**Lesson Plan**

**Academic Session 2024-25**

**Class: M.Sc. Maths (1st sem)**

**Paper: Analytical Number Theory Name: Dr. Ridam**

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| Weeks | **Month** |
|  | **August 2024** |
| Week 2 | Distribution of Primes |
| Week 3 | Fermat and Mersenne Numbers, Farey series |
| Week 4 | Some results concerning Farey series, Approximation of irrationals by rationals |
| Week 5 | Hurwitz theorem, irrationality of e and π. |
|  | **September 2024** |
| Week 1 | The arithmetic in Zn, The group Un |
| Week 2 | Primitive roots and their existence, the group Up^n(p-odd) and U2^n |
| Week 3 | The group of quadratic residues Qn, Quadratic residues for prime power moduli and arbitrary moduli |
| Week 4 | The algebraic structure of Qn and Un. Tests and Revision |
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|  | **October 2024** |
| Week 1 | Riemann Zeta Function and its convergence, Application to prime number |
| Week 2 | Zeta function as Euler product, Evaluation of zeta function at 2 and 2k, Diophantine equations |
| Week 3 | Representation of numbers by two or four squares, Waring problem, Four square theorem |
| Week 4 | The numbers g(k) and G(k), Lower bounds for g(k) and G(k). Tests and Revision |
| Week 5 | Diwali Break |
|  | **November 2024** |
| Week 1 | Arithmetic function ϕ(n), ԏ(n), σ(n) and σk (n), U(n), N(n), I(n), Definition and xamples and simple properties. |
| Week 2 | Perfect Numbers, The Mobius Inversion Formula, The Mobius function μn. |
| Week 3 | The order and average order of the functions ϕ(n), ԏ(n), σ(n). |
| Week 4 | Tests and Assignments |
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| **Name of the Assistant/Associate Professor: Dr. Preeti** |
| **Class: B.Sc. 2(math hons) (2024-25)** |
| **Subject: Mathematics** |
| **Paper: Differential Geometry(MC34)** |
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| **July** |
| **Week 4:**  One parameter family of surfaces : Envelope, characteristic, edge of regression  Examples and problems |
| **AUGUST :** |
| **Week 1:**  Developable surfaces, developable associated with a curve, osculating developable |
| **Week 2:**  Discuss Problem,Polar developable, Rectifying developable |

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| **Week 3 :**  Two Parameter Family of Surface:Envelope, Take problems |
| **Week 4:**  Examples of Envelope,Characteristics Point,Curvilinear coordinates |
| **Week 5 :**  Take Problems,First Order Magnitude |
| **SEPTEMBER**: |
| **Week 1 :**  Take problem, Assignament, Test |
| **Week 2:**  Direction on a surface of Normal,Take Problems |
| **Week 3:**  Second Order Magnitude,Derivative of N, Take Problems |
| **Week 4:**  Curve on a Surface:Principal Directions And Curvatures |
| **OCTOBER:** |
| **Week 1:**  Euler’s Theorem And Prestation  Take Problem And Assignment |
| **Week 2:**  Duplin’s Indicatrix,The Surface z=f(x,y),Problems |
| **Week 3:**  Surface Of Revolution, Conjute Directions, Problems |
| **Week 4:**  Diwali Break |
| **November:** |
| **Week 1:**  ConjugateSystems,Asymtotic Lines,CurvatureAnd Torsion |
| **Week 2:**  Torsion,Isometric Parameters And Problems |
| **Week 3:**  Null lines,Minimal Curves,Geodics And Geodics Parallel |
| **Week 4:**  Take Assignment, Problem, Test |

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| **Name of the Assistant/Associate Professor: Dr. Preeti** |
| **Class and Section: B. Sc III** |
| **Subject: MATHEMATICS** |
| **Paper: Groups and Rings** |
| **July** |
| **Week 4:** Definition of group and its brief introduction, examples of group and general properties. |

