# Lesson Plan

Name of Assistant Professor: Mr. Mandeep
Class: B.A/B.Sc-II (Sem-III) Session 2020-21
Subject: Numerical Analysis

| Month | Week | Topics Covered |
|---|---|---|
| Nov | Week-3 | Finite Difference operators and their relations, difference table, finding the missing terms and effect of error in a difference tabular values, |
| | Week-4 | Interpolation with equal intervals: derivations of Newton's forward and Newton's backward interpolation formulae and their applications |
| Dec | Week-1 | Interpolation with unequal intervals: derivations of Newton's divided difference |
| | Week-2 | Lagrange's Interpolation formulae and their applications. |
| | Week-3 | Central Difference interpolation formulae: derivations of Gauss's forward and Gauss's backward interpolation formulae |
| | Week-4 | Sterling,Bessel formulae and their applications. Numerical Differentiation: Relation between difference operator and derivative operator, Derivative of a function using interpolation formulae |
| Jan | Week-1 | Numerical Integration: Newton-Cote's Quadrature formula, Trapezoidal rule |
| | Week-2 | Simpson's one- third rule and Simpson's three-eighth rule, Chebychev formula, Gauss Quadrature formula. |
| | Week-3 | Solution of Algebraic and Transcendental equations: Bisection method |
| | Week-4 | Regula-Falsi method, Secant method, Newton-Raphson's method, **Assignment & Test** |
| Feb | Week-1 | Newton's iterative method for finding pth root of a number. Simultaneous linear algebraic equations: Gauss-elimination method, |
| | Week-2 | Gauss-Jordan method, Triangularization method (LU decomposition method). |
| | Week-3 | Iterative method, Jacobi's method, Gauss-Seidal's method, Relaxation method. |
| | Week-4 | Eigen Value Problems: Power method, Jacobi's method, Given's method, House-Holder's method |
| March | Week-1 | Numerical solution of ordinary differential equations: Single step methods-Picard's method |
| | Week-2 | Taylor's series method, Euler's method, Modified Euler's method, |
| | Week-3 | Runge-Kutta Methods. Multiple step methods; Predictor-corrector method, Milne-Simpson's method |
| | Week-4 | Revision |

# Lesson Plan

Name of Assistant Professor: Mr. Mandeep
Class: B.A-I (Sem-I) Session 2020-21
Subject: Calculus

| Month | Week | Topics Covered |
|---|---|---|
| Nov | Week-3 | Limit, continuity (− definition), Types of Discontinuities and differentiability of functions. |
| | Week-4 | Successive differentiation of functions in implicit, explicit and parametric form. |
| Dec | Week-1 | Leibnitz theorem. Some general theorems on differentiable functions and expansions. |
| | Week-2 | Taylor's theorem with LaGrange's form and Cauchy' form of remainder after 'n' terms. Maclaurin form and Infinite Series |
| | Week-3 | Asymptotes parallel to coordinate axis |
| | Week-4 | Oblique Asymptotes in Cartesian and Polar form. |
| Jan | Week-1 | Singular points. Points of inflexion |
| | Week-2 | Multiple points. Cusps, nodes & conjugate points |
| | Week-3 | Tracing of curves in Cartesian, parametric and polar co-ordinates, particularly, Asteroid, Cycloid and Cardioid |
| | Week-4 | Curvature (radius of curvature for Cartesian curve, parametric curves, polar curves, pedal curves) |
| Feb | Week-1 | Reduction formulae. |
| | Week-2 | Rectification<br>**Assignment & Test** |
| | Week-3 | Length of curves in Cartesian, parametric and polar curves particularly Asteroid, Cycloid and Cardioid. |
| | Week-4 | Intrinsic equations of curve. |
| March | Week-1 | Quadrature (area) Sectorial area. |
| | Week-2 | Area bounded by closed curves in Cartesian, parametric form and polar form |
| | Week-3 | Volumes and surfaces of solids of revolution about x-axis and about any line |
| | Week-4 | Revision |

# Lesson Plan

Name of Assistant Professor: Mr. Mandeep
Class: B.A/B.Sc-II (Sem-IV) Session 2020-21
Subject: Mechanics-I

| **Month** | **Week** | **Topic Covered** |
|---|---|---|
| May | Week-1 | Forces in two dimension (co-planner), triangle law and polygon law of forces, Lami's theorem, resultant of concurrent and coplanar forces |
| | Week-2 | Conditions of equilibrium of concurrent forces. Parallel forces:like parallel and unequal unlike parallel forces, resultant and centre of parallel forces |
| | Week-3 | Moments and Couples |
| | Week-4 | Forces in three dimensions, Poinsot's central axis, |
| June | Week-1 | Conditions for the reduction of a general system of forces in space to a single force, equations of central axis. |
| | Week-2 | Wrenches: Definition and basic laws, resultant wrench of two wrenches, locus of the central axis of two wrenches |
| | Week-3 | Null lines and null planes. Velocity and acceleration along a plane curve |
| | Week-4 | component of velocity and acceleration in radial, transverse, tangential and normal directions |
| July | Week-1 | Relative velocity and acceleration. Simple harmonic motion (SHM).<br>**Assignment 1,2 & Unit Test** |
| | Week-2 | Newton's laws of motion, Central Orbits, differential equations of Central Orbits in polar form and in pedal form |
| | Week-3 | areal velocity, elliptic, hyperbolic and parabolic orbit, velocity in a circle, apse and apsidal distances definition and laws velocity from infinity |
| | Week-4 | 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. |

# Lesson Plan

Name of Assistant Professor: Mr. Mandeep
Class: B.A-I (Sem-II) Session 2020-21
Subject: Ordinary Differential Equation

| Month | Week | Topic Covered |
|---|---|---|
| May | Week-1 | Geometrical meaning of a differential equation. Exact differential equations, integrating factors |
| | Week-2 | First order higher degree equations solvable for x, y, p |
| | Week-3 | Lagrange's equations, Clairaut's equations. Equation reducible to Clairaut's form. Singular solutions |
| | Week-4 | Orthogonal trajectories: in Cartesian coordinates and polar coordinates. Self-orthogonal family of curves. |
| June | Week-1 | Linear differential equations with constant coefficients. |
| | Week-2 | Homogeneous linear ordinary differential equations. Equations reducible to homogeneous |
| | Week-3 | Linear differential equations of second order. Reduction to normal form. Transformation of the equation by changing the dependent variable/ the independent variable |
| | Week-4 | Solution by operators of non-homogeneous linear differential equations. Reduction of order of a differential equation. Method of variations of parameters. |
| July | Week-1 | Ordinary simultaneous differential equations. Solution of simultaneous differential equations<br>**Test & Assignment** |
| | Week-2 | Laplace Transforms –Existence theorem for Laplace transforms, Linear property of the Laplace transform, Shifting theorems, Laplace transform of derivatives and integrals |
| | Week-3 | Differentiation and integration of Laplace transforms, Convolution theorem, Inverse Laplace transform, convolution theorem, Inverse |
| | Week-4 | Laplace transform of derivatives, solution of ordinary differential equations using Laplace transform |

# FGM Government College, Adampur

## Lesson Plan of Year 2020-2021

## Department- Mathematics

**Programme Name- BA/BSc.** **Course Name-Number Theory & Trigonometry**

**Teacher- Dr Seema** **Sem- V**

| Month | Week | Topic | Test/Assign. |
|---|---|---|---|
| SEPT | 3rd | Primes, Fundamental Theorem of Arithmetic | |
| | 4th | Linear Diophantine equations in two variables. | |
| OCT. | 1st | Linear Congruences | Assignment |
| | 2nd | Fermat's theorem, Wilson's theorem and its converse. | |
| | 3rd | Divisibility, G.C.D.(Greatest Common Divisors), L.C.M.(Least Common Multiple). | |
| | 4th | The number of divisors and the sum of divisors of a natural numer n(The functions d(n) and s(n)). | |
| NOV. | 1st | Complete Residue System and Reduced Residue System modulo m, Euler f function. | Test |
| | 2nd | Euler's Generalization of Fermat's theorem, | |
| | 3rd | Chinese Remainder Theorem, Quadratic Residues. | |
| | 4th | Moebius Function and Moebius Inversion Formula. | |
| DEC. | 1st | Lengendre Symbols, Lemma of Gauss | Test |
| | 2nd | Gauss Reciprocity law, Greatest integer function [x]. | |
| | 3rd | Expansion of trigonometrical functions. Direct circular and their properties. | |
| | 4th | Hyperbolic functions and their properties. | |
| JAN. | 1st | Inverse circular and hyperbolic functions and their properties, Logarithm of a complex quantity. | Assignment |
| | 2nd | Gregory's series, Summation of trigonometric series. | |
| | 3rd | Revision,Group Dicussion | |
| | 4th | Test | |

**Programme Name- B.Sc. II** **Course Name- Maths Lab-III**

**Teacher- Dr Seema Rani** **Sem-III**

| Month | Week | Topic |
|---|---|---|
| SEPT | 3rd | To interpolate the data using Newton's forward interpolation formula |
| | 4th | To interpolate the data using Newton's backward interpolation formula |
| OCT. | 1st | To interpolate the data using Gauss's forward interpolation formula |
| | 2nd | To interpolate the data using Gauss's backward interpolation formula |
| | 3rd | To interpolate the data using Lagrange's interpolation formula |
| | 4th | To find the roots of algebraic and transcendental equations using Bisection method |
| NOV. | 1st | To find the roots of algebraic and transcendental equations using Regula-Falsi method. |
| | 2nd | To find the roots of algebraic and transcendental equations using Secant method. |
| | 3rd | To find the roots of algebraic and transcendental equations using Newton-Raphson's method. |
| | 4th | To solve the system of linear equations using Gauss -elimination method. |
| DEC. | 1st | To solve the system of linear equations using Gauss -Seidal iteration method. |
| | 2nd | To solve the system of linear equation using Gauss –jordan method. |
| | 3rd | To find the largest eigen value of a matrix by Power -method. |
| | 4th | To integrate numerically using Trapezoidal rule. |

