

Semester Lecture Plan

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

Name of Faculty: Mr. Vishal Vinayak Gawas **Subject: Mathematics**

Paper code: MAT -211 Matrix Algebra(Practicals) **Program/Course: SYBSC(Minor)** **Division:**

Academic year: 2026- 2027 **Semester: III** **Total Lectures: 30**

Course Objectives: To develop understanding of fundamental concepts of matrices and linear systems, to train students in applying matrix methods for solving practical problems.

Expected course Outcome: students to Understand and identify properties of different types of matrices, Apply elementary operations to find rank and canonical forms, Solve systems of linear equations using direct and iterative methods.

Student learning outcome: The student will be able to apply mathematical knowledge to real problems, use computational and analytical techniques effectively for matrix operations and interpret, analyze and validate results obtained from numerical methods.

Month	Lectures on		No. of lectures allotted	Topic, Subtopic to be covered	Exercises/ assignment	ICT Tools	Reference books
June	22/06/2026	27/06/2026	02	Introduction to matrices		Marker and Board, Smartboard	H. Kishan: A <i>Textbook of Matrices</i> , Atlantic Publishers, 2008.
June/July	29/06/2026	04/07/2026	02	Linearly Independent sets and Basis Identifying properties of Special Matrices (Symmetric, Skew symmetric, Hermitian, Nilpotent, Idempotent)		Marker and Board, Smartboard	H. Kishan: A <i>Textbook of Matrices</i> , Atlantic

							Publishers, 2008
July	06/07/2026	11/07/2026	02	Identifying properties of Special Matrices (Symmetric, Skew symmetric, Hermitian, Nilpotent, Idempotent)		Marker and Board, Smartboard	H. Kishan: <i>A Textbook of Matrices</i> , Atlantic Publishers, 2008
July	13/07/2026	18/07/2026	02	Elementary matrices and effect of their multiplication		Marker and Board, Smartboard	H. Kishan: <i>A Textbook of Matrices</i> , Atlantic Publishers, 2008
July	20/07/2026	25/07/2026	02	Echelon forms		Marker and Board, Smartboard	H. Kishan: <i>A Textbook of Matrices</i> , Atlantic Publishers, 2008
July/Aug	27/07/2026	01/08/2026	02	Normal form		Marker and Board, Smartboard	H. Kishan: <i>A Textbook of Matrices</i> , Atlantic Publishers, 2008

August	03/08/2026	08/08/2026	02	Finding rank of a matrix using definition (upto 3x3 only)		Marker and Board, Smartboard	H. Kishan: A <i>Textbook of Matrices</i> , Atlantic Publishers, 2008
August	10/08/2026	15/08/2026	02	Finding the rank using echelon forms		Marker and Board, Smartboard	H. Kishan: A <i>Textbook of Matrices</i> , Atlantic Publishers, 2008
August	17/08/2026	22/08/2026	02	Existence of solutions of a system of linear equations using Rank method and their solution using Gauss Elimination		Marker and Board, Smartboard	H. Kishan: A <i>Textbook of Matrices</i> , Atlantic Publishers, 2008
August	24/08/2026	29/08/2026	02	Solution of system using Gauss – Jacobi and Gauss – Siedel method		Marker and Board, Smartboard	H. Kishan: A <i>Textbook of Matrices</i> , Atlantic Publishers, 2008
Aug/Sept	31/08/2026	05/09/2026	02	Diagonalisation of a matrix 10. Reduction of quadratic form into sum of squares form operations		Marker and Board, Smartboard	H. Kishan: A <i>Textbook of Matrices</i> , Atlantic Publishers, 2008
September	07/09/2026	12/09/2026	02	Counting the number of walks of a given length between a pair of vertices in a Graph using powers of the adjacency matrix.		Marker and Board, Smartboard	H. Kishan: A <i>Textbook of Matrices</i> , Atlantic Publishers, 2008

September	14/09/2026	19/09/2026	00	Ganesh Chaturthi Break (14–19 Sep)			
September	21/09/2026	26/09/2026	02	Demonstration of various Matrix using SageMath or any other relevant software		Marker and Board, Smartboard	H. Kishan: <i>A Textbook of Matrices</i> , Atlantic Publishers, 2008
Sept/Oct	28/09/2026	03/10/2026	02	Revision		Marker and Board, Smartboard	H. Kishan: <i>A Textbook of Matrices</i> , Atlantic Publishers, 2008
October	05/10/2026	10/10/2026	02	PRACTICAL EXAM			

*** Assessment Rubrics**

Component	Max Marks
Viva	5
Journal	5
Practical Exam	15
Total	25