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| **AUGUST** |
| **Week 1:** Theorems on group, introduction of subgroups and its examples, subgroup criterion, product, intersection and union of subgroup. |
| **Week 2:** Cyclic groups and its examples and theorems, Euler function and its generators of groups. |
| **Week 3:** Introduction of cosets of a subgroup, theorems on cosets, Index of a subgroup, Lagrange`s theorem and its consequences, introduction to Normal subgroups and simple groups |
| **Week 4:** Examples and theorems on Normal subgroups, concept of quotient groups, examples and theorems on quotient groups. |
| **Week 5 :** Introduction to Homomorphism and isomorphism of groups and examples, Kernel of homomorphism and Fundamental theorem, Automorphism. |

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| **SEPTEMBER** |
| **Week 1 :** Examples and theorems on automorphism and Inner automorphism, Normalizer of a subgroup and examples, centre of a group. |
| **Week 2 :** Definition of permutation group and alternating group, related theorems, Caley theorem |
| **Week 3:** Introduction to Rings and related examples and theorems, integral domain and its examples, introduction to Field and examples. |
| **Week 4 :** Theorems on fields and integral domain, subring of a ring and examples, characteristic of ring and field and related theorems. |

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| **OCTOBER** |
| **Week1:** Introduction to ideal, their examples, sum, product, intersection, union and related theorems. |
| **Week 2 :** Principal ideal and principal ideal domain, their examples and theorems. |
| Week 3 : Maximal and prime ideal, idempotent and nilpotent element in ring, concept of quotient ring, ring homomorphism and its examples, Fundamental theorem on homomorphism. |
| **Week 4:** Diwali break |

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| **NOVEMBER** |
| **Week 1 :** Field of quotient of an integral domain, divisibility in the ring. Unit, prime and irreducible element in ring and their examples. |
| **Week 2 :** Introduction to polynomial ring, polynomial over ring and integral domain, GCD and LCM inring, Euclidean ring, its example and theorems, theorems on prime and irreducible element |
| **Week 3:** Unique factorization domain and its examples and theorems. |
| **Week 4:** Division algorithm, irreducibility of polynomial over ring and integral domain, mod-p and the Eisenstein`s criterion for irreducibility of polynomials. |

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| **Name of the Assistant/Associate Professor: Dr Sarita, Dr. Babita, Dr Shalini** |
| **Class and Section: B.Sc. III, B.A.** |
| **Subject: MATHEMATICS** |
| **Paper: Numerical analysis** |
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| **July** |
| **Week 4**  **Finite difference operator, Forward and backward difference operator, Central diff. operator, fundamental theorem of diff. operator, operator E and their properties**  **August** |
| **Week 1:**  **Effect of error in tabular value, relation b/w different operator, definition of terms interpolation and extrapolation, definition of term interpolation with equal intervals** |

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| **Week 2:**  **Finite difference operator, Forward and backward difference operator, Central diff. operator, fundamental theorem of diff. operator, operator E and their properties** |
| **Week 3: Effect of error in tabular value, relation b/w different operator, definition of terms interpolation and extrapolation, definition of term interpolation with equal intervals** |
| **Week 4**  **Interpolation with unequal intervals, difference b/w interpolation with equal intervals** |
| **Week 5**  **Newton formula for forward and backward interpolation, problems, subdivision of interval and related examples , interpolation with equal intervals and examples. And problems** |
| **September** |
| **Week 1: Divided difference formula and theorems, newton divided difference and ordinary difference and examples.** |
| **Week 2: lagrange interpolation formula and examples. , Hermite formula and examples.** |
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| **Week 3: Gauss forward and backward interpolation and related examples** |
| **Week 4: Bessel formula, Sterling formula and examples. And problems ,** |

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| **October** |
| **Week 1: Probability distribution of random variables , binomial distribution and examples., Poisson distribution and examples.** |
| **Week 2: Normal distribution and examples, problems** |
| **Week 3: Numerical differentiation derivative of interpolation formula, Eigen value formula** , Power method examples And problems |
| **Week 4:**  **Jacobi method and examples., Given method and examples and problems, House holder method and examples., QR method, lanczo method, examples** |
| **Newton quotes quadrature formula, Trapezoidal rule, Simpsons one third rule and examples.** |
| **November** | |
| **Week 1: Simpsons three eight rule ,Chebychev formula and Gauss quadrature formula ,examples** | |
| **Week 2: Single step method, Picard method, Tailor series and Euler method, Runga kutta method and multiple step method and examples.**  **Week 3: Revision** | |

**Lesson Plan**

**Academic Session 2024-25**

**Class: M.Sc. Maths (1stsem)**

**Paper: Mathematical Analysis Name: Dr. Sushma**

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| Weeks | **Month** |
|  | **August 2024** |
| Week 2 | Riemann-Stieltjes integral, its existence and properties, |
| Week 3 | Integration and differentiation, The fundamental theorem of calculus, |
| Week 4 | Integration of vector-valued functions, Rectifiable curves. |
| Week 5 | Sequence and series of functions, Pointwise and uniform convergence, |
|  | **September 2024** |
| Week 1 | Cauchy criterion for uniform convergence, Weirstrass’s M test, Abel’s and Dirichlet’s tests for uniform convergence |
| Week 2 | Uniform convergence and continuity, Uniform convergence and differentiation, |
| Week 3 | Weierstrass approximation theorem. Unit - III Power series, its uniform convergence and uniqueness theorem |
| Week 4 | Abel’s theorem, Tauber’s theorem |
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|  | **October 2024** |
| Week 1 | Functions of several variables, Linear Transformations, |
| Week 2 | , Euclidean space Rn , Derivatives in an open subset of Rn |
| Week 3 | Chain Rule, Partial derivatives, Continuously Differentiable Mapping, Young’s and Schwarz’s theorems |
| Week 4 | . Taylor’s theorem ,Higher order differentials,test and assignment |
| Week 5 | Diwali break |
|  | **November 2024** |
| Week 1 | Explicit and implicit functions. Implicit function theorem, |
| Week 2 | Inverse function theorem. Change of variables, Extreme values of explicit functions, |
| Week 3 | Stationary values of implicit functions. Lagrange’s multipliers method. Jacobian and its properties. |
| Week 4 | Tests and Assignments |
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| **Name of the Assistant/Associate Professor: Dr Neeraj, Dr Kusum** |
| **Class and Section: B.Sc -/B.sc hon’s/B.A-IIIrd Sem** |
| **Subject: MATHEMATICS** |
| **Paper: Advanced Calculus** |
| **July** |
| **Week 4**  **Continuous functions , uniform continuity** |
| **Assignments : Examples based on continuity** |
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| **AUGUST** |
| **Week 1** |
| **The derivative and mean value theorems** |
| **Week 2**  **The derivative and mean value theorems, Lagrange's mean value theorem, Darboux's theorem, Rolle's theorem, Taylor's theorem** |
| **Assignments: Examples related to mean value theorems** |
| **Week 3**  **Chapter: Maclaurin's theorem, Cauchy's mean value theorem** |
| **Week 4**  **Indeterminate forms** |
| **Week 5**  **Revision of first unit** |
| **SEPTEMBER** |
| **Week 1**  **Limit and continuity of functions of two variables** |
| ***Assignments: Examples*** |
| **Week 2**  **Continuity of functions of two variables and Partial differentiation** |
| ***Assignments: Examples*** |
| **Week 3**  **Partial differentiation-Homogeneous functions, Euler's theorem** |
| ***Assignments: Questions based on Euler's theorem*** |
| **Week 4**  **Differentiability of functions of two variables** |
| ***Assignments: Definitions related to differentiability*** |
| **Week 5**,  **Differentiability of a function of two variables** |
| ***Assignments: Test*** |
| **OCTOBER** |
| **Week 1**  **Differentiability of a function of two variables- Implicit function theorem** |
| ***Assignments: Questions based on excercise*** |
| **Week 2**  **Maximum and minimum of a function of two variables , Lagrange's method of undetermined multipliers** |
| ***Assignments: Examples*** |
| **Week 3**  **Curves in space ,introduction to curves, Circle of curvature and spherical curvature, normal plane** |
| ***Assignments: Examples*** |
| **Week 4**  **Circle of curvature and spherical curvature** |
| ***Assignments:***  **Examples** |
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| **NOVEMBER** |
| **Week 1**  **Involution and evolution, Concept of a surface and envelopes** |
| ***Assignments: Examples*** |
| **Week 2**  **Concept of a surface and envelopes**  **Week 3**  **Revision** |

