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-501, Linear Algebra	**Program:** M.Sc.	**Division: -**
Academic year: 2024-25	**Semester:** I	**Total Lectures:** 60

Course Objectives:

1. **To prepare students to handle solving problems involving linear equations**
2. **Determining the qualitative properties of the solution set.**

Expected Course Outcome:

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

Student Learning Outcome: Student will be able to

1) Display familiarity and knowledge of Vector Spaces, Linear Transformations and associated concepts
2) Demonstrate proofs to establish truths related to Vector Spaces, Linear Transformations and associated concepts

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
June	28/06/2024	29/06/2024	0	Introduction to System of equation		Smart Board PDF	Kenneth Hoffmann and Ray Kunze, Linear Algebra
July	01/07/2024	06/07/2024	4	Introduction to System of equation		Smart Board PDF	Kenneth Hoffmann and Ray Kunze, Linear Algebra
	08/07/2024	13/07/2024	4	Linear functional on a vector space, Dual space & Properties			Kenneth Hoffmann and Ray Kunze, Linear Algebra
	15/07/2024	20/07/2024	4	Double Dual , Double Annihilator		Data projector	Kenneth Hoffmann and Ray Kunze, Linear Algebra
	22/07/2024	27/07/2024	4	Transpose of a Linear transformation, Matrix of Tt			Kenneth Hoffmann and Ray Kunze, Linear Algebra
July August	29/07/2024	03/08/2024	4	Characteristic values and characteristic vectors, Diagonalization			Kenneth Hoffmann and Ray Kunze, Linear Algebra
August	05/08/2024	10/08/2024	4	Polynomial algebra, Polynomial Ideals,Greatest Common Divisors of polynomials and Prime Factorization of Polynomials		Smart Board	Kenneth Hoffmann and Ray Kunze, Linear Algebra
	12/08/2024	17/08/2024	4	Annihilating polynomials, Invariant subspaces			Kenneth Hoffmann and Ray Kunze, Linear Algebra

	19/08/2024	24/08/2024	3	Simultaneous Diagonalization, Direct sum decomposition		Smart Board PDF	Kenneth Hoffmann and Ray Kunze, Linear Algebra
	26/08/2024	31/08/2024	4	Invariant direct sum, Primary Decomposition Theorem			Kenneth Hoffmann and Ray Kunze, Linear Algebra
September	02/09/2024	07/09/2024	2	Cyclic Subspaces & Annihilators		Smart Board	Kenneth Hoffmann and Ray Kunze, Linear Algebra
	09/09/2024	14/09/2024	2	Cyclic Subspaces & Annihilators			Kenneth Hoffmann and Ray Kunze, Linear Algebra
	16/09/2024	21/09/2024	3	Cyclic Decomposition & The Rational Form		Smart Board	Kenneth Hoffmann and Ray Kunze, Linear Algebra
	23/09/2024	28/09/2024	4	The Jordan Form		Smart Board	
September October	30/09/2024	05/10/2024	4	Computation of Invariant Factors			Kenneth Hoffmann and Ray Kunze, Linear Algebra
October	07/10/2024	12/10/2024	4	Summary; Semi-Simple Operators.			Kenneth Hoffmann and Ray Kunze, Linear Algebra
	14/10/2024	19/10/2024	4	Revision			
	21/10/2024	23/10/2024	2	Revision			

*** Assessment Rubrics**

Component	Max Marks
ISA 1	20
ISA 2	20
ISA 3	20
Practical	Nil
Project	Nil
Semester End Exam	40