Department of Mathematics

Lesson plan

Session 2024-25

Odd Semester

LESSON PLAN

Session: 2024-25 (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 upto order 15.
Week 5	Normal and subnormal series, Zassenhaus lemma
Week 6	Solvable series, Derived series ,Solvable groups, Solvability of S_n-the symmetric group of degree $n \geq 2$, 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	$Hom_R(R,R)$, Nil and Nilpotent ideals, Opposite rings, Wedderburn – Artin 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: 2024-25 (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 Z_n, The group U_n, Primitive roots and their existence
Week 5	the group $U_p{}^n$ (p-odd) and $U_2{}^n$, The group of quadratic residues Q_n ,
Week 6	Quadratic residues for prime power moduli and arbitrary moduli, The algebraic structure of U_n and Q_n-
Week 7	Riemann Zeta Function $\zeta(s)$ and its convergence, Application to prime numbers,$\zeta(s)$ as Euler product,
Week 8	Evaluation of $\zeta(2)$ and $\zeta(2k)$. 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 $\sigma_k(n)$, U(n), N(n), I(n), Definitions and examples and simple properties
Week 12	Arithmetic functions $\phi(n)$, $\tau(n)$, $\sigma(n)$ and $\sigma_k(n)$, U(n), N(n), I(n), Definitions and examples and simple properties
Week 13	Perfect numbers, Mobius inversion formula, The Mobius function μ_n
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: 2024-25 (ODD SEM)

Name of Teacher- Dr. Amit Sehgal
Class- M.Sc 3rd Sem (Mathematics)
Credits- 4 (L)+1(T)=5
Subject- Analytical Number Theory **Code-**17MAT23DB1

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 Z_n, The group U_n, Primitive roots and their existence
Week 5	the group U_{p^n} (p-odd) and U_{2^n}, The group of quadratic residues Q_n ,
Week 6	Quadratic residues for prime power moduli and arbitrary moduli, The algebraic structure of U_n and Q_n-
Week 7	Riemann Zeta Function $\zeta(s)$ and its convergence, Application to prime numbers,$\zeta(s)$ as Euler product,
Week 8	Evaluation of $\zeta(2)$ and $\zeta(2k)$. 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 $\sigma_k(n)$, U(n), N(n), I(n), Definitions and examples and simple properties
Week 12	Arithmetic functions $\phi(n)$, $\tau(n)$, $\sigma(n)$ and $\sigma_k(n)$, U(n), N(n), I(n), Definitions and examples and simple properties
Week 13	Perfect numbers, Mobius inversion formula, The Mobius function μ_n
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:

Name of the Assistant/Associate Professor: Dr Parvesh
Class and Section: M.Sc. Mathematics Ist Semester
Subject: MATHEMATICS
Paper: Object Oriented Programming with C++

Week 1
Basic concepts of Object-Oriented Programming (OOP). Advantages and applications of OOP. Object-oriented languages. Introduction to C++. Structure of a C++ program.

Week 2
Creating the source files. Compiling and linking. C++ programming basics: Input/Output, Data types, Operators

Week 3
Expressions, Control structures, Library functions. Functions in C++: Passing arguments to and returning values from functions

Week 4
Inline functions, Default arguments, Function overloading.

Week 5
Classes and objects: Specifying and using class and object, Arrays within a class, Arrays of objects, Object as a function argument

Week 6
Friendly functions, Pointers to members

Week 7
Constructors and destructors. Operator overloading and type conversions.

Week 8
Inheritance: Derived class and their constructs, Overriding member functions

Week 9
Class hierarchies, Public and private inheritance levels. Polymorphism

Week 10
Pointers to objects, This pointer, Pointers to derived classes, Virtual functions.

Week 11
Streams, Stream classes, Unformatted Input/Output operations

Week 12
Formatted console Input/Output operations, Managing output with manipulators.

Week 13
Classes for file stream operations, Opening and Closing a file. File pointers and their manipulations

Week 14
Random access. Error handling during file operations, Command-line arguments. Exceptional handling.

Week 15
Revision and Test

Week 16
Revision and Test

Week 17
Revision and Test

Week 18
Revision and Test

Lesson Plan:

Name of the Assistant/Associate Professor: Dr. Parvesh
Class and Section: M.Sc. Mathematics 3rd Semester
Subject: MATHEMATICS
Paper: Programming in C

Week 1
An overview of Programming, Programming Language, Classification. Basic structure of a C Program

Week 2
C language preliminaries. Operators and Expressions, Bit - Manipulation Operators

Week 3
Bitwise Assignment Operators, Decisions and looping.

Week 4
Arrays and Pointers, Encryption and Decryption, Pointer Arithmetic, Passing Pointers as Function Arguments

Week 5
Accessing Array Elements through Pointers, Passing Arrays as Function Arguments. Multidimensional Arrays

Week 6
Arrays of Pointers, Pointers to Pointers

Week 7
Storage Classes –Fixed vs. Automatic Duration. Scope. Global Variables. Definitions and Allusions

Week 8
ANSI rules for the Syntax and Semantics of the Storage Class Keywords. Dynamic Memory Allocation, Structures and Unions.

Week 9
Structures and Unions, enum declarations. Passing Arguments to a Function, The Register Specifier Declarations and Calls, Automatic Argument Conversions, Pointers to Functions.

Week 10
The C Preprocessors, Macro Substitution, Include Facility. Conditional Compilation. Line Control

Week 11
Input and Output -Streams. Buffering

Week 12
Error Handling. Opening and Closing a File. Reading and Writing Data. Selecting an I/O Method

Week 13
Unbuffered I/O. Random Access. The Standard Library for I/O.

Week 14
Revision and Test

Week 15
Revision and Test

Week 16
Revision and Test

Week 17
Revision and Test

Week 18
Revision and Test

Lesson Plan:

Name of the Assistant/Associate Professor: Dr Ritika

Class and Section: M.Sc. Mathematics 3rd Semester

Subject: MATHEMATICS

Paper: Functional Analysis

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
Finite dimensional normed linear spaces and Subspaces.

Week 6
Bounded linear transformation, Equivalent formulation of continuity, Spaces of bounded linear transformations.

