<div align="center">**LESSON PLAN**</div>

Session:2025-26(ODDSEM)

Name of Teacher- Shipra

Class- BA II, BSc Maths Hons II

Subject- Skill EnhancementCourse

WEEKS	SYLLABUS
Week1	Definition, scope, methodology and applications of OR. Types of OR models.
Week2	Concept of optimization, Linear Programming: Introduction, Formulation of a Linear Programming Problem (LPP), Requirements for an LPP
Week3	Advantages and limitations of LP. Graphical solution: Multiple, unbounded and infeasible solutions.
Week4	Revision and test.
Week5	Principle of simplex method: standard form, basic solution, basic feasible solution
Week6	Computational Aspect of Simplex Method: Cases of unique feasible solution, no feasible solution, multiple solution and unbounded solution and degeneracy.
Week7	Two Phase and Big- M methods.
Week8	Duality in LPP, primal-dual relationship.
Week9	Revision and test.
Week10	Transportation Problem: Methods for finding basic feasible solution of a transportation problem, Modified distribution method for finding the optimum solution,
Week11	Unbalanced and degenerate transportation problems, transhipment problem, maximization in a transportation problem.
Week12	Revision and test.
Week13	Assignment Problem: Solution by Hungarian method, Unbalanced assignment problem, maximization in an assignment problem, Crew assignment and Travelling salesman problem.
Week14	Game Theory: Two person zero sum game, Game with saddle points, the rule of dominance; Algebraic, graphical and linear programming methods for solving mixed strategy games.
Week15	Revision and test
Week16	Revision and test

<div align="center">**LESSON PLAN**</div>

Session:2025-26(ODDSEM)

Name of Teacher- Shipra

Class-BSc Phy Hons II

Subject- Minor

WEEKS	SYLLABUS
Week1	Linear programming problems (LPP): Introduction to linear programming problems (LPP), Mathematical formulation of the linear programming problems with illustrations.
Week2	Graphical method used for solving linear programming problem. Feasible region of LPP, unbounded solution to the LPP in graphical method
Week3	Canonical and standard form of LPP.
Week4	Revision and test.
Week5	Simplex Method: Basic and non basic variables, Theory of Simplex method, optimality and unboundlessness, Simplex algorithm
Week6	Simplex method in tableau format. Introduction to artificial variables
Week7	Two –phase simplex method, Big-M method,
Week8	Degeneracy problem in simplex method.
Week9	Revision and test.
Week10	Transportation Problem: Introduction to transportation problem, Initial basic feasible solution to transportation problem using North-West Corner, Least Cost Method and Vogel's approximation Method.
Week11	Optimal solution to transportation problem using MODI method, Unbalanced transportation problem, Degeneracy in transportation problem.
Week12	Revision and test.
Week13	Assignment Problem: Introduction to assignment problem, Mathematical formulation of assignment problem
Week14	Solution to assignment problem using Hungarian method
Week15	Revision and test
Week16	Revision and test

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LESSON PLAN

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Session:2025-26(ODDSEM)

Name of Teacher- Shipra

Class-BSc Maths Hons III

Subject- Integral Equation

WEEKS	SYLLABUS
Week1	Linear integral equations, Some basic identities, Initial-value problems reduced to Volterra integral equations, Method of successive approximation to solve Volterra integral equations of second kind
Week2	Neumann series for Volterra integral equation. Resolvent Kernel Method Examples.
Week3	Laplace transform method for a difference kernel, Solution of a Volterra integral equation of the first kind.
Week4	Revision and test.
Week5	Boundary value problems .Their corresponding Fredholm integral equations,
Week6	Method of successive approximations to solve Fredholm equation of second kind. Iterated kernels Neumann series for Fredholm equations.
Week7	Resolvent kernel as a sum of series
Week8	Fredholm resolvent kernel as a ratio of two series. Fredholm equations with degenerate kernel.
Week9	Revision and test.
Week10	Approximation of a kernel by a degenerate kernel, Fredholm Alternative numerical.
Week11	Green's function. Method of variation of parameters Construction the Green's function Applications
Week12	Revision and test.
Week13	Homogeneous Fredholm equations with symmetric kernels, Solution of Fredholm equations of the second kind with symmetric kernel,
Week14	Method of Iterated Kernels, Fredholm Equations of the First Kind with Symmetric Kernels. Solution of such integral equations.Properties of Symmetric Kernels
Week15	Revision and test
Week16	Revision and test

LESSON PLAN

Name of theAssistant Professor: **Dr Rajesh Dahiya and Dr Sunil**

Class: B. A. (Pass) / B. A. Economics Hons. 1st Semester
Name of Subject: **MDC - Mathematics**

WEEK	SYLLABUS
Week 1	Numbers, H.C.F. and L.C.M. of Numbers,Simplification,
Week 2	Decimal and Fractions
Week 3	Square roots and cube roots
Week 4	Surds and indices.
Week 5	Revisions and Test
Week 6	Problems on numbers, Average
Week 7	Percentage, Profit and Loss,
Week 8	Ratio and proportion.
Week 9	Revision and Test
Week 10	Problem on ages, Partnership
Week 11	, Time and work, Time and distance.
Week 12	Revisions and Test
Week 13	Problems on trains,
Week 14	Mixture problem,
Week 15	Problems based on Calendar and clock.
Week 16	Problem Discussion
Week 17	Revision and Test

LESSONPLAN

Session:2025-26(ODDSEM)

Name of Teacher: Dr Archana Dhankhar
Class M.Sc. 3rd Sem.

Subject: Fluid Dynamics

WEEK	SYLLABUS
Week1	Kinematics - Velocity at a point of a fluid,Eulerian and Lagrangian methods, Streamlines, path lines and

	Pressure at a point of a moving fluid, Euler equation of motion, Equations of motion in cylindrical and spherical co-ordinates
Week2	streak lines,Velocity potential, Irrotational and rotational motions, Vorticity and circulation, Equation of continuity
Week3	Boundary surfaces, Acceleration at a point of a fluid, Components of acceleration in cylindrical and spherical polar co-ordiantes.
Week4	Pressure at a point of a moving fluid, Euler equation of motion, Equations of motion in cylindrical and spherical polar co-ordinates
Week5	Bernoulli equation, Impulsive motion, Kelvin circulation theorem
Week6	Vorticity equation, Energy equation for incompressible flow, Kinetic energy of irrotational flow, Kelvin minimum energy theorem
Week7	Kinetic energy of infinite fluid. Uniqueness theorems.
Week8	Axially symmetric flows, Liquid streaming part a fixed sphere, Motion of a sphere through a liquid at rest at infinity .
Week9	Equation of motion of a sphere, Kinetic energy generated by impulsive motion, Motion of two concentric spheres
Week10	Three-dimensional sources, sinks and doublets, Images of sources, sinks and doublets in rigid impermeable infinite plane and in impermeable spherical surface.
Week11	Two dimensional motion; Use of cylindrical polar co-ordinates, Stream function, Axisymmetric flow,
Week12	Stoke stream function, Stoke stream function of basic flows, Irrotational motion in two-dimensions,
Week13	Complex velocity potential, Milne-Thomson circle theorem, Two-dimensional sources, sinks
Week14	doublets and their images, Blasius theorem.
Week15	Revision and Test
Week16	Revision and Test
Week17	Revision and Test

LESSONPLAN

Session:2025-26 (ODD SEM)

Name of Teacher: Dr. Rajesh Mor

Class-B.A Sem III Sec A

Ordinary Differential Equations

WEEKS	SYLLABUS
Week1	Geometrical meaning of a differential equation.
Week2	Exact differential equations. Integrating factors.
Week3	First orderhigher degree equations solvable for x,y,p. Lagrange's equations, Revision and problems of Exact Differential Equations
Week4	Clairaut's equations. Equation reducible toClairaut's form. Singular solutions.
Week5	Orthogonal trajectories: Cartesian coordinates and polar coordinates. Self-orthogonal family of curves.
Week6	Linearordinary differential equations with constant coefficients. Revision and problems of Equations of first order but not of first degree.
Week7	Homogeneous linear ordinary differential equations.Equations reducible to homogeneous.
Week8	Linear differential equations of second order: Reduction to normal form. Transformation of the equation bychanging the dependent variable/the independent variable.
Week9	Solution by operators of non-homogeneous lineardifferential equations. Revision and Test of Section-1.
Week10	Reduction of order of a differential equation.
Week11	Method of variations of parameters.Method of undetermined coefficients. Revision and test of Section-2
Week12	Ordinary simultaneous differential equations.

Week13	Solution of simultaneous differential equations involving operators x (d/dx) or t (d/dt) etc. Revision and test of Section-3.
Week14	Simultaneous equation of the form dx/P = dy/Q = dz/R. Total differential equations. Condition for Pdx + Qdy +Rdz = 0 to be exact.
Week15	General method of solving Pdx + Qdy + Rdz = 0 by taking one variable constant.
Week16	Method of auxiliary equations
Week17	Revision and test

LESSON PLAN

Name of the Assistant Professor: **Dr Vikash**

Class: BCA 3rd semester

Name of Subject: **Applicable Mathematics** (**MDC - Mathematics**)

WEEK	SYLLABUS
Week 1	Theory of Sets: Meaning, elements, types, presentation and equality of Sets
Week 2	Union, Intersection, Complement and Difference of Sets
Week 3	Venn Diagram, Cartesian Product of two Sets
Week 4	Applications of Set Theory.
Week 5	Revisions and Test
Week 6	Matrices and Determinants: Definition of a Matrix; Types of Matrices
Week 7	Algebra of Matrices; Properties of determinants; Calculation of values of Determinants up to third order; adjoint of a Matrix, elementary row and column operations
Week 8	Finding inverse matrix through adjoint; Solution of a system of Linear equations having unique Solution and involving not more than three variables.
Week 9	Revision and Test
Week 10	Compound Interest: Certain different types of interest rate
Week 11	Concept of present value and amount of a sum.
Week 12	Revisions and Test
Week 13	Annuities: Types of annuities
Week 14	Present value and amount of an annuity
Week 15	Including the case of continuous compounding.
Week 16	Problem Discussion
Week 17	Revision and Test

LESSON PLAN

Name of the Assistant Professor: **Dr Vikash**

Class: BCom 1st Semester

Name of Subject: **MDC - Mathematics**

WEEK	SYLLABUS
Week 1	Numbers, H.C.F. and L.C.M. of Numbers, Simplification,
Week 2	Decimal and Fractions
Week 3	Square roots and cube roots
Week 4	Surds and indices.
Week 5	Revisions and Test
Week 6	Problems on numbers, Average
Week 7	Percentage, Profit and Loss,
Week 8	Ratio and proportion.
Week 9	Revision and Test
Week 10	Problem on ages, Partnership
Week 11	, Time and work, Time and distance.
Week 12	Revisions and Test
Week 13	Problems on trains,
Week 14	Mixture problem,
Week 15	Problems based on Calendar and clock.
Week 16	Problem Discussion
Week 17	Revision and Test

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Teacher- Dr Vikash

Class- BCom 1ˢᵗ sem

 Subject- Mathematics

WEEKS	SYLLABUS
Week 1	Calculus: (Problems and theorems involving trigonometrically ratios are not to be done). Differentiation: Partial derivatives up to second order
Week 2	Homogeneity of functions and Euler's theorem; total differentials, Differentiation of implicit function with the help of total differentials.
Week 3	Maxima and Minima; Cases of one variable involving second or higher order derivatives;
Week 4	Cases of two variables involving not more than one constraint.
Week 5	Integration: Integration as anti-derivative process; Standard forms
Week 6	Methods of integration by substitution, by parts, and by use of partial fractions; Definite integration
Week 7	Finding areas in simple cases; Consumers and producers surplus
Week 8	Nature of Commodities learning Curve; Leontiff Input-Output Model.
Week 9	Matrices: Definition of matrix; Types of matrices
Week 10	Algebra of matrices.
Week 11	Algebra of matrices.
Week 12	Algebra of matrices.
Week 13	Determinants: Properties of determinants
Week 14	calculation of values of determinants up to third order; Adjoint of a matrix
Week 15	through Adjoint and elementary row or column operations
Week 16	Solution of system of linear equations having unique solution and involving not more than three variables.
Week 17	**Rivision**

LESSON PLAN
Session: 2025-26 (ODDSEM)
Name of Teacher- ASHA

Class- MSC MATHS SEM 1   **Subject-24MAT201DS03**

Complex Analysis

WEEKS	SYLLABUS
Week 1	Function of a complex variable, Continuity, Differentiability, Analytic functions and their properties
Week 2	CauchyRiemann equations in cartesian and polar coordinates, Power series, Radius of convergence
Week 3	Differentiability of sum function of a power series,
Week 4	Branches of many valued functions with special reference to argz, logz and za
Week 5	Path in a region, Contour, Complex integration, Cauchy theorem, Cauchy integral formula, Assignment 1& 2 Deadline, Test 1
Week 6	Extension of Cauchy integral formula for multiple connected domain
Week 7	Poisson integral formula, Higher order derivatives,
Week 8	Complex integral as a function of its upper limit, Morera theorem, Cauchy inequality,
Week 9	Liouville theorem, Taylor theorem.Discussion on unit 1 , Assignment 1 and Announcements of Test 2
Week 10	Zeros of an analytic function,Laurent series, Isolated singularities
Week 11	Cassorati-Weierstrass theorem, Limit point of zeros and poles. Maximum modulus principle, Schwarz lemma
Week 12	Meromorphic functions, Argument principle, Rouche theorem, Discussion on Assignment 2 and Test , all excercise problem if any (Unit 1&2)
Week 13	Fundamental theorem of algebra, Inverse function theorem.
Week 14	Calculus of residues, Cauchy residue theorem, Evaluation of integrals of different sine,cosine types
Week 15	Conformal mappings. Space of analytic functions and their completeness
Week 16	Hurwitz theorem, Montel theorem, Riemann mapping theorem. Discussion unit 3&4: Assignment Problem ,Test

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Teacher- Dr Sheetal Chawla

Class- B.Sc.(H) Sem-V

Subject- Method of Applied Mathematics

WEEKS	SYLLABUS
Week 1	Solution of 3D Laplace equations in spherical polar co-ordinate by the method of separation of variables.
Week 2	Solution of 3D Wave equations in spherical polar co-ordinate by the method of separation of variables.
Week 3	Solution of 3D Heat equations in spherical polar co-ordinate by the method of separation of variables, Revision and Test
Week 4	Solution of 3D Laplace equations in Cylindrical polar co-ordinate by the method of separation of variables.
Week 5	Solution of 3D Wave equations in Cylindrical polar co-ordinate by the method of separation of variables.
Week 6	Solution of 3D Heat equations in Cylindrical polar co-ordinate by the method of separation of variables.
Week 7	Examples based on these articles, Revision and test
Week 8	Fourier series solution of the wave equation, transformation of boundary value
Week 9	Examples based on these articles
Week 10	Fourier series solution of the heat equation
Week 11	Hankel transform of elementary functions, Revision and Test
Week 12	Operational properties of the Hankel transform and Applications of Hankel transform to PDE
Week 13	Definition and basic properties of finite Fourier sine and cosine transforms, its applications to the solutions of BVP's and IVP's.
Week 14	Moments and products of inertia, Revision and Test
Week 15	Angular momentum of a rigid body, principal axes and principal moment of inertia of a rigid body, General motion of a rigid body
Week 16	Kinetic energy of a rigid body rotating about a fixed point, Momental ellipsoid and equimomental systems, coplanar mass distribution, Revision and Test
Week 17	Revision, Problem Discussion and Test.

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Teacher- Dr. Sheetal Chawla

Class- B.Sc. Sem III Sec A

Ordinary Differential Equations

WEEKS	SYLLABUS
Week 1	Geometrical meaning of a differential equation.
Week 2	Exact differential equations. Integrating factors.
Week 3	First order higher degree equations solvable for x,y,p. Lagrange's equations, Revision and problems of Exact Differential Equations
Week 4	Clairaut's equations. Equation reducible to Clairaut's form. Singular solutions.
Week 5	Orthogonal trajectories: Cartesian coordinates and polar coordinates. Self-orthogonal family of curves.
Week 6	Linear ordinary differential equations with constant coefficients. Revision and problems of Equations of first order but not of first degree.
Week 7	Homogeneous linear ordinary differential equations. Equations reducible to homogeneous.
Week 8	Linear differential equations of second order: Reduction to normal form. Transformation of the equation by changing the dependent variable/the independent variable.
Week 9	Solution by operators of non-homogeneous linear differential equations. Revision and Test of Section-1.
Week 10	Reduction of order of a differential equation.
Week 11	Method of variations of parameters. Method of undetermined coefficients. Revision and test of Section-2
Week 12	Ordinary simultaneous differential equations.
Week 13	Solution of simultaneous differential equations involving operators x (d/dx) or t (d/dt) etc. Revision and test of Section-3.
Week 14	Simultaneous equation of the form dx/P = dy/Q = dz/R. Total differential equations. Condition for Pdx + Qdy +Rdz = 0 to be exact.
Week 15	General method of solving Pdx + Qdy + Rdz = 0 by taking one variable constant.
Week 16	Method of auxiliary equations
Week 17	Revision and test

