



Semester*	: II
Course Type	: IDC
Course Code**	: MATIDC151
Name of the Course	: Geometry
Learning level***	: 100
Credits	: 3
Contact Hours	: 50
Total Marks	: 100
End Semester Marks	: 70
Internal Marks	: 30

Course Objective

The main objective of this course is to introduce coordinate geometry concepts, including distance between points, section formula, and conversion between Cartesian and polar coordinates and to gain proficiency in working with equations of straight lines, conic sections, etc.

Unit – I

Coordinates, distance between two points, section formula, area of a triangle and quadrilateral with given coordinates of vertices, polar coordinates, change of cartesian to polar coordinates.

Unit – II

Straight lines, various forms of equation of a straight line, angles between two straight lines, conditions for parallel and perpendicular lines, lengths of perpendiculars, intersection of two straight lines.

Unit – III

Pair of straight lines, conditions parallel and perpendicular lines, bisector of angles between pair of straight lines, general equation of 2nd degree. Homogeneous equation of 2nd degree.

Unit – IV

Circles, various forms of equation of a circle, condition that the general equation of 2nd degree may represent a circle, tangent and normal to a circle.

Unit – V

Conic sections, parabola, hyperbola, ellipse, their equations in various forms.

Textbook:

1. S.L. Loney, The Elements of Coordinate Geometry, 17th ed., Arihant Publication (India), 2023.

Reference book:

1. J.G. Chakraborty and P.R. Ghosh, Advanced Analytical Geometry, 14th ed., U.N. Dhur and sons, 1987.

Course Learning Outcome

After completion of the course, learners will be able to

1. