Shri Gurū Teg bahadur Ji Government College, Taraori(Karnal)

Department: Mathematics **Class:** B.Sc. III (Vth Sem)

Subject: Linear Algebra **Lesson Plan**

Month		
	Week 1	Vector spaces, Subspaces, Sum and direct sum of subspaces, Linear span, Linearly Independent and dependent subsets of a vector space.
	Week 2	Finitely generated vector space. Existence theorem for basis of a finitely generated vector space.
	Week 3	Finite dimensional vector spaces, Invariance of the number of elements of bases sets.
	Week 4	Dimensions, Quotient space and its dimension. Homomorphism and isomorphism of vector space.
	Week 1	Linear transformation and linear forms on vector space
	Week 2	Vector space of all the linear transformations. Dual spaces, Bidual spaces, annihilator of subspaces of finite dimensional vector spaces. Null Spaces.
	Week 3	Range space of a linear transformation, Rank and Nullity theorem.
	Week 4	Class test
	Week 1	Algebra of linear transformation, Minimal polynomial of a linear transformation, Singular & Non-Singular LT.
	Week 2	Matrix of LT, change of basis, Eigen values & Eigen vectors of linear transformation
	Week 3	Inner product spaces, Cauchy - Schwarz inequality, orthogonal vectors, Orthogonal compliments.
	Week 4	Class test
	Week 1	Orthogonal sets and Basis, Bessels inequality for finite dimensional vector spaces.
	Week 2	Gram - Schmidt Orthogonalization process, Adjoint of a LT and its properties, Unitary linear transformation.
	Week 3	Class
	Week 4	Revision

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Shri Guru Teg bahadur Ji Government College, Taraori (Karnal)

Department: Mathematics **Class:B.Com I (IInd sem)**

Subject: Business Mathematics-II

Lesson Plan

Month		
Feb, 2025	Week 1	Differentiation, derivative of simple functions and other funtions.
	Week 2	Application of derivative in business studies, maxima and minima of revenue.
	Week 3	Application of derivative in Cost, demand and production, profit functions related to business and commerce.
	Week 4	Class test, Integration
March, 2025	Week 1	Integration of definite and indefinite functions.
	Week 2	**Holi Break**
	Week 3	Basic rules of integration, application of integration in commercial and business problems.
	Week 4	Binomial Theorem
April, 2025	Week 1	Permutation and probles related to permutations.
	Week 2	Combination and problems related to combination.
	Week 3	Linear programming Problems (LPP)
	Week 4	Simplex method to solve LPP.
May, 2023	Week 1	ISO Profit Method to solve LPP.
	Week 2	Applications of LPP in solving real life problems.
	Week 3	Class Test
	Week 4	Revision

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Shri Guru Teg bahadur Ji Government College, Taraori (Karnal)

Department:Mathematics **Class:B.Sc I (IInd Sem)**

Subject: Algebra and Number Theory

Lesson Plan

Month		
Feb, 2025	Week 1	Symmetric, Skew Symmetric, Hermitian and skew Hermitian Matrices
	Week 2	Elementary operations on matrices, Rank of a Matrix, inverse of a matrix, Linear dependence and independence of rows and columns of matrix.
	Week 3	Row rank and column rankof a matrix, eigen values, Eigen vectors and characterstic operation and matrix minimal polynomial of a matrix.
	Week 4	Cayley-Hamilton theorems and its use in finding the inverse of a matrix, Unitary and orthogonal matrices.
March, 2025	Week 1	Relation between the roots and coefficients of a general polynomial equation in one variable.
	Week 2	**Holi Break**
	Week 3	Solution of polynomial equations having conditions on roots, Common roots and multiple roots.
	Week 4	Transformation of equations, nature of roots of an equation, descarte's rule of signs.
April, 2025	Week 1	Solutions of cubic equations (Cardon's Method), Biquadratic equation and their solutions
	Week 2	Divisibility, Greatest common factor, Least common Multiple
	Week 3	Prime numbers, Fundamental theorem of arithmetic.
	Week 4	Class Test, Linear Congrueces
May, 2023	Week 1	Fermat's Theorem and Euler's theorem
	Week 2	Wilson's Theorem and its converse, Chinese Remainder theorem.
	Week 3	Linear Diophantine equations in two variables.
	Week 4	Class Test and revision.

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