Lesson Plan 2021-2022

FGM Government College, Adampur

Lesson Plan for Even Semester April-May-2022 & Upto 14 June 2022

Department: Mathematics

Teacher: Ms. Priya **Class:** B.Sc - II (NM+CS)
Subject: Mechanics - I (Theory)

Sr. No.	Description of Chapters/Topics	Expected Duration	Assignment/Test
1.	forces in two dimension (co-planar), triangle law and polygon law of forces, Lami's Theorem, Resultant of concurrent and coplanar forces, conditions of equilibrium of concurrent forces. Parallel forces : like parallel and unequal forces, resultant and centre of parallel forces, Moments and couples.	1st April 2022 to 20th April 2022	1st assignment in 3rd week of April.
2.	Forces in three dimensions, Poinsot's Central axis, condition for reduction of a general system of forces in space to a single force, Equations of central axis, Wrenches : Definition and basic laws, resultant wrench of two wrenches, locus of the central axis of two wrenches	21st April 2022 to 10 May 2022	Test in 1st Week of May.
3.	Velocity and Acc. along a plane curve, component of velocity & acc. in radial, transverse, tangential and normal direction, Relative velocity and Acceleration, Newton's laws of motion, Kepler's Law of planetary motion, Equivalence of Kepler's Law & Newton's Laws, motion under inverse square law.	10 May, 2022 to 31 May, 2022	Rivision Test in Last Week of May.
4.	Central Orbits, Null lines and Null planes, Simple Harmonic Motion	01 June 2022 to 14 June 2022	Rivision, Problem Discussion & Test

Priya

CLASS:-B.A./B.SC.-I **PAPER:- Ordinary Differential Equations**

SEM.:- II **Submitted by: Ms. Suman Jasta**

SR. NO.	MONTHS	WEEK	TOPICS
1.	April	1st week	Geometrical meaning of a differential equation, Exact differential equations. Integrating factors, First order higher degree equations solvable for x, y, p. Lagrange's equations.
		2nd week	Clairaut's equations, Equations reducible to Clairaut's form. Singular solutions, Orthogonal trajectories in Cartesian coordinates and polar coordinates.
		3rd week	Self-orthogonal family of curves, Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations, Equations reducible to homogeneous.
		Last week	Linear differential equations of second order, Reduction to normal form. Transformation of the equation by changing the dependent variable/independent variable.
2.	May	1st week	Solution of simultaneous differential equations involving operators x(d/dx) etc. Simultaneous equation of the form dx/P = dy/Q =dz/R.
		2nd week	Total differential equations, Condition for Pdx + Qdy +Rdz = 0 to be exact.
		3rd week	General method of solving Pdx + Qdy + Rdz = 0 by taking one variable constant, Method of auxiliary equations.
		Last week	Laplace Transformations. Differentiation and Integration of Laplace transform
3.	June	1st week	Convolution Theorem, Inverse Laplace Transform, Laplace transform of derivatives, Solution of O.D.E using Laplace transform.
		2nd week	Revision.

SUMAN JASTA
Maths Dept
F.G.M Govt College
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Lesson Plan 2021-22

FGM Government College, Adampur

Unit wise Lesson Plan for Even Semester from April 1, 2022 to June 15, 2022

Department: Mathematics

Teacher: Dr. Renu Yadav **Class: B.Sc.I /B.A.I , 2nd Sem.**

Subject: Vector Calculus & Geometry

Sr. No.	Description of Chapters/Topics	Expected Duration
1	Scalar and vector product of three vectors, product of four vectors. Reciprocal vectors. Vector differentiation. Scalar Valued point functions, vector valued point functions, derivative along a curve, directional derivatives. Gradient of a scalar point function, geometrical interpretation of grad Φ. Divergence and curl of vector point function. Gradient, divergence and curl of sums and product and their related vector identities. Laplacian operator. Vector integration: Indefinite Integral, Definite Integral, Standard results of Integration.	April 2022
2	Line integral, Surface integral, Volume integral. Gauss Divergence Theorem, Green Theorem, Stoke's Theorem. General equation of second degree. Tracing of conics. System of conics, confocal conics. Tangent at any point to the conic, chord of contact, pole of line to the conic, director circle of conic. Polar equation of a conic, tangent and normal to the conic. Sphere: Plane section of a sphere. Sphere through a given circle.	May, 2022
3	Intersection of two spheres, radical plane of two spheres. Co-axial system of spheres. Cones: Right circular cone. Enveloping cone and reciprocal cone. Cylinder: Right circular cylinder and enveloping cylinder.	June, 2022

Lesson Plan

Name of Assistant Professor: Mr. Mandeep

Class: B.A 2nd (4th Sem)

Subject: Mechanics-I

Month	Topics Covered
April	Forces in two dimension (co-planner), triangle law and polygon law of forces, Lami's theorem, resultant of concurrent and coplanar forces, conditions of equilibrium of concurrent forces. Parallel forces: like parallel and unequal unlike parallel forces, resultant and centre of parallel forces; Moments and Couples. Forces in three dimensions, Poinsot's central axis, conditions for the reduction of a general system of forces in space to a single force, equations of central axis.
May	Wrenches: Definition and basic laws, resultant wrench of two wrenches, locus of the central axis of two wrenches; Null lines and null planes. Velocity and acceleration along a plane curve, component of velocity and acceleration in radial, transverse, tangential and normal directions, Relative velocity and acceleration. Simple harmonic motion (SHM). **Assignment 1,2 & Unit Test**
Up to 15 June	Newton's laws of motion, Central Orbits, differential equations of Central Orbits in polar form and in pedal form, areal velocity, elliptic, hyperbolic and parabolic orbit, velocity in a circle, apse and apsidal distances: definition and laws, velocity from infinity, Kepler's laws of planetary motion, equivalence of Kepler's laws of planetary motion and Newton's law of gravitation, motion under the inverse square law.

20/05/22

Lesson Plan

Name of Assistant Professor: Mr. Mandeep

Class: B.A & B.Sc 3rd (6th Sem)

Subject: Mechanics-II

Month	Topics Covered
April	Analytical conditions of equilibrium of co-planar forces: Equilibrium of three forces, conditions of equilibrium, trigonometric theorem's, conditions of equilibrium of co-planar forces (First, Second and Third form); Friction: Definition of friction and basic laws, problems based on equilibrium of rods and ladders; Centre of gravity: Basic concepts and definitions, centre of gravity of a uniform rod, a thin uniform lamina in the form of a parallelogram, a thin uniform triangular lamina, three uniform rods forming a triangle, a uniform quadrilateral lamina, lamina in the form of a trapezium, centre of gravity of a body by integration..
May	Motion of a particle attached to an elastic string, Hooke's law, motion of horizontal and vertical elastic strings, Definition of work, Power and Energy, work done by a variable force, work done in stretching an elastic string, principle of work and energy, conservative system of forces, principle of conservation of energy, impulse of a constant force and a variable force. Motion of a particle on smooth curves, motion on the outside and inside of a smooth vertical circle, cycloidal motion, motion on a rough curve under gravity. **Assignment & Unit Test**
Up to 15 June	Projectile motion of a particle in a plane, velocity at any point of the trajectory, directions of projection for a particle, range and time of flight on an inclined plane, directions of projection for a given velocity and a given range; range and time of fight down an inclined plane.

20/05/22

Lesson Plan - 2021-22 (Even Sem)

F.G.M. Govt. College, Adampur

Department : Mathematics

Class - B.A II (IV Sem)

Teacher : Geeta Rani

Paper : Partial Differential Equation & Special Function.

S.No.	Month	Topics Covered
1	April. 2022	Formation of P.D.E, Linear and non-linear P.D.E of first order Complete solution, Singular solution, general solution. Solution of Lagranges linear equation, Charpits general method of solution, Compatible system of first order equation, Jacobi's method Liner P.D.E of 2nd and higher order P.D.E with variable Co-efficients reducible to const. coeffici. Monge's method for P.D.E of 2nd order. Characteristics of 2nd order P.D.E and Cauchy's Problem.
2.	May 2022	Classification of linear P.D.E of 2nd order, hyperbolic, parabolic and elliptic type., Reduction of P.D.E to canonical forms and their solution Power series method, Bessel equation and its solution, Bessel function, orthogonality of Bessel function. Legendre d.E and ~~ist~~ its solution, Legendre function and their properties. Recurrence Relation and Generation function. + Assignments (2) and test
3	June-2022	Method of Seperation of variables Wave, heat and Laplace equation.

