

# LESSON PLAN

Session 2025-26

Subject- Mathematics (Major)

Class- B.A./B.Sc.1<sup>st</sup> Year ( Sem.-II)

Paper- Algebra and Number Theory

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## **15 January 2026 to 31 January 2026**

Symmetric, Skew symmetric, Hermitian and skew Hermitian matrices, Elementary operations on matrices, Rank of a matrix, Inverse of a matrix, Linear dependence and independence of rows and columns of matrix, Row rank and column rank of a matrix.

## **02 February 2026 to 28 February 2026**

Eigen values, Eigen vectors and characteristic equation of a matrix, Minimal polynomial of a matrix, Cayley-Hamilton theorem and its use in finding the inverse of a matrix, Unitary and orthogonal matrices. Relations between the roots and coefficients of general polynomial equation in one variable, Solutions of polynomial equations having conditions on roots, Common roots and multiple roots, Transformation of equations, Nature of the roots of an equation, Descarte's rule of signs.

## **09 March 2026 to 04 April 2026**

Solutions of cubic equations (Cardan's method), Biquadratic equations and their solutions. Divisibility, Greatest common divisor (gcd), Least common multiple (lcm), Prime numbers, Fundamental theorem of arithmetic.

## **06 April 2026 to 05 May 2026**

Linear congruences, Fermat's theorem, Euler's theorem, Wilson's theorem and its converse, Chinese Remainder theorem, Linear Diophantine equations in two variables. **Revision**

**SUDHIR PUJARA**

**(Associate Professor in Mathematics)**

# LESSON PLAN

Session 2025-26

Subject- Mathematics (Minor)

Class- BCA 1<sup>st</sup> Year ( Sem.-II)

Paper- Mathematical Foundations for Computer Science-II

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## **15 January 2026 to 31 January 2026**

Integration of simple algebraic, trigonometric, and exponential functions. Presentation of data: Frequency distribution and cumulative frequency distribution, Diagrammatic and graphical presentation of data, Construction of bar, Pie diagrams, Histograms, Frequency polygon, Frequency curve, and Ogives.

## **02 February 2026 to 28 February 2026**

Measures of central tendency: Arithmetic mean, Median, Mode, Geometric mean, and Harmonic mean for ungrouped and grouped data. Measures of dispersion: Concept of dispersion, Mean deviation and its coefficient, Range, Variance and its coefficient, Standard deviation.

## **09 March 2026 to 04 April 2026**

Correlation: Concept and types of correlation, Methods of finding correlation: Scatter diagram, Karl Pearson's coefficients of correlation, Rank correlation.

## **06 April 2026 to 05 May 2026**

Linear regression: Principle of least square, Fitting of a straight line, Two lines of regression, Regression coefficients. **Revision**

**SUDHIR PUJARA**

**(Associate Professor in Mathematics)**

# LESSON PLAN

Session 2025-26

Subject- Mathematics (Minor)

Class- B.Com. 1<sup>st</sup> Year ( Sem.-II)

Paper- Business Mathematics - II

Section-A

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## **15 January 2026 to 31 January 2026**

Binomial Theorem; Permutations and Combinations.

## **02 February 2026 to 28 February 2026**

Differentiation; derivative of simple functions and other functions (excluding trigonometric functions) having applications in business studies; Maxima and minima of Revenue, Cost, Demand, Production, Profit functions and other functions related to business and commerce.

## **09 March 2026 to 28 March 2026**

Integration: Definite and indefinite (simple functions excluding trigonometric functions), basic rules of integration, application of integration in commercial and business problems.

## **30 March 2026 to 05 May 2026**

Linear programming: Formulation of linear programming problems (LPP) and their solution by graphical and simplex methods, Applications of linear programming in solving problems related to business and commerce. **Revision**

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**(Associate Professor in Mathematics)**

# LESSON PLAN

Session 2025-26

Class- M.Sc. 1<sup>st</sup> Year ( Sem.-II)

Paper- Computer Programming With MATLAB

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## **15 January 2026 to 31 January 2026**

Basics of programming, Anatomy of a program, Constants, Characters, Variables, Data types, Operators, Functions, Expressions, Entering long statements, command line editing, Good programming style.

Defining a vector, Basic operations on vectors, Mathematical functions, Strings, String functions, Cell array, Creating cell array, Concatenation.

Generating matrices, Mathematical operations and functions, Deleting rows/columns.

## **02 February 2026 to 28 February 2026**

Arrays, Multivariate data, Scalar expansion, Logical subscripting.

Save, Load functions, M-files, The find function, The format function, Suppressing output.

If and else, switch and case, for loop, while loop, continue, break, try – catch, return.

Multidimensional arrays, Cell arrays, Characters and text, Structures.

Scripts, Functions, Type of functions, Global variables, Passing string arguments to functions, The eval function, Function handles, Vectorization, Preallocation.

Linear differential equations of order n with constant coefficients, Characteristic roots, Fundamental set.

## **09 March 2026 to 04 April 2026**

Plotting process, Graph components, Figure tools, Arranging graphs with a figure, Selecting plot types, Using functions to edit graphs, Modifying graphs, Printing a graph, Exporting a graph.

Creating a plot, Multiple data sets in one graph, Imaginary and Complex data, Adding plots to existing graph, Figure windows, Multiple plots in one figure, Controlling the axes, Saving figures.

Mesh and Surface plots: Visualizing functions of two variables, Reading/Writing images.

Printing and Handle graphics: Using the handle, Graphics object, Setting object properties, Specifying the axes or figure, Finding the handles of existing objects.

Animations: Erase mode method, Creating movies.

## **06 April 2026 to 05 May 2026**

Symbolic objects, Creating symbolic variables and expressions, The findsym Command, The default symbolic variable, Constructing real and complex variables, Creating abstract functions, Creating symbolic math functions, Creating an M-file.

Limits, Differentiation, Integration, Symbolic summation, Taylor series, Examples, Simplifications and substitutions, Variable-precision arithmetic examples.

Basic algebraic operations, Linear algebraic operations, Eigen values.

Jordan canonical form, Singular value decomposition, Eigenvalue trajectories.

Solving Equations: System of algebraic equations, System of differential equations.

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