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Teacher- Dr. Sheetal Chawla

Class- B.A. Sem-I

Subject- Function and Algebra

WEEKS	SYLLABUS
Week 1	Relations, Functions along with domain and range, Composition of functions
Week 2	Invertibility and inverse of functions, One-to-one correspondence and the cardinality of a set.
Week 3	Relations between the roots and coefficients of general polynomial equation in one variable. Test and Revision of Section-1
Week 4	Solutions of polynomial equations having conditions on roots. Common roots and multiple roots
Week 5	Transformation of equations. Nature of the roots of an equation Descarte's rule of signs.
Week 6	Solutions of cubic equations (Cardon's method). Biquadratic equations and their solutions. Test and Revision of Section-2
Week 7	**Matrix and its types**. Symmetric, Skew-symmetric, Hermitian and Skew Hermitian matrices.
Week 8	Unitary and Orthogonal Matrices, Idempotent, Involuntary, Nilpotent Matrices.
Week 9	**Rank of a Matrix & its applications.** Rank of a matrices, Row rank and column rank of a matrix
Week 10	Elementary Operations on matrices, Inverse of a matrix , Normal Form, PAQ Form Test and Revision of Section-3
Week 11	Linear dependence and independence of rows and columns of matrices
Week 12	Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations, Theorems on consistency of a system of linear equations.
Week 13	**Cayley Hamilton theorem.** Eigenvalues, eigenvectors and the characteristic equation of a matrix. Problem Discussion and Revision.
Week 14	Minimal polynomial of a matrix.
Week 15	Cayley Hamilton theorem and its use in finding the inverse of a matrix.
Week 16	Diagonalization of matrix.
Week 17	Test and Revision

Name of Teacher: **Mr Sunil Dua ,Dr Ritika, Dr Sanjay**

Class: B.S.C Maths Hons. 5th Sem **,**B. A. (Pass) / B. Sc. (Pass) 5th Semester

Subject: **Real Analysis**

WEEK	SYLLABUS
Week 1	Partition of an interval, Norm of partition, Refinement of partition, Upper Sum and Lower Sum, Oscillatory Sum, Lower Riemann integral, Upper Riemann integral, Riemann integral, Example of Riemann integral,
Week 2	Darboux's Theorem, Application of Darboux's Theorem, Condition of Integrability, Integrability of continuous and monotonic functions, Integral as a limit of sums, Riemann Sum, Integral as a Riemann Sum,
Week 3	The Fundamental theorem of integral calculus: its application and examples, Primitive of a function and its application, Theorem on Continuity and Differentiability of integral function, Application and example of Continuity and Differentiability of integral function
Week 4	Mean value theorems of integral calculus, Application and example of Mean value theorems of integral calculus
Week 5	Generalized Mean value theorems of integral calculus: its application and example, Improper integrals and their convergence, Application and example of Improper integrals and their convergence
Week 6	Comparison tests to check convergence of Improper integrals, An important Comparison integrals, Application and example of important Comparison integrals, General test for convergence, Absolute convergence, Comparison tests for convergence at infinity.
Week 7	Abel's and Dirichlet's tests, Frullani's integral, Application and example of Abel's and Dirichlet's tests, Application and example Frullani's integral, Integral as a function of a parameter, Application and example of Integral as a function of a parameter. Continuity, Application and example of Continuity
Week 8	Differentiability and integrability of an integral of a function of a parameter, Application and example of Differentiability and integrability of an integral of a function of a parameter
Week 9	Definition and examples of metric spaces, Application and example of metric spaces, Neighborhoods, limit points, Interior points, Application and example of neighborhoods, Application and example of limit points, Application and example of interior points
Week 10	Open and Closed sets, Closure and Interior, Boundary Points, Application and example of Open and Closed sets, Application and example of Closure and Interior point, Application and example of Boundary Points
Week 11	Subspace of a Metric space, Equivalent metrics, Application and example of subspace of a metric space and equivalent metrics

Week 12	Cauchy sequences, Completeness, Application and example of Cauchy sequences and its completeness, Cantor's intersection theorem, Baire's category theorem, contraction Principle, Application and example of Cantor's intersection theorem, Baire's category theorem, contraction Principle
Week 13	Continuous functions, uniform continuity, compactness for metric spaces, sequential compactness, Bolzano - Weierstrass property, total boundedness, finite intersection property, continuity in relation with compactness,
Week 14	Connectedness, components, continuity in relation with connectedness.
Week 15	Revision and Test
Week 16	Revision and Test
Week 17	Revision and Test

LESSON PLAN

Name of Teacher: **Dr Ritika**

Class: B. Sc. (Maths Hons.) 3rd Semester

Subject: **Advanced Calculus**

WEEK	SYLLABUS
Week 1	Continuity, Sequential continuity, Properties of continuous functions, Uniform continuity
Week 2	Chain rule of differentiability. Mean value theorems: Rolle's Theorem and their geometrical interpretations.
Week 3	Lagrange's mean value theorem and their geometrical interpretations, Taylor's Theorem with various forms of remainders, Darboux intermediate value theorem for derivatives.
Week 4	Reduction formulae
Week 5	Rectification
Week 6	Intrinsic equations of curve. Limit and continuity of real valued functions of two variables.
Week 7	Partial differentiation, Total Differentials: Composite functions & Implicit functions. Change of variables.
Week 8	Homogenous functions & Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables. Differentiability of real valued functions of two variables.
Week 9	Schwarz and Young's theorem. Implicit function theorem.
Week 10	Maxima, Minima and saddle points of two variables. Lagrange's method of multipliers.
Week 11	Curves: Tangents, Principal normals, Binormals, Serret - Frenet formulae. Locus of the centre of curvature,

Week 12	Spherical curvature, Locus of centre of Spherical curvature,
Week 13	Involutes, Evolutes, Bertrand Curves.
Week 14	Surfaces: Tangent planes, One parameter family of surfaces
Week 15	Envelopes.
Week 16	Revision and Test
Week 17	Revision and Test

LESSON PLAN

Name of the Assistant Professor: **Dr Ritika, Dr Shilpa, Dr Roji, Dr Anil, Dr Sanjay, Dr Upma**

Class: B.Sc. Chem Hons / B.Sc. Life Sciences / B. Com. (Pass) / B.A. (Pass) / BBA 3rd Semester
Name of Subject: **Applicable Mathematics (MDC - Mathematics)**

WEEK	SYLLABUS
Week 1	Theory of Sets: Meaning, elements, types, presentation and equality of Sets
Week 2	Union, Intersection, Complement and Difference of Sets
Week 3	Venn Diagram, Cartesian Product of two Sets
Week 4	Applications of Set Theory.
Week 5	Revisions and Test
Week 6	Matrices and Determinants: Definition of a Matrix; Types of Matrices
Week 7	Algebra of Matrices; Properties of determinants; Calculation of values of Determinants up to third order; adjoint of a Matrix, elementary row and column operations
Week 8	Finding inverse matrix through adjoint; Solution of a system of Linear equations having unique Solution and involving not more than three variables.
Week 9	Revision and Test
Week 10	Compound Interest: Certain different types of interest rate
Week 11	Concept of present value and amount of a sum.
Week 12	Revisions and Test
Week 13	Annuities: Types of annuities
Week 14	Present value and amount of an annuity
Week 15	Including the case of continuous compounding.
Week 16	Problem Discussion
Week 17	Revision and Test

LESSON PLAN
Session: 2025-26 (ODD SEM)

Name of Teacher- Dr Roji , Shilpa
Class- B.S.C Ist P.H
Subject- Mathematics

WEEKS	SYLLABUS
Week 1	Calculus: (Problems and theorems involving trigonometrically ratios are not to be done). Differentiation: Partial derivatives up to second order
Week 2	Homogeneity of functions and Euler's theorem; total differentials, Differentiation of implicit function with the help of total differentials.
Week 3	Maxima and Minima; Cases of one variable involving second or higher order derivatives;
Week 4	Cases of two variables involving not more than one constraint.
Week 5	Integration: Integration as anti-derivative process; Standard forms
Week 6	Methods of integration by substitution, by parts, and by use of partial fractions; Definite integration
Week 7	Finding areas in simple cases; Consumers and producers surplus
Week 8	Nature of Commodities learning Curve; Leontiff Input-Output Model.
Week 9	Matrices: Definition of matrix; Types of matrices
Week 10	Algebra of matrices.
Week 11	Algebra of matrices.
Week 12	Algebra of matrices.
Week 13	Determinants: Properties of determinants
Week 14	calculation of values of determinants up to third order; Adjoint of a matrix
Week 15	through Adjoint and elementary row or column operations
Week 16	Solution of system of linear equations having unique solution and involving not more than three variables.
Week 17	Revision and Test