| | | |
|---|---|---|
| J A N . | 1st | To integrate numerically using Simpson's one- third rule. |
| | 2nd | To integrate numerically using Simpson's three-eighth rule. |
| | 3rd | To find numerical solution of ordinary differential equations by Euler's method/ Modified Euler's method. |
| | 4th | To find numerical solution of ordinary differential equations by Runge -Kutta method. |

**Programme Name-B.Sc. I** **Course Name- Algebra**
**Teacher- Dr Seema** **Sem-I**

| Month | Week | Topic | Assignment/ Test |
|---|---|---|---|
| N O V | 3rd | Symmetric, skew symmetric | |
| | 4th | Hermitian and skew-Hermitian. | |
| D E C | 1st | Elementary operation on matrices, Rank of a matrix. Inverse of a matrix. | 1st Assignment |
| | 2nd | Linear dependence and independence of rows and columns of matrices, Row rank and column rank of a m | |
| | 3rd | Eigen values, eigen vectors and the characterstic equation of a matrix, Minimal polynomial of a matrix. | |
| | 4th | Cayley Hamilton theorem and its use in finding inverse of a matrix. | |
| J A N | 1st | Application of matrices to a system of linear (both homogenous and non-homogenous) equations | Minor Test |
| | 2nd | Theorems on consistency of a system of linear equations | |
| | 3rd | Unitary and Orthogonal Matrices,Bilinear and Quadratic forms. | |
| | 4th | Descarte's rule of signs,Relations between the roots and coefficients of general polynomial equation in one variable. | |
| F E B | 1st | Solution of polynomial equations having conditions on roots,Common roots and multiple roots. | 2nd Assignment |
| | 2nd | Transformation of equations,Nature of the roots of an equation. | |
| | 3rd | Descarte's rule of signs, Solution of cubic equations (Cardan's method). | |
| | 4th | Descarte's rule of signs, Solution of cubic equations (Cardan's method). | |

**Programme Name- BA/BSc. III** **Course Name- Real And Complex Analysis**
**Teacher- Dr Seema** **Sem-VI**

| Month | Week | Topic | Test/Assign. |
|---|---|---|---|
| M A Y | 1st | Definition and examples of metric spaces, Neighbourhoods, Limit points, Interior points. | Test |
| | 2nd | Open and closed sets, Closure and interior, Boundary points. | |
| | 3rd | Subspace of a metric space, Equivalent metrices, Cauchy sequences, Completeness. | |
| | 4th | Integral as a function of a parameter, Continuity. | |
| J U N E | 1st | Cantor's intersection theorem, Baire's category theorem, Contraction Principle. | Test |
| | 2nd | Continuous functions, uniform continuity.Connectedness, Components | |
| | 3rd | Compact metric spaces, Sequential compactness.Bolzano-Weierstrass property,Total boundedness | |
| | 4th | Improper integrals and their convergence.Comparison tests, Abel's and Dirichlet's tests, Frullani's integral. | |
| J U L Y | 1st | Stereographic projection of complex numbers. Continuity and differentiability of complex functions. | Assignment |
| | 2nd | Analytic functions, Cauchy-Riemann equations, harmonic conjugates, harmonic functions. | |
| | 3rd | Construction of analytic functions: direct method and Milne-Thomson method. | |
| | 4th | Revision,Group Dicussion | |

**Programme Name-B.Sc** **Course Name- Ordinary Differential Equations & Laplace Transform**

**Teacher - Dr Seema** **Sem-II**

| Month | Week | Topic | Assignment/ Test |
|---|---|---|---|
| MAY | 1st | Geometrical meaning of a differential equation. Exact differential equations, integrating factors. | 1st Assignment |
| | 2nd | First order higher degree equations solvable for x, y, p Lagrange's equations, | |
| | 3rd | Clairaut's equations. Equation reducible to Clairaut's form.Singular solutions. | |
| | 4th | Orthogonal trajectories: in Cartesian coordinates and polar coordinates. Self orthogonal family of curves. | |
| JUNE | 1st | Linear differential equations with constant coefficients. | Minor Test |
| | 2nd | Homogeneous linear ordinary differential equations. Equations reducible to homogeneous. | |
| | 3rd | Linear differential equations of second order. Reduction to normal form. | |
| | 4th | Transformation of the equation by changing the dependent variable/ the independent variable. | |
| JULY | 1st | Solution by operators of non-homogeneous linear differential equations. | 2nd Assignment |
| | 2nd | Reduction of order of a differential equation. Method of variations of parameters. | |
| | 3rd | Laplace transform of derivatives and integrals, Differentiation and integration of Laplace transforms, Convolution theorem | |
| | 4th | Rivision | |

