Curriculum Plan: B.Sc. Physical Science (Semester II)- Elementary Linear Algebra
2024-25 Even Sem

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			Internal Assessment- 30
		Classes Assigned	**Lectures: 3 per week**
	References	**1.** Andrilli, S., & Hecker, D. (2016). Elementary Linear Algebra (5th ed.). Elsevier India. **2.**	
	Week	**Topics**	
	1ˢᵗ week	Fundamental operations with vectors in Euclidean space $\mathbb{R}n$, Linear combination of vectors , Dot product and their properties, Cauchy-Schwarz inequality, Triangle inequality.	
	2ⁿᵈ week	Solving system of linear equations using Gaussian elimination, Application: Curve Fitting, Gauss-Jordan row reduction	
	3ʳᵈ week	Reduced row echelon form, Application: Solving several systems simultaneously	
	4ᵗʰ week	Equivalent systems, Rank of a matrix, Row space of a matrix.	
	5ᵗʰ week	Eigenvalues, Eigenvectors, Eigenspace, Diagonalization	
	6ᵗʰ week	Characteristic polynomial of a matrix	
	7ᵗʰ week	Definition, Examples, and some elementary properties of vector spaces	
	8ᵗʰ week	Subspaces, Span	
	9ᵗʰ week	Linear independence, and linear dependence of vectors	
	10ᵗʰ week	Basis and dimension of a vector space, Maximal linearly independent sets, Minimal spanning sets	
	11ᵗʰ week	Linear transformations: Definition, Examples and elementary properties	
	12ᵗʰ week	The matrix of a linear transformation	
	13ᵗʰ week	Kernel and range of a linear transformation, The dimension theorem	
	14ᵗʰ week	one-to-one and onto linear transformations	
	15ᵗʰ week	Invertible linear transformations, Isomorphic vector spaces	