FGM Government College, Adampur

Lesson Plan of Year 2021-2022

Department- Mathematics

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

Teacher- Dr Seema **Sem-V**

Month	Week	Topic	Test/Assign.
O C T	3rd	Primes, Fundamental Theorem of Arithmetic	
	4th	Linear Diophantine equations in two variables.	
N O V	1st	Linear Congruences	Test
	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 $\sigma(n)$).	
D E C	1st	Complete Residue System and Reduced Residue System modulo m, Euler ϕ function.	Test
	2nd	Euler's Generalization of Fermat's theorem,	
	3rd	Chinese Remainder Theorem, Quadratic Residues.	
	4th	Moebius Function and Moebius Inversion Formula.	
J A N	1st	Lengendre Symbols, Lemma of Gauss,Gauss Reciprocity law, Greatest integer function [x].	Assignment
	2nd	Expansion of trigonometrical functions. Direct circular and their properties. Hyperbolic functions and their properties.	
	3rd	Revision,Group Dicussion	
	4th	Test	

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

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

Month	Week	Topic
O C T	3rd	To interpolate the data using Newton's forward interpolation formula
	4th	To interpolate the data using Newton's backward interpolation formula
N O V	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
D E C	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-
	4th	To solve the system of linear equations using Gauss -elimination method.
J A N	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.

Programme Name- B.Sc. **Course Name- Advanced Calculus**

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

Month	Week	Topic	Test/Assign.
OCT	3rd	Continuity, Sequential continuity, properties of continuous functions,	
	4th	Chain rule of differentiability, Mean value theorems, Rolle's theorem and Lagrange's mean value theorem and their geometrical interpretations.	
NOV	1st	Taylor's theorem with various form of remainders.	Assignment
	2nd	Darboux intermediate value theorem for derivatives, Indeterminate forms.	
	3rd	Limit and continuity of real valued functions of two variables.	
	4th	Partial differentiation, Total differentials.	
DEC	1st	Composite functions and implicit functions, Change of variables,	Test
	2nd	Euler's theorem on homogeneous functions, Taylor's theorem for functions of	
	3rd	Differentiability of real valued functions of two variables.Schwarz and Young's	
	4th	Maxima, Minima and saddle points of two variables. Lagrange's method of multipliers	
JAN	1st	Curves: Tangents, Principal normals, Binormals.	Assignment
	2nd	Serret-Frenet formulae, Locus of the centre of curvature.Spherical	
	3rd	Locus of centre of Spherical curvature.Involutes, Evolutes, Bertrand curves.	
	4th	Revision and Group Discussion	

Programme Name- BA/BSc. III **Course Name- Real And Complex Analysis**

Teacher- Dr Seema **Sem-VI**

Month	Week	Topic	Test/Assign.
APRIL	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.	
MAY	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 N E	1st	Stereographic projection of complex numbers. Continuity and differentiability of complex functions.Analytic functions, Cauchy-Riemann equations, harmonic conjugates, harmonic functions.	Assignment
	2nd	Revision,Group Dicussion	

Programme Name-BSc III **Course Name- Partial Differential Equations And Special Functions**

Teacher- Dr Seema **Sem-IV**

Month	Week	Topic	Assignment/ Test
A P R I L	1st	Partial differential equations: Formation, order and degree, Linear and Non-Linear Partial differential equations of the first order	1st Assignment
	2nd	Complete solution, singular solution, General solution, Solution of Lagrange's linear equations,	
	3rd	Charpit's general method of solution. Compatible systems of first order equations, Jacobi's method.	
	4th	Linear partial differential equations of second and higher orders, Linear and non-linear homogeneous and nonhomogeneous equations with constant	
M A Y	1st	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.	Minor Test
	2nd	Method of separation of variables: Solution of Laplace's equation, Wave equation (one and two dimensions), Diffusion (Heat) equation (one and two	
	3rd	Classification of linear partial differential equations of second order, hyperbolic, parabolic and elliptic types	
	4th	Reduction of second order linear partial differential equations to Canonical (Normal) forms and their solutions, Solution of linear hyperbolic equations	
J U N E	1st	Legendre function and its properties-Recurrence Relations and generating functions.Characteristic equations and characteristic curves of second order partial differential equation	2nd Assignment
	2nd	Class Discussion, Test & Rivision	

Programme Name- BSc. II **Course Name- Mathematics Lab-IV**
Teacher- Dr Seema **Sem-IV**