Week 7
Continuous linear functional, Conjugate spaces. Hahn-Banach extension theorem (Real and Complex form)

Week 8
Riesz Representation theorem for bounded linear functionals on Lp and C[a,b].

Week 9
Second conjugate spaces, Reflexive space. Uniform boundedness principle and its consequences

Week 10
Open mapping theorem and its application, Projections, Closed Graph theorem.

Week 11
Equivalent norms, Weak and Strong convergence, Their equivalence in finite dimensional spaces.

Week 12
Weak sequential compactness, Solvability of linear equations in Banach spaces. Compact operator and its relation with continuous operator.

Week 13
Compactness of linear transformation on a finite dimensional space, Properties of compact operators. Compactness of the limit of the sequence of compact operators.

Week 14
Revision and Test

Week 15
Revision and Test

Week 16
Revision and Test

Week 17
Revision and Test

Week 18
Revision and Test

Lesson Plan:

Name of the Assistant/Associate Professor: Dr Ritika
Class and Section: M.Sc. Mathematics Ist Semester
Subject: MATHEMATICS
Paper: Complex Analysis
Week 1 Function of a complex variable, Continuity, Differentiability, Analytic functions and their properties Week 2 Cauchy-Riemann equations in cartesian and polar coordinates Week 3 Power series, Radius of convergence Week 4 Differentiability of sum function of a power series, Branches of many valued functions with special reference to argz, logz and za Week 5 Path in a region, Contour, Complex integration, Cauchy theorem Week 6 Cauchy integral formula, Extension of Cauchy integral formula for multiple connected domain

Week 7
Poisson integral formula, Higher order derivatives, Complex integral as a function of its upper limit

Week 8
Morera theorem, Cauchy inequality, Liouville theorem, Taylor theorem.

Week 9
Zeros of an analytic function, Laurent series, Isolated singularities
Week 10
Cassorati - Weierstrass theorem, Limit point of zeros and poles. Maximum modulus principle, Schwarz lemma

Week 11
Meromorphic functions, Argument principle, Rouche theorem, Fundamental theorem of algebra, Inverse function theorem.

Week 12
Calculus of residues, Cauchy residue theorem, Evaluation of integrals of the types $\int f(\cos\theta, \sin\theta)d\theta$, $\int f(x)dx$, $\int f(x) \sin mx\, dx$ and $\int f(x) \cos mx\, dx$

Week 13
Conformal mappings, Space of analytic functions and their completeness

Week 14
Hurwitz theorem, Montel theorem, Riemann mapping theorem.

Week 15
Revision and Test

Week 16
Revision and Test

Week 17
Revision and Test

Week 18
Revision and Test

Lesson Plan:

Name of the Assistant/Associate Professor: Dr Ritika
Class and Section: B.A. 3rd Year (5th Sem)
Subject: MATHEMATICS
Paper: Numerical Analysis
Week 1 Finite Differences operators and their relations. Finding the missing terms and effect of error in a difference tabular values, Week 2 Interpolation with equal intervals: Newton's forward and Newton's backward interpolation formulae. Interpolation with unequal intervals: Newton's divided difference, Lagrange's Interpolation formulae, Hermite Formula

Week 3
Central Differences: Gauss forward and Gauss's backward interpolation formulae, Sterling, Bessel Formula.

Week 4
Probability distribution of random variables, Binomial distribution, Poisson's distribution,

Week 5
Normal distribution: Mean, Variance and Fitting.

Week 6
Numerical Differentiation: Derivative of a function using interpolation formulae as studied in Sections –I & II.

Week 7
Eigen Value Problems: Power method, Jacobi's method, Given's method, House-Holder's method, QR method, Lanczos method.

Week 8
Numerical Integration: Newton-Cote's Quadrature formula, Trapezoidal rule, Simpson's one-third and three-eighth rule, Chebychev formula, Gauss Quadrature formula.

Week 9
Numerical solution of ordinary differential equations: Single step methods-Picard's method.

Week 10
Taylor's series method, Euler's method, Runge-Kutta Methods. Multiple step methods; Predictor-corrector method, Modified Euler's method, Milne-Simpson's method

Week 11
Revision and Test

Week 12
Revision and Test

Week 13
Revision and Test

Week 14
Revision and Test

Week 15
Revision and Test

Week 16
Revision and Test

Week 17
Revision and Test

Week 18
Revision and Test

LESSON PLAN
Session: 2024-25 (ODD SEM)

Name of Teacher- Vikash Ghlawat
Class- BSc Math Hons. (3rd Semester)
Subject- Differential Geometry

WEEKS	SYLLABUS
Week 1	One Parameter family of Surfaces: Envelope, Characteristics, Edge of regression.
Week 2	Developable surfaces.
Week 3	Developable Associated with a Curve: Osculating developable.
Week 4	Polar developable Rectifying developable.
Week 5	Two- parameter Family of Surfaces: Envelope, Characteristics points, Curvilinear coordinates
Week 6	First order magnitudes
Week 7	Directions on a surface
Week 8	Second order magnitudes
Week 9	Curves on a Surface: Principal directions and curvatures First and second curvatures Surface of revolution. Conjugate directions, Conjugate systems.
Week 10	Euler's theorems Dupin's indicatrix
Week 11	Asymptotic lines Curvature and torsion
Week 12	Isometric parameters Null lines Minimal curves.
Week 13	Geodesics and Geodesic Parallels. Equation of Geodesics
Week 14	Surface of revolution, Torsion of Geodesic Curves in Relation to Geodesics.
Week 15	Bonnet's theorem Joachimsthal's theorems
Week 16	Vector curvature Geodesic curvature Bonnet's formula.