**Programme Name- B.A. I** **Course Name- Mathematics Lab -I**

**Teacher- Ms. Priya**

| Month | Week | Topics |
|---|---|---|
| NOV | 3rd | Program To Calculate Simple Interest ,Program to calculate Compound Interest . |
| | 4th | Program To Calculate Arithmetic Mean Of Three Numbers |
| DEC | 1st | Program To Calculate Area And Perameter Of A Circle |
| | | Program To Calculate Area Of Triengle By Heron's Formula |
| | 2nd | Program To Check Wheather The Number Is Odd or Even |
| | | Program to Calculate Greatest Of Three Numbers |
| | 3rd | Program To Find The Roots Of A Quadratic Equation |
| | | Program to Reverse The Digits Of A Positive Number |
| | 4th | Program to Convert Decimal To Binary |
| JAN | 1st | Program To Generate First n Prime Numbers |
| | 2nd | Program to Check Wheather The Number Is Prime or not |
| | 3rd | Program To Check A Year Is Leap Or Not |
| | 4th | Program To Find The Sum Of First n Natural Numbers |
| FEB | 1st | Program to Generate Pyramid |
| | 2nd | Program to find simple interest using switch statement |
| | 3rd | Program to prepare Electricity Bill, |
| | 4th | Program to Calculate Gross salary of an Employee |
| | | Practical File Completion |

**Programme Name- BCom. I** **Course Name-Business Mathematics -I**

**Teacher- Ms. Priya**

| Month | Week | Topics | Assignment/Test |
|---|---|---|---|
| NOV | 3rd | Logarithm | |
| | 4th | Anti-logarithm | |
| DEC | 1st | Arithmetic Progression | 1st Assignment |
| | 2nd | Geometric Progression | |
| | 3rd | Simple derivative of different functions | |
| | 4th | Rules of differentiation | |
| JAN | 1st | Maxima and Minima of functions of one variable. | Minor Test |
| | 2nd | Definition and Types of matrix. | |
| | 3rd | Algebra of matrices, Properties of determinant. | |
| | 4th | Adjoint of matrices, Elementary row and column operation,Finding inverse of matrices. | |
| FEB | 1st | Solution of a system of linear equations having unique solution and involving not more than three variables. | 2nd Assignment Revision Tests |
| | 2nd | Certain different types of interest rates. Concept of present value And amount of sum. | |
| | 3rd | Types of annuities, Present value and amount of an annuity. | |
| | 4th | Valuation of simple loans and debentures,Problems relating to sinking funds. | |

**Programme Name-B.SC I** **Course Name- VECTOR CALCULAS AND GEOMETRY**

**Teacher Name - Ms. Priya**

| Month | Week | Topic | Test/Assign. |
|---|---|---|---|
| MAY | 1st | Scalar and vector product of three vectors, product of four vectors. Reciprocal vectors. | Assignment |
| | 2nd | 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 $\phi$. | |
| | 3rd | Divergence and curl of vector point function. Gradient, divergence and curl of sums and product and their related vector identities. Laplacian operator. | |
| | 4th | Vector integration: Indefinite Integral, Definite Integral, Standard results of Integration. | |
| JUNE | 1st | Line integral, Surface integral, Volume integral. Gauss Divergence Theorem, Divergence Theorem in Cartesian Co-ordinates, Green Theorem, Stoke's Theorem(Relation between line Integral Surface Integral). | Test |
| | 2nd | Stoke's Theorem in Cartesian form. Green's Theorem in Plane as special case of Stoke's Theorem. | |
| | 3rd | General equation of second degree. Tracing of conics,System of conics, confocal conics. Tangent a any point to the conic, chord of contact, | |
| | 4th | pole of line to the conic, director circle of conic,Polar equation of a conic, tangent and normal to the conic. | |
| JULY | 1st | Sphere: Plane section of a sphere. Sphere through a given circle. | Assignment |
| | 2nd | Intersection of two spheres, radical plane of two spheres. Co-axial system of spheres,Cones: Right circular cone. Enveloping cone and reciprocal cone. | |
| | 3rd | Cylinder: Right circular cylinder and enveloping cylinder. | |
| | 4th | Test and Rivision | |

**Programme Name-B.comI** **Course Name- Business Mathematics - II**

**Teacher- MS. PRIYA**

| Month | Week | Topic | Test/Assign. |
|---|---|---|---|
| M A Y | 1st | Graphical representation of linear inequalities. | Assignment |
| | 2nd | Solution of system of linear inequalities in two variables. | |
| | 3rd | Formulation of System of Linear Inequalities | |
| | 4th | Introduction to Linear Programming and its Significance | |
| J U N E | 1st | Solution of Problems relating to two variables by Graphical Method | Test |
| | 2nd | Cases of mixed constraints, multiple solutions etc. | |
| | 3rd | Introduction of data, Diagrammatic representation of data | |
| | 4th | Classification and tabulation of data,Graphical representation of data | |
| J U L Y | 1st | Data interpretation,Binomial Theorem and its problems | Assignment |
| | 2nd | Permutations,Combinations | |
| | 3rd | Group Discussion | |
| | 4th | Test & Rivision | |

**Programme Name- B.A. I** **Course Name- Mathematics Lab– II**

**Teacher- MS. PRIYA**

| Month | Week | Topic |
|---|---|---|
| M A Y | 1st | Program to add two matrices. |
| | 2nd | Program to multiply two matrices. |
| | 3rd | Program to find the inverse of a matrix. |
| | 4th | Program to find transpose of a matrix. |
| J U N E | 1st | Program to find the sum of a series. Trigonometric series: sin(x), cos(x), tan(x), etc. |
| | 2nd | Program to sort an entire array using bubble sort |
| | 3rd | Program to find trace of 3X3 Matrix. |
| | 4th | Program to find largest of three numbers using function. |
| J U L Y | 1st | Program to find factorial of a number using recursion,Program to generate n fibonacci terms using recursion. |
| | 2nd | Program to count number of vowels and consonants in a given sentence. |
| | 3rd | Program to print a salary chart for employee of a company. |
| | 4th | Practical File Completion |

**Programme Name-B.A. I** **Course Name- Algebra**

**Teacher- Mrs. Geeta Rani**

| Month | Week | Topic | Assignment/ Test |
|---|---|---|---|
| N O V | 3rd | 1.symmetric, skew symmetric | |
| | 4th | 2.Hermitian and skew-Hermitian. | |
| | 1st | 1. Elementary operation on matrices, Rank of a matrix. Inverse of a matrix. | |

| | | | |
|---|---|---|---|
| D E C | 2nd | 2. Linear dependence and independence of rows and columns of matrices, Row rank and column rank of a m | 1st Assignment |
| | 3rd | 3. Eigen values, eigen vectors and the characterstic equation of a matrix, Minimal polynomial of a matrix. | |
| | 4th | 4. Cayley Hamilton theorem and its use in finding inverse of a matrix. | |
| J A N | 1st | 1. Application of matrices to a system of linear (both homogenous and non-homogenous) equations | Minor Test |
| | 2nd | 2. Theorems on consistency of a system of linear equations | |
| | 3rd | 3. Unitary and Orthogonal Matrices,Bilinear and Quadratic forms. | |
| | 4th | 4 .Descarte's rule of signs,Relations between the roots and coefficients of general polynomial equation in one variable. | |
| F E B | 1st | 1.Solution of polynomial equations having conditions on roots,Common roots and multiple roots. | 2nd Assignment |
| | 2nd | 2.Transformation of equations,Nature of the roots of an equation. | |
| | 3rd | 3.Descarte's rule of signs, Solution of cubic equations (Cardan's method). | |
| | 4th | 4. Descarte's rule of signs, Solution of cubic equations (Cardan's method). | |

**Programme Name- B. Com I** **Course Name-Business Mathematics -I**
**Teacher- Mrs. Geeta Rani**

| Month | Week | Topics | Assignment/Test |
|---|---|---|---|
| N O V | 3rd | Logarithm | |
| | 4th | Anti-logarithm | |
| D E C | 1st | Arithmetic Progression | 1st Assignment |
| | 2nd | Geometric Progression | |
| | 3rd | Simple derivative of different functions | |
| | 4th | Rules of differentiation | |
| J A N | 1st | Maxima and Minima of functions of one variable. | Minor Test |
| | 2nd | Definition and Types of matrix. | |
| | 3rd | Algebra of matrices, Properties of determinant. | |
| | 4th | Adjoint of matrices, Elementary row and column operation,Finding inverse of matrices. | |
| F E B | 1st | Solution of a system of linear equations having unique solution and involving not more than three variables. | 2nd Assignment Revision Tests |
| | 2nd | Certain different types of interest rates. Concept of present value And amount of sum. | |
| | 3rd | Types of annuities, Present value and amount of an annuity. | |
| | 4th | Valuation of simple loans and debentures,Problems relating to sinking funds. | |

