**Govt. College Jassia (Rohtak)**

**Lesson Plan for the Session 2025-2026**

Class: B.A. 5th Sem

Name of Teacher: Dr. Deepak

Name of the Course: Real Analysis

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| **July 2025** |
| 15-19 July | Unit 1: Riemann integral, Integrabililty of continuous and monotonic functions |
| 21-26 July | Fundamental theorem of integral calculus.  |
| **August 2025** |
| 28 July-02 Aug. | Mean value theorems of integral calculus. |
| 04-09 Aug. | Unit 2: Improper integrals and their convergence |
| 11-16 Aug. | Comparison tests, Abel’s and Dirichlet’s tests |
| 18-23 Aug. | Frullani’s integral, Integral as a function of a parameter. |
| 25-30 Aug. | Continuity, Differentiability and integrability of an integral of a function of a parameter. |
| **September 2025** |
| 01-06 Sept. | Unit 3: Definition and examples of metric spaces |
| 08-13 Sept. | neighborhoods, limit points, interior points, open and closed sets |
| 15-20 Sept. | closure and interior, boundary points,  |
| 22-27 Sept. | subspace of a metric space |
| **October 2025** |
| 29 Sept.-04 Oct. | equivalent metrics, Cauchy sequences, completeness, Cantor’s intersection theorem |
| 06-13 Oct. | Baire’s category theorem, contraction Principle |
| 14-22 Oct. | Diwali vacations |
| 23-25 & 27-31 Oct. | Unit 4: Continuous functions, uniform continuity, compactness for metric spaces, sequential compactness |
| **November 2025** |
| 01-08 Nov. | Bolzano-Weierstrass property, total boundedness, finite intersection property |
| 10-15 Nov. | Compactness and connectedness of metric spaces |
| 17-19 Nov. | Doubt classes, revision and test work etc. |

**Govt. College Jassia (Rohtak)**

**Lesson Plan for the Session 2025-2026**

Class: B.A. 5th Sem

Name of Teacher: Dr. Deepak

Name of the Course: Groups and Rings

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| **July 2025** |
| 15-19 July | Unit 1: Definition of a group with example and simple properties of groups |
| 21-26 July | Subgroups and Subgroup criteria, Generation of groups, cyclic groups |
| **August 2025** |
| 28 July-02 Aug. | Cosets, Left and right cosets, Index of a sub-group Coset decomposition |
| 04-09 Aug. | Largrage’s theorem and its consequences, Normal subgroups, Quotient groups |
| 11-16 Aug. | Unit 2: Homoomorphisms, isomophisms, automorphisms and inner automorphisms of a group |
| 18-23 Aug. | Permutations groups. Even and odd permutations. |
| 25-30 Aug. | Alternating groups, Cayley’s theorem |
| **September 2025** |
| 01-06 Sept. | Center of a group and derived group of a group. |
| 08-13 Sept. | Unit 3: Introduction to rings, subrings, integral domains and fields, Characteristics of a ring |
| 15-20 Sept. | Ring homomorphisms |
| 22-27 Sept. | Ideals (principle, prime and Maximal) and Quotient rings |
| **October 2025** |
| 29 Sept.-04 Oct. | Field of quotients of an integral domain. |
| 06-13 Oct. | Unit 4: Euclidean rings, Polynomial rings |
| 14-22 Oct. | Diwali vacations |
| 23-25 & 27-31 Oct. | Polynomials over the rational field, The Eisenstein’s criterion |
| **November 2025** |
| 01-08 Nov. | Polynomial rings over commutative rings |
| 10-15 Nov. | Unique factorization domain, R unique factorization domain implies so is R[X1 , X2,…,Xn] |
| 17-19 Nov. | Doubt classes, revision and test work etc. |