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Vikash Ghlawat

Class- MSc 3rd Semester

Subject- Fluid Dynamics

WEEKS	SYLLABUS
Week 1	Kinematics - Velocity at a point of a fluid. Eulerian methods. Lagrangian methods.
Week 2	Stream lines, path lines and streak lines. Velocity potential. Irrotational and rotational motions.
Week 3	Vorticity and circulation. Equation of continuity. Boundary surfaces.
Week 4	Acceleration at a point of a fluid. Components of acceleration in cylindrical and spherical polar co-ordinates.
Week 5	Pressure at a point of a moving fluid. Euler equation of motion. Equations of motion in cylindrical polar co-ordinates.
Week 6	Equations of motion in spherical polar co-ordinates. Bernoulli equation. Impulsive motion.
Week 7	Kelvin circulation theorem. Vorticity equation. Energy equation for incompressible flow. Kinetic energy of irrotational flow.
Week 8	Kelvin minimum energy theorem. Kinetic energy of infinite fluid. Uniqueness theorems.
Week 9	Axially symmetric flows. Liquid streaming part a fixed sphere. Motion of a sphere through a liquid at rest at infinity.
Week 10	Equation of motion of a sphere. Kinetic energy generated by impulsive motion.
Week 11	Motion of two concentric spheres. Three-dimensional sources, sinks and doublets.
Week 12	Images of sources, sinks and doublets in rigid impermeable infinite plane. Images of sources, sinks and doublets in rigid impermeable spherical surface.
Week 13	Two-dimensional motion: Use of cylindrical polar co-ordinates. Stream function.
Week 14	Axisymmetric flow. Stoke stream function. Stoke stream function of basic flows.
Week 15	Irrotational motion in two-dimensions. Complex velocity potential. Milne-Thomson circle theorem.
Week 16	Two-dimensional sources, sinks, doublets and their images. Blasius theorem.

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Anil Kumar

Class- Bsc. Math (Hon.), Bsc Non-Medical Vth Semester

Subject- Mathematics - Groups and Rings

WEEKS	**SYLLABUS**
Week 1	Introduction. Some pre-requisite. Definition of groups and its brief introduction. Examples of groups. General properties of groups.
Week 2	Subgroups and Subgroup criteria, Generation of groups, cyclic groups.
Week 3	Cosets, Left and right cosets, Index of a sub-group Coset decomposition, Largrage's theorem and its consequences.
Week 4	Normal subgroups, Quotient groups. Revision and Class test.
Week 5	Homomorphisms, isomorphisms, automorphisms and inner automorphisms of a group.
Week 6	Automorphisms of cyclic groups, Permutations groups.
Week 7	Even and odd permutations. Alternating groups, Cayley's theorem.
Week 8	Center of a group and derived group of a group. Revision and Class test.
Week 9	Introduction to rings, subrings, integral domains and fields.
Week 10	Characteristics of a ring. Ring homomorphisms, ideals (principle, prime and Maximal).
Week 11	Quotient rings, Field of quotients of an integral domain.
Week 12	Euclidean rings, Polynomial rings, Polynomials over the rational field.
Week 13	The Eisenstein's criterion, Polynomial rings over commutative rings.
Week 14	Unique factorization domain, R unique factorization domain implies so is R[X1 , X2,……Xn]
Week 15	Revision and Class test.
Week 16	Revision and Class test.

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Assistant Professor - Dr Deepak

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: 2024-25 (ODD SEM)

Name of Assistant Professor- Dr Deepak

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

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Deepak

Class- B.Sc. Non-medical 5th Semester (B)

Subject- Real Analysis

WEEKS	**SYLLABUS**
Week 1	Riemann integral, Integrabililty of continuous and monotonic functions
Week 2	The Fundamental theorem of integral calculus. Mean value theorems of integral calculus.
Week 3	Improper integrals and their convergence
Week 4	Comparison tests, Abel's and Dirichlet's tests
Week 5	Frullani's integral, Integral as a function of a parameter
Week 6	Continuity, Differentiability and integrability of an integral of a function of a parameter
Week 7	Definition and examples of metric spaces
Week 8	neighborhoods, limit points, interior points, open and closed sets
Week 9	closure and interior, boundary points, subspace of a metric space
Week 10	equivalent metrics, Cauchy sequences, completeness, Cantor's intersection theorem
Week 11	Baire's category theorem, contraction Principle
Week 12	Continuous functions, uniform continuity
Week 13	compactness for metric spaces, sequential compactness, Bolzano-Weierstrass property
Week 14	total boundedness, finite intersection property, continuity in relation with compactness
Week 15	Connectedness, components, continuity in relation with connectedness.
Week 16	Revision and test

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Vikash Ghlawat

Class- BSc 1st Medical

Subject- MDC

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

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Sunil Dua

Class- B.Sc 3rd Sem(H) (Mathematics)

Credits- 4 (L)

Subject- Advanced Calculus **Code-BHM 231**

WEEKS	**SYLLABUS**
Week 1	Indeterminate forms.
Week 2	Partial differentiation.
Week 3	Total Differentials; Composite functions & implicit functions
Week 4	Change of variables. Homogenous functions & Euler's theorem on homogeneous functions.
Week 5	Taylor's theorem for functions of two variables. Problems on previous topics. Test.
Week 6	Curves: Tangents, Principal normals, Binormals, Serret-Frenet formulae.
Week 7	Locus of the centre of curvature, Spherical curvature, Locus of centre of Spherical curvature.
Week 8	Maxima, Minima and saddle points of two variables. Lagrange's method of multiplier. Discussion of theory.
Week 9	Continuity, Sequential Continuity, properties of continuous functions.
Week 10	Continuity, Sequential Continuity, properties of continuous functions continue.
Week 11	Limit and continuity of real valued functions of two varia Differentiability of real valued functions of two variables. Schwarz and Young's theorem. Implicit function theorem.
Week 12	Mean value theorems; Rolle's Theorem and Lagrange's mean value theorem and their geometrical interpretations. Taylor's Theorem with various forms of remainders, Darboux's intermediate value theorem for derivative.
Week 13	Taylor's Theorem with various forms of remainders, Uniform continuity.
Week 14	More discussion on continuity. Presentations. Test.
Week 15	Involutes, evolutes, Bertrand Curves. Surfaces: Tangent planes, one parameter family of surfaces, Envelopes
Week 16	Doubts.

