Lecture Plan

Name of the College: Government College of Arts, Science and Commerce, Sanquelim-Goa

Name of Faculty: Prajyot Maruti Patil	**Subject:** Mathematics	
Paper code: MAT-203 Linear Algebra	**Program:** B.Sc.	**Division: -**
Academic year: 2025-26	**Semester: IV**	**Total Lectures:** 60

Course Objectives: To display familiarity and knowledge of vector spaces, linear transformations, inner products and related concepts.

Expected Course Outcome:

1. Display familiarity and knowledge of the concepts in the syllabus.
2. Demonstrate proofs to establish truths related to the concepts in the syllabus.
3. Choose the appropriate procedures and modify them, if needed, to solve method-based problems on the concepts in the syllabus.
4. Analyze and solve unseen problems in Linear Algebra and invent mathematically precise arguments to justify their solutions.

Student Learning Outcome: Students will be able to analyse and solve problems in Linear Algebra and invent mathematically precise arguments to justify their solutions

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books

December	01/12/2025	06/12/2025	St. Francis Xaviers Feast 01	Introduction to Fields and Vector spaces		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	08/12/2025	13/12/2025	04	Vector spaces and Examples, Subspaces and Examples		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	15/12/2025	20/12/2025	Liberation Day 00	Nil			S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	22/12/2025	23/12/2025	01	Sum and Direct sum of two subspaces		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
January	02/01/2026	03/01/2026	02	Linear combinations; Span; Generating sets;		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	05/01/2026	10/01/2026	04	Linear dependence and linear independence; Bases; Replacement theorem;		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	12/01/2026	17/01/2026	04	Dimension; Dimension of (W1+W2); Quotient Space; Dimension of V/W.		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition

	19/01/2026	24/01/2026	04	Linear transformation; Null space; Range of linear transformation; Nullity; Rank; Dimension theorem (Rank Nullity theorem);		Typed Notes and Geogebra	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	26/01/2026	31/01/2026	03 Republic Holiday	Ordered basis; Coordinate vector; Matrix representation of linear transformation; Space of linear transformations L(V,W);		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
February	02/02/2026	07/02/2026	04	Composition of linear transformations; Left multiplication transformation; Inverse of a linear transformation; Isomorphism of vector spaces;		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	09/02/2026	14/02/2026	04	Standard representation of a finite dimensional vector space. Change of coordinate matrix; Similar matrices.		Typed Notes and Geogebra	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	16/02/2026	21/02/2026	04	Diagonalizable linear operator; Eigen values and Eigen vectors;		Typed Notes and Geogebra	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	23/02/2026	28/02/2026	04	Characteristic polynomial; Eigen spaces and Diagonalizability;		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
March	02/03/2026	07/03/2026	03 Holi	Test for diagonalization		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition

	09/03/2026	14/03/2026	04	Diagonalization and direct sums. Inner product and examples.		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	16/03/2026	21/03/2026	03 Gudi Padva / Id-Ul Fitr	Norm of a vector; Orthogonal and orthonormal vectors;		Typed Notes and Geogebra	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	23/03/2026	28/03/2026	03 Ram Navami	Orthogonal Complement, Gram-Schmidt Orthogonalization Process		Typed Notes	S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition
	30/03/2026	31/03/2026	01	Revision			S. Friedberg, A. Insel, L. Spence: Linear Algebra, 4th Edition

*** Assessment Rubrics**

Component	Max Marks
ISA 1	10
ISA 2	10
Practical	Nil
Project	Nil
Semester End Exam	80