
1	15/1/2021- 25/01/2021	ALGEBRA: Vector spaces, Examples, Linear Dependence, Linear Combinations.
2	26/01/2021- 5/02/2021	Bases and Dimension, Subspaces, Quotient spaces , Direct Sum of vector spaces.
3	06/02/2021- 15/02/2021	Direct Sum of vector spaces, Dimension of a direct sum, Dual of a vector space.
4	16/02/2021- 28/02/2021	Matrices and change of basis. Linear transformation, Algebra of linear transformations.
5	1/03/2021- 15/03/2021	Matrices as linear mappings, Kernal and image, Rank and Nullity theorem, Singular and non-singular linear mappings.
6	16/03/2021- 30/03/2021	Isomorphism, Composition of linear mappings, Polynomials and linear operators.
7	01/04/2021- 15/04/2021	Square matrices as linear operators, matrix representation of a linear operator, Change of basis. characteristic and minimal polynomial for linear operator. MST WILL BE HELD
8	16/04/2021- 30/04/2021	Discrete Mathematics : Brief review of Groups and Rings. Boolean Algebras-Lattices and Algebraic Structures. Duality. Distributive and Complemented Lattices.
9	01/05/2021- 31/05/2021	Boolean Lattices and Boolean Algebras. Boolean Functions and Expressions. Propositional Calculus. Design and Implementation of Digital Networks. Switching circuit.