

Lesson Plan (2021-2022)

Name: Dr. Sowita Gulia
Class: BSc/BA-1st year

Subject: Mathematics
Semester: 2nd

Paper Name: Vector Calculus

March 21 to March 31, 2022

Introduction to Vector product & Scalar product, Product of four vectors, Reciprocal vectors. Vector differentiation
Examples & Exercises of ch. I

April 01 to April 30, 2022

Vector pt function, Vector valued point function.
Derivative along a curve & Directional Derivative
Chapter - 2 with exercise & examples. Complete Vector Diff.
Test in mid months. Chapter - 3 (Introduction about
Gradient, divergence & Curl). Their geometrical Interpretation
of grad, div. & curl. Laplacian operators
Examples & exercises of ch-3. Test in last of months.

May 01 to May 30, 2022

Revision of Unit-1 & U-2. Start U-3 (Revision)
Orthogonal Curvilinear Co-ordinates. Conditions for
orthogonality. Fundamental triad of mutually ortho-
-gonal unit vectors. Gradient Divergence, Curl
& Laplace operators, Cylindrical co-ordinates &
Spherical co-ordinates.

Test in mid & last of the month. Revisions
Prepare the assignments.

BA/BSc-Ist / Vector Calculus (Sem^r 2nd)

June 01 to June 20, 2022

Introduction about Vector Integration; Line Integral, Surface Integral, Volume Integral.

Theorems of Gauss, Green \leftarrow Stokes \leftarrow problems based on these theorems. All examples & exercise
Revision & Test.

Lesson Plan (2021-2022)

Name: Dr. Santa Gulia

Subject: Mathematics

Class: BSc/BA - 1st year

Semester: 2nd

Paper Name: Ordinary Differential Equations

March 21 to March 31, 2022

Introduction about Unit-I, Geometrical meaning of a differential equation. Exact differential equations.

Integrating Factors first order higher degree eq. solvable for x, y, p . Lagrange's eqⁿ. Clairaut's equations, examples & Exercises.

April 01 to April 30, 2022

Equation reducible to Clairaut's form. Singular Solution. Revision of Unit-1. Start Unit-2. Introduction about

Orthogonal trajectories in Cartesian co-ordinates & polar Co-ordinates. Self-orthogonal family of curves. Linear differential equation with constant coefficients. Homogeneous linear ordinary differential equation. Equation reducible to homogeneous. Practice of all examples & exercises. Test in mid & last of this month.

May 01 to May 31, 2022

Start Unit-3 (Introduction about linear diffⁿ eqⁿ of 2nd order Reduction to normal form. Transformation of the equation by changing the dependent variable / independent variable. Solution by operators of non-homogeneous linear diffⁿ eqⁿ. Reduction of order of a diff. eqⁿ. Method of Variation of parameters. Method of Undetermined Coeff

Solve all examples & exercise. Test in mid & last of this month. Make assignment of this book.

June 01 to June 20, 22.

Start Unit - 4, Ordinary simultaneous eqⁿ. Solⁿ. of 2nd differential eqⁿ. involving operators x (d/dx) or t (d/dt)

Simultaneous eqⁿ of the form $dx/p = dy/q = dz/r$.

Total diff. eqⁿ. Condition for $Pdx + Qdy + Rdz = 0$ to be exact. Method of auxiliary eqⁿ.

Solve all examples & exercise of above related topic.

Test of above in mid of this time period.

Lesson Plan (2021-2022)

Business

Name : Dr. Samta Gulia

Subject : Mathematics - II

Class : B.Sc. - IInd year

Semester ~~4th~~

Paper Name : Special Functions and Integral Transforms

March 21 to March 31, 2022

Series solution of differential equations : Power series method, Definitions of Beta and Gamma functions, Bessel equation and its solution : Bessel functions and their properties - Convergence. Practice of all examples and exercise.

April 01 to April 30, 2022

Recurrence relations and generating functions, Orthogonality of Bessel functions. Legendre and Hermite differential equations and their solutions : Legendre and Hermite's functions and their properties, Recurrence relations and generating functions. Orthogonality of Legendre and Hermite polynomials, Rodrigues' Formula for Legendre and Hermite polynomials, Laplace Integral Representation of Legendre polynomial. Practice of all examples and exercises.

May 01 to May 31, 2022

Laplace Transforms : Existence theorem for Laplace transform, Linearity of the Laplace transform, 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 and integrals. Practice of all examples and exercises.

June 01 to 20 June

Solution of ordinary differential equations using Laplace transform. Fourier transforms: Linearity property, Shifting, Modulation, Convolution theorem, Fourier transform of derivatives, Relations between Fourier transform and Laplace transform, Parseval's identity for Fourier transforms, Solution of differential equations using Fourier transforms. Practice of all the examples and exercise.

Name: Dr. Samta Gulia

Subject: Mathematics

Class: BSc/BA-IIIrd yearSemester: 6th

Paper Name: Dynamics

March 21 to March 31, 2022

Introduction about Unit-I, Velocity along a plane curve
Acceleration along radial, transverse, tangential
and normal directions. Relative velocity and
acceleration. Simple harmonic motion. Elastic
String introduction. Examples and exercise
Questions. Do for Test.

April 01 to April 30, 2022

Hooke's law, Horizontal elastic string, Vertical
elastic string, examples and exercise related
elastic string. Mass, Momentum and force.
Newton's laws of Motion. Work, power and energy
Definitions of Conservative forces and Impulsive
forces. Practice of all examples and exercise
questions. Test in mid & last of this month.
Doubt Classes in last of the month.

May 01 to May 31, 2022

Start Unit-3, Motion on smooth and rough
plane curves, Motion on the outside of a
vertical circle, Motion on the inside of a smooth
vertical circle, Cycloidal Motion, Motion on
a rough curve under gravity. Examples and
exercise. Projectile motion, Latus Rectum,
Vertex, Focus, Directrix, Axis to the
Trajectory of a Projectile, Time of flight,
Horizontal Range and Greatest Height of a
projectile. Velocity at any point of the

(Semester - 6th)
Trajectory, Directions of Projection for a particle to hit a given point, Range and time of flight on an inclined Plane. Maximum Range up the Plane. Directions of Projection for a given velocity and a given Range. Velocity when the particle strikes the Plane. Solve all example & exercise. Test in mid & last of this month. Make Assessment of this book.

June 01 to June 20, 22

Start Unit - 4 General Motion of a rigid body, Central Orbits, Kepler's law of motion, Motion of a particle in three dimensions. Acceleration in terms of different co-ordinate systems. Solve all example & exercise of above related topics. Test of above in mid of this time period.

Lesson Plan (2021-2022)

Name: Dr. Smita Gulia

Subject: ^{Business} Mathematics

Class: B.Com-Ist

Semester - 2nd

Paper Name: Business Mathematics - II

March 21 to March 31, 2022

Introduction about Matrices & Determinants.
Properties of Matrix & Determinants. Addition, subtraction, product of two Matrices. Properties of Determinants. Important all question based on Determinants. Theorems. Inverse of a Matrix. Solution of a system of linear equation having unique solⁿ. & involving not more than three variables.

April 01 to April 30, 2022

Find Inverse of a Matrix by using Matrix method
Cramer's Rule, Symmetric, Non-symmetric, skew & orthogonal & other important concepts of this topic. Complete Unit-I with examples & exercises
Test of Uni-I. Start Unit-II (Differentiation)

Introduction about derivatives, Product & Quotient Rule of derivatives. Application of differentiation.
Do Practice. Unit-2 Revision, Problems of Unit-I & II

May 01 to May 31, 2022

Examples & Exercises about this derivatives. Find derivative by using First Principle. Find derivation of Logarithms of a function. Chain Rule. Examples & Exercises
ch-6, Concepts of Compound Interest, its examples & exercises.

Types of annuities; Present value & amount of an annuity.
June 01 to June 20, 2022

Do practice of Unit-3, Test of Unit-I & II

Concepts of Ratio, Proportion & Percentages; Loss & Profit

Do Practice. Make assignments.