LESSON PLAN
Session: 2025-26 (ODD SEM)

Name of Teacher- Dr Roji
Class- B.C.A.
 Subject- Mathematics

WEEKS	SYLLABUS
Week 1	Set, Set Operations, Properties of Set operations, Subset, Venn Diagrams, Cartesian Products. Relations on a Set, Properties of Relations
Week 2	Representing Relations using matrices and digraphs, Types of Relations, Equivalence Relation, Equivalence relation and partition on set, Closures of Relations, Warshall's algorithm.
Week 3	Functions, properties of functions (domain, range), composition of functions, surjective (onto), injective (one-to-one) and bijective functions, inverse of functions.
Week 4	Some useful functions for Computer Science: Exponential and Logarithmic functions, Polynomial functions, Ceiling and Floor functions.
Week 5	Basics of counting, Pigeonhole principle, permutation, combination, Binomial coefficients, Binomial theorem.
Week 6	Recurrence relations, modelling recurrence relations with examples, like Fibonacci numbers
Week 7	The tower of Hanoi problem.
Week 8	Solving linear recurrence relation with constant coefficients using characteristic equation roots method.
Week 9	Basic terminologies of graphs, connected and disconnected graphs
Week 10	Subgraph, paths and cycles, complete graphs, digraphs, weighted graphs, Euler and Hamiltonian graphs.
Week 11	Trees, properties of trees, concept of spanning tree. Planar graphs.
Week 12	Definitions and basic results
Week 13	Types of matrices, algebra of matrices–addition, subtraction, and multiplication of matrices
Week 14	determinant of a matrix, symmetric and skew-symmetric matrices
Week 15	orthogonal matrix, rank of a matrix, inverse of a matrix, applications of matrices to solve system of linear equations,

| Week 16 | Eigen values and Eigen vectors, Caley-Hamilton theorem. |
| Week 17 | Revision and Test |

LESSON PLAN
Session: 2025-26 (ODD SEM)

Name of Teacher- Sunil Dua ,Dr Jyotsana
Class- B.S.C Maths Hons. 5th Sem ,B.S.C IIIrd
Subject- Mathematics

WEEKS	SYLLABUS
Week 1	Chapter 1: Finite Difference Operators. Forward difference operator, Backward difference operator, Central difference operator and their properties. Fundamental theorem of difference calculus
Week 2	The operator E and their properties. Numerical problems related to different difference operators. Effect of an error in a tabular value(Missing terms). Numerical problems related to effect of an error in a tabular value. Relation between different Finite difference operators.
Week 3	Defining the term interpolation and extrapolation, Difference between Interpolation with equal intervals and Interpolation with unequal intervals. Newton-Gregory formula for forward interpolation and their problems. Newton-Gregory formula for backward interpolation and their problems. More problems related to Newton's interpolation formulas interpolation.
Week 4	,Subdivision of intervals and related examples. Chapter 2: Interpolation with equal intervals. Chapter 3: Interpolation with unequal intervals. Discussion on Chapter 2 and Take problems of Chapter 2. Define the term divided difference and related theorems. Newton's divided difference interpolation formula for unequal intervals and related examples. Relation between divided differences and ordinary differences and related examples
Week 5	More examples related to Divided Differences. Lagrange's interpolation formula and related examples. Lagrange's interpolation formula and related examples. Hermite's interpolation formula and related examples. Brief overview of Interpolation with unequal intervals
Week 6	Problems of Chapter 3 Chapter 4: Central Difference Interpolation formula and related examples. Define central difference, Gauss forward interpolation formula and related examples. Gauss backward interpolation formula and related examples
Week 7	Sterling formula and related examples. Bessle's formula and related examples. Brief overview of Central Difference interpolation formulas. Problems of Chapter 4.

	Chapter 5 : Probability Distributions
Week 8	Examples of probability distribution of a random variable, Mean and variance of a random variable. Problems based on mean and variance of a random variable. Binomial distribution and related examples. Mean and variance of binomial distribution, recurrence formula Problems based on properties of binomial distribution
Week 9	Problems based on fitting a binomial distribution. Poisson distribution, Mean, variance and recurrence formula of poisson distribution. Problems related to poisson distribution and their properties. Fitting a poisson distribution and related properties. Normal distribution and its properties. Problems related to Normal distribution and its properties
Week 10	Method of area to find the expected frequencies for normal curve. Problems to find the expected frequencies for normal curve under the method of area. More problems related to Probability distribution. Chapter6: Derivatives Using Newton's Forward and Backward Interpolation formula Derivatives Using Sterling and Bessel's Central Difference Formula and Newton's Divided Difference formula. Problems to find the different derivative when some tabulated table is given
Week 11	Chapter 7: Define Eigen values and Eigen vectors and some properties of eigen values, Problems to find the eigen values and their corresponding eigen vectors of the matrix Power method and problems to find the largest eigen value of the matrix Jacobi's method for symmetric matrix, method to find all the eigen values and eigen vectors of the matrix Given's Method, Problems on how to transform a matrix into tridiagonal form by Given's method and to find the eigen vector corresponding to the largest eigen value from the eigen vectors of the tridiagonal matrix. House-Holder's method and problems based on House-Holder's method More Problems based on House-Holder's method QR method and related problems
Week 12	Lanczo's method and related problems. More problems on power, jacobi's, Given's, House-Holder's method, QR and Lanczo's method. Problem discussion on Eigen value Problems
Week 13	Presentation on Eigen value Problems Newton Cotes Quadrature formula and related problems Numerical Integration by trapezoidal rule and related problems
Week 14	Numerical Integration by Simpson's 1/3 rule and related problems Numerical Integration by Chebyshev's Quadrature formula and related problems Problems discussion. Introducing the concept: Initial and Boundary conditions, Single step and Multi step method, Euler's method and related examples. Modified Euler's Method and related examples

Week 15	More problems on Euler's method and Modified Euler's method. Taylor's series method and problems related to Taylor's series method. Runge-Kutta method of First and Second order and its examples
Week 16	Runge-Kutta method of Third and Fourth order and its examples. Picard's Method and problems related with Picard's method , Predictor-Corrector Methods, Milne-Simpson's method and its examples
Week 17	Adams-Bashforth Predictor Formula and Adams-Moulton Corrector Formula and its examplesMore examples related to Numerical Solution of Ordinary Differential Equations.More examples related to Numerical Solution of Ordinary Differential Equations

LESSON PLAN
Session: 2025-26 (ODD SEM)

Name of Teacher- Dr Jyotsana ,Shilpa ,Sunil
Class- B.S.C IIIrd , B.S.C Maths Hons. 5th Sem
Subject- Groups and Rings

WEEKS	SYLLABUS
Week 1	Definition of a group with example and simple properties of groups, ,
Week 2	Subgroups and Subgroup criteria, Generation of groups,
Week 3	cyclic groups, Cosets, Left and right cosets, Index of a sub-group Coset decomposition,
Week 4	Largrage's theorem and its consequences, Normal subgroups, Quotient groups
Week 5	Homoomorphisms, isomophisms,
Week 6	automorphisms and inner automorphisms of a group..
Week 7	Automorphisms of cyclic groups, Permutations groups.
Week 8	Even and odd permutations. Alternating groups, Cayley's theorem, Center of a group and derived group of a group
Week 9	Introduction to rings, subrings, integral domains and fields,
Week 10	Characteristics of a ring. Ring homomorphisms,
Week 11	ideals (principle, prime and Maximal) and Quotient rings,
Week 12	Field of quotients of an integral domain.

Week 13	Euclidean rings, Polynomial rings, Polynomials over the rational field,
Week 14	The Eisenstein's criterion, Polynomial rings over commutative rings,
Week 15	Unique factorization domain, R unique factorization domain implies so is R[X1 , X2,……Xn]
Week 16	Revision and Test
Week 17	Revision and Test

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Teacher- Dr Parvesh

Class- M.S.C Ist Maths

Subject- Mathematics

WEEKS	SYLLABUS
Week 1	Basic concepts of Object-Oriented Programming (OOP). Advantages and applications of OOP. Object-oriented languages.
Week 2	Introduction to C++. Structure of a C++ program
Week 3	Creating the source files. Compiling and linking. C++ programming basics: Input/Output, Data types
Week 4	C ++ Operators, Expressions, Control structures, Library functions
Week 5	Functions in C++: Passing arguments to and returning values from functions, Inline functions
Week 6	Default arguments, Function overloading
Week 7	Classes and objects : Specifying and using class and object, Arrays within a class, Arrays of objects
Week 8	Object as a function arguments, Friendly functions, Pointers to members.
Week 9	Constructors and destructors. Operator overloading and type conversions
Week 10	Inheritance: Derived class and their constructs, Overriding member functions, Class hierarchies
Week 11	Public and private inheritance levels

Week 12	Polymorphism, Pointers to objects, This pointer, Pointers to derived classes, Virtual functions.
Week 13	Streams, Stream classes, Unformatted Input/Output operations
Week 14	Formatted console Input/Output operations, Managing output with manipulators.
Week 15	Classes for file stream operations, Opening and Closing a file. File pointers and their manipulations, Random access.
Week 16	Error handling during file operations, Command-line arguments. Exceptional handling
Week 17	Revision and test

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Teacher- Dr Parvesh

Class- M.S.C IInd Maths

Subject- Mathematics

WEEKS	SYLLABUS
Week 1	Introduction to MATLAB Programming: Basics of MATLAB programming, Anatomy of a program
Week 2	Data types, Operators, Arithmetic operators with scalars, Display Formats, Mathematical operations, Scalar Variables and assignments
Week 3	Script Files, Complex Numbers and Commands related to Complex Numbers
Week 4	Loops: For loops, While loops, Branching (conditional statements) - if statement, If else statement, Else if statement.
Week 5	Introduction to Arrays: Creating one and two-dimensional arrays, Array addressing, Strings, String functions,
Week 6	Mathematical Operations with Arrays, Cell array, Creating cell array, Using script files and Managing Data
Week 7	Input/Output Commands, Save and Load Commands, Importing and Exporting Data.
Week 8	Executable files, Subroutines, Built in functions and user-defined functions, Function handles, Function handles

Week 9	Two-Dimensional Plots, specialized 2-D plots, Formatting a Plot, Multiple Plots on same Plot, Plots with
Week 10	Logarithmic Axes, Error Bar Plots, Histograms, Polar Plots, Using subplots for multiple graphs, 3-D plots- Line
Week 11	Plots, Mesh and Surface Plots, View Command, Interpolated surface plots, Overlay Plots, Saving and printing
Week 12	graphs, Mesh, Contour, Contour.
Week 13	Polynomials: Finding Value and Roots of Polynomials, Arithmetic operations with Polynomials.
Week 14	Curve Fitting: Curve Fitting with Polynomials, Curve fitting with Functions other than Polynomials,
Week 15	Interpolation.
Week 16	Numerical Analysis: Solving an equation, Finding Minimum and Maximum of Function, Numerical Integration,
Week 17	Revision and test

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Teacher- Dr. Asha

Class- B.SC. Sem-I Sec C

Subject- Function and Algebra

WEEKS	SYLLABUS
Week 1	Relations, Functions along with domain and range, Composition of functions
Week 2	Invertibility and inverse of functions, One-to-one correspondence and the cardinality of a set.
Week 3	Relations between the roots and coefficients of general polynomial equation in one variable. Test and Revision of Section-1
Week 4	Solutions of polynomial equations having conditions on roots. Common roots and multiple roots
Week 5	Transformation of equations. Nature of the roots of an equation Descarte's rule of signs.
Week 6	Solutions of cubic equations (Cardon's method). Biquadratic equations and their solutions. Test and Revision of Section-2
Week 7	**Matrix and its types**. Symmetric, Skew-symmetric, Hermitian and Skew Hermitian matrices.

Week 8	Unitary and Orthogonal Matrices, Idempotent, Involuntary, Nilpotent Matrices.
Week 9	**Rank of a Matrix & its applications.** Rank of a matrices, Row rank and column rank of a matrix
Week 10	Elementary Operations on matrices, Inverse of a matrix , Normal Form, PAQ Form Test and Revision of Section-3
Week 11	Linear dependence and independence of rows and columns of matrices
Week 12	Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations, Theorems on consistency of a system of linear equations.
Week 13	**Cayley Hamilton theorem.** Eigenvalues, eigenvectors and the characteristic equation of a matrix. Problem Discussion and Revision.
Week 14	Minimal polynomial of a matrix.
Week 15	Cayley Hamilton theorem and its use in finding the inverse of a matrix.
Week 16	Diagonalization of matrix.
Week 17	Test and Revision

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Teacher- Dr. Archana

Class- B.SC. Sem-I Sec A

Subject- Function and Algebra

WEEKS	SYLLABUS
Week 1	Relations, Functions along with domain and range, Composition of functions
Week 2	Invertibility and inverse of functions, One-to-one correspondence and the cardinality of a set.
Week 3	Relations between the roots and coefficients of general polynomial equation in one variable. Test and Revision of Section-1
Week 4	Solutions of polynomial equations having conditions on roots. Common roots and multiple roots
Week 5	Transformation of equations. Nature of the roots of an equation Descarte's rule of signs.
Week 6	Solutions of cubic equations (Cardon's method). Biquadratic equations and their solutions. Test and Revision of Section-2
Week 7	**Matrix and its types**. Symmetric, Skew-symmetric, Hermitian and Skew Hermitian matrices.
Week 8	Unitary and Orthogonal Matrices, Idempotent, Involuntary, Nilpotent Matrices.

Week 9	**Rank of a Matrix & its applications.** Rank of a matrices, Row rank and column rank of a matrix
Week 10	Elementary Operations on matrices, Inverse of a matrix , Normal Form, PAQ Form Test and Revision of Section-3
Week 11	Linear dependence and independence of rows and columns of matrices
Week 12	Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations, Theorems on consistency of a system of linear equations.
Week 13	**Cayley Hamilton theorem.** Eigenvalues, eigenvectors and the characteristic equation of a matrix. Problem Discussion and Revision.
Week 14	Minimal polynomial of a matrix.
Week 15	Cayley Hamilton theorem and its use in finding the inverse of a matrix.
Week 16	Diagonalization of matrix.
Week 17	Test and Revision

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Teacher- Amita

Class- B.SC. Sem-I Sec B

Subject- Function and Algebra

WEEKS	SYLLABUS
Week 1	Relations, Functions along with domain and range, Composition of functions
Week 2	Invertibility and inverse of functions, One-to-one correspondence and the cardinality of a set.
Week 3	Relations between the roots and coefficients of general polynomial equation in one variable. Test and Revision of Section-1
Week 4	Solutions of polynomial equations having conditions on roots. Common roots and multiple roots
Week 5	Transformation of equations. Nature of the roots of an equation Descarte's rule of signs.
Week 6	Solutions of cubic equations (Cardon's method). Biquadratic equations and their solutions. Test and Revision of Section-2
Week 7	**Matrix and its types**. Symmetric, Skew-symmetric, Hermitian and Skew Hermitian matrices.
Week 8	Unitary and Orthogonal Matrices, Idempotent, Involuntary, Nilpotent Matrices.
Week 9	**Rank of a Matrix & its applications.** Rank of a matrices, Row rank and column rank of a matrix

Week 10	Elementary Operations on matrices, Inverse of a matrix , Normal Form, PAQ Form Test and Revision of Section-3
Week 11	Linear dependence and independence of rows and columns of matrices
Week 12	Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations, Theorems on consistency of a system of linear equations.
Week 13	**Cayley Hamilton theorem.** Eigenvalues, eigenvectors and the characteristic equation of a matrix. Problem Discussion and Revision.
Week 14	Minimal polynomial of a matrix.
Week 15	Cayley Hamilton theorem and its use in finding the inverse of a matrix.
Week 16	Diagonalization of matrix.
Week 17	Test and Revision

LESSON PLAN
Session: 2025-26 (ODD SEM)

Name of Assistant Professor - Mr. Anil Kumar
Class- M.Sc. Mathematics 3ʳᵈ Semester
Subject- Elementary Topology

WEEKS	SYLLABUS
Week 1	Definition and examples of topological spaces, Comparison of topologies on a set.
Week 2	Intersection and union of topologies on a set, Neighbourhoods, Interior point and interior of a set
Week 3	Closed set as a complement of an open set, Adherent point and limit point of a set, Closure of a set, Derived set
Week 4	Properties of Closure operator, Boundary of a set , Dense subsets, Interior, Exterior and boundary operators
Week 5	Alternative methods of defining a topology in terms of neighbourhood system and Kuratowski closure operator
Week 6	Relative(Induced) topology, Base and sub-base for a topology, Base for Neighbourhood system.
Week 7	Continuous functions, Open and closed functions , Homeomorphism.
Week 8	Connectedness and its characterization, Connected subsets and their properties, Continuity and connectedness, Components, Locally connected spaces
Week 9	Compact spaces and subsets, Compactness in terms of finite intersection property
Week 10	Continuity and compact sets, Basic properties of compactness, Closeness of compact subset

