Lesson Plan(2021-22) Even Semester

Faculty-Dr. Harsha

Subject-Ordinary Dierential Equations and Laplace Transorms

Class-B.A. I Lecture 3rd

Date	Topics
1/4/2022-15/4/2022	Eaxact Diff. Equations, Equations of First order but not of first degree
16/4/2022-30/04/2022	Orthogonal trajectories, linear diff. equations with constant coefficients
1/5/2022-15/5/2022	Homogeneous linear diff equations, linear diff. equations of second order
16/5/2022-31/05/2022	ordinary simultaneous diff equations, laplace transorms
1/6/2022-15/6/2022	inverse laplace transforms
16/6/2022-30/06/2022	solutions of diff. equations with laplace transforms
July	Revision , tests, assignments

Lesson Plan(2021-22) Even Semester

Faculty-Dr. Harsha

Subject-Vector Calculus and Solid Geometry

Class-B.A. I Lecture 4th

Date	Topics
1/4/2022-15/4/2022	Multiple Product of vectors, differentiation of vectors
16/4/2022-30/04/2022	Gradient , Divergence and Curl
1/5/2022-15/5/2022	Vector Integration, Guass, Green, Stokes Theorem
16/5/2022-31/05/2022	General Equation of second degree, Tracing of conics,
1/6/2022-15/6/2022	System of conics, Confocal conics
16/6/2022-30/06/2022	polar equation of conics, sphere, cone, cylinder
july	Revision, tests, assignments

Lesson Plan

Session 2021-22

Name of Extension Lecturer : Ms. Deepal

Class : B.Sc./B.A-III **Subject: Mechanics-II**

Month	Topics Covered
April	**UNIT-I** Analytical conditions of equilibrium of co planners forced: Equilibrium of three forces, conditions of equilibrium, trigonometric theorems, conditions of equilibrium of co -planner forces; Friction: problem based on equilibrium of rods and ladders; centre of gravity: basic concept , centre of gravity of uniform rod, a thin uniform lamina , centre of gravity of a body by integration.
May	**Unit – II** Motion of a particle attached to an elastic string, Hole's law, motion of horizontal and vertical elastic strings, Work , power , 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 forces and a variable. **Unit – III** Motion of a particle on smooth curves, motion on the outside and inside of a smooth vertical circle, cycloid all motion, motion on a rough curve under gravity.
June	**Unit –IV** 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 flight down an inclined plane.
July	**Revision**

Lesson Plan

Session 2021-22

Name of Teacher :- Dr. Sanjay Kumar

Class : B.Sc.-I (NM)

Subject: Ordinary Differential Equations & LaplaceTransforms (CML-207)

Month	Topics Covered
April	**UNIT-I** Geometrical meaning of a differential equation.Exact differential equations, integrating factors. First order higher degree equations solvable for x,y,p Lagrange's equations, Clairaut's equations. Equation reducible to Clairaut's form.Singular solutions.
May	**Unit – II** Orthogonal trajectories: in Cartesian coordinates and Polar coordinates. Self orthogonal family of curves.Linear differential equations with constant coefficients.Homogeneous linear ordinary differential equations. Equations reducible to homogeneous. **Unit – III** Linear differential equations of second order.Reduction to normal form.Transformation of the equation by changing the dependent variable/ the independent variable.Solution by operators of non-homogeneous linear differential equations.Reduction of order of a differential equation.Method of variations of parameters.Ordinary simultaneous differential equations.Solution of simultaneous differential equations.
June	**Unit –IV** Laplace Transforms –Existence theorem for Laplace transforms, Linearity of the Laplace transforms, Shifting theorems, Laplace transforms of derivatives and integrals, Differentiation and integration of Laplace transforms, Convolution theorem, Inverse Laplace transforms, convolution theorem, Inverse Laplace transforms of derivatives,solution of ordinary differential equations using Laplace transform. ntersection of two spheres, Cones. Right circular cone.Cylinder: Right circular cylinder.
July	**Revision**

Lesson Plan

Session 2021-22

Name of Teacher :- Dr. Sanjay Kumar

Class : B.Sc.-I (NM) **Subject: Vector Calculus & Geometry(CML-206)**

Month	Topics Covered
April	**UNIT-I** 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 .Divergence and curl of vector point function.
May	**Unit – II** Gradient, divergence and curl of sums and product and their related vector identities.Laplacian operator.Orthogonal curvilinear coordinates Conditions for orthogonality fundamental triad of mutually orthogonal unit vectors. Gradient, Divergence, Curl and Laplacian operators in terms of orthogonal curvilinear coordinates, Cylindrical co-ordinates and Spherical co-ordinates. **Unit – III** Vector integration: Indefinite Integral, Definite Integral,Standard results of Integration.Line integral, Surface integral, Volume integral. Gauss Divergence Theorem, Divergence Theorem in Cartesian Co-ordinates, Green Theorem, Stoke's Theorem(Relation between line Integral and Surface Integral). Stoke's Theorem in Cartesian form. Green's Theorem in Plane as special case of Stoke's Theorem, problems based on these theorems. 79
June	**Unit –IV** Geometry:General equation of second degree. Tracing of 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.
July	**Revision**

Lesson Plan

Session 2021- 22

Name of Extension Lecturer : Anil Kumar Budania

Class : B.Sc.- I (CS)

Subject: Vector Calculus & Geometry(CML- 206)

Month	Topics Covered
April	**UNIT- I** 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 .Divergence and curl of vector point function.
May	**Unit – II** Gradient, divergence and curl of sums and product and their related vector identities.Laplacian operator.Orthogonal curvilinear coordinates Conditions for orthogonality fundamental triad of mutually orthogonal unit vectors. Gradient, Divergence, Curl and Laplacian operators in terms of orthogonal curvilinear coordinates, Cylindrical co- ordinates and Spherical co- ordinates. **Unit – III** Vector integration: Indefinite Integral, Definite Integral,Standard results of Integration.Line integral, Surface integral, Volume integral. Gauss Divergence Theorem, Divergence Theorem in Cartesian Co- ordinates, Green Theorem, Stoke's Theorem(Relation between line Integral and Surface Integral). Stoke's Theorem in Cartesian form. Green's Theorem in Plane as special case of Stoke's Theorem, problems based on these theorems. 79
June	**Unit –IV** Geometry:General equation of second degree. Tracing of 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.
July	**Revision**

Lesson Plan

Session 2021- 22

Name of Extension Lecturer : Anil Kumar Budania

Class : B.Sc.- I (CS)

Subject: Ordinary Differential Equations & LaplaceTransforms (CML- 207)

Month	Topics Covered
April	**UNIT- I** Geometrical meaning of a differential equation.Exact differential equations, integrating factors. First order higher degree equations solvable for x,y,p Lagrange's equations, Clairaut's equations. Equation reducible to Clairaut's form.Singular solutions.
May	**Unit – II** Orthogonal trajectories: in Cartesian coordinates and Polar coordinates. Self orthogonal family of curves.Linear differential equations with constant coefficients.Homogeneous linear ordinary differential equations. Equations reducible to homogeneous. **Unit – III** Linear differential equations of second order.Reduction to normal form.Transformation of the equation by changing the dependent variable/ the independent variable.Solution by operators of non- homogeneous linear differential equations.Reduction of order of a differential equation.Method of variations of parameters.Ordinary simultaneous differential equations.Solution of simultaneous differential equations.
June	**Unit –IV** Laplace Transforms –Existence theorem for Laplace transforms, Linearity of the Laplace transforms, Shifting theorems, Laplace transforms of derivatives and integrals, Differentiation and integration of Laplace transforms, Convolution theorem, Inverse Laplace transforms, convolution theorem, Inverse Laplace transforms of derivatives,solution of ordinary differential equations using Laplace transform. ntersection of two spheres, Cones. Right circular cone.Cylinder: Right circular cylinder.
July	**Revision**

Lesson Plan(2021-22)Even Sem.

FACULTY- MS. Sonal

Subject-Partial Diff. Eq. and Special Functions

Class-B.A.II,B.Sc.II(C.S and N.M.)

Date	Topics
1/4/2022-15/4/2022	Formation of partial diff. eq. , first order linear partial diff. eq.
16/4/2022-30/04/2022	First order non-linear partial diff. eq., linear partial diff. eq. o second and higher orders
1/5/2022-15/5/2022	Partial diff. eq. with variable coeffcients reducible to equations with constant coeffcients, classification and canonical forms of second order Linear partial diff. eq.
16/5/2022-31/5/2022	Monge's method for partial diff. eq. of second order, characteristics of second order partial diff. eq. and Cauchy's problem
1/6/2022-15/6/2022	Method of separation of variables : Wave,Heat and Lapalce equations, Power series
16/6/2022-30/6/2022	Bessel's equation and bessel's function, Legendre's equation
1/7/2022-15/7/2022	Revision

Lesson Plan(2021-22)Even Sem.

FACULTY- MS. Sonal

Subject-Solid Geometry

Class-B.A.III,B.Sc.III(C.S and N.M.)

Date	Topics
1/4/2022-15/4/2022	Central conicoids:Equation of tangent plane,Director Sphere
16/4/2022-30/04/2022	Normal to conicoids,polar plane of a point
1/5/2022-15/5/2022	Enveloping cone of a conicoid
16/5/2022-31/5/2022	Enveloping cylinder of a conicoid
1/6/2022-15/6/2022	Paraboloids:circular section,plane sections of conicoid
16/6/2022-30/6/2022	Generating lines,confocal conicoid,Reduction of second degree equations
1/7/2022-15/7/2022	Revision

Lesson Plan
Session 2021-22 (Even Sem)

Name of Teacher: Dr. Renu Sheoran
Subject: Mechanic-I
Class: B.Sc. II /B.A. II

Sr. No.	Topic Covered	Date & Month
1	Forces Acting at a Point	1/4/2022- 15/4/2022
2	Parallel Forces	
3	Moments	16/4/2022- 30/4/2022
4	Couples	
5	Forces in Three Dimensions	1/5/2022- 15/5/2022
6	Wrenches	
7	Null Lines and Null Planes	16/5/2022- 31/5/2022
8	Motion Along a Plane Curve	
9	Relative Motion	1/6/2022- 15/6/2022
10	Simple Harmonic Motion	
11	Newton's Laws of Motion	16/6/2022- 30/6/2022
12	Central Orbits	
13	Kepler's laws of Planetary Motion	
14	Revision	1/7/2022- Onward

Lesson Plan(2021-22) Even Semester

Faculty-Aarti kadian

Subject-Linear algebra

Class-B.A.III,B.Sc III(N.M+C.S)

Date	Topics
1/4/2022-15/4/2022	Vector spaces and its subspaces
16/4/2022-30/04/2022	Basis and Dimension, Quotient space
1/5/2022-15/5/2022	Linear transformation, Rank and Nullity
16/5/2022-31/05/2022	Algebra of linear transformation
1/6/2022-15/6/2022	Matrix of a linear transformation, dual space
16/6/2022-30/06/2022	Eigen values and Eigen vectors, inner product spaces
1/7/2022-15/7/2022	Linear operators on iner product spaces