**Govt. College Jassia (Rohtak)**

**Lesson Plan for the Session 2025-2026**

Class: B.A. 5th Sem

Name of Teacher: Dr. Deepak

Name of the Course: Numerical Analysis

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| **July 2025** |
| 15-19 July | Unit 1: Finite Differences operators and their relations. |
| 21-26 July | Finding the missing terms and effect of error in a difference tabular values, Interpolation with equal intervals |
| **August 2025** |
| 28 July-02 Aug. | Newton’s forward and Newton’s backward interpolation formulae |
| 04-09 Aug. | Interpolation with unequal intervals: Newton’s divided difference, Lagrange’s Interpolation formulae, Hermite Formula. |
| 11-16 Aug. | Unit 2: Central Differences: Gauss forward and Gauss’s backward interpolation formulae |
| 18-23 Aug. | Sterling and Bessel Formula. |
| 25-30 Aug. | Probability distribution of random variables, Binomial distribution |
| **September 2025** |
| 01-06 Sept. | Poisson’s distribution, Normal distribution: Mean, Variance and Fitting. |
| 08-13 Sept. | Unit 3: Numerical Differentiation: Derivative of a function using interpolation formulae as studied in Sections –I & II. |
| 15-20 Sept. | Eigen Value Problems: Power method |
| 22-27 Sept. | Jacobi’s method, Given’s method |
| **October 2025** |
| 29 Sept.-04 Oct. | House- Holder’s method, QR method, Lanczos method. |
| 06-13 Oct. | Unit 4: Numerical Integration: Newton-Cote’s Quadrature formula |
| 14-22 Oct. | Diwali vacations |
| 23-25 & 27-31 Oct. | Trapezoidal rule, Simpson’s one- third and three-eighth rule, Chebychev formula, Gauss Quadrature formula. |
| **November 2025** |
| 01-08 Nov. | Numerical solution of ODEs: Single step methods- Picard’s method.  |
| 10-15 Nov. | Euler’s method, Runge-Kutta Methods and Milne-Simpson’s method. |
| 17-19 Nov. | Doubt classes, revision and test work etc. |

**Govt. College Jassia (Rohtak)**

**Lesson Plan for the Session 2025-2026**

Class: B.A. 1st Sem

Name of Teacher: Dr. Deepak

Name of the Course: Function and Algebra

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| **July 2025** |
| 15-19 July | Unit 1: Relations, Functions along with domain and range. |
| 21-26 July | Composition of functions |
| **August 2025** |
| 28 July-02 Aug. | Invertibility and inverse of functions |
| 04-09 Aug. | One-to-one correspondence and the cardinality of a set. |
| 11-16 Aug. | Unit 2: Relations between the roots and coefficients of general polynomial equation in one variable |
| 18-23 Aug. | Solutions of polynomial equations having conditions on roots. Common roots and multiple roots. |
| 25-30 Aug. | Transformation of equations. Nature of the roots of an equation |
| **September 2025** |
| 01-06 Sept. | Solutions of cubic equations, Biquadratic equations and their solutions. |
| 08-13 Sept. | Unit 3: Matrix and its types. Symmetric and Skew-symmetric |
| 15-20 Sept. | Rank of a matrices, Row rank and column rank of a matrix |
| 22-27 Sept. | Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations |
| **October 2025** |
| 29 Sept.-04 Oct. | Theorems on consistency of a system of linear equations.. |
| 06-13 Oct. | Unit 4: Cayley Hamilton theorem and its applications. |
| 14-22 Oct. | Diwali vacations |
| 23-25 & 27-31 Oct. | Eigenvalues, eigenvectors and the characteristic equation of a matrix |
| **November 2025** |
| 01-08 Nov. | Minimal polynomial of a matrix. Cayley Hamilton theorem |
| 10-15 Nov. | Diagonalization of matrix.  |
| 17-19 Nov. | Doubt classes, revision and test work etc. |

**Govt. College Jassia (Rohtak)**

**Lesson Plan for the Session 2025-2026**

Class: B.A. 1st Sem

Name of Teacher: Dr. Deepak

Name of the Course: Skill Enhancement Course (SEC)

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| **July 2025** |
| 15-19 July | Unit 1: Programmer’s model of a computer, Algorithms, Flow charts |
| 21-26 July | Data types, Operators and expressions, Input / Output functions. |
| **August 2025** |
| 28 July-02 Aug. | Decisions control structure: Decision statements, Logical and conditional statements |
| 04-09 Aug. | Implementation of Loops, Switch Statement & Case control structures |
| 11-16 Aug. | Functions, Preprocessors and Arrays. |
| 18-23 Aug. | Unit 2: Strings: Character Data Type, Standard String handling Functions |
| 25-30 Aug. | Arithmetic Operations on Characters. Structures |
| **September 2025** |
| 01-06 Sept. | Definition, using Structures, Arrays in Structures |
| 08-13 Sept. | Pointers: Pointers Data type, Pointers and Arrays, Pointers and Functions. |
| 15-20 Sept. | Solution of Algebraic and Transcendental equations: Bisection method |
| 22-27 Sept. | Regula-Falsi method, Secant method, Newton-Raphson’s method. |
| **October 2025** |
| 29 Sept.-04 Oct. | Newton’s iterative method for finding pth root of a number. |
| 06-13 Oct. | Unit 3: Simultaneous linear algebraic equations: Gauss-elimination method |
| 14-22 Oct. | Diwali vacations |
| 23-25 & 27-31 Oct. | Gauss-Jordan method, Triangularization method |
| **November 2025** |
| 01-08 Nov. | Crout’s method, Cholesky Decomposition method |
| 10-15 Nov. | Jacobi’s method, Gauss-Seidal’s method, Relaxation method. |
| 17-19 Nov. | Doubt classes, revision and test work etc. |