**Lesson Plan**

**Academic Session: 2024-25**

**Class: B.com 1st Sem**

**Paper: Basic Mathematics Name: Dr. Parul Singh**

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| **Weeks** | **Month** |
|  | **August 2024** |
| Week 2 | Differentiation |
| Week 3 | Differentiation of Logarithmic and Exponential functions, Partial differentiation |
| Week 4 | Total Differentials, Maxima and Minima |
| Week 5 | Maxima and Minima continue |
|  | **September 2024** |
| Week 1 | Test of 1st and 2nd chapter and revision of 1st section |
| Week 2 | Indefinite Integration |
| Week 3 | Indefinite Integration continue, Definite integration |
| Week 4 | Test |
|  | **October 2024** |
| Week 1 | Definite integration |
| Week 2 | Application on Integration |
| Week 3 | Algebra on Matrices |
| Week 4 | Algebra on Matrices continue |
| Week 5 | **Diwali Break** |
|  | **November 2024** |
| Week 1 | Revision on Matrices and Test |
| Week 2 | Determinant |
| Week 3 | System of linear equations |
| Week 4 | Revision, Tests and Assignments |

**Lesson Plan**

**Academic Session 2024-25**

**Class: M.Sc. Maths (1stsem)**

**Paper: Discrete Mathematics Name: Dr. Sushma**

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| Weeks | **Month** |
|  | **August 2024** |
| Week 2 | Recurrence Relations and Generating Functions, |
| Week 3 | Some number sequences, Linear homogeneous recurrence relations, Non-homogeneous recurrence relations |
| Week 4 | , Non-homogeneous recurrence relations, Generating functions, Recurrences and generating functions |
| Week 5 | Exponential generating functions.  Statements Symbolic Representation and Tautologies, |
|  | **September 2024** |
| Week 1 | Quantifiers, Predicates and validity, Prepositional Logic. Lattices as partially ordered sets, their properties |
| Week 2 | Lattices as Algebraic systems. Sub lattices, Direct products and Homomorphism |
| Week 3 | Some special lattices e.g. complete, Complemented and Distributive Lattices.  Boolean Algebras as Lattices |
| Week 4 | Various Boolean Identities, The switching Algebra.Example, Subalgebras, Direct Products and Homomorphism |
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|  | **October 2024** |
| Week 1 | Joint-irreducible elements,Atoms and Minterms, Boolean forms and their equivalence |
| Week 2 | Minterm Boolean forms, Sum of Products, Cononical forms, Minimization of Boolean functions, Applications ofBoolean Algebra to Switching Theory ( using AND, OR and NOT gates.) The Karnaugh method. |
| Week 3 | Finite state Machines and their Transition table diagrams, Equivalence of Finite State, Machines, Reduced Machines |
| Week 4 | , Homomorphism. Finite automata, Acceptors, Nondeterministic, |
| Week 5 | Diwali Break |
|  | **November 2024** |
| Week 1 | Finite Automata and equivalence of its power to that of deterministic Finite automata, Moore and  Mealy Machines. |
| Week 2 | Grammars and Language: Phrase-Structure Grammars, Requiting rules, Derivation, Sentential forms, |
| Week 3 | Language generated by a Grammar, Regular ,Context -Free and context sensitive grammars and Languages, Regular sets, Regular Expressions and the pumping Lemma. |
| Week 4 | Tests and Assignments |
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| **Name of the Assistant/Associate Professor: Dr Neeraj, Dr parul** |
| **Class and Section: B.Sc -/B.sc hon’s/B.A-IIIrd Sem** |
| **Subject: Mathematics** |
| **Paper:Introductory Mathematics** |
| **July** |
| **Week 4** |
| **H.C.F and L.C.M** |
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| **AUGUST** |
| **Week 1** |
| **Decimals and fractions** |
| **Week 2**  **Simplification,square root and cube roots** |
| **Assignments: problems on numbers** |
| **Week 3**  **Chapter: Profit and loss** |
| **Week 4**  **Ratios and proportion** |
| **Week 5**  **Problem on age** |
| **SEPTEMBER** |
| **Average** |
| ***Assignments: Examples*** |
| **Week 2**  **Percentage questions** |
| ***Assignments: Examples*** |
| **Week 3**  **Time and work questions** |
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| **Week 4**  **Revision of section 1** |
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| **Week 5**,  **Revision of section 2** |
| ***Assignments: Test*** |
| **OCTOBER** |
| **Week 1**  **Problems on trains** |
| ***Assignments:*** |
| **Week 2**  **Mixture problems** |
| ***Assignments: Examples*** |
| **Week 3**  **Calender problems** |
| ***Assignments: Examples*** |
| **Week 4**  **Clock problems** |
| ***Assignments:***  **Examples** |
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| **NOVEMBER** |
| **Week 1**   * **Revision of section III** |
| ***Assignments: Examples*** |
| **Week 2**  **Test of whole syllabus**  **Week 3**  **Revision** |

**Lesson Plan**

**Academic Session: 2024-25**

**Class: M.Sc. Maths (1st Sem)**

**Paper: Complex Analysis Name: Dr. Parul Singh**

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| **Weeks** | **Month** |
|  | **August 2024** |
| Week 2 | Function of Complex Variable, Continuity and Differentaibity, Ananlytic functions and its property |
| Week 3 | Cauchy Riemann Equation, Power series and Radius of Convergence |
| Week 4 | Examples on Radius of Convergence, differentiability od sum function of power series |
| Week 5 | Branches of many valued functions with reference t[p arg z, log z, complex exponential function |
|  | **September 2024** |
| Week 1 | Test of 1st section , Path in region, Contour, complex integration |
| Week 2 | Cauchy theorem, Cauchy Integral formula + Group wise Seminar on above topics. |
| Week 3 | Higher order derivatives, Complex intergral as a function of upper limit |
| Week 4 | Morera theorem, Cauchy inequality, Liouville Theorem, Taylor Theorem |
|  | **October 2024** |
| Week 1 | Zeros of analytic function, Laurent series, Isolated Singularities |
| Week 2 | Cassorati- Weisrstrass theorem, Limit point of zeroes and pole |
| Week 3 | Maximum modulus principle, Schwarz Lemma, Meromorphic functions, Argument Principle |
| Week 4 | Rouche Theorem, fundamental theorem of algebra, inverse function theorem, Revision and test |
| Week 5 | **Diwali Break** |
|  | **November 2024** |
| Week 1 | Calculus of residues, Cauchy residue theorem Conformal mappings |
| Week 2 | Equation of integrals, Space of analytic functions and completeness, Hurwitz theorem |
| Week 3 | Montel Theorem, Riemann mapping theorem, discuss some short question on entire syllabus |
| Week 4 | Seminar on important topics, Tests and Assignments |

**Lesson Plan**

**Academic Session: 2024-25**

**Class: B.com 1st Sem**

**Paper: Basic Mathematics Name: Dr. Parul Singh**

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| **Weeks** | **Month** |
|  | **August 2024** |
| Week 2 | Differentiation |
| Week 3 | Differentiation of Logarithmic and Exponential functions, Partial differentiation |
| Week 4 | Total Differentials, Maxima and Minima |
| Week 5 | Maxima and Minima continue |
|  | **September 2024** |
| Week 1 | Test of 1st and 2nd chapter and revision of 1st section |
| Week 2 | Indefinite Integration |
| Week 3 | Indefinite Integration continue, Definite integration |
| Week 4 | Test |
|  | **October 2024** |
| Week 1 | Definite integration |
| Week 2 | Application on Integration |
| Week 3 | Algebra on Matrices |
| Week 4 | Algebra on Matrices continue |
| Week 5 | **Diwali Break** |
|  | **November 2024** |
| Week 1 | Revision on Matrices and Test |
| Week 2 | Determinant |
| Week 3 | System of linear equations |
| Week 4 | Revision, Tests and Assignments |

