

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (November 2024 – April 2025)

Department : Mathematics
Name of the Faculty : Dr. Benazir Obilia.X. A (3hours) & Dr. Arul Roselet Meryline S (2 hours)
Course Title : Analytical Geometry
Course Code : 23MT/MC/DM43
Shift : II

COURSE OUTCOMES (COs)

COs	Description						CL
CO1	identify the nature of a given general second degree equation and define the basics of plane, straight line, sphere and cone in 3D						K1
CO2	understand the different types of conics in 2D and 3D						K2
CO3	apply the formula for finding the centre, lengths and axes of a central conic and find the properties of ellipse and hyperbola as well as to describe the various forms of plane, straight line, sphere and cone						K3
CO4	analyse the different parameters of conics in 2D & 3D						K4
CO5	evaluate the problems related to the geometry of two dimension and three dimensions						K5
Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Nov 18 – 25, 2024 (Day Order 1-6)	1	General Second Degree Equation 1.1 Condition for a General Second Degree Equation to Represent a Conic	K1-K5	3+2	CO1-5	Lecture & Problem Solving	Questioning

	5	Sphere and Cone 5.1 Equation of a Sphere with given Centre and Radius					
Nov 26- Dec 3, 2024 (Day Order 1 to 6)	1	General Second Degree Equation 1.2 Centre of the Conic given by the General Second degree Equation (concept only)	K1-K5	3+2	CO1-5	Lecture & Problem Solving	Questioning
	5	Sphere and Cone 5.2 General Form of the Equation of a Sphere					
Dec 4-11, 2024 (Day Order 1 to 6)	1	General Second Degree Equation 1.3 Lengths and Positions of the Axes of the Central Conic $ax^2 + 2hxy + by^2 = 1$ (concept only)	K1-K5	3+2	CO1-5	Lecture & Problem Solving	Questioning
	5	Sphere and Cone 5.3 Plane Section of a Sphere					
Dec 12-19, 2024 (Day Order 1 to 6)	1	General Second Degree Equation 1.3 Lengths and Positions of the Axes of the Central Conic $ax^2 + 2hxy + by^2 = 1$ (concept only) (CONTD.)	K1-K5	3+2	CO1-5	Lecture & Problem Solving	Questioning & III Component-1 MCQ Test Section 1.1-1.3, 5.1,5.2 [15 marks]
	5	Sphere and Cone 5.4 Intersection of Two Spheres 5.5 Equation of a Circle on a Sphere					
Dec 20, 2024 (Day Order 1)	3	Plane 3.1 General Equation 3.2 Intercept Form	K1-K5	1+1	CO1-5	Lecture & Problem Solving	Questioning

	5	Sphere and Cone 5.6 Equation of Sphere Passing through given Circle					
Jan 3 – 7, 2025 (Day Order 3 to 6)	3	Plane 3.3 Normal Form	K1-K5	1+1	CO1-5	Lecture & Problem Solving	Questioning
	5	Sphere and Cone 5.7 Tangent Plane to a Sphere					
Jan 8 – 17, 2024 (Day Order 1 to 6)	3	Plane 3.4 Angle Between two Planes 3.5 Equation of Plane through the Line of Intersection of two Given Planes	K1-K5	3+2	CO1-5	Lecture & Problem Solving	Questioning & Slip Test
	5	Sphere and Cone 5.8 Right Circular Cone; Necessary Condition for a General Equation of Second Degree to Represent a Cone					
Jan 18 - 23, 2025	C.A. Test – I Units 1 & 5 (5.1-5.7)						
Jan 24 -31, 2025 (Day Order 1 to 6)	3	Plane 3.5 Equation of Plane through the Line of Intersection of two Given Planes	K1-K5	3+2	CO1-5	Lecture & Problem Solving	Questioning
	2	Ellipse 2.1 Conjugate Diameters and its Properties					
Feb 3-8, 2025	3	Plane 3.6 Length of Perpendicular from a	K1-K5	3+2	CO1-5	Lecture & Problem Solving	Questioning

(Day Order 1 to 6)	2	given Point to a Plane. Ellipse 2.2 Equi-Conjugate Diameters					
Feb 10– 18, 2025 (Day Order 1 to 4)	4 2	Straight Line 4.1 Symmetrical Form 4.2 Line through two points Hyperbola 2.3 Asymptotes	K1-K5	2+1	CO1-5	Lecture & Problem Solving	III Component-2 Assignment [10 marks] Unit 3
Feb 19- 26, 2025 (Day Order 1-6)	4 2	Straight Line 4.3 Reduction of the Unsymmetrical Form to the Symmetrical Form Hyperbola 2.3 Asymptotes (contd.)	K1-K5	3+2	CO1-5	Interactive Teaching & Problem Solving	Questioning & Slip Test
Feb 27- Mar 6, 2025 (Day Order 1 to 6)	4 2	Straight Line 4.4 Condition for a Line to Lie on a Plane 4.5 Plane through a given Line Hyperbola 2.4 Conjugate Hyperbola	K1-K5	3+2	CO1-5	Interactive Teaching & Problem Solving	
Mar 7 – 11, 2025 (Day Order 1 to 3)	4 2	Straight Line 4.6 Condition for two Lines to be Coplanar Hyperbola 2.5 Relation between the Equation of a Hyperbola, its Asymptotes and	K1-K5	2+1	CO1-5	Interactive Teaching & Problem Solving	Questioning

		Conjugate Hyperbola					
Mar 12 –17, 2025	C.A. Test – II Units 2 (2.1-2.4) & 3						
Mar 18 – 20, 2025 (Day 4 to 6)	4	Straight Line 4.7 Equation of the Plane Containing the two Lines	K1-K5	1+1	CO1-5	Interactive Teaching & Problem Solving	Questioning
	2	Hyperbola 2.6 Rectangular Hyperbola					
Mar 21 - 28, 2025 (Day Order 1 to 6)	4	Straight Line 4.8 Shortest Distance between two Skew Lines and Equation of the Line Containing the Shortest Distance.	K1-K5	3+2	CO1-5	Interactive Teaching & Problem Solving	III Component-3 Test Sections 4.1- 4.6 & 2.5 [25 marks]
	2	Hyperbola 2.6 Rectangular Hyperbola (contd.)					
Mar 29- April 2, 2025 (Day Order 1 to 3)	REVISION						