Week 11	Sequentially and countably compact sets, Local compactness and one point compatification
Week 12	First countable, Second countable and separable spaces, Hereditary and topological property
Week 13	Countability of a collection of disjoint open sets in separable and second countable spaces, Lindelof theorem
Week 14	T0, T1, T2 (Hausdorff) separation axioms, their characterization and basic properties
Week 15	Revision and test
Week 16	Revision and test

LESSON PLAN Session: 2025-26 (ODD SEM)

Name of Teacher- Sunil Dua   **Class- B.Sc. (Single Major in Mathematics)-1st Sem**
Credits- 3 (L)+1(P)=4   **Subject- Functions and Algebra Code- 24MATS401DS01**

WEEKS	SYLLABUS
Week 1	Relations, Functions along with domain and range, Composition of functions
Week 2	Invertibility and inverse of functions, One-to-one correspondence and the cardinality of a set.
Week 3	Relations between the roots and coefficients of general polynomial equation in one variable. Test and Revision of Section-1
Week 4	Solutions of polynomial equations having conditions on roots. Common roots and multiple roots
Week 5	Transformation of equations. Nature of the roots of an equation Descarte's rule of signs.
Week 6	Solutions of cubic equations (Cardon's method). Biquadratic equations and their solutions. Test and Revision of Section-2
Week 7	Matrix and its types. Symmetric, Skew-symmetric, Hermitian and Skew Hermitian matrices.
Week 8	Unitary and Orthogonal Matrices, Idempotent, Involuntary, Nilpotent Matrices.
Week 9	Rank of a Matrix & its applications. Rank of a matrices, Row rank and column rank of a matrix
Week 10	Elementary Operations on matrices, Inverse of a matrix , Normal Form, PAQ Form Test and Revision of Section-3
Week 11	Linear dependence and independence of rows and columns of matrices
Week 12	Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations, Theorems on consistency of a system of linear equations.
Week 13	Cayley Hamilton theorem. Eigenvalues, eigenvectors and the characteristic equation of a matrix. Problem Discussion and Revision.
Week 14	Minimal polynomial of a matrix.
Week 15	Cayley Hamilton theorem and its use in finding the inverse of a matrix.
Week 16	Diagonalization of matrix.

LESSON PLAN Session: 2025-26 (ODD SEM)

Name of Teacher- Dr. Amit Sehgal   Class- M.Sc. 1st Sem (Mathematics)
Credits- 3 (L)+1(T)=4   Subject- Abstract Algebra Code- 24MAT201DS01

Weeks	Syllabus
Week 1	Review of group theory
Week 2	Sylow theorems: p-groups, Sylow subgroups, Applications of Sylow theorems
Week 3	Sylow theorems: p-groups, Sylow subgroups, Applications of Sylow theorems
Week 4	Description of group of order p^2 and pq, Survey of groups up-to order 15.
Week 5	Normal and subnormal series, Zassenhaus lemma
Week 6	Solvable series, Derived series, Solvable groups, Solvability of Sn-the symmetric group of degree n ≥ 2, Central series, Composition series, Jordan-Holder theorem
Week 7	Nilpotent groups and their properties, Equivalent conditions for a finite group to be nilpotent
Week 8	Review of Ring/Vector Space theory
Week 9	Modules, Cyclic modules, Simple and semi-simple modules
Week 10	Schurs' lemma, Free modules, test of unit 1st and unit 2nd
Week 11	Modules over principal ideal domain and its applications to finitely generated abelian groups
Week 12	Noetherian and Artinian modules
Week 13	Modules of finite length, Noetherian and Artinian rings, Hilbert basis theorem.
Week 14	HomR(R,R), Nil and Nilpotent ideals, Opposite rings, Wedderburn – Artinian theorem
Week 15	Test of unit 3rd and 4th unit. Re-visit the 1st and 2nd units with problems
Week 16	Re-visit the 3rd and 4th units with problems

LESSON PLAN Session: 2025-26 (ODD SEM)

Name of Teacher- Dr. Amit Sehgal   Class- M.Sc. 1st Sem (Mathematics)
Credits- 3 (L)+1(T)=4   Subject- Analytical Number Theory Code- 24MAT201DS05

Weeks	Syllabus
Week 1	Distribution of primes, Fermat and Mersenne numbers
Week 2	Farey series and some results concerning Farey series
Week 3	Approximation of irrational numbers by rationals, Hurwitz theorem, Irrationality of e and π.
Week 4	The arithmetic in Zn, The group Un, Primitive roots and their existence
Week 5	the group U_{p^n} (p-odd) and U_{2p^n} , The group of quadratic residues Qn ,
Week 6	Quadratic residues for prime power moduli and arbitrary moduli, The algebraic structure of Un and Qn
Week 7	Riemann Zeta Function ζ(s) and its convergence, Application to prime numbers,ζ(s) as Euler product,
Week 8	Evaluation of ζ(2) and ζ(2k). Diophantine equations ax + by = c, $x^2 + y^2 = z^2$ and $x^4 + y^4 = z^4$,
Week 9	The representation of number by two or four squares, Waring problem, Four square theorem,
Week 10	The numbers g(k) & G(k), Lower bounds for g(k) & G(k), test of unit 1st and

	unit 2nd
Week 11	Arithmetic functions $\phi(n)$, $\tau(n)$, $\sigma(n)$ and $\sigma k(n)$, $\mu(n)$, $N(n)$, $I(n)$, Definitions and examples and simple properties
Week 12	Arithmetic functions $\phi(n)$, $\tau(n)$, $\sigma(n)$ and $\sigma k(n)$, $\mu(n)$, $N(n)$, $I(n)$, Definitions and examples and simple properties
Week 13	Perfect numbers, Mobius inversion formula, The Mobius function μn
Week 14	The order and average order of the function $\phi(n)$, $\tau(n)$ and $\sigma(n)$.
Week 15	Test of unit 3rd and 4th unit. Re-visit the 1st and 2nd units with problems
Week 16	Re-visit the 3rd and 4th units with problems

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Assistant Prof.- Dr Yogeeta

Class- M.Sc. Mathematics 3rd Semester

Subject- Functional Analysis

WEEKS	SYLLABUS
Week 1	Normed linear spaces, Metric on normed linear spaces, Completion of a normed space, Holder and Minkowski inequality
Week 2	Banach spaces, subspace of a Banach space, Completeness of quotient spaces of normed linear spaces
Week 3	Completeness of lp, Lp, Rn , Cn .
Week 4	Completeness of C[a,b]. Incomplete normed spaces.
Week 5	Revision and test
Week 6	Finite dimensional normed linear spaces and Subspaces
Week 7	Bounded linear transformation, Equivalent formulation of continuity, Spaces of bounded linear transformations.
Week 8	Continuous linear functional, Conjugate spaces. Hahn-Banach extension theorem (Real and Complex form)
Week 9	Revision and test
Week 10	Riesz Representation theorem for bounded linear functionals on Lp and C[a,b].
Week 11	Second conjugate spaces, Reflexive space. Uniform boundedness principle and its consequences
Week 12	Open mapping theorem and its application, Projections, Closed Graph theorem.
Week 13	Equivalent norms, Weak and Strong convergence, Their equivalence in finite dimensional spaces.
Week 14	Weak sequential compactness, Solvability of linear equations in Banach spaces. Compact operator and its relation with continuous operator.
Week 15	Compactness of linear transformation on a finite dimensional space, Properties of compact operators. Compactness of the limit of the sequence of compact operators.
Week 16	Revision and Test
Week 17	Revision and test

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Assistant Prof.- Dr Yogeeta

Class- M.Sc. Mathematics 1st Semester

Subject- Mathematical Analysis

WEEKS	SYLLABUS
Week 1	Riemann-Stieltjes integral, existence and properties
Week 2	Integration and differentiation, the fundamental theorem of calculus
Week 3	Integration of vector-valued functions, rectifiable curves
Week 4	Revision and test
Week 5	Sequence and series of functions, point wise and uniform convergence
Week 6	Cauchy criterion for uniform convergence, Weierstrass M-test, Abel and Dirichlet tests for uniform convergence
Week 7	Uniform convergence and continuity, uniform convergence and differentiation
Week 8	Uniform convergence and integration, Weierstrass approximation theorem
Week 9	Revision and test
Week 10	Power series, uniform convergence and uniqueness theorem, Abel theorem, Tauber theorem
Week 11	Functions of several variables, Linear Transformations, Euclidean space R^n, Derivatives in an open subset of R^n
Week 12	Chain Rule, Partial derivatives, Continuously Differentiable Mapping, Young and Schwarz theorems.
Week 13	Taylor theorem, Higher order differentials, Explicit and implicit functions
Week 14	Implicit function theorem, Inverse function theorem
Week 15	Change of variables, Extreme values of explicit functions, Stationary values of implicit functions
Week 16	Lagrange multipliers method, Jacobian and its properties.
Week 17	Revision and test

