

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

Department : **Mathematics**
Name/s of the Faculty : **Dr. Fancy V. F.**
Course Title : **Mathematics for Chemistry - I**
Course Code : **25MT/ME/MC13**
Shift : **I**

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	To recall the fundamental concepts of matrices, Fourier series, calculus, partial differential equations and finite difference methods	K1
CO2	To understand different techniques in obtaining approximate solutions to complex mathematical problems	K2
CO3	To solve the results of calculus through illustrations, equations, and to utilize several methods in interpolation and differentiation	K3
CO4	To analyse solutions that are obtained by using techniques of calculus, series and finite differences and to classify partial differential equations and obtain their solutions systematically	K4
CO5	To evaluate the eigen vectors, integrals and to predict appropriate methods to find the solution of problems on differential and interpret results using appropriate numerical techniques	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 22, 2026 (Day Order 6)	I	Properties of Matrices Preliminaries: Different types of matrices and its operations	K1, K2	1	CO1, CO2	Lecture	Quiz
Jun 23 – July 1, 2026 (Day Order 1- 6)	I	Properties of Matrices 1.1 Eigenvalues and Eigenvectors	K1 - K5	5	CO1 - CO5	Problem solving	Questioning & slip test
July 2 – July 8, 2026 (Day Order 1- 6)	I	Properties of Matrices 1.2 Cayley Hamilton theorem (statement only) 1.3 Diagonalization of matrices processing distinct eigenvalues	K1 - K5	5	CO1 - CO5	Problem solving, assignments	Quiz
July 9 – 16, 2026 (Day Order 1- 6)	I	Properties of Matrices 1.3 Diagonalization of matrices processing distinct eigenvalues	K1 - K5	5	CO1 - CO5	Problem solving, group discussions, assignments	Slip test

	II	Differential Calculus 2.1 Differentiation of hyperbolic and inverse hyperbolic functions					
July 17 – 24, 2026 (Day Order 1- 6)	II	Differential Calculus 2.2 Higher derivatives - n th derivative – standard results 2.3 Derivatives of fractional expressions of the form $f(x)$ $\varphi(x)$ both functions being algebraic and rational	K1 - K5	5	CO1 - CO5	Problem solving, assignments	Quiz
July 25 – 28, 2026 (Day Order 1- 3)	II	Differential Calculus 2.3 Derivatives of fractional expressions of the form $f(x)$ $\varphi(x)$ both functions being algebraic and rational 2.4 Trigonometric transformations	K1 - K5	3	CO1 - CO5	Problem solving, assignments	Quiz
July 29 – Aug 3, 2026	C.A. Test – I (Portions: Unit I & Unit II till sec 2.2)						
Aug 4 - 6, 2026 (Day Order 4 - 6)	II	Differential Calculus	K1 - K5	2	CO1 - CO5	Problem solving, assignments	Quiz

		2.4 Trigonometric transformations					
Aug 7 – 14, 2026 (Day Order 1- 6)	III	Fourier Series 3.1 Definition of Fourier series 3.2 Finding Fourier coefficients for a given periodic function with period 2π	K1 - K5	5	CO1 - CO5	Problem solving, group discussions, assignments	Questioning & slip test
Aug 17 - 24, 2026 (Day Order 1- 6)	III	Fourier Series 3.2 Finding Fourier coefficients for a given periodic function with period 2π 3.3 Odd and even functions	K1 - K5	5	CO1 - CO5	Problem solving, group discussions, assignments	Questioning & slip test
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	V	Finite Difference Methods 5.1 Finite differences 5.2 Forward difference table 5.3 Interpolation methods	K1 - K5	5	CO1 - CO5	Problem solving	Component Test: Problem solving (Unit III: 20 marks)

Sep 3 – 11, 2026 (Day Order 1- 6)	V	Finite Difference Methods 5.4 Newton's forward formula 5.5 Newton's backward formula 5.6 Binomial method	K1 - K5	5	CO1 - CO5	Problem solving	Component: Assignment Problem submission (Sec 1.2, 1.3 & secs 5.4-5.6, 10 marks)
Sep 15-17, 2026 (Day Order 1 - 3)	V	Finite Difference Methods 5.6 Binomial method 5.7 Lagrange's formula	K1 - K5	3	CO1 - CO5	Problem solving	Questioning & slip test
Sep 18 –23, 2026	C.A. Test – II (Portions: Unit II – secs 2.3, 2.4 & Unit V)						
Sep 24 - 28, 2026 (Day 4 – 6)	IV	Partial Differential Equations 4.1 Definition of general, particular, complete and singular integral 4.2 Formation of equations by elimination of arbitrary constants and arbitrary functions	K1 - K5	2	CO1 - CO5	Problem solving, group discussions, assignments	Questioning & slip test

Sep 29 – Oct 7, 2026 (Day Order 1 - 6)	IV	Partial Differential Equations 4.2 Formation of equations by elimination of arbitrary constants and arbitrary functions 4.3 Solutions of first order equations in their standard forms	K1 - K5	5	CO1 - CO5	Problem solving, group discussions, assignments	Component Test: Problem solving (Unit IV: 20 marks)
Oct 8 - 14, 2026 (Day Order 1 - 6)	IV	Partial Differential Equations 4.3 Solutions of first order equations in their standard forms 4.4 Lagrange's method of solving linear equations $Pp + Qq = R$	K1 - K5	5	CO1 - CO5	Problem solving, group discussions, assignments	Questioning & slip test
Oct 15 - 21, 2026 (Day Order 1- 4)	REVISION						