Geeta Rani
Assistant Professor
Mathematics

Cont.
20-05-2022

Lesson Plan 2021-22

FGM Government College, Adampur

Month Wise Lesson Plan for Even Semester April –June 2022

Department: Mathematics

Teacher: **Dr. Seema Rani** **Class: B. Sc. II**

Subject: **Partial Differential Equations & Special Functions**

Sr. No.	Description of Chapters/Topics	Expected Duration	Assignment/Test
1	Partial differential equations: Formation, order and degree, Linear and Non-Linear Partial differential equations of the first order: Complete solution, singular solution, General solution, Solution of Lagrange's linear equations, Charpit's general method of solution. Compatible systems of first order equations, Jacobi's method. Linear partial differential equations of second and higher orders, Linear and non-linear homogeneous and nonhomogeneous equations with constant coefficients, Partial differential equation with variable coefficients reducible to equations with constant coefficients, their complimentary functions and particular integrals, Equations reducible to linear equations with constant coefficients. Method of separation of variables: Solution of Laplace's equation, Wave equation (one and two dimensions), Diffusion (Heat) equation (one and two dimension) in Cartesian Co-ordinate system.	1 April to 30 April	1st assignment in the last week
2	Classification of linear partial differential equations of second order, hyperbolic, parabolic and elliptic types, Reduction of second order linear partial differential equations to Canonical (Normal) forms and their solutions, Solution of linear hyperbolic equations, Monge's method for partial differential equations of second order, Cauchy's problem for second order partial differential equations, Characteristic equations and characteristic curves of second order partial differential equation Series solution of differential equations – Power series method. Bessel equation and its solution: Bessel functions and their properties-Convergence, recurrence, Relations and generating functions, Orthogonality of Bessel functions. Legendre differential equation and its solution:	1 May to 31 May	1st Minor test
3	Legendre differential equation and its solution: Legendre function and its properties-Recurrence Relations. Revision and Test	1 June to 14 June	Class test

Seema

Lesson Plan 2021-22

FGM Government College, Adampur

Month Wise Lesson Plan for Even Semester April –June 2022

Department: Mathematics

Teacher: **Dr. Seema Rani** **Class: BA/ B. Sc. III**

Subject: **Real and Complex Analysis**

Sr. No.	Description of Chapters/Topics	Expected Duration	Assignment/Test
1	Improper integrals and their convergence. Comparison tests, Abel's and Dirichlet's tests, Frullani's integral.Integral as a function of a parameter, Continuity.Differentiability and integrability of an integral of a function of a parameter. Definition and examples of metric spaces, Neighbourhoods, Limit points, Interior points. Open and closed sets, Closure and interior, Boundary points.Subspace of a metric space, Equivalent metrices, Cauchy sequences, Completeness.Cantor's intersection theorem, Baire's category theorem, Contraction Principle. Differentiability and integrability of an integral of a function of a parameter.	1 April to 30 April	1st assignment in the last week
2	Definition and examples of metric spaces, Neighbourhoods, Limit points, Interior points. Open and closed sets, Closure and interior, Boundary points.Subspace of a metric space, Equivalent metrices, Cauchy sequences, Completeness. Continuous functions, uniform continuity.Compactness for metric spaces, Sequential compactness. Bolzano-Weierstrass property, Total boundedness. Topology of Complex Numbers, Trigonometric,exponential, logarithmic functions. Extemnded complex plane, Stereographic projection of complex numbers.	1 May to 30 May	1st Minor test
3	Continuity and differentiability of complex functions. Analytic functions, C-R Equations,Harmonic Conjugates, Harmonic Functions. Construction of analytic Functions Rivision And Test	1 June to 14 June	Class test

Seema

Lesson Plan 2021-22

FGM Government College, Adampur

Unit wise Lesson Plan for Even Semester April-2022

Department: Mathematics

Teacher: Mukesh Kumari **Class:** B.A\B.Sc III

Subject: Linear Algebra

Sr. No.	Description of Chapters/Topics	Expected Duration	Assignment/Test
1	Vector Spaces and Subspaces. Problems related to vector space and Examples of vector space, Basis and Dimension, Linear Span, Finitely generated vector space, Existence thm for basis of finitely generated vector space. Quotient Space. Homomorphism and Isomorphism of vector space	From 1st April to 30th April.	1st Assignment in the last week of April.
2.	Linear transformations and linear proems on vector spaces, vector space of all linear transformation, Null Space, Range Space, Algebra of linear Transformation Matrix of Linear Transformation	From 1st May to 31th May.	Unit Test
3.	Dual Space, Eigen values and Eigen vectors, Inner Product Spaces, Linear operators on Inner Product Spaces Revision and Test	1st June to 14 June	Class Test

Lesson Plan 2021-22

FGM Government College, Adampur

Unit wise Lesson Plan for Even Semester April-2022

Department: Mathematics

Teacher: Mukesh Kumari **Class:** B.A\B.Sc III

Subject: Solid Geometry

Sr. No.	Description of Chapters/Topics	Expected Duration	Assignment/Test
1	Central conicoids: Eqn of tangent plane, Director Sphere, Normal to the conicoids. Polar Plane of a point, Enveloping Cone of a conicoid Enveloping Cylinder of	From 1st April to 30th April	Assignment in the last week of April
2.	Paraboloids: Circular Section and its Problems Reduction of second degree confocal conicoid	From 1st May to 31th May	Unit Test
3.	Plane Sections of conicoids, Generating lines. Rivision and Test	From 1st June to 14th June	class Test