Lesson Plan

Name of the Assistant Professor: Dr Upma

Class: BA II ,Sem -3

Name of Subject: Elements of Applicable Mathematics {MDC (Mathematics)}

Week 1	Theory of Sets: Meaning, elements, types, presentation and equality of Sets
Week 2	Union, Intersection, Complement and Difference of Sets
Week 3	Venn Diagram, Cartesian Product of two Sets
Week 4	Applications of Set Theory.
Week 5	Revisions and Test
Week 6	Matrices and Determinants: Definition of a Matrix ; Types of Matrices
Week 7	Algebra of Matrices; Properties of determinants; Calculation of values of Determinants upto third order; adjoint of a Matrix, elementary row and column operations
Week 8	Finding inverse matrix through adjoint; Solution of a system of Linear equations having unique Solution and involving not more than three variables.
Week 9	Revisions and Test
Week 10	Compound Interest: Certain different types of interest rate
Week 11	Concept of present value and amount of a sum.
Week 12	Revisions and Test
Week 13	Annuities: Types of annuities
Week 14	Present value and amount of an annuity
Week 15	Including the case of continuous compounding.
Week 16	Problem Discussion
Week 17	Revisions and Test

Lesson Plan

Name of the Assistant Professor: Dr Upma

Class: BBA II Year,Sem-3

Name of Subject: Elements of Applicable Mathematics{ MDC (Mathematics)}

Week 1	Theory of Sets: Meaning, elements, types, presentation and equality of Sets
Week 2	Union, Intersection, Complement and Difference of Sets
Week 3	Venn Diagram, Cartesian Product of two Sets
Week 4	Applications of Set Theory.
Week 5	Revisions and Test
Week 6	Matrices and Determinants: Definition of a Matrix ; Types of Matrices
Week 7	Algebra of Matrices; Properties of determinants; Calculation of values of Determinants upto third order; adjoint of a Matrix, elementary row and column operations
Week 8	Finding inverse matrix through adjoint; Solution of a system of Linear equations having unique Solution and involving not more than three variables.
Week 9	Revisions and Test
Week 10	Compound Interest: Certain different types of interest rate
Week 11	Concept of present value and amount of a sum.
Week 12	Revisions and Test
Week 13	Annuities: Types of annuities
Week 14	Present value and amount of an annuity
Week 15	Including the case of continuous compounding.
Week 16	Problem Discussion
Week 17	Revisions and Test

Lesson Plan

Name of the Assistant Professor: Dr Upma

Class: B.Sc. Maths Hons Ist Year,Sem-1

Name of Subject: Programming in C and Numerical Methods {SEC (Mathematics)}

Week 1	Chapter-1 (A Computer a General Introduction) Advantages & Limitations of Flow Chart Examples Chapter- 2 (Introduction to ‘C’) Importance of C & its related terms
Week 2	Chapter- 3 (Data Type) Variable Declaration Assignment Statement & its related terms A Typical C Program Examples
Week 3	Chapter- 4 (Operators & Expressions) Introduction Relational, Logical, Assignment Operators Special Operators
Week 4	Operator Precedence with examples Revision Problems Discussion Test- Chapter 3,4
Week 5	Chapter- 5 (Decision Control Structures) Introduction Control Structure The if…..else Statement Computer Program Nested if……else Statement
Week 6	The else-if Ladder The Switch Statement Chapter-6 (Loops) Introduction
Week 7	Types of Loops Related Programs The do-while Statement Related Programs The For Loop & its Programs
Week 8	The Continue Statement Some Typical Examples Problems Discussions Revisions
Week 9	Chapter- 7 (Functions) Function Definitions

Week 10	Local & Global Variables Chapter- 8 (The C Preprocessor) Related Terms
Week 11	Chapter- 9 (Arrays) Introductions One- Dimensional Arrays Two- Dimensional Arrays Multi-dimensional Arrays
Week 12	Revisions Test Ch-5,6,7 Chapter-10 (Puppetting of Strings) Related Programs Chapter -11 (Structures & Unions) Introductions
Week 13	Related terms Some Typical Examples Chapter- 12 (Pointers) Introductions Pointers & Arrays
Week 14	Chapter-13(Files In C) Related Terms Chapter-14 (Miscellaneous Features & Advanced Topics) Introductions Different Variables Chapter-1 in Numerical Method (Introduction) Bolzano or Bisection Method a& Practical
Week 15	Method of Regula False Regula Falsi Method Examples Newton- Raphson Method, Newton- Raphson Iterative Formula with Examples
Week 16	Test Ch-1 Chapter-2 (Simultaneous Linear Algebraic Equation) Introduction, Gauss Elimination Method with examples, Gauss-Jordan Method with Examples, Triangularization Method, Crouts·s Method
Week 17	Square Root Method with Examples Iterative Method with Examples, Test

Lesson Plan

Name of the Assistant Professor: Dr Upma

Class: B.Sc. Non-Medical Ist Year,Sem-1

Name of Subject: Programming in C and Numerical Methods SEC (Mathematics)

Week 1	Chapter-1 (A Computer a General Introduction) Advantages & Limitations of Flow Chart Examples Chapter- 2 (Introduction to ‘C’) Importance of C & its related terms
Week 2	Chapter- 3 (Data Type) Variable Declaration Assignment Statement & its related terms A Typical C Program Examples
Week 3	Chapter- 4 (Operators & Expressions) Introduction Relational, Logical, Assignment Operators Special Operators
Week 4	Operator Precedence with examples Revision Problems Discussion Test- Chapter 3,4
Week 5	Chapter- 5 (Decision Control Structures) Introduction Control Structure The if…..else Statement Computer Program Nested if……else Statement
Week 6	The else-if Ladder The Switch Statement Chapter-6 (Loops) Introduction
Week 7	Types of Loops Related Programs The do-while Statement Related Programs The For Loop & its Programs
Week 8	The Continue Statement Some Typical Examples Problems Discussions Revisions
Week 9	Chapter- 7 (Functions) Function Definitions

Week 10	Local & Global Variables Chapter- 8 (The C Preprocessor) Related Terms
Week 11	Chapter- 9 (Arrays) Introductions One- Dimensional Arrays Two- Dimensional Arrays Multi-dimensional Arrays
Week 12	Revisions Test Ch-5,6,7 Chapter-10 (Puppetting of Strings) Related Programs Chapter -11 (Structures & Unions) Introductions
Week 13	Related terms Some Typical Examples Chapter- 12 (Pointers) Introductions Pointers & Arrays
Week 14	Chapter-13(Files In C) Related Terms Chapter-14 (Miscellaneous Features & Advanced Topics) Introductions Different Variables Chapter-1 in Numerical Method (Introduction) Bolzano or Bisection Method a& Practical
Week 15	Method of Regula False Regula Falsi Method Examples Newton- Raphson Method, Newton- Raphson Iterative Formula with Examples
Week 16	Test Ch-1 Chapter-2 (Simultaneous Linear Algebraic Equation) Introduction, Gauss Elimination Method with examples, Gauss-Jordan Method with Examples, Triangularization Method, Crouts's Method
Week 17	Square Root Method with Examples Iterative Method with Examples, Test

