

**Lesson Plan for Session 2025-2026 ( Jan 2026 –April 2026 )**

**Name: Seema (Mathematics)**

**Class: BSc I + BA I**

**Paper: Algebra and Number Theory**

3 <sup>rd</sup> Week of Jan	Symmetric, Skew symmetric, Hermitian and skew Hermitian matrices, Elementary operations on matrices
4 <sup>th</sup> Week of Jan	Rank of a matrix, Inverse of a matrix, Class Test
1 <sup>st</sup> Week of Feb	Linear dependence and independence of rows and columns of matrix, Row rank and column rank of a matrix
2 <sup>nd</sup> Week of Feb	Eigen values, Eigen vectors and characteristic equation of a matrix, Minimal polynomial of a matrix, Assignment.
3 <sup>rd</sup> Week of Feb	Eigen values, Eigen vectors and characteristic equation of a matrix, Minimal polynomial of a matrix, Class Test.
4 <sup>th</sup> Week of Feb	Cayley-Hamilton theorem and its use in finding the inverse of a matrix, Unitary and orthogonal matrices.
2 <sup>nd</sup> Week of March	Relations between the roots and coefficients of general polynomial equation in one variable, Class & Assignment.
3 <sup>rd</sup> Week of March	Solutions of polynomial equations having conditions on roots, Common roots and multiple roots
4 <sup>th</sup> Week of March	Transformation of equations, Nature of the roots of an equation, Descarte's rule of signs ,.
1 <sup>st</sup> Week of April	Solutions of cubic equations (Cardon's method), Biquadratic equations and their solutions, Class Test & Assignment.
2 <sup>nd</sup> Week of April	Divisibility, Greatest common divisor (gcd), Least common multiple (lcm), Prime numbers
3 <sup>rd</sup> Week of April	Fundamental theorem of arithmetic, Linear congruences, Fermat's theorem
4 <sup>th</sup> Week of April	Euler's theorem, Wilson's theorem and its converse, Chinese Remainder theorem, Linear Diophantine equations in two variables, Class Test.

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**Lesson Plan for Session 2025-2026 ( Jan 2026 –April 2026 )**

**Name: Seema (Mathematics)**

**Class: BSc II**

**Paper: Analytical Geometry & Vector Calculus**

3 <sup>rd</sup> Week of Jan	General equation of second degree: Classification of conic sections; centre, asymptotes, axes, eccentricity, foci and directrices of conics.
4 <sup>th</sup> Week of Jan	Centre, asymptotes, axes, eccentricity, foci and directrices of conics. Tangent at any point to a conic, chord of contact, pole of line to a conic, director circle of a conic.
1 <sup>st</sup> Week of Feb	Polar equation of a conic, tangent and normal to a conic, Class Test
2 <sup>nd</sup> Week of Feb	Confocal conics. Assignment-I
3 <sup>rd</sup> Week of Feb	Sphere: General form, Plane section of a sphere. Sphere through a given circle. Intersection of two spheres, tangent plane and line, polar plane and line.
4 <sup>th</sup> Week of Feb	Orthogonal spheres, radical plane of two spheres and co-axial system of spheres.
2 <sup>nd</sup> Week of March	Cone: Equation of a cone, right circular cone, quadric cone. Tangent plane and condition of tangency, Class Test & Assignment-II.
3 <sup>rd</sup> Week of March	Enveloping cone. Tangent plane and condition of tangency.
4 <sup>th</sup> Week of March	Cylinder: Right circular cylinder and enveloping cylinder. Central Conicoids: Equation of tangent plane. Director sphere. Normal to the conicoids, Class Test.
1 <sup>st</sup> Week of April	Polar plane of a point. Enveloping cone of a conicoid, Enveloping cylinder of a conicoid, confocal conicoid, reduction of second degree equations.
2 <sup>nd</sup> Week of April	Scalar and Vector product of three vectors, four vectors, reciprocal vectors, vector differentiation and derivative along a curve, directional derivatives,
3 <sup>rd</sup> Week of April	Gradient of a scalar point function, divergence and curl of vector point functions, their geometrical meanings and vector identities, Class Test .
4 <sup>th</sup> Week of April	Vector integration: line integral, surface integral and volume integral. Theorem of Gauss, Green, Stoke and problems based on these.