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| Name of the Assistant/Associate Professor: |
| Class and Section: Physics Hons 3rd sem |
| Subject: mathematics |
| Paper:Phy 305 |
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| July |
| Week 3  Sequence and series of function of real variable  Examples and problems |
| Week 4  Pointwise and uniform convergence  Discuss problems  Class test |
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| Week 5  Weierstrass M- test Uniform convergence and continuity |
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| AUGUST |
| Week 1  Uniform convergence and differentiation  Examples  Class test |
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| Week 2  Uniform convergence and integration  Problem discussion  Test |
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| Week 3  Weierstrass approximation theorem  Numericals  Problems  Test |
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| Week 4  Power series and their convergence and uniform convergence  numericals  test |
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| Week 5  All definitions related to power series  Numericals  Problem discussion  Test |
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| SEPTEMBER |
| Week 1 |
| Improper integral  numericals  test |
| Week 2 |
| Comparison tests  Presentation  Test |
| Week 3 |
| Abel's and Dirichlet's tests  Problems  Presentations |
| Week 4 |
| Beta and Gamma functions  Numerical  Assignment |
| Week 5 |
| Differentiation under the sign of integration  Numerical  Test |

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| OCTOBER |
| Week 1  Unit- 4 |
| Probability classical  problems  test |
| Week 2 |
| Relative frequency and axiomatic approach to probability  problem discussion  test |
| Week 3 |
| Theorems of total and compound probability  Test |
| Week 4 |
| Conditional probability  Test  Problem discussion |
| Week 5 |
| Independent events  Numerical  Presentation |
| NOVEMBER | |
| Week 1 | |
| Assignments: | |
| Week 2 | |
| Assignments:  Test | |
| Week 3 | |
| Assignments:  Problem discussion  Revision | |
| Week 4 | |
| Assignments:  Revision  Exams | |

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| **Name of the Assistant/Associate Professor: Dr. Preety** |
| **Class and Section:B.Sc 5th Sem** |
| **Subject: Mathematics** |
| **Paper: Real Analysis** |
| **July**  **Week 4: Riemann Integral** |
| **AUGUST**  **Week 1 :Integrability of continuous and monotonic function, Fundamental Theorem of integral calculus** |
| **Week 2: Mean value theorems of integral calculus** |
| **Week 3:Improper integral and their convergence** |
| **Week 4: Comparison tests, Abel’s &Dirichlet’s tests** |
| **Week 5:Frullani’s Integral, Integral as a function of a parameter** |
| **SEPTEMBER** |
| **Week1: Continuity, Differentiability &integrability of an integral of a function of a parameter** |
| **Week2:Take problem** |
| **Week3: Definition and examples of metric spaces** |
| **Week4: Neighbourhoods, limit points, interior points, Open & closed sets, closure & interior , boundary points** |
| **October**  **Week 1: Subspace of a metric space, equivalent metrices, Cauchy sequence, Completeness, Cantor’s intersection theorem** |
| **Week 2: Baire’s category theorem, Contraction principle** |
| **Week 2:Continous functions, uniform continuity, Compactness for metric spaces, sequential compactness** |
| **Week 3: Bolzano-Weierstrass property, total boundedness**  **Week 4:Diwali break** |
| **November** |
| **Week 1: Finite intersection property, continuity in relation with compactness** |
| **Week 2: Connectedness, components** |
| **Week3: Continuity in relation with connectedness** |
| **Week4: Take problems & Revision** |

