

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (June - November 2026)

Department : Mathematics
Name/s of the Faculty : Dr. V. Jude Annie Cynthia
Course Title : Vector Analysis and Applications
Course Code : 23MT/MC/VA53
Shift : I

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	understand the basic definitions of vector differentiation and vector integration	K1
CO2	explain and illustrate the concepts of vector differential operators and its geometrical significance	K2
CO3	apply the concepts of vector differentiation and vector integration to solve problems	K3
CO4	analyse the properties of vector differential operators and to classify line, surface and volume integral problems	K4
CO5	evaluate and describe the importance of integral theorems through the concepts studied	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 15 – 22, 2026 (Day Order 1- 6)	1	Vector Differentiation 1.1 Scalar and Vector Point Functions 1.2 Level Surfaces	K1-K5	4	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Questioning
Jun 23 – July 1, 2026 (Day Order 1- 6)	1	Vector Differentiation 1.3 Directional derivative of a Scalar Point Function 1.4 Gradient of a Scalar Point Function	K1-K5	4	CO1-5	Lecture and Group Discussion	Slip Test
July 2 – July 8, 2026 (Day Order 1- 6)	1	Vector Differentiation 1.4 Gradient of a Scalar Point Function 1.5 Gradient of a Vector Point Function	K1-K5	4	CO1-5	Learning by Doing Problems	Questioning
July 9 – 16, 2026 (Day Order 1- 6)	2	Divergence and curl 2.1 Divergence and Curl of a Vector Point Function 2.2 Laplacian Differential Operator	K1-K5	4	CO1-5	Lecture and Group Discussion	Slip Test
July 17 – 24, 2026 (Day Order 1- 6)	2	Divergence and curl 2.2 Laplacian Differential Operator	K1-K5	4	CO1-5	Lecture and Group Discussion	III Component Test -1

		2.3 Divergence and Curl of a Gradient 2.4 Divergence and Curl of a Curl					Unit 1: 1.1-1.3- K4 Level (15 marks)
July 25 – 28, 2026 (Day Order 1- 3)	2	Divergence and curl 2.4 Divergence and Curl of a Curl	K1-K5	2	CO1-5	Learning by Doing Problems	Quiz
July 29 – Aug 3, 2026	C.A. Test – I (Unit 1: 1.4, 1.5 and Unit 2)						
Aug 4 - 6, 2026 (Day Order 4 - 6)	3	Vector Integration 3.1 Line Integrals 3.2 Independence of Path of Integration	K1-K5	2	CO1-5	Lecture	Problem Solving
Aug 7 – 14, 2026 (Day Order 1- 6)	3	Vector Integration 3.2 Independence of Path of Integration 3.3 Conservative Field and Scalar Potential	K1-K5	4	CO1-5	Learning by Doing Problems	Questioning
Aug 17 - 24, 2026 (Day Order 1- 6)	3	Vector Integration 3.3 Conservative Field and Scalar	K1-K5	4	CO1-5	Learning by Doing Problems	Problem Solving

		Potential 3.4 Line Integral of a Conservative Vector					
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	4	Surface and Volume Integrals 4.1 Surface Integrals 4.2 Volume Integrals	K1-K5	4	CO1-5	Lecture and Group Discussion	III Component Test - 2 (Test) Unit 3 Sections: 3.2, 3.3 (20 marks)
Sep 3 – 11, 2026 (Day Order 1- 6)	4	Surface and Volume Integrals 4.2 Volume Integrals 4.3 Cylindrical and Spherical Polar Coordinates	K1-K5	4	CO1-5	Presentation	Slip Test
Sep 15-17, 2026 (Day Order 1 - 3)	4	Surface and Volume Integrals 4.3 Cylindrical and Spherical Polar Coordinates	K1-K5	2	CO1-5	Presentation	Questioning & Problem Solving
Sep 18 –23, 2026	C.A. Test - II (Unit 3: 3.1, 3.2 and Unit 4)						
Sep 24 - 28, 2026 (Day 4 – 6)	5	Integral Theorems 5.1 Integral Theorems 5.2 Gauss' Divergence	K1-K5	2	CO1-5	Lecture and Group Discussion	Slip Test

		Theorem (Statement Only)					
Sep 29 – Oct 7, 2026 (Day Order 1 - 6)	5	Integral Theorems 5.3 Integral Theorems derived from the Divergence Theorem 5.4 Green's Theorem in Plane (Statement Only)	K1-K5	4	CO1-5	Lecture and Group Discussion	III Component Test – 3 Unit 5: 5.1-5.3 (15 marks)
Oct 8 - 14, 2026 (Day Order 1 - 6)	5	Integral Theorems 5.5 Stoke's Theorem (Statement Only) 5.6 Integral Theorems Derived from Stoke's Theorem	K1-K5	4	CO1-5	Lecture and Group Discussion	Questioning & Problem Solving
Oct 15 - 21, 2026 (Day Order 1- 4)	REVISION						