LESSON PLAN
Session: 2024-25 (ODD SEM)

Name of Teacher- Sunil Dua
Class- B.Sc 5th Sem(Pass/Hon's) (Mathematics)
Credits- 4 (L)
Subject- Real Analysis Code-BM/BHM 351

WEEKS	SYLLABUS
Week 1	Integral as a function of a parameter. Continuity, Differentiability and integrability of an integral of a function of a parameter.
Week 2	Definition and examples of metric space.
Week 3	Neighbourhoods, interior points, open sets.
Week 4	limit points, closed sets .
Week 5	Subspace of a metric space, equivalent metrics, Cauchy sequences, completeness.
Week 6	Continuous functions, uniform continuity.
Week 7	Compactness for metric spaces, sequential compactness, Bolzano-Weierstrass property, total boundedness.
Week 8	connectedness , components, continuity in relation with connectedness.
Week 9	Finite intersection property, continuity in relation with compactness.
Week 10	Riemann integral. Lower sums Upper Sums, introductory theorems and numerical of first ex.
Week 11	Integrability of continuous and monotonic functions, The Fundamental theorem of integral calculus. Mean value theorems of integral calculus.
Week 12	Continue Riemann integral theorems and numerical.
Week 13	Improper integrals and their convergence, Comparison tests, Abel's and Dirichlet's tests, Frullani's integral.
Week 14	Improper integrals and their convergence, Comparison tests, Abel's and Dirichlet's tests, Frullani's integral .
Week 15	Presentations and tests.
Week 16	Doubts.

Lesson Plan

Name of the Assistant/Associate Professor:Dr Sanjay

Class and Section: B.Sc. IInd Year (Maths Hons) (3rd Sem)

Subject: MATHEMATICS

Paper: Probability Distributions

Week 1
Random variables: Introduction, types with examples.
Distribution functions: Introduction, types with examples.
Discrete Distribution functions. Continuous Distribution functions.
Expectation: Introduction and its properties. Generating Functions.

Week 2
Generating Functions: Moment generating function along with their properties and uses. Cumulant generating function along with their properties and uses. Explanation with Questions.
Moments: By Differentiation method and by Expansion method.

Week 3
Problems related to Moments, Moment generating function and Cumulant generating function, Chebychev's inequality and its applications,
Convergence in Probability

Week 4
Weak and strong laws of large numbers (Statements only). Questions related to Chebychev's inequality and Weak and strong laws of large numbers

Week 5
Problems taken related to Chebychev's inequality and Weak and strong laws of large numbers. Bernoulli Distribution with their properties and uses. Explanation with Questions. Problems taken related to Bernoulli Distribution.

Week 6
Binomial Distribution with their properties and uses. Explanation with Questions.
Assignments: Presentation of Moment generating functions and cumulant generating functions.

Week 7
Continuation to Binomial Distribution with their properties and uses. Problems taken related to Binomial Distribution. Poisson Distribution with their properties and uses.
Explanation with Questions.

Week 8
Hyper-Geometric Distribution with their properties and uses. Explanation with Questions. Problems taken related to Hyper-Geometric Distribution.

Week 9
Continuation to Hyper-Geometric Distribution with their properties and uses. Explanation with Questions.
Problems taken related to Hyper-Geometric Distribution.

Week 10
Uniform Distribution with their properties and uses. Explanation with Questions.
Problems taken related to Uniform Distribution.

Week 11

Continuation of Uniform Distribution with their properties and uses Explanation with Questions. Problems taken related to Uniform Distribution.

Week 12
Gamma Distribution with their properties and uses. Explanation with Questions. Problems taken related to Gamma Distribution. Beta Distribution (first and second kinds) with their properties and uses Explanation with Questions. Problems taken related to Beta Distribution.

Week 13
Exponential distributions with their properties and uses. Explanation with Questions. Problems taken related to Exponential Distribution.

Week 14
Normal distribution with their properties and uses
Explanation with Questions.
Problems taken related to Normal Distribution.

Week 15
Discussion and Test.

Week 16
Discussion and Test.

LESSON PLAN
Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Sanjay
Class- B.Sc. Non-medical 5th Semester , BA 5th sem.
Subject- Real Analysis

WEEKS	SYLLABUS
Week 1	Riemann integral, Integrabililty of continuous and monotonic functions
Week 2	The Fundamental theorem of integral calculus. Mean value theorems of integral calculus.
Week 3	Improper integrals and their convergence
Week 4	Comparison tests, Abel's and Dirichlet's tests
Week 5	Frullani's integral, Integral as a function of a parameter
Week 6	Continuity, Differentiability and integrability of an integral of a function of a parameter
Week 7	Definition and examples of metric spaces
Week 8	neighborhoods, limit points, interior points, open and closed sets
Week 9	closure and interior, boundary points, subspace of a metric space
Week 10	equivalent metrics, Cauchy sequences, completeness, Cantor's intersection theorem
Week 11	Baire's category theorem, contraction Principle
Week 12	Continuous functions, uniform continuity
Week 13	compactness for metric spaces, sequential compactness, Bolzano-Weierstrass property
Week 14	total boundedness, finite intersection property, continuity in relation with compactness
Week 15	Connectedness, components, continuity in relation with connectedness.
Week 16	Revision and test

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Jyotsana

Class- B.Sc. Non-Medical 3rd Semester

Subject- Advanced Calculus

WEEKS	**SYLLABUS**
Week 1	Indeterminate forms.
Week 2	Partial differentiation.
Week 3	Total Differentials; Composite functions & implicit functions
Week 4	Change of variables. Homogenous functions & Euler's theorem on homogeneous functions.
Week 5	Taylor's theorem for functions of two variables. Problems on previous topics. Test.
Week 6	Curves: Tangents, Principal normals, Binormals, Serret-Frenet formulae.
Week 7	Locus of the centre of curvature, Spherical curvature, Locus of centre of Spherical curvature.
Week 8	Maxima, Minima and saddle points of two variables. Lagrange's method of multiplier. Discussion of theory.
Week 9	Continuity, Sequential Continuity, properties of continuous functions.
Week 10	Continuity, Sequential Continuity, properties of continuous functions continue.
Week 11	Limit and continuity of real valued functions of two varia Differentiability of real valued functions of two variables. Schwarz and Young's theorem. Implicit function theorem.
Week 12	Mean value theorems; Rolle's Theorem and Lagrange's mean value theorem and their geometrical interpretations. Taylor's Theorem with various forms of remainders, Darboux's intermediate value theorem for derivative.
Week 13	Taylor's Theorem with various forms of remainders, Uniform continuity.
Week 14	More discussion on continuity. Presentations. Test.
Week 15	Involutes, evolutes, Bertrand Curves. Surfaces: Tangent planes, one parameter family of surfaces, Envelopes
Week 16	Doubts.