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Teacher- Dr.Upma

Class- B.Sc. II Sec B,Sem-3

Ordinary Differential Equations

WEEKS	SYLLABUS
Week 1	Geometrical meaning of a differential equation.
Week 2	Exact differential equations. Integrating factors.
Week 3	First order higher degree equations solvable for x,y,p. Lagrange's equations, Revision and problems of Exact Differential Equations
Week 4	Clairaut's equations. Equation reducible to Clairaut's form. Singular solutions.
Week 5	Orthogonal trajectories: Cartesian coordinates and polar coordinates. Self-orthogonal family of curves.
Week 6	Linear ordinary differential equations with constant coefficients. Revision and problems of Equations of first order but not of first degree.
Week 7	Homogeneous linear ordinary differential equations. Equations reducible to homogeneous.
Week 8	Linear differential equations of second order: Reduction to normal form. Transformation of the equation by changing the dependent variable/the independent variable.
Week 9	Solution by operators of non-homogeneous linear differential equations. Revision and Test of Section-1.
Week 10	Reduction of order of a differential equation.
Week 11	Method of variations of parameters. Method of undetermined coefficients. Revision and test of Section-2
Week 12	Ordinary simultaneous differential equations.
Week 13	Solution of simultaneous differential equations involving operators x (d/dx) or t (d/dt) etc. Revision and test of Section-3.
Week 14	Simultaneous equation of the form dx/P = dy/Q = dz/R. Total differential equations. Condition for Pdx + Qdy +Rdz = 0 to be exact.
Week 15	General method of solving Pdx + Qdy + Rdz = 0 by taking one variable constant.
Week 16	Method of auxiliary equations
Week 17	Revision and test

LESSON PLAN

Session: 2025-26 (ODD SEM)

Name of Teacher- Dr Ravinder Kumar

Class- B.A. (Pass) IIIrd Year

Subject: Numerical Analysis

WEEKS	SYLLABUS
Week 1	Chapter 1: Finite Difference Operators. Forward difference operator, Backward difference operator, Central difference operator and their properties. Fundamental theorem of difference calculus
Week 2	The operator E and their properties. Numerical problems related to different difference operators. Effect of an error in a tabular value(Missing terms). Numerical problems related to effect of an error in a tabular value. Relation between different Finite difference operators.
Week 3	Defining the term interpolation and extrapolation, Difference between Interpolation with equal intervals and Interpolation with unequal intervals. Newton-Gregory formula for forward interpolation and their problems. Newton-Gregory formula for backward interpolation and their problems. More problems related to Newton's interpolation formulas interpolation.
Week 4	,Subdivision of intervals and related examples. Chapter 2: Interpolation with equal intervals. Chapter 3: Interpolation with unequal intervals. Discussion on Chapter 2 and Take problems of Chapter 2. Define the term divided difference and related theorems. Newton's divided difference interpolation formula for unequal intervals and related examples. Relation between divided differences and ordinary differences and related examples
Week 5	More examples related to Divided Differences. Lagrange's interpolation formula and related examples. Lagrange's interpolation formula and related examples. Hermite's interpolation formula and related examples. Brief overview of Interpolation with unequal intervals
Week 6	Problems of Chapter 3 Chapter 4: Central Difference Interpolation formula and related examples. Define central difference, Gauss forward interpolation formula and related examples. Gauss backward interpolation formula and related examples
Week 7	Sterling formula and related examples. Bessle's formula and related examples. Brief overview of Central Difference interpolation formulas. Problems of Chapter 4. Chapter 5 : Probability Distributions
Week 8	Examples of probability distribution of a random variable, Mean and variance of a random variable. Problems based on mean and variance of a random variable. Binomial distribution and related examples. Mean and variance of

	binomial distribution, recurrence formula
	Problems based on properties of binomial distribution
Week 9	Problems based on fitting a binomial distribution. Poisson distribution, Mean, variance and recurrence formula of poisson distribution. Problems related to poisson distribution and their properties. Fitting a poisson distribution and related properties. Normal distribution and its properties. Problems related to Normal distribution and its properties
Week 10	Method of area to find the expected frequencies for normal curve. Problems to find the expected frequencies for normal curve under the method of area. More problems related to Probability distribution.
	Chapter6: Derivatives Using Newton's Forward and Backward Interpolation formula
	Derivatives Using Sterling and Bessel's Central Difference Formula and Newton's Divided Difference formula. Problems to find the different derivative when some tabulated table is given
Week 11	Chapter 7: Define Eigen values and Eigen vectors and some properties of eigen values, Problems to find the eigen values and their corresponding eigen vectors of the matrix
	Power method and problems to find the largest eigen value of the matrix
	Jacobi's method for symmetric matrix, method to find all the eigen values and eigen vectors of the matrix
	Given's Method, Problems on how to transform a matrix into tridiagonal form by Given's method and to find the eigen vector corresponding to the largest eigen value from the eigen vectors of the tridiagonal matrix.
	House-Holder's method and problems based on House-Holder's method
	More Problems based on House-Holder's method
	QR method and related problems
Week 12	Lanczo's method and related problems. More problems on power, jacobi's, Given's, House-Holder's method, QR and Lanczo's method. Problem discussion on Eigen value Problems
Week 13	Presentation on Eigen value Problems
	Newton Cotes Quadrature formula and related problems
	Numerical Integration by trapezoidal rule and related problems
Week 14	Numerical Integration by Simpson's 1/3 rule and related problems
	Numerical Integration by Chebyshev's Quadrature formula and related problems
	Problems discussion. Introducing the concept: Initial and Boundary conditions, Single step and Multi step method, Euler's method and related examples. Modified Euler's Method and related examples
Week 15	More problems on Euler's method and Modified Euler's method. Taylor's series method and problems related to Taylor's series method. Runge-Kutta method of First and Second order and its examples
Week 16	Runge-Kutta method of Third and Fourth order and its examples. Picard's Method and problems related with Picard's method , Predictor-Corrector Methods, Milne-Simpson's method and its examples

Week 17	Adams-Bashforth Predictor Formula and Adams-Moulton Corrector Formula and its examplesMore examples related to Numerical Solution of Ordinary Differential Equations.More examples related to Numerical Solution of Ordinary Differential Equations

LESSON PLAN

Name of the Assistant Professor: **Dr Ravinder Kumar**

Class: BCom / BSc Life Sciences 1st Semester

Name of Subject: **MDC - Mathematics**

WEEK	SYLLABUS
Week 1	Numbers, H.C.F. and L.C.M. of Numbers, Simplification,
Week 2	Decimal and Fractions
Week 3	Square roots and cube roots
Week 4	Surds and indices.
Week 5	Revisions and Test
Week 6	Problems on numbers, Average
Week 7	Percentage, Profit and Loss,
Week 8	Ratio and proportion.
Week 9	Revision and Test
Week 10	Problem on ages, Partnership
Week 11	Time and work, Time and distance.
Week 12	Revisions and Test
Week 13	Problems on trains,
Week 14	Mixture problem,
Week 15	Problems based on Calendar and clock.
Week 16	Problem Discussion
Week 17	Revision and Test

Lesson Plan

Name of the Assistant Professor: Dr Sunil

Class: B.A Ist Year,Sem-1
Name of Subject: SEC (Mathematics)

Week 1	Chapter-1 (A Computer a General Introduction) Advantages & Limitations of Flow Chart Examples Chapter- 2 (Introduction to ꞌCꞌ) Importance of C & its related terms
Week 2	Chapter- 3 (Data Type) Variable Declaration Assignment Statement & its related terms A Typical C Program Examples
Week 3	Chapter- 4 (Operators & Expressions) Introduction Relational, Logical, Assignment Operators Special Operators
Week 4	Operator Precedence with examples Revision Problems Discussion Test- Chapter 3,4
Week 5	Chapter- 5 (Decision Control Structures) Introduction Control Structure The if…..else Statement Computer Program Nested if……else Statement
Week 6	The else-if Ladder The Switch Statement Chapter-6 (Loops) Introduction
Week 7	Types of Loops Related Programs The do-while Statement Related Programs The For Loop & its Programs
Week 8	The Continue Statement Some Typical Examples Problems Discussions Revisions

Week 9	Chapter- 7 (Functions) Function Definitions
Week 10	Local & Global Variables Chapter- 8 (The C Preprocessor) Related Terms
Week 11	Chapter- 9 (Arrays) Introductions One- Dimensional Arrays Two- Dimensional Arrays Multi- dimensional Arrays
Week 12	Revisions Test Ch- 5,6,7 Chapter-10 (Puppetting of Strings) Related Programs Chapter -11 (Structures & Unions) Introductions
Week 13	Related terms Some Typical Examples Chapter- 12 (Pointers) Introductions Pointers & Arrays
Week 14	Chapter-13(Files In C) Related Terms Chapter-14 (Miscellaneous Features & Advanced Topics) Introductions Different Variables Chapter-1 in Numerical Method (Introduction) Bolzano or Bisection Method a& Practical
Week 15	Method of Regula False Regula Falsi Method Examples Newton- Raphson Method, Newton- Raphson Iterative Formula with Examples
Week 16	Test Ch-1 Chapter-2 (Simultaneous Linear Algebraic Equation) Introduction, Gauss Elimination Method with examples, Gauss-Jordan Method with Examples, Triangularization Method, Crouts's Method
Week 17	Square Root Method with Examples Iterative Method with Examples, Test