**Lesson Plan**

**Academic Session 2024-25**

**Class: M.Sc. Maths (1st sem)**

**Paper: Mathematical Statistics Name: Dr. Ridam**

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| Weeks | **Month** |
|  | **August 2024** |
| Week 2 | Probability: Definition and various approaches of probability, Addition theorem |
| Week 3 | Boole inequality, Conditional probability and multiplication theorem, independent events |
| Week 4 | Mutual and pairwise independence of events, Bayes theorem and its applications. |
| Week 5 | Practice questions and tests |
|  | **September 2024** |
| Week 1 | Random variable and probability functions: Definition and properties of random variables, Discrete and continuous random variables. |
| Week 2 | Probability mass and density functions, Distribution function, Concepts of bivariate random variable: joint, marginal and conditional distributions. |
| Week 3 | Mathematical expectations: Definition and its properties, Variance, Covariance |
| Week 4 | Moment Generating Function: Definition and their properties.  Revision and Tests |
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|  | **October 2024** |
| Week 1 | Discrete distributions: Uniform, Bernoulli, Binomial distribution with their properties. |
| Week 2 | Poisson and Geometric distributions with their properties. |
| Week 3 | Continuous distributions: Uniform, Exponential and Normal distributions with their properties. |
| Week 4 | Revision and Tests |
| Week 5 | Diwali Break |
|  | **November 2024** |
| Week 1 | Testing of hypothesis: Parameter and statistic, Sampling distribution and standard error of estimate, Null and alternative hypothesis |
| Week 2 | Simple and composite hypothesis, Critical region, level of significance, one tailed and two tailed tests, two types of errors |
| Week 3 | Tests of significance: Large sample tests for single mean, Single proportion, Difference between two means and two proportions. |
| Week 4 | Tests and Assignments |
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LESSON PLAN (2024-25)

Teacher Name:-Dr.Rekha Dahiya

Paper:- statics

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| Week | Topics |
| July  Week 4/5 | Introduction of different types of force |
| August  Week 1 | Composition of force |
| Week 2 | Resolution of force |
| Week 3 | Revision and doubts |
| Week 4/5 | Parallel forces |
| Sweptember  Week 1 | Moments |
| Week 2 | Practical paper |
| Week 3 | Couples of force |
| Week 4 | Analytic condition of equilibrium of forces |
| October  Week 1 | Friction,cen centere of gravity |
| week 2 | Force in three dimensions |
| Week 3 | Poinsots central axis |
| Week 4/5 | Wrenches |
| November  Week 1 | Null lines and planes ,stable and unatastable equillibrium |
| Week 2 | Stable and unstable equilibrium |
| Week 3 | Revision |

**Lesson Plan**

**Academic Session 2024-25**

**Subject-Mathematics Class-B.A/B.SC/B.SC Maths Hons-I sam**

**Paper:- Programming in c &numerical methods Name: Renu Mor**

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| Week | **Month** |
|  | **JULY** |
| Week 4 | Programmer’s model of a computer Algorithms,Flow charts, |
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|  | Data types, Operators and expressions  AUGUST |
| Week 1 | Input / outputs functions |
| Week 2 | Decisions control structure: Decision statements, Logical and conditional statements |
| Week 3  Week 4 | Implementation of Loops,  Switch Statement & Case control structures  Functions, Preprocessors and Arrays. |
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|  | SEPTEMBER |
| Week 1 | Strings: Character Data Type, Standard String handling Functions  Arithmetic Operations on Characters. Structures: |
| Week 2 | Definition, using Structures ,Use of Structures in Arrays and Arrays in Structures. |
| Week 3 | Pointers: Pointers Data type, Pointers and Arrays, Pointers and Functions. |
| Week 4  week 1 | Solution of Algebraic and Transcendental equations: Bisection method, Regula-Falsi method  OCTOBER  , Secant method, Newton-Raphson’s method.  Newton’s iterative method for finding pth root of a number, Order of convergence of above methods. |
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| Week 2 | Simultaneous linear algebraic equations: Gauss-elimination method, |
| Week 3 | Gauss-Jordan method, Triangularization method (LU decomposition method). |
| Week 4 | Crout’s method, Cholesky Decomposition method. Iterative method  NOVEMBER |
| week 2 | Jacobi’s method, Gauss-Seidal’s method, Relaxation method |
| Week 3 | Test and Assignment |