Lesson Plan

Name of the Assistant Professor: Dr Jyotsana

Class: B.Sc. Non-Medical Ist Year

Name of Subject: 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: 2024-25 (ODD SEM)

Name of Teacher- Dr Jyotsana

Class- BSc NM 1st year

Subject- Functions and Alegbra

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

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Asha

Class- B.Sc. Non-Medical and B.A 3rd Semester

Subject- Advanced Calculus

WEEKS	**SYLLABUS**
Week 1	Indeterminate forms.
Week 2	Partial differentiation.
Week 3	Total Differentials; Composite functions & implicit functions
Week 4	Change of variables. Homogenous functions & Euler's theorem on homogeneous functions.
Week 5	Taylor's theorem for functions of two variables. Problems on previous topics. Test.
Week 6	Curves: Tangents, Principal normals, Binormals, Serret-Frenet formulae.
Week 7	Locus of the centre of curvature, Spherical curvature, Locus of centre of Spherical curvature.
Week 8	Maxima, Minima and saddle points of two variables. Lagrange's method of multiplier. Discussion of theory.
Week 9	Continuity, Sequential Continuity, properties of continuous functions.
Week 10	Continuity, Sequential Continuity, properties of continuous functions continue.
Week 11	Limit and continuity of real valued functions of two varia Differentiability of real valued functions of two variables. Schwarz and Young's theorem. Implicit function theorem.
Week 12	Mean value theorems; Rolle's Theorem and Lagrange's mean value theorem and their geometrical interpretations. Taylor's Theorem with various forms of remainders, Darboux's intermediate value theorem for derivative.
Week 13	Taylor's Theorem with various forms of remainders, Uniform continuity.
Week 14	More discussion on continuity. Presentations. Test.
Week 15	Involutes, evolutes, Bertrand Curves. Surfaces: Tangent planes, one parameter family of surfaces, Envelopes
Week 16	Doubts.

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Vikash Ghlawat

Class- BSc 1st Medical

Subject- MDC

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

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Sunil Dua

Class- B.Sc 5th Sem(Pass/Hon's) (Mathematics)

Credits- 4 (L)

Subject- Real Analysis Code-BM/BHM 351

WEEKS	**SYLLABUS**
Week 1	Integral as a function of a parameter. Continuity, Differentiability and integrability of an integral of a function of a parameter.
Week 2	Definition and examples of metric space.
Week 3	Neighbourhoods, interior points, open sets.
Week 4	limit points, closed sets .
Week 5	Subspace of a metric space, equivalent metrics, Cauchy sequences, completeness.
Week 6	Continuous functions, uniform continuity.
Week 7	Compactness for metric spaces, sequential compactness, Bolzano-Weierstrass property, total boundedness.
Week 8	connectedness , components, continuity in relation with connectedness.
Week 9	Finite intersection property, continuity in relation with compactness.
Week 10	Riemann integral. Lower sums Upper Sums, introductory theorems and numerical of first ex.
Week 11	Integrability of continuous and monotonic functions, The Fundamental theorem of integral calculus. Mean value theorems of integral calculus.
Week 12	Continue Riemann integral theorems and numerical.
Week 13	Improper integrals and their convergence, Comparison tests, Abel's and Dirichlet's tests, Frullani's integral.
Week 14	Improper integrals and their convergence, Comparison tests, Abel's and Dirichlet's tests, Frullani's integral .
Week 15	Presentations and tests.
Week 16	Doubts.

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Sunil Dua

Class- B.Sc(H) Math 5th Sem

Subject- Numerical Analysis

Week	Syallbus
Week 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. Give brief overview of Chapter 1 and take problems.
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, Interpolation with equal intervals. 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. *Assignments: State when Lagrange and Hermite interpolation is applied and Test of Chapter 3.*
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.
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 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 12	Presentation on Eigen value Problems Newton Cotes Quadrature formula and related problems Numerical Integration by trapezoidal rule and related problems Test of Chapter-6 Numerical Integration by Simpson's 1/3 rule and related problems More problems on Numerical Integration
Week 13	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 14	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 15	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 Adams-Bashforth Predictor Formula and Adams-Moulton Corrector Formula and its examples More examples related to Numerical Solution of Ordinary Differential Equations More examples related to Numerical Solution of Ordinary Differential Equations Take Problems of Chapter 9
Week 16	Doubts, Revision and Test

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Rajeev Kumar

Class- B.Sc 5th Sem(H) (Mathematics)

Credits- 4 (L)

Subject- Operations Research-I Code-BHM 356

WEEKS	**SYLLABUS**
Week 1	Definition, scope, methodology and applications of OR. Types of OR models
Week 2	Concept of optimization, Linear Programming: Introduction, Formulation of a Linear Programming Problem (LPP)
Week 3	Requirements for an LPP, Advantages and limitations of LP. Graphical solution:
Week 4	Graphical solution: Multiple, unbounded and infeasible solutions.
Week 5	Principle of simplex method: standard form, basic solution, basic feasible solution
Week 6	Computational Aspect of Simplex Method: Cases of unique feasible solution
Week 7	no feasible solution, multiple solution and unbounded solution and degeneracy
Week 8	Two Phase and Big- M methods.
Week 9	Duality in LPP, primal-dual relationship
Week 10	Transportation Problem: Methods for finding basic feasible solution of a transportation problem
Week 11	Modified distribution method for finding the optimum solution, Unbalanced and degenerate transportation problems
Week 12	transshipment problem, maximization in a transportation problem
Week 13	Assignment Problem: Solution by Hungarian method, Unbalanced assignment problem, maximization in an assignment problem
Week 14	Crew assignment and Travelling salesman problem. Presentations. Test.
Week 15	Game Theory: Two person zero sum game, Game with saddle points, the rule of dominance;
Week 16	Algebraic, graphical and linear programming methods for solving mixed strategy games., Doubts.

