

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**COURSE PLAN (June - November 2026)**

Department : Mathematics
Name/s of the Faculty : Dr. Benazir Obilia X A (3 hours) & Dr. Amalore Arumica (2 hours)
Course Title : MATHEMATICS FOR DATA SCIENCE
Course Code : 24DS/PC/MS14
Shift : II

COURSE OUTCOMES (COs)

COs	Description						CL
CO1	state basic concepts related to vectors, matrices, and linear transformations						K1
CO2	explain the significance of vector spaces, subspaces, and their roles in solving linear systems						K2
CO3	apply matrix operations and solution techniques to solve mathematical problems						K3
CO4	analyze vector independence, bases, dimensions, and properties of eigenvalues/eigenvectors in different contexts						K4
CO5	develop alternative solution strategies for linear algebra problems in novel situations						K5, K6
Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 22, 2026 (Day Order 6)		No Class					

Jun 23 – July 1, 2026 (Day Order 1- 6)	1 4	1.1 Vectors and Matrices Vectors and Linear Combinations-Lengths and Angles from Dot Products 4.1 Eigenvalues and Eigenvectors Introduction to Eigenvalues : $Ax = \lambda x$	K1-K6	3+2	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Questioning
July 2 – July 8, 2026 (Day Order 1- 6)	1 4	1.1 Vectors and Matrices Matrices and Their Column Spaces-Matrix Multiplication AB and CR 4.1 Eigenvalues and Eigenvectors Diagonalizing a Matrix	K1-K6	3+2	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Slip Test
July 9 – 16, 2026 (Day Order 1- 6)	1 4	1.2 Solving Linear Equations $Ax = b$ Elimination and Back Substitution -Elimination Matrices and Inverse Matrices 4.1 Eigenvalues and Eigenvectors Symmetric Positive Definite Matrices	K1-K6	3+2	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Questioning
July 17 – 24, 2026 (Day Order 1- 6)	1	1.2 Solving Linear Equations $Ax = b$ Matrix Computations and A = LU-Permutations and	K1-K6	3+2	CO1-5	Lecture and Group Discussion Learning by Doing	III Component Test -1 Unit 1-

	5	The Complete Solution to $Ax = b$- Independence 5.1 The Singular Value Decomposition (SVD) Image Processing by Linear Algebra				Discussion Learning by Doing Problems	Solving
Aug 17 - 24, 2026 (Day Order 1- 6)	2	2.1 The Four Fundamental Subspaces Basis, and Dimension-Dimensions of the Four Subspaces	K1-K6	3+2	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Questioning & Problem Solving
	5	5.1 The Singular Value Decomposition (SVD) Principal Component Analysis (PCA by the SVD)					
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	3	3.1 Orthogonality Orthogonality of Vectors and Subspaces	K1-K6	3+2	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Questioning & Problem Solving
	5	5.1 The Singular Value Decomposition (SVD) Principal Component Analysis (PCA by the SVD)					
Sep 3 – 11, 2026 (Day Order 1- 6)	3	3.1 Orthogonality Projections onto Lines and Subspaces-Least Squares Approximations	K1-K6	3+2	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Questioning & Problem Solving

	5	5.2 Linear Transformations The Idea of a Linear Transformation					
Sep 15-17, 2026 (Day Order 1 - 3)	3	3.1 Orthogonality Orthonormal Bases and Gram-Schmidt	K1-K6	2+1	CO1-5	Lecture, Group Discussion and Presentations Learning by Doing Problems	Questioning & Problem Solving
	5	5.2 Linear Transformations The Matrix of a Linear Transformation					
Sep 18 –23, 2026	C.A. Test – II (Unit 2 & Unit 5 (5.1))						
Sep 24 - 28, 2026 (Day 4 – 6)	3	3.1 Orthogonality The Pseudoinverse of a Matrix	K1-K6	1+1	CO1-5	Lecture, Group Discussion and Presentations Learning by Doing Problems	III Component Test 2 Unit 5 Section 5.2 (20 marks)
	5	5.2 Linear Transformations The Matrix of a Linear Transformation					
Sep 29 – Oct 7, 2026 (Day Order 1 - 6)	3	3.2 Determinants 3 by 3 Determinants and Cofactors-Computing and Using Determinants	K1-K6	3+2	CO1-5	Lecture, Group Discussion and Presentations Learning by Doing	III Component 3 SEMINAR Section-3.1 &