**Programme Name-B.A I** **Course Name- VECTOR CALCULAS AND GEOMETRY**
**Teacher Name - Geeta Rani**

| Month | Week | Topic | Test/Assign. |
|---|---|---|---|
| M A Y | 1st | Scalar and vector product of three vectors, product of four vectors. Reciprocal vectors. | Assignment |
| | 2nd | 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 $\phi$. | |
| | 3rd | Divergence and curl of vector point function. Gradient, divergence and curl of sums and product and their related vector identities. Laplacian operator. | |
| | 4th | Vector integration: Indefinite Integral, Definite Integral, Standard results of Integration. | |
| J U N | 1st | Line integral, Surface integral, Volume integral. Gauss Divergence Theorem, Divergence Theorem in Cartesian Co-ordinates, Green Theorem, Stoke's Theorem(Relation between line Integral Surface Integral). | Test |
| | 2nd | Stoke's Theorem in Cartesian form. Green's Theorem in Plane as special case of Stoke's Theorem. | |

| | | | |
|---|---|---|---|
| N E | 3rd | General equation of second degree. Tracing of conics,System of conics, confocal conics. Tangent a any point to the conic, chord of contact, | |
| | 4th | pole of line to the conic, director circle of conic,Polar equation of a conic, tangent and normal to the conic. | |
| J U L Y | 1st | Sphere: Plane section of a sphere. Sphere through a given circle. | Assignment |
| | 2nd | . Intersection of two spheres, radical plane of two spheres. Co-axial system of spheres,Cones: Right circular cone. Enveloping cone and reciprocal cone. | |
| | 3rd | Cylinder: Right circular cylinder and enveloping cylinder. | |
| | 4th | Test and Rivision | |

**Programme Name-B.comI**
**Teacher- Mrs. Geeta Rani**

**Course Name- Business Mathematics - II**

| Month | Week | Topic | Test/Assign. |
|---|---|---|---|
| M A Y | 1st | Graphical representation of linear inequalities. | Assignment |
| | 2nd | Solution of system of linear inequalities in two variables. | |
| | 3rd | Formulation of System of Linear Inequalities | |
| | 4th | Introduction to Linear Programming and its Significance | |
| J U N E | 1st | Solution of Problems relating to two variables by Graphical Method | Test |
| | 2nd | Cases of mixed constraints, multiple solutions etc. | |
| | 3rd | Introduction of data, Diagrammatic representation of data | |
| | 4th | Classification and tabulation of data,Graphical representation of data | |
| J U L Y | 1st | Data interpretation,Binomial Theorem and its problems | Assignment |
| | 2nd | Permutations,Combinations | |
| | 3rd | Group Discussion | |
| | 4th | Test & Rivision | |

**Programme Name- B.Sc I**
**Teacher- Geeta Rani**

**Course Name- Mathematics Lab– II**

| Month | Week | Topic |
|---|---|---|
| M A Y | 1st | Program to add two matrices. |
| | 2nd | Program to multiply two matrices. |
| | 3rd | Program to find the inverse of a matrix. |
| | 4th | Program to find transpose of a matrix. |
| J U N E | 1st | Program to find the sum of a series. Trigonometric series: sin(x), cos(x), tan(x), etc. |
| | 2nd | Program to sort an entire array using bubble sort |
| | 3rd | Program to find trace of 3X3 Matrix. |
| | 4th | Program to find largest of three numbers using function. |
| J U L Y | 1st | Program to find factorial of a number using recursion,Program to generate n fibonacci terms using recursion. |
| | 2nd | Program to count number of vowels and consonants in a given sentence. |
| | 3rd | Program to print a salary chart for employee of a company. |
| | 4th | Practical File Completion |

**Programme Name- BA/BSc. III**
**Teacher-Dr. Renu Yadav**

**Course Name- Groups & Rings**

| Month | Week | Topic | Assignment/ Test |
|---|---|---|---|
| SEPT | 3rd | Definitions of a Group, Examples of Abelian and Non Abelian groups. | |
| | 4th | The group Zn of integers under addition modulo n&group U(n), Cyclic Groups | |
| OCT | 1st | Subgroups and Criteria, Cosets and Properties | 1st Assignment |
| | 2nd | Index of Subgroup,Coset decomposition, Lagrange's Theorem and its Consequences | |
| | 3rd | Normal Subgroups, | |
| | 4th | Quotient Groups, Homomorphisms | |
| NOV | 1st | Isomorphisms, Automorphisms on Group, | Minor Test |
| | 2nd | Permutation Groups, Alternating Groups | |
| | 3rd | Centre of a group, Class equation of group, Introduction to Rings. | |
| | 4th | Subrings, Integral Domains and Fields. | |
| DEC | 1st | Characteristics of Ring , Ideals(Principle, Prime and Maximal) | 2nd Assignment |
| | 2nd | Ring Homomorphism , Thoerem on Ring Homomorphism | |
| | 3rd | Quotient Rings, Field of Quotients of an Integral Domain, | |
| | 4th | Euclidean Ring | |
| JANUARY | 1st | Polynomial Rings, Polynomial over Rational Field, | Rivision Tests |
| | 2nd | Einstein Criteria of Irreducibility | |
| | 3rd | PID, UFD | |
| | 4th | Test & Rivision | |