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**Lesson Plan for Session 2025-2026 ( Jan 2026 –April 2026 )**

**Name: Seema (Mathematics)**

**Class: BSc III + BA III**

**Paper: Linear Algebra**

3 <sup>rd</sup> Week of Jan	Vector spaces, subspaces, Sum and Direct sum of subspaces, Linear span, Linearly Independent and dependent subsets of a vector space.
4 <sup>th</sup> Week of Jan	Finitely generated vector space, Existence theorem for basis of a finitely generated vector space, Finite dimensional vector spaces. Class Test .
1 <sup>st</sup> Week of Feb	Invariance of the number of elements of bases sets, Dimensions. Class Test of Vector Space.
2 <sup>nd</sup> Week of Feb	Quotient space and its dimension & Theorems related to Quotient space & Assignment 1.
3 <sup>rd</sup> Week of Feb	Homomorphism and isomorphism of vector spaces, Linear transformations and linear forms on vector spaces. Vector space of all the linear transformations.
4 <sup>th</sup> Week of Feb	Dual Spaces, Bidual spaces, annihilator of subspaces of finite dimensional vector spaces. Class Test .
2 <sup>nd</sup> Week of March	Null Space, Range space of a linear transformation, Rank and Nullity Theorem. Algebra of Linear Transformation, Matrix of a linear Transformation, Change of basis.
3 <sup>rd</sup> Week of March	Minimal Polynomial of a linear transformation, Singular and non-singular linear transformations, Eigen values and Eigen vectors of linear transformations. Assignment 2.
4 <sup>th</sup> Week of March	Inner product spaces, Cauchy-Schwarz inequality, Orthogonal vectors, Orthogonal complements.
1 <sup>st</sup> Week of April	Orthogonal sets and Basis, Bessel's inequality for finite dimensional vector spaces, Class Test.
2 <sup>nd</sup> Week of April	Gram- Schmidt, Orthogonalization process & related Examples
3 <sup>rd</sup> Week of April	Adjoint of a linear transformation and its properties, Unitary linear transformations.
4 <sup>th</sup> Week of April	Revision & Class Test.

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**Name: Seema (Mathematics)**

**Class: BSc III + BA III**

**Paper: Real & Complex Analysis**

3 <sup>rd</sup> Week of Jan	Jacobians, Beta and Gamma functions
4 <sup>th</sup> Week of Jan	Beta and Gamma functions related Examples, Class Test, Double integrals.
1 <sup>st</sup> Week of Feb	Triple integrals, Dirichlet's integrals, change of order of integration in double integrals.
2 <sup>nd</sup> Week of Feb	Fourier's series: Fourier expansion of piecewise monotonic functions, Properties of Fourier Co-efficient. Class Test.
3 <sup>rd</sup> Week of Feb	Dirichlet's conditions, Parseval's identity for Fourier series, Fourier series for even and odd functions. Assignment-I
4 <sup>th</sup> Week of Feb	Half range series, Change of Intervals.
2 <sup>nd</sup> Week of March	Extended Complex Plane, Stereographic projection of complex numbers. Class Test.
3 <sup>rd</sup> Week of March	continuity and differentiability of complex functions, Assignment –II.
4 <sup>th</sup> Week of March	continuity and differentiability of complex functions, Analytic functions,
1 <sup>st</sup> Week of April	Analytic functions related Examples, Cauchy-Riemann equations. Harmonic functions. Class Test.
2 <sup>nd</sup> Week of April	Mappings by elementary functions: Translation, rotation, Magnification and Inversion. Conformal Mappings. Class Test
3 <sup>rd</sup> Week of April	Mobius transformations. Fixed points, Cross ratio, Inverse Points and critical mappings.
4 <sup>th</sup> Week of April	Revision, Class Test.

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