

LESSON PLAN

Session 2026-27

Subject- Mathematics

Class-B.Com. 1st Year(Sem--I)

Paper- Bus. Mathematics-I

Course Code - B23-COM-104

24 August 2026 to 26 September 2026

Matrices and Determinants: Definition of a matrix, order, equality, types of matrices. Operations on matrices: Addition, multiplication and multiplication with a scalar and their simple properties. Determinant of a square matrix (upto 3×3 order): Properties of determinants, minors, co-factors and applications of determinants in finding the area of triangle, adjoint and inverse of a square matrix, solutions of a system of linear equations by examples.

28 September 2026 to 10 October 2026

Logarithms: Laws of operation, log tables; Arithmetic and geometric progression.

12 October 2026 to 31 October 2026

Compound interest and annuities: Different types of interest rates, types of annuities, present value and amount of an annuity (including the case of continuous compounding), valuation of simple loans and debentures, problems related to sinking funds.

10 November 2026 to 28 November 2026

Set Theory: Representation of sets, equivalent sets, power set, complement of a set. Venn Diagrams: Union and intersection of sets, De-Morgan's laws; Logical statements and truth tables.

30 November 2026 to 04 December 2026

Revision.

SUDHIR PUJARA

(Associate Professor Mathematics)

LESSON PLAN

Session 2026-27

Subject- Mathematics

Class-BCA 1st Year(Sem--I)

Paper- Mathematical Foundations-I

Course Code - B23-CAP-104

24 August 2026 to 26 September 2026

An introduction to matrices and their types, Operations on matrices, Symmetric and skew-symmetric matrices, Minors, Co-factors. Determinant of a square matrix, Adjoint and inverse of a square matrix, Solutions of a system of linear equations up to order 3.

28 September 2026 to 10 October 2026

Sets and their representations, Empty set, Finite and infinite sets, Subsets, Equal sets, Power sets, Universal set, Union and intersection of sets, Difference of two sets, Complement of a set, Venn diagram, De-Morgan's laws and their applications.

12 October 2026 to 31 October 2026

Quadratic equations, Solution of quadratic equations. Arithmetic progression, Geometric progression, Harmonic progression, Arithmetic mean (A.M.), Geometric mean (G.M.), Harmonic mean (H.M.), Relation between AM, GM and HM.

10 November 2026 to 28 November 2026

The concept of differentiation, differentiation of simple functions, Use of differentiation for solving problems related to real-life situations. Differentiation of simple algebraic, trigonometric and exponential functions.

30 November 2026 to 04 December 2026

Revision.

SUDHIR PUJARA

(Associate Professor Mathematics)

LESSON PLAN

Session 2026-27

Subject- Mathematics

Class-B.Sc./B.A. 1st Year(Sem--I)

Paper- Calculus

Course Code - B23-MAT-101

24 August 2026 to 26 September 2026

ϵ - δ definition of limit and continuity of a real valued function, Basic properties of limits, Types of discontinuities, Differentiability of functions, Application of L'Hospital rule to indeterminate forms, Successive differentiation, Leibnitz theorem, Taylor's and Maclaurin's series expansion with different forms of remainder.

28 September 2026 to 10 October 2026

Asymptotes: Horizontal, vertical and oblique asymptotes for algebraic curves, Asymptotes for polar curves, Intersection of a curve and its asymptotes.

12 October 2026 to 31 October 2026

Curvature and radius of curvature of curves (Cartesian, parametric, polar & intrinsic forms), Newton's method, Centre of curvature and circle of curvature, Multiple points, Node, Cusp, Conjugate point, Tests for concavity and convexity, Points of inflexion, Tracing of curves.

10 November 2026 to 28 November 2026

Reduction formulae, Rectification, intrinsic equation of a curve, Quadrature, Area bounded by closed curves, Volumes and surfaces of solids of revolution.

30 November 2026 to 04 December 2026

Revision.

SUDHIR PUJARA

(Associate Professor Mathematics)

LESSON PLAN

Session 2026-27

Subject- Mathematics

Class-M.Sc 1st Year(Sem--I)

Paper- Complex Analysis

Course Code - M24-MAT-102

10 September 2026 to 26 September 2026

Analytic functions; Harmonic functions; Reflection principle; Elementary functions: Exponential, Logarithmic, Trigonometric, Hyperbolic, Inverse trigonometric, Inverse hyperbolic, Complex exponents; Complex Integration: Definite integral; Contours; Branch cuts.

28 September 2026 to 10 October 2026

Cauchy-Goursat theorem; Simply/ multiply connected domains; Cauchy integral formula; Morera's theorem; Liouville's theorem; Fundamental theorem of algebra; Maximum modulus principle; Power series: Taylor series; Laurent series; Uniform/ absolute convergence.

12 October 2026 to 31 October 2026

Differentiation. integration, multiplication, division of power series; Singularities; Poles; Residues; Cauchy's residue theorem; Zeros of an analytic function; Evaluation of improper integrals; Jordan's lemma.

10 November 2026 to 28 November 2026

Indented paths; Integration along a branch cut; Definite integrals involving sines and cosines; Winding number of closed curve; Argument principle; Rouché's theorem; Schwarz Lemma; Transformations: linear, bilinear (Möbius), Mapping: Isogonal; Conformal; Scale factors; Local inverses; harmonic conjugates.

30 November 2026 to 04 December 2026

Revision.

SUDHIR PUJARA

(Associate Professor Mathematics)

LESSON PLAN

Session 2026-27

Subject- Mathematics

Class-M.Sc 2nd Year(Sem--3)

Paper- Mathematical Statistics

Course Code - M24-MAT-309

10 September 2026 to 26 September 2026

Measures of central tendency, measures of dispersion, measures of skewness, measures of Kurtosis. Probability-Basic terminology, addition theorem of probability, Boole's inequality, conditional probability, Multiplication theorem of probability, independent events. Bayes' theorem. Distribution function, discrete random variable, continuous random variable, two dimensional random variable, transformation of one dimensional random variable, transformation of two dimensional random variable.

28 September 2026 to 10 October 2026

Mathematical expectation, expectation of random variable, expectation of function of random variable, properties of expectation and variance , Covariance, Cauchy-schwarz inequality, Jensen inequality, moment generating function, cumulants, characteristic function, Chebychev's Inequality, convergence in probability, weak law of large numbers, scatter diagram, Karl Pearson's coefficients of Correlation, Linear regression.

12 October 2026 to 31 October 2026

Discrete probability distributions-uniform distributions, Bernoulli distributions, Binomial distributions, Poisson distributions. Continuous probability distribution- Normal distributions, rectangular distributions, triangular distributions, Gamma distributions. Central limit theorem. Sampling distributions- chi square distribution, Student's „t“ distribution, F distribution, relation between t and F , relation between F and chi-square.

10 November 2026 to 28 November 2026

Large sample theory- types of sampling, parameter and statistic, test of significance, procedure for testing of hypothesis. Statistical inference- characteristic of estimators, Cramer-Rao inequality, MVU, Rao Blackwell theorem.

30 November 2026 to 04 December 2026

Revision.

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(Associate Professor Mathematics)