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Rajeev Kumar

Class- B.Sc 3rd Sem(H) (Mathematics)

Credits- 4 (L)

Subject- Statics Code-BHM 233

WEEKS	**SYLLABUS**
Week 1	Composition and resolution of forces
Week 2	Composition and resolution of forces
Week 3	Parallel forces
Week 4	Moments and Couples.
Week 5	Analytical conditions of equilibrium of coplanar forces
Week 6	Analytical conditions of equilibrium of coplanar forces
Week 7	Friction.
Week 8	Centre of Gravity
Week 9	Virtual work.
Week 10	Virtual work.
Week 11	Poinsots central axis.
Week 12	Doubts, test
Week 13	Wrenches
Week 14	Null lines and planes
Week 15	Stable and unstable equilibrium.
Week 16	Doubts, test

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Rajeev Kumar

Class- B.Sc(SINGLE MAJOR PROGRAMS in Mathematics)

Credits- 3(L)+1(T)

Subject- Vector Calculus **Code- 24MATS401DS02**

WEEKS	**SYLLABUS**
Week 1	Scalar and vector product of three vectors , product of four vectors. Reciprocal vectors.
Week 2	Partial derivative, Vector differentiation. Scalar Valued point functions, Vector valued point functions,
Week 3	functions, derivative along a curve, directional derivatives. Gradient of a scalar point function,
Week 4	geometrical interpretation of grad, gradient as a point function. Tangent planes and Normal lines.
Week 5	Analytical conditions of equilibrium of coplanar forcDivergence and curl of vector point function, characters of Div $\vec{f}$ and curl $\vec{f}$ as point function, examples.es
Week 6	Gradient, divergence and curl of sums and product and their related vector identities. Laplacian operator.
Week 7	Double integrals, double integrals in polar co-ordinates, change of order, change in variable
Week 8	Triple integrals, Triple integrals in Cylindrical co-ordinates and Spherical co- ordinates,
Week 9	Change of order in triple integral, Volume integral.
Week 10	Line integrals, independent of the path,
Week 11	Green Theorem and problem based on Green Theorem.
Week 12	Doubts, test
Week 13	Surface integral, Stokes' theorem
Week 14	problem based on Stokes' theorem,
Week 15	Gauss theorem and problems based on Gauss theorem.
Week 16	Doubts, test

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Shipra, Rajesh Mor

Class- BSc II

Subject- PDE

WEEKS	**SYLLABUS**
Week 1	Partial differential equations: Formation, order and degree
Week 2	Linear and Non-Linear Partial differential equations of the first order: Complete solution, singular solution, General solution
Week 3	Solution of Lagrange's linear equations, Charpit's general method of solution
Week 4	Compatible systems of first order equations, Jacobi's method.
Week 5	Linear partial differential equations of second and higher orders, Linear and non-linear homogenious and non-homogenious equations with constant co-efficients
Week 6	Partial differential eqution with variable co-efficients reducible to equations with constant coefficients,
Week 7	their complimentary functions and particular Integrals, Equations reducible to linear equations with constant co-efficients.
Week 8	Classification of linear partial differential equations of second order, Hyperbolic, parabolic and elliptic types
Week 9	Reduction of second order linear partial differential equations to Canonical (Normal) forms and their solutions
Week 10	Solution of linear hyperbolic equations, Monge's method for partial differential equations of second order
Week 11	Cauchy's problem for second order partial differential equations,
Week 12	Characteristic equations and characteristic curves of second order partial differential equation,
Week 13	Method of separation of variables: Solution of Laplace's equation
Week 14	**Wave equation (one and two dimensions), Diffusion (Heat) equation (one and two dimension) in Cartesian Co- ordinate system.**
Week 15	**Revision**
Week 16	Revision

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Shipra

Class- BSc III Maths Hons

Subject- Integral Equation

WEEKS	**SYLLABUS**
Week 1	Linear integral equations, Some basic identities, Initial-value problems reduced to Volterra integral equations
Week 2	Method of successive approximation to solve Volterra integral equations of second kind
Week 3	Iterated kernels and Neumann series for Volterra equation. Resolvent kernel as a series in λ
Week 4	Laplace transform method for a difference kernel, Solution of a Volterra integral equation of the first kind.
Week 5	Boundary value problems reduced to Fredholm integral equations, method of successive approximations to solve Fredholm equation of second kind
Week 6	Iterated kernels and Neumann series for Fredholm equations, Resolvent kernel as a sum of series, Fredholm resolvent kernel as a ratio of two series.
Week 7	Fredholm equations with degenerate kernel, approximation of a kernel by a degenerate kernel
Week 8	Fredholm Alternative.
Week 9	Green's function. Use of method of variation of parameters to construction the Green's function for a nonhomogeneous linear second degree BVP
Week 10	Green's function. Use of method of variation of parameters to construction the Green's function for a nonhomogeneous linear second degree BVP
Week 11	Method of series representation of the Green's function in terms of the solutions of the associated homogeneous BVP. Reduction of a BVP to a Fredholm integral equation with kernel as Green's function.
Week 12	Homogeneous Fredholm equations with symmetric kernels, Solution of Fredholm equations of the second kind with symmetric kernel,
Week 13	Method of Fredholm Resolvent Kernel, Method of Iterated Kernels
Week 14	**Fredholm Equations of the First Kind with Symmetric Kernels**
Week 15	**Revision**
Week 16	Revision

Lesson Plan

Name of the Assistant Professor: Dr Roji

Class: B.Sc. Maths Hons Ist Year

Name of Subject: 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/ Associate Professor: Dr Roji
Class and Section: B.C.A. (Semester – I)
Subject: Mathematics
Paper : Mathematics

