

ADIKAVI NANNAYA UNIVERSITY
CBCS/SEMESTER SYSTEM
SEMESTER – II : B.A./B.Sc. FIRST YEAR MATHEMATICS SYLLABUS (UPDATED)
PAPER – 2 : SOLID GEOMETRY

60 Hrs

UNIT – I (12 hrs) : The Plane :

Equation of plane in terms of its intercepts on the axis, Equations of the plane through the given points, Length of the perpendicular from a given point to a given plane, Bisectors of angles between two planes, Combined equation of two planes, Orthogonal projection on a plane.

UNIT – II (12 hrs) : The Line :

Equation of a line; Angle between a line and a plane; The condition that a given line may lie in a given plane; The condition that two given lines are coplanar; Number of arbitrary constants in the equations of straight line; Sets of conditions which determine a line; The shortest distance between two lines; The length and equations of the line of shortest distance between two straight lines; Length of the perpendicular from a given point to a given line

UNIT-III: The Sphere

Definition and equation of the sphere; Equation of the sphere through four given points; plane sections of a sphere; intersection of two spheres; equation of a circle; sphere through a given circle; intersection of a sphere and a line; tangent plane; plane of contact; polar plane; pole of a plane; conjugate points; conjugate planes.

UNIT-IV: The Sphere and Cones

Angle of intersection of two spheres; conditions for two spheres to be orthogonal; Power of a point; radical plane; coaxal system of spheres; simplified form of the equation of two spheres.

Definitions of a cone; vertex; guiding curve; generators; equation of the cone with a given vertex and guiding curve; equations of cones with vertex at origin are homogeneous; condition that the general equation of the second degree should represent a cone.

UNIT V-: Cones

Enveloping cone of a sphere; right circular cone; equation of the right circular cone with a given vertex, axis and semi vertical angle; condition that a cone may have three mutually perpendicular generators; intersection of a line and a quadric cone; tangent lines and tangent plane at a point; condition that a plane may touch the cone; reciprocal cones; intersection of two cones with a common vertex.

Reference Books :

1. Analytical Solid Geometry by Shanti Narayan and P.K. Mittal, Published by S. Chand & Company Ltd. 7th Edition.
2. A text book of Mathematics for BA/B.Sc Vol 1, by V Krishna Murthy & Others, Published by S. Chand & Company, New Delhi.
3. A text Book of Analytical Geometry of Three Dimensions, by P.K. Jain and Khaleel Ahmed, Published by Wiley Eastern Ltd., 1999
4. Co-ordinate Geometry of two and three dimensions by P. Balasubrahmanyam, K.Y. Subrahmanyam G.R. Venkataraman published by Tata-MC Gran-Hill Publishers Company Ltd., New Delhi.