Month	Week	Topic
APRIL	1st	To solve the system of linear equations using Gauss -elimination method.
	2nd	To solve the system of linear equations using Gauss -Seidal iteration method.
	3rd	To solve the system of linear equation using Gauss –jordan method.
	4th	To find the largest eigen value of a matrix by Power -method
MAY	1st	To integrate numerically using Trapezoidal rule.
	2nd	To integrate numerically using Simpson's one- third rule, three-eighth rule.
	3rd	To find numerical solution of ordinary differential equations by Runge -Kutta method
	4th	To find numerical solution of ordinary differential equations by Euler's method/ Modified Euler's
JUNE	1st	To find numerical solution of ordinary differential equations by Euler's method/ Modified Euler's
	2nd	File Completion

Programme Name- B.Sc. I **Course Name- Calculus**
Teacher- Ms. Priya

Month	Week	Topic	Assignment/ Test
NOV	3rd	Definition of the limit of a function, Basic properties of limits, Continuous functions and classification of discontinuity	
	4th	Differentiability, Successive differentiation.	
DEC	1st	Leibnitz theorem, Maclaurin and Taylor series expansions	1st Assignment
	2nd	Asymptotes in Cartesian coordinates, Intersection of curve and its asymptotes	
	3rd	Asymptotes in polar coordinates, Curvature	
	4th	Radius of curvature for Cartesian curves, parametric curves, polar curves, Newton's method	
JAN	1st	Radius of curvature for pedal curves, Tangential polar equations.	Minor Test
	2nd	Centre of curvature, Circle of curvature, Chord of curvature, evolutes	
	3rd	Tests for concavity and convexity, Point of inflexion, Multiple points, Cusps, nodes and conjugate points, Type of cusps	
	4th	Tracing of curves in Cartesian, parametric and polar co-ordinates.	
	1st	Reduction formulae, Rectification.	

FEB	2nd	Intrinsic equations of curve,Quadrature(area) Sectorial area	2nd Assignment
	3rd	Area bounded by closed curves.,Volumes and Surfaces of solids of revolution	
	4th	Theorems of Pappu's and Guilden.	
		Revision	

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
February	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	
JA	1st	Maxima and Minima of functions of one variable.	Minor Test
	2nd	Definition and Types of matrix.	
	3rd	Algebra of matrices, Properties of determinant.	

N	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.SC I **Course Name- VECTOR CALCULAS AND GEOMETRY**

Teacher Name - Ms. Priya

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 ϕ.	
	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 E	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.	
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 **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.
JULY	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.	
D E C	1st	1. Elementary operation on matrices, Rank of a matrix. Inverse of a matrix.	1st Assignment
	2nd	2. Linear dependence and independence of rows and columns of matrices, Row rank and column rank of a m	
	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	Revision , Test	

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	1st	Maxima and Minima of functions of one variable.	
	2nd	Definition and Types of matrix.	

A N	3rd	Algebra of matrices, Properties of determinant.	Minor Test
	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 ϕ.	
	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 E	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.	
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 **Course Name- Business Mathematics - II**
Teacher- Mrs. Geeta Rani

Month	Week	Topic	Test/Assign.
MAY	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	
JUNE	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	
JULY	1st	Data interpretation,Binomial Theorem and its problems	Assignment
	2nd	Permutations,Combinations	
	3rd	Group Discussion	
	4th	Test & Rivision	

Programme Name- B.Sc I **Course Name- Mathematics Lab– II**
Teacher- Geeta Rani

Month	Week	Topic
MAY	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.
JUNE	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.
JULY	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

Course Name- Groups & Rings

Month	Week	Topic	Assignment/ Test
S E P T	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	
O C T	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	
N O V	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.	
D E C	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	
J A N	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.	
	4th	Valuation of simple loans and debentures,Problems relating to sinking funds.	

Programme Name-B.A./ B.Sc III

Teacher- Dr. Renu Yadav **Course Name- Linear Algebra**

Month	Week	Topic	Test/Assign.
MAY	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.	
JUNE	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	
JU	1st	Matrix of a linear Transformation, Change of basis, Eigen values and Eigen vectors of linear transformations.	
	2nd	Inner product spaces, Cauchy-Schwarz inequality	Assignment

L Y	3rd	Orthogonal vectors, Orthogonal complements, Orthogonal sets and Basis	Assignment
	4th	Test & Rivision	

Programme Name-B.comI
Teacher- Dr. Renu Yadav

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	

Lesson Plan

Name of Assistant Professor: Mr. Mandeep
Class: B.A-II (Sem-III) Session 2021-22
Subject: Advanced Calculus