Week 1	Sets, subsets, equal sets, Universal sets. Finite and infinite sets
Week 2	Operation on sets: Intersection and Complements of sets. Cartesian Product. Cardinality of sets. Simple applications. Examples Assignments
Week 3	Define matrix and type of matrices
Week 4	Minors, Cofactors. Properties of determinants. Applications of determinants. Revision and problems of the chapter
Week 5	Solving a system of linear equations, Examples, Definitions and Types of Matrices, Addition , Subtraction of matrices, Examples
Week 6	Class Test Multiplication of Matrices. Examples. Adjoint of Matrix. Inverse of Matrix
Week 7	Examples on Inverse. Solving system of linear equations. Discuss problems. Cramer's rule. Revision
Week 8	Properties of Relations. Equivalence Relation. Partial Order Relation.Functions. Examples. September
Week 9	Examples: Inverse Functions.Problem Discussion. Limit at a Point. Properties of limits. Examples. Computation of limits of various type of functions
Week 10	Limit at a Point. Properties of limits. Examples. Computation of limits of various type of functions
Week 11	Sum , product and quotient of continuous functions. Examples. Revision. Test. Intermediate Value theorem. Examples
Week 12	Derivative of a Function. Examples. Derivative of sum. Examples. Derivative of differences.
Week 13	Derivative of Trigonometric Functions. Derivative of exponential functions. Examples. Derivative of logarithmic functions. Examples. Derivative of inverse Trigonometric Functions. Examples
Week 14	Derivative of implicit functions. Examples.Logarithmic Differentiation. Examples.
Week 15	Chain rule. Examples. Week 3 Differentiation by substitution. Examples and Problem Discussion. Test
Week 16	Indefinite Integrals. Examples. Methods of integration by Substitution. Examples.
Week 17	Methods of integration by Parts. Examples. Partial Fractions. Examples and Problem Discussions.

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Ravinder Kumar

Class- B.Sc 3rd

Subject- Statics

WEEKS	**SYLLABUS**
Week 1	Composition and resolution of forces
Week 2	Composition and resolution of forces
Week 3	Parallel forces
Week 4	Moments and Couples.
Week 5	Analytical conditions of equilibrium of coplanar forces
Week 6	Analytical conditions of equilibrium of coplanar forces
Week 7	Friction.
Week 8	Centre of Gravity
Week 9	Virtual work.
Week 10	Virtual work.
Week 11	Poinsots central axis.
Week 12	Doubts, test
Week 13	Wrenches
Week 14	Null lines and planes
Week 15	Stable and unstable equilibrium.
Week 16	Doubts, test

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Rajesh Kumar Dahiya

Class- B.Sc 3rd

Subject- Statics

WEEKS	**SYLLABUS**
Week 1	Composition and resolution of forces
Week 2	Composition and resolution of forces
Week 3	Parallel forces
Week 4	Moments and Couples.
Week 5	Analytical conditions of equilibrium of coplanar forces
Week 6	Analytical conditions of equilibrium of coplanar forces
Week 7	Friction.
Week 8	Centre of Gravity
Week 9	Virtual work.
Week 10	Virtual work.
Week 11	Poinsots central axis.
Week 12	Doubts, test
Week 13	Wrenches
Week 14	Null lines and planes
Week 15	Stable and unstable equilibrium.
Week 16	Doubts, test

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Ravinder Kumar

Class- BSc 1st

Subject- MDC

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

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr.Upma

Class- Major in Physics (Hons)1st Semester

Subject- Basic Mathematics

WEEKS	**SYLLABUS**
Week 1	Calculus: (Problems and theorems involving trigonometrically ratios are not to be done)
Week 2	Differentiation: Partial derivatives up to second order; Homogeneity of functions and Euler's theorem; total differentials
Week 3	Differentiation of implicit function with the help of total differentials. Maxima and Minima
Week 4	Cases of one variable involving second or higher order derivatives; Cases of two variables involving not more than one constraint
Week 5	Integration: Integration as anti-derivative process; Standard forms
Week 6	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
Week 10	Types of matrices ,Algebra of matrices
Week 11	Determinants: Properties of determinants
Week 12	Test,Revision
Week 13	calculation of values of determinants up to third order
Week 14	Adjoint of a matrix, through Adjoint and
Week 15	elementary row or column operations
Week 16	Solution of system of linear equations having unique solution and involving not more than three variables

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr.Upma

Class- B.Sc.Physics Hon 3rd Sem

Subject- Mathematics III

WEEKS	**SYLLABUS**
Week 1	Sequences and series of functions of real variable. Point wise and uniform convergence.
Week 2	Weierstrass M-test Uniform convergence and continuity Uniform convergence and differentiation
Week 3	Uniform convergence and integration . Weierstrass approximation theorem.
Week 4	Power series and t heir convergence and uniform convergence
Week 5	Definition of exponential, logarithmic and trigonometric functions by means of power series
Week 6	Improper integrants and their convergence comparison , Abel 's and Dirichlet 's tests.
Week 7	Beta and Gamma functions and their properties. Differentiation under the sign of integration
Week 8	Test and Revision
Week 9	Probability Classical, relative frequency and axiomatic approaches to probability
Week 10	Theorems of total and compound probability . Conditional probabil ity
Week 11	I ndependent events. Bayes theorem . Random variables..
Week 12	Expectation of a random variable.
Week 13	Moments, moment generating function
Week 14	Probability generating function
Week 15	Discrete and continuous random variables. distinction function
Week 16	Test and Revision

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr.Upma

Class- B.Sc. in Physical Science (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.
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.
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
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.
Week 14	Minimal polynomial of a matrix.
Week 15	HCayley Hamilton theorem and its use in finding the inverse of a matrix. Diagonalization of matrix.
Week 16	Test and Revision

