STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (November 2024 – April 2025)

Department : **Mathematics**

Name/s of the Faculty : **Dr. S. Teresa Arockiamary (3 hours) and Dr. S. Sarah Surya (2 hours)**

Course Title : **Analytical Geometry**

Course Code : **23MT/MC/AG24**

Shift : **I**

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 3	1.1 Condition for a General second degree equation to represent a Conic 3.1 General Equation	K1- K5	3+2	CO1-5	Lecture Problem solving	Questioning and interaction Slip test
Nov 26- Dec 3, 2024 (Day Order 1 to 6)	1 3	1.2 Centre of the Conic given by the General second degree equation (Concept Only) 3.2 Intercept Form 3.3 Normal Form	K1- K5	3+2	CO1-5	Lecture Problem solving	Slip test Quiz
Dec 4-11, 2024 (Day Order 1 to 6)	1 3	1.3 Lengths And Positions of the Axes of the Central Conic $Ax^2 + 2hxy + By^2 = 1$ (Concept Only) 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	Group discussions Presentation	Questioning and interaction Quiz
Dec 12-19, 2024 (Day Order 1 to 6)	1 3	1.3 Lengths And Positions of the Axes of the Central Conic $Ax^2 + 2hxy + By^2 = 1$ (Concept Only) 3.5 Equation of Plane through the Line of	K1- K5	3+2	CO1-5	Lecture Problem solving	Questioning and interaction Third Component

		Intersection of Two Given Planes					Assignment for 10 marks Unit 3
Dec 20, 2024 (Day Order 1)	3	3.5 Equation of Plane through the Line of Intersection of Two Given Planes	K1- K5	0+1	CO1-5	Lecturing and Problem solving	Quiz
Jan 3 – 7, 2025 (Day Order 3 to 6)	2 3	2.1 Conjugate Diameters of Ellipse 3.6 Length of Perpendicular from a given Point to a Plane	K1- K5	2+1	CO1-5	Lecture Problem solving	Questioning and interaction Quiz
Jan 8 – 17, 2025 (Day Order 1 to 6)	2 3	2.2 Properties of Conjugate Diameters of Ellipse **Hyperbola** 2.3 The Asymptotes 2.4 Angle Between the Asymptotes 3.6 Length of Perpendicular from a given Point to a Plane	K1- K5	3+2	CO1-5	Lecture Problem solving	Group work Slip Test
Jan 18 - 23, 2025	**C.A. Test – I Units 1 & 3**						
Jan 24 -31, 2025	2	2.5 Properties of the Asymptotes	K1- K5	3+2	CO1-5	Lecture	Questioning

(Day Order 1 to 6)	3, 4	2.6 The Conjugate Hyperbola 3.6 Length of Perpendicular from a given Point to a Plane 4.1 Symmetrical Form				Presentation	and interaction Slip Test
Feb 3-8, 2025 (Day Order 1 to 6)	2 4	2.7 Conjugate Diameters of Hyperbola 2.8 Properties of Conjugate Diameters of Hyperbola 4.1 Symmetrical Form 4.2 Line through Two Points	K1- K5	3+2	CO1-5	Lecture Group discussions Problem solving	Questioning and interaction Slip Test
Feb 10– 18, 2025 (Day Order 1 to 4)	2 4	2.9 Rectangular Hyperbola 4.3 Reduction of the Unsymmetrical Form to the Symmetrical Form	K1- K5	2+2	CO1-5	Lecture Problem solving	Questioning and interaction Third Component Quiz for 20 marks Unit 2 and 4
Feb 19- 26, 2025 (Day Order 1 to 6)	5	5.1 Equation of a Sphere with Given Centre and Radius 5.2 General Form of the	K1- K5	3+2	CO1-5	Lecture Problem solving	Group work

	4	Equation of a Sphere 4.4 Condition for a Line to Lie on a Plane 4.5 Plane Through a Given Line				Group discussion	Quiz
Feb 27- Mar 6, 2025 (Day Order 1 to 6)	5 4	5.3 Plane Section of a Sphere 5.4 Intersection of two Spheres 4.6 Condition for Two Lines to be Coplanar	K1- K5	3+2	CO1-5	Presentation Problem solving	Questioning and interaction Quiz
Mar 7 – 11, 2025 (Day Order 1 to 3)	5 4	5.5 Equation of a Circle on a Sphere 4.7 Equation of the Plane Containing the Two Lines	K1- K5	1+2	CO1-5	Lecture Problem solving	Third Component Test for 20 marks Unit 5
Mar 12 –17, 2025	**C.A. Test – II Units 2 & 4**						
Mar 18 – 20, 2025 (Day 4 to 6)	5	5.6 Equation of Sphere Passing through Given Circle 5.7 Tangent Plane to a Sphere	K1- K5	2	CO1-5	Lecture Problem solving	Group work
Mar 21 - 28, 2025 (Day Order 1 to 6)	5	5.8 Right Circular Cone; Necessary Condition for a General Equation of Second Degree to	K1- K5	3+2	CO1-5	Presentation Problem solving	Questioning and interaction

	4	Represent a Cone 5.9 Equation of a Cone with Given Vertex, Axis and Semi-Vertical Angle 4.8 Shortest Distance between Two Skew Lines and Equation of the Line Containing the Shortest Distance					Slip Test
Mar 29- April 2, 2025 (Day Order 1 to 3) (1+2)	**REVISION**						

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