Month	Week	Topics Covered
Oct	Week-3	Continuity, Sequential Continuity, properties of continuous functions,
	Week-4	Uniform continuity, chain rule of differentiability. Mean value theorems;
Nov	Week-1	Rolle's Theorem and Lagrange's mean value theorem and their geometrical interpretations. Taylor's Theorem with various forms of remainders,
	Week-2	Darboux intermediate value theorem for derivatives, Indeterminate forms
	Week-3	Limit and continuity of real valued functions of two variables
	Week-4	Partial differentiation. Total Differentials; Composite functions & implicit functions Change of variables
Dec	Week-1	Homogenous functions & Euler's theorem on homogeneous functions..
	Week-2	Taylor's theorem for functions of two variables **Assignment & Test**
	Week-3	Differentiability of real valued functions of two variables
	Week-4	Schwarz and Young's theorems. Implicit function theorem
Jan	Week-1	Maxima, Minima and saddle points of two variables. Lagrange's method of multipliers
	Week-2	Jacobians
	Week-3	Beta and Gama functions
	Week-4	Double and Triple integrals, Dirichlets integrals, change of order of integration in double integrals
Feb	Week-1	Revision
	Week-2	Revision

Lesson Plan

Name of Assistant Professor: Mr. Mandeep
Class: B.A/B.Sc-III (Sem-V) Session 2021-22
Subject: Sequence & Series

Month	Week	Topics Covered
Oct	Week-3	Boundedness of the set of real numbers; least upper bound, greatest lower bound of a set, neighbourhoods,
	Week-4	Interior points, isolated points, limit points, open sets, closed set, interior of a set, closure of a set in real numbers and their properties.
Nov	Week-1	Sequence: Real sequences and their convergence, theorem on limits of sequence, bounded and monotonic sequences, Cauchy's sequence,
	Week-2	Cauchy general principle of convergence, subsequence's, sub sequential limits.
	Week-3	Infinite series: Convergence and divergence of Infinite Series
	Week-4	Comparison Tests of positive terms Infinite series, Cauchy's general principle of Convergence of series,
Dec	Week-1	Convergence and divergence of geometric series, Hyper Harmonic series or p-series. D-Alembert's ratio test, Raabe's test
	Week-2	Logarithmic test, De Morgan and Bertrand's test, Cauchy's nth root test, Gauss Test, Cauchy's integral test, Cauchy's condensation test
	Week-3	Alternating series: Leibnitz's test, absolute and conditional convergence. Arbitrary series: Abel's lemma, Abel's test, Dirichlet's test.
	Week-4	Fourier's series: Fourier expansion of piecewise monotonic functions, Properties of Fourier Coefficients, Dirichlet's conditions,
Jan	Week-1	Parseval's identity for Fourier series, Fourier series for even and odd functions, Half range series, Change of Intervals.
	Week-2	Riemann integral: Definition and examples. Darboux's Theorem and condition of existence of Riemann's integral. **Assignment & Test**
	Week-3	Integrabililty of continuous, monotonic functions and discontinuous functions. Properties of integrable functions
	Week-4	Continuity and differentiability of integrable functions. Primitive. The Fundamental theorem of integral calculus. Mean value theorems of integral calculus
Feb	Week-1	Revision
	Week-2	Revision

Lesson Plan

Name of Assistant Professor: Mr. Mandeep
Class: B.A-II (Sem-IV) Session 2021-22
Subject: Mechanics-I

Month	Week	Topics Covered
April	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, conditions for the reduction of a general system of forces in space to a single force, equations of central axis.
May	Week-1	Wrenches: Definition and basic laws, resultant wrench of two wrenches, locus of the central axis of two wrenches
	Week-2	Null lines and null planes. Velocity and acceleration along a plane curve
	Week-3	component of velocity and acceleration in radial, transverse, tangential and normal directions
	Week-4	Relative velocity and acceleration. Simple harmonic motion (SHM). **Assignment 1,2 & Unit Test**
June	Week-1	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
	Week-2	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/B.Sc-III (Sem-VI) Session 2021-22
Subject: Mechanics-II

Month	Week	Topics Covered
April	Week-1	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)
	Week-2	Friction: Definition of friction and basic laws, problems based on equilibrium of rods and ladders;
	Week-3	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
	Week-4	A uniform quadrilateral lamina, lamina in the form of a trapezium, centre of gravity of a body by integration..
May	Week-1	Motion of a particle attached to an elastic string, Hooke's law, motion of horizontal and vertical elastic strings,
	Week-2	Definition of work, Power and Energy, work done by a variable force, work done in stretching an elastic string, principle of work and energy
	Week-3	conservative system of forces, principle of conservation of energy, Impulse of a constant force and a variable force.
	Week-4	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**
June	Week-1	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
	Week-2	Directions of projection for a given velocity and a given range; range and time of fight down an inclined plane.

Lesson Plan 2021-22

FGM Government College, Adampur

Unit wise Lesson Plan for Even Semester 2021-22

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. 2. Equation of tangent plane, Director sphere and its exercise. 3. Normal to the coincoid and Polar plane of point. 4. Enveloping cone of a conicoid.	1st week of April to 2nd week of April	1st assignment in the beginning of 2nd week of April
2	1. Examples and exercise of Enveloping cone of conicoid. 2. Enveloping cylinder of a conicoid. 3. Exercise and examples of enveloping cylinder. 4. Definition of Paraboloid and its examples.	3rd week of April to 4th week of April	1stMinor test
3	1. Circular section of Paraboloid. 2. Plane section of conicoid. 3. Generating lines and it' s Examples. 4. Confocal coincoid and its exercise.	1stweek of May to 3rdweek of be May	2nd assignment in the last of 2nd week of May
4	1. Reduction of second degree equations. 2. Examples based on reduction of second degree and second degree equations. 3. Test and Revision. 4. Test and Revision.	4th week May to 1stweek of June	2nd Minor test

Lesson Plan 2021-22

FGM Government College, Adampur

Unit wise Lesson Plan for Even Semester 2021-22

Department: ... Mathematics

Teacher: Mukesh Kumari .... **Class:**B. A/ B. ScIII
Subject: Linear Algebra

Sr. No.	Description of Chapters/Topics	Expected Duration	Assignment/Test
1	1. Vector Space and Subspaces. 2. Basis and Dimension 3. Examples and exercise 4. Quotient space and its examples	1st week of April to 2nd week of April	1st assignment in the beginning of 2nd week of April
2	1. Linear Transformations and its exercise 2. Rank and Nullity and Theorems based on Rank and Nullity 3. Algebra of Linear Transformation and theorem.	3rd week of April to 4th week of April	1stMinor test
3	1. Matrix of Linear Transformation and exercise 2. Dual space and Eigen values. 3. Eigen values and Eigen vectors. 4. Inner Product space and Theorems	1stweek of May to 3rdweek of be May	2nd assignment in the last of 2nd week of May
4	1. Linear Operators on inner Product space 2. Test and Revision	4th week May to 1stweek of June	2nd Minor test

Lesson Plan 2021-22

FGM Government College, Adampur

Department: Mathematics

Teacher : Ms Suman Jasta **Class: B.Sc/B.A 1st Semester**

Subject: Algebra **Section:(N.M+C.S)/B.A-I**

SR. NO.	MONTHS	PERIOD	TOPICS
1.	OCTOBER	3rdweek Last week	1. Symmetric, Skew-symmetric. 2. Hermitian and Skew-Hermitian.
2.	NOVEMBER	1st week 2nd week 3rd week Last week	1. Elementary operations on matrices, Rank of a matrix. Inverse of a matrix. 2. Linear dependence and independence of rows and columns of matrices, Row rank and column rank of a matrix. 3. Eigen values, eigen vectors and the characterstic equation of a matrix, Minimal polynomial of a matrix. 4. Cayley Hamilton theorem and its use in finding inverse of a matrix.
`	DECEMBER	1st week 2nd week 3rd week Last week	1. Application of matrices to a system of linear (both homogenous and non-homogenous) equations. 2. Theorems on consistency of a system of linear equations. 3. Unitary and Orthogonal Matrices. 4. Bilinear and Quadratic forms.

4.	**JANUARY**	**1st week** **2nd week** **3rd week** **Last week**	**1. .**Descarte's rule of signs,Relations between the roots and coefficients of general polynomial equation in one variable. **2.**Solution of polynomial equations having conditions on roots. **3.** Common roots and multiple roots. **4.** Transformation of equations.
5.	**FEBRUARY**	**1st week** **2nd week**	**1.** Nature of the roots of an equation. **2.**Descarte's rule of signs, Solution of cubic equations (Cardan's method). **3.** Biquadratic equations and their solutions.

Lesson Plan 2021-22

FGM Government College, Adampur

Department: Mathematics

Teacher : Ms Suman Jasta **Class: B.Sc/B.A 2nd Semester**

Subject: Ordinary differential equations. **Section:(N.M+C.S)/B.A-I**

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. Inverse Laplace Transformations.

3.	**June**	**1st week** **2nd week**	Laplace Transformatons. Revision.