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Sheetal Chawla

Class- Chem. Hons. 1st Semester

Subject- Multidisciplinary Course in Mathematics

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

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Sheetal Chawla

Class- Chem. Hons. 3rd Semester

Subject- Mathematics

WEEKS	SYLLABUS
Week 1	Properties of Continuous Function, Uniform Continuity, Definition of Continuity, Sequential Continuity
Week 2	Limit and Continuity, Introduction of partial differentiation, Total Differential, Composite Function, Implicit functions, Change of variables, Revision
Week 3	Homogeneous Functions, Euler's theorem Taylor theorem for functions of two variables
Week 4	Definition of differential equation, order and degree of differential equation, Definition and formation of O.D.E.
Week 5	Order and degree of O.D.E. of first order and first degree, Variable separable, Homogeneous equation, Revision and Test
Week 6	Solution of Linear differential equation of with constant coefficients, Solution of Homogeneous Linear Differential equation
Week 7	Definition of Partial differential equation, order and degree of P.D.E., Formation of P.D.E.
Week 8	Order and degree of P.D.E., Solution of Linear differential equation of first order, Solution of Non-Linear differential equation of first order
Week 9	Definition and Solution of linear partial differential equation of Second and Higher order, Difference between linear and non-linear partial differential equation, Revision and Test
Week 10	Solution of linear homogeneous partial differential equation of second order
Week 11	Solution of non- linear partial differential equation of second order
Week 12	Method of separation of variable
Week 13	Def. of Laplace equation, Solution of Laplace equation, Revision and Test
Week 14	Definition of Wave equation, Solution of Wave equation in one dimension
Week 15	Solution of Wave equation in two dimensions, Definition of Diffusion equation
Week 16	Solution of Heat equation in one dimension, Solution of Heat equation in two dimensions, Revision and Test

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Sheetal Chawla

Class- B.Sc.(H) Final

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

LESSON PLAN
Session: 2024-25 (ODD SEM)
Name of Teacher- Dr Sheetal Chawla
Class- B.Sc. Final Section: A
Subject- Numerical Analysis

Week	Syallbus
Week 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. Give brief overview of Chapter 1 and take problems.
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. *Assignments: State when Lagrange and Hermite interpolation is applied and Test of Chapter 3.*
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 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 12	Presentation on Eigen value Problems ,Newton Cotes Quadrature formula and related problems Numerical Integration by trapezoidal rule and related problems,Test of Chapter-6 Numerical Integration by Simpson's 1/3 rule and related problems ,More problems on Numerical Integration
Week 13	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 14	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 15	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 Adams-Bashforth Predictor Formula and Adams-Moulton Corrector Formula and its examples More examples related to Numerical Solution of Ordinary Differential Equations More examples related to Numerical Solution of Ordinary Differential Equations Take Problems of Chapter 9
Week 16	Doubts, Revision and Test

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Archana

Class- B.Sc. Final

Subject- Numerical Analysis

Week	Syallbus
Week 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. Give brief overview of Chapter 1 and take problems.
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, Interpolation with equal intervals. 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. *Assignments: State when Lagrange and Hermite interpolation is applied and Test of Chapter 3.*
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.
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 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 12	Presentation on Eigen value Problems Newton Cotes Quadrature formula and related problems Numerical Integration by trapezoidal rule and related problems,Test of Chapter-6 Numerical Integration by Simpson's 1/3 rule and related problems More problems on Numerical Integration
Week 13	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 14	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 15	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 Adams-Bashforth Predictor Formula and Adams-Moulton Corrector Formula and its examples More examples related to Numerical Solution of Ordinary Differential Equations More examples related to Numerical Solution of Ordinary Differential Equations Take Problems of Chapter 9
Week 16	Doubts, Revision and Test

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Sunil Kumar

Class- B.Com.

Subject- Minor

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. Maxima and Minima
Week 3	Cases of one variable involving second or higher order derivatives; Cases of two variables involving not more than one constraint.
Week 4	Integration: Integration as anti-derivative process; Standard forms;
Week 5	Methods of integration by substitution, by parts, and by use of partial fractions; Definite integration;
Week 6	Finding areas in simple cases; Consumers and producers surplus; Nature of Commodities learning Curve;
Week 7	Leontiff Input-Output Model.
Week 8	Matrices: Definition of matrix;
Week 9	Types of matrices; Algebra of matrices.
Week 10	Determinants: Properties of determinants; calculation of values of determinants up to third order;
Week 11	Adjoint of a matrix, through Adjoint and elementary row or column operations;
Week 12	Solution of system of linear equations having unique solution and involving not more than three variables.
Week 13	Revision
Week 14	Revision
Week 15	Revision
Week 16	Revision

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Suni Kumar

Class- B.Com.

Subject- MDC

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

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Suni Kumar

Class- BBA

Subject- MDC

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

LESSON PLAN

Session: 2024-25 (ODD SEM)

Name of Teacher- Dr Jyotsana

Class- BSc NM 1st year

Subject- Functions and Alegbra

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

LESSON PLAN
Session: 2024-25 (ODD SEM)

Name of Teacher- Mrs. Amita
Class- B.Com(Hons.) 3rd Semester
Subject- Business Mathematics

WEEKS	SYLLABUS
Week 1	Algebra of Matrices
Week 2	Determinants
Week 3	Adjoint And Inverse of Matrix
Week 4	Leontief Input -Output Model
Week 5	Problem Discussion and Test
Week 6	Compound Interest
Week 7	Annuities
Week 8	Time Value of Money
Week 9	Problem Discussion , Assignment and Test
Week 10	Differentiation
Week 11	Integration
Week 12	Problem Discussion, Assignment and Test
Week 13	Linear Programming
Week 14	Linear Programming
Week 15	Set Theory
Week 16	Revision and Problem Discussion

LESSON PLAN
Session: 2024-25 (ODD SEM)

Name of Teacher- Mrs. Amita
Class- B.Sc.3rd (5th Semester)
Subject- Group And Rings

WEEKS	SYLLABUS
Week 1	Groups and Subgroups
Week 2	Groups and Subgroups
Week 3	Cosets
Week 4	Problem Discussion and Test
Week 5	Homomorphism and Automorphisms
Week 6	Permutation Groups
Week 7	Problem Discussion, Assignment and Test
Week 8	Rings
Week 9	Fields
Week 10	Ideals and Quotient Rings
Week 11	Homomorphisms of Rings
Week 12	Problem Discussion ,Assignment and Test
Week 13	Euclidean Rings
Week 14	Polynomial Rings
Week 15	Polynomial Rings
Week 16	Revision and Problem Discussion