Lecture Plan

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

Name of Faculty: Rohit R. Redkar	**Subject:** Mathematics	
Paper code: MAT-211	**Program: S.Y.B**.Sc.	**Division: -**
Academic year: 2024-25	**Semester:** III	**Total Lectures: 30**

Course Objectives:
To introduce and familiarize the learner with the System of Equations, Matrices and Matrix Operations, Gauss Elimination method, Diagonalisation and Quadratic forms

Expected Course Outcome:

1) Display familiarity and knowledge of System of Equations, Matrices and matrix operations
2) Demonstrate proofs of Matrix Algebra
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 Matrix Algebra and invent mathematically precise arguments to justify their solutions.

Student Learning Outcome: Student will be able to

1) Use matrices to represent and solve systems of linear equations.
2) Understand and determine the rank of a matrix, and use it to analyze and solve systems of linear equations.
3) Understand and determine the basis of a vector space and calculate its dimension.

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
July	01/07/2024	06/07/2024	2	Linearly Independent sets and Basis	Problem solving	White board	A textbook of matrices by Hari kishan
	08/07/2024	13/07/2024	2	Identifying properties of Special Matrices (Symmetric, Skew-symmetric, Hermitian, Nilpotent, Idempotent)	Problem solving	White board	A textbook of matrices by Hari kishan
	15/07/2024	20/07/2024	2	Elementary matrices and effect of their multiplication	Problem solving	White board	A textbook of matrices by Hari kishan
	22/07/2024	27/07/2024	2	Echelon forms; Normal form	Problem solving	White board	A textbook of matrices by Hari kishan
July August	29/07/2024	03/08/2024	2	Finding rank of a matrix using definition (upto 3x3 only)	Problem solving	White board	A textbook of matrices by Hari kishan
August	05/08/2024	10/08/2024	2	Finding the rank using echelon forms	Problem solving	White board	A textbook of matrices by Hari kishan

	12/08/2024	17/08/2024	2	Existence of solutions of a system of linear equations using Rank method and their solution using Gauss Elimination	Problem solving	White board	A textbook of matrices by Hari kishan
	19/08/2024	24/08/2024	2	Solution of system using Gauss – Jacobi and Gauss –Siedel method	Problem solving	White board	A textbook of matrices by Hari kishan
	26/08/2024	31/08/2024	2	Diagonalisation of a matrix	Problem solving	White board	A textbook of matrices by Hari kishan
September	02/09/2024	07/09/2024	2	Reduction of quadratic form into sum of squares form	Problem solving	White board	A textbook of matrices by Hari kishan
	16/09/2024	21/09/2024	2	Counting the Number Walks of a given length betweena pair of vertices in a Graph using powers of the adjacency matrix	Problem solving	White board	A textbook of matrices by Hari kishan
	23/09/2024	28/09/2024	2	Demonstration of various Matrix operations using SageMath.	Problem solving	White board	A textbook of matrices by Hari kishan
September October	30/09/2024	05/10/2024	2	Revision	Problem solving	White board	A textbook of matrices by Hari kishan
October	07/10/2024	12/10/2024	2	Revision	Problem solving	White board	A textbook of matrices by Hari kishan

	14/10/2024	19/10/2024	2	Practical exam		White board	A textbook of matrices by Hari kishan

*** Assessment Rubrics**

Component	Max Marks
ISA 1	Nil
ISA 2	Nil
ISA 3	Nil
Practical	25
Project	Nil