**LESSON PLAN**

**SESSION 2024-25 (ODD SEM)**

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| **Name of the Assistant/Associate Professor: Renu Mor** |
| **Class and Section: Maths (Honour) 5th sem** |
| **Subject: Mathematics** |
| **Paper: Methods of Applied Mathematics** |
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| **JULY** |
| **WEEK-4** |
| ***Assignments:*** |
| **solution of**  **3D Laplace Equations in cylindrical polar co-ordinates**  **3D Laplace Equations in spherical polar co-ordinates**  **By method of separation of variables and related problems** |
| **3D Wave Equations in cylindrical polar co-ordinates**  **3D Wave Equations in spherical polar co-ordinates**  **By method of separation of variables and related problems** |
| **3D Heat Equations in cylindrical polar co-ordinates**  **3D Heat Equations in spherical polar co-ordinates**  **By method of separation of variables and related problems** |
| AUGUST  WEEK -1 |
| ***Assignments:*** |
| **Fourier series solution of one- dimensional Wave Equations and solution of related   problems.**  **Fourier series solution of two- dimensional Wave Equations and solution of related**  **problems.** |
| **Week 2**  **Chapter:** |
| **Assignments:** |
| **Transformation of boundary value problems and solution of related problems.** |
| **Test and Assignments are solved** |

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| ***Week 3*** |
| **Fourier series solution of one- dimensional Heat Equations and solution of related problems.**  **Fourier series solution of two- dimensional Heat Equations and solution of related problems.**  **Steady-state temperature in plates and solution of related problems.** |
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| **Solution of Heat and Wave equations in unbounded domains**  **Related articles and solution of related problems** |
| **Week 4**  **Chapter:** |
| ***Assignments:*** |
| **Fourier transformation solution of boundary value problems.**  **Solution of wave, heat and laplace equations** |
| **SEPTEMBER**  **WEEK -1**  **Chapter:** |
| ***Assignments:*** |
| **Fourier transformation solution of boundary value problems.**  **Solution of wave, heat and laplace equations** |
| **Week 2**  **Chapter:** |
| ***Assignments:* Revision of 2nd unit and solution of unsolved problems** |
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| **Week 3** |
| **Solution of heat equation in an infinite cylinder and in a solid sphere.**  **Solution of related problems** |
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| **Week 4**  **Chapter:** |
| ***Assignments:***  **Definition of Hankel Transformation and its operational properties**  **Transformation of some elementary functions.** |
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| **OCTOBER**  **WEEK -1**  **Chapter:** |
| ***Assignments:***  **Application of Hankel Transformation to solve many partial differential equations.** |
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| **Week 2**  **Chapter:** |
| ***Assignments:***  **Definition of finite sine and cosine Fourier Transformations.**  **Some basic properties of these Transformations.** |
| **Week 3** |
| ***Assignments:***  **Revision and Test. Solution of given Assignment.** |

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| **Week 4**  **Chapter:** |
| ***Assignments:***  **Solution of many BVP and IVP by using Fourier Transformations.**  **Related examples are solved.** |
| **NOVEMBER** |
| **Week 2** |
| ***Assignments:***  **Definition of moments of Inertia and product of Inertia**  **Related problems are solved.** |
| **Week 3**  **Chapter:** |
| ***Assignments:***  **Angular momentum of a rigid body**  **Principal moment and Principal axes**  **Kinetic energy of a rigid body rotating about a point** |
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| ***Assignments:***  **Unsolved problems are solved related above said topics.** |
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| ***Assignments:***  **Equimomental systems and momental ellipsoidal**  **Co-planar mass distribution and related problems are discussed.** |

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