**Programme Name- B.Com I** **Course Name-Business Mathematics -I**

**Teacher- Dr. Renu Yadav**

| Month | Week | Topics | Assignment/Test |
|---|---|---|---|
| NOV | 3rd | Logarithm | |
| | 4th | Anti-logarithm | |
| DEC | 1st | Arithmetic Progression | 1st Assignment |
| | 2nd | Geometric Progression | |
| | 3rd | Simple derivative of different functions | |
| | 4th | Rules of differentiation | |
| JAN | 1st | Maxima and Minima of functions of one variable. | Minor Test |
| | 2nd | Definition and Types of matrix. | |
| | 3rd | Algebra of matrices, Properties of determinant. | |
| | 4th | Adjoint of matrices, Elementary row and column operation,Finding inverse of matrices. | |
| FEB | 1st | Solution of a system of linear equations having unique solution and involving not more than three variables. | 2nd Assignment Revision Tests |
| | 2nd | Certain different types of interest rates. Concept of present value And amount of sum. | |
| | 3rd | Types of annuities, Present value and amount of an annuity. | |

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|---|---|---|---|
| | 4th | Valuation of simple loans and debentures,Problems relating to sinking funds. | |

**Programme Name-B. A./ B.Sc III** **Course Name- Linear Algebra**

**Teacher- Dr. Renu Yadav**

| Month | Week | Topic | Test/Assign. |
|---|---|---|---|
| M A Y | 1st | Vector spaces, subspaces, Sum and Direct sum of subspaces | Assignment |
| | 2nd | Linear span, Linearly Independent and dependent subsets of a vector space. Finitely generated vector space, Existence theorem for basis of a finitely generated vector space | |
| | 3rd | Finite dimensional vector spaces, Invariance of the number of elements of bases sets | |
| | 4th | Dimensions, Quotient space and its dimension. | |
| J U N E | 1st | Homomorphism and isomorphism of vector spaces ,Linear transformations and linear forms on vector spaces | Test |
| | 2nd | Vector space of all the linear transformations, Null Space | |
| | 3rd | Range space of a linear transformation, Rank and Nullity Theorem | |
| | 4th | Algebra of Linear Transformation, Minimal Polynomial of a linear transformation,Singular and non-singular linear transformations | |
| J U L Y | 1st | Matrix of a linear Transformation, Change of basis, Eigen values and Eigen vectors of linear transformations. | Assignment |
| | 2nd | Inner product spaces, Cauchy-Schwarz inequality | |
| | 3rd | Orthogonal vectors, Orthogonal complements, Orthogonal sets and Basis | |
| | 4th | Test & Rivision | |

**Programme Name-B.comI** **Course Name- Business Mathematics - II**

**Teacher- Dr. Renu Yadav**

| Month | Week | Topic | Test/Assign. |
|---|---|---|---|
| M A Y | 1st | Graphical representation of linear inequalities. | Assignment |
| | 2nd | Solution of system of linear inequalities in two variables. | |
| | 3rd | Formulation of System of Linear Inequalities | |
| | 4th | Introduction to Linear Programming and its Significance | |
| J U N E | 1st | Solution of Problems relating to two variables by Graphical Method | Test |
| | 2nd | Cases of mixed constraints, multiple solutions etc. | |
| | 3rd | Introduction of data, Diagrammatic representation of data | |
| | 4th | Classification and tabulation of data,Graphical representation of data | |
| J U L Y | 1st | Data interpretation,Binomial Theorem and its problems | Assignment |
| | 2nd | Permutations,Combinations | |
| | 3rd | Group Discussion | |
| | 4th | Test & Rivision | |

Lesson Plan 2020-21

FGM Government College, Adampur

Department: Mathematics

Teacher : Ms Suman Jasta  Class: B.Sc/B.A 4th Semester

Subject: Partial Differential Equation.  Section:(N.M+C.S)/B.A

| SR. NO. | MONTHS | PERIOD | TOPICS |
|---|---|---|---|
| 1. | MAY | 1st week<br><br>2nd week<br><br>3rd week<br><br>Last week | **1.** Partial differential equations: Formation, order and degree.<br><br>**2.** Linear and non-linear partial differential equations of the first order: Complete solution.<br><br>**3.** Singular solution, General solution, Solution of Lagrange's linear equations.<br><br>**4.** Charpit's general method of solution, Compatible systems of first order equations, Jacobi's method.<br><br>**5.** Linear partial differential equations of second and higher orders.<br><br>**6.** Linear and non-linear homogeneous equations with constant coefficients. |
| 2. | JUNE | 1st week<br><br>2nd week<br><br>3rd week<br><br>Last week | **1.** Partial differential equation with variable coefficients reducible to equations with constant coefficients, their complimentary functions and particular integrals.<br><br>**2.** Equations reducible to linear equations with constant coefficient.<br><br>**3.**Classification of linear partial differential equations of second order, Hyperbolic.<br><br>**4.** Parabolic and elliptic types.<br><br>**5.** Reduction of second order linear partial differential equations to Canonical(Normal) forms and their solutions. |

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|---|---|---|---|
| **3.** | **JULY** | **1st week**<br><br><br><br>**2nd week**<br><br><br><br>**3rd week**<br><br><br>**Last week** | **1.** Solution of linear hyperbolic equations, Monge's method for partial differential equations of second order.<br><br>**2.** Cauchy's problem for second order partial differential equations.<br><br>**3.** Characteristic equations and characteristic curves of second order partial differential equation.<br><br>4. Method of separation of variables : Solution of Laplace's equation,<br><br>5. Wave equation (one and two dimensions).<br><br>6. Diffusion (Heat) equation (one and two dimension) in Cartesian coordinate system. |

**Lesson Plan 2020-2021**

**FGM Government College, Adampur**

**Unit wise Lesson Plan forOdd Semester 15 Sept.31January-2020**

**Department: Mathematics**

**Teacher:** **Mukesh Kumari** **Class: B.ScIII**
**Subject:** **Sequence and Series**

| Sr. No. | Description of Chapters/Topics | Expected Duration | Assignment/Test |
|---|---|---|---|
| 1 | **Topology of Real Numbers and Questions based on this topic** | | |
| 2 | Infinite Series and Infinite Series (Continued) and Exercises of Infinite Series. | 1st week of Oct. to last week of Oct. | Assignement |
| 3 | Alternating Series and Arbitrary Series ,Questions and Theorems of infinite and Arbitrary series. | 1st week of November . to last week of November | 1st Class test |
| 4 | Fourier series related exercises and theorems. Introduction of Riemann Integral. | 1st week of Dec. to last week of Dec. | 2nd Class test |
| 5 | Theorems and exercises based on Riemann integral , Sequence' theorems and questions. | 1st week of January to last week of January | |

**Lesson Plan 2020-21**

**FGM Government College, Adampur**

**Lesson Plan for Even semester2020-21**

**Department: Mathematics .....**

**Teacher:** ...Mukesh Kumari ..... **Class:** B. A/B. ScIII.....

**Subject:** Mechanic II..... **Section:** .....

| Sr. No. | Description of Chapters/Topics | Expected Duration | Assignment/Test |
|---|---|---|---|
| 1 | 1. Analytical conditions of equilibrium of coplanar forces.<br>2. Friction and its exercise.<br>3. Central Gravity and its examples and exercise | 1st week of May to 3rd week of May | 1st assignment in the beginning of 3rd week of May |
| 2 | 1. Elastic string and its theorems<br>2. Mass, momentum and force.<br>3. Newton's Law of motion and Work | 4th week of May to 2nd week of June | First minor test |
| 3 | 1. Power and Energy and it's theorem<br>2. Exercise and examples of work and energy<br>3. Definition of conservative force and Impulsive forces | 3rd week of June to the 2nd week of July | 2nd assignment in the last of 2nd week of July |

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|---|---|---|---|
| **4** | 1. Motion on smooth and rough plane<br>2. Exercise and examples of rough and smooth curve<br>3. Test and Revision | 3rd week of July to first week of August | 2nd minor test |

**Lesson Plan 2020-21**

**FGM Government College, Adampur**

**Unit wise Lesson Plan for Even Semester** 2020-21

**Department: ...**Mathematics

**Teacher:** Mukesh Kumari **....** **Class:**B. A/ B. ScIII

**Subject:** Solid Geometry

| Sr. No. | Description of Chapters/Topics | Expected Duration | Assignment/Test |
|---|---|---|---|
| **1** | 1. Central coincoid and its properties.<br>2. Equation of tangent plane, Director sphere and its exercise.<br>3. Normal to the coincoid and Polar plane of point.<br>4. Enveloping cone of a conicoid. | 1st week of May to 3rd week of May | 1st assignment in the beginning of 2nd week of May |
| **2** | 1. Examples and exercise of Enveloping cone of conicoid.<br>2. Enveloping cylinder of a conicoid.<br>3. Exercise and examples of enveloping cylinder.<br>4. Definition of Paraboloid and its examples. | 4th week of May to 2nd week June | 1stMinor test |
| **3** | 1. Circular section of Paraboloid.<br>**2.** Plane section of conicoid.<br>**3.** Generating lines and it' s Examples.<br>**4.** Confocal coincoid and its exercise. | 3rd week of June to 2ndweek of be July | 2nd assignment in the last of 2nd week of July |
| **4** | 1. Reduction of second degree equations.<br>2. Examples based on reduction of second degree and second degree equations.<br>3. Test and Revision.<br>4. Test and Revision. | 3rd week of July to 1stweek of August | 2nd Minor test |