

Lecture Plan		
Name of the College: Government College of Arts, Science and Commerce, Sanquelim-Goa		
Name of Faculty: Mr. Vishal Vinayak Gawas	Subject: Mathematics	
Paper code: MAT-308 -Analytical 3D Geometry	Program: B.Sc.	Division: -
Academic year: 2026-27	Semester: V	Total Lectures: 30
Course Objectives: To make students explore the principles of coordinate geometry, focusing on planes, lines, spheres, cones, cylinders and conicoids.		
Expected Course Outcome: 1) Define terms and explain concepts related to 3D Geometry 2) EUnderstand the properties of straight lines, spheres, cones and cylinders. 3) Establish various properties and results on conicoids. 4) Develop analytical skills in solving geometric problems.		
Student Learning Outcome: Student will be able to 1) Define and explain fundamental concepts of 3D Geometry and understand the properties of straight lines, spheres, cones, and cylinders. 2) Establish various properties and results on conicoids and develop analytical skills in solving complex geometric problems.		

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
June	22/06/2026	27/06/2026	2	Discussion of prerequisites		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition).
June/July	29/06/2026	04/07/2026	2	Co-ordinates Coordinates of a Point in Space, Distance between two points,		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
July	06/07/2026	11/07/2026	2	Division of the join of two points, Direction Cosines of a line lines		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
July	13/07/2026	18/07/2026	2	Relation between direction cosines, Projection on a straight line		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
July	20/07/2026	25/07/2026	2	Angle between two lines. The Plane Section 2.1		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
July/Aug	27/07/2026	01/08/2026	2	Section 2.2, General equation of first degree, Normal form and		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid

				transformation of general equation to normal form, Direction cosines of the normal to the plane			Geometry S. Chand Publications (Sixteenth Edition)
August	03/08/2026	08/08/2026	2	Angle between the planes, Determination of the planes under given conditions, Length of the perpendicular from a point to a plane.		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
August	10/08/2026	15/08/2026	2	Representation of line, Equation of line through a given point in given direction, Equation of line through two points,		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
August	17/08/2026	22/08/2026	2	Transformation from the unsymmetrical to the symmetrical form, Angle between line and a plane, Conditions for a line to lie in a plane		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
August	24/08/2026	29/08/2026	2	Shortest distance between two lines. Length of the perpendicular from a point to a line		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
Aug/Sept	31/08/2026	05/09/2026	2	Equation of a Sphere, General equation of a Sphere		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)

September	07/09/2026	12/09/2026	2	Sphere through four given points, Plane section of a Sphere		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
September	14/09/2026	19/09/2026	2	Ganesh Chaturthi Break (14–19 Sep)			
September	21/09/2026	26/09/2026	2	Definition, Equation of a Cone with conics as guiding curve, The Right Circular Cone		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
Sept/Oct	28/09/2026	03/10/2026	2	Definition, equation of a right circular cone, The Cylinder: Definition, Equation of a Cylinder		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
October	05/10/2026	10/10/2026	2	Definition, Equation of a Right Circular Cylinder.		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition)
October	12/10/2026	14/10/2026	2	The general equation of the second degree, Shapes of some surfaces: The Ellipsoid, The Hyperboloid of one sheet, The Hyperboloid of two sheets.		Chalk and Board	Shanti Narayan, Dr. P.K. Mittal, Analytical Solid Geometry S. Chand Publications (Sixteenth Edition).

*** Assessment Rubrics**

Component	Max Marks
ISA 1	5
ISA 2	5
Practical	Nil
Project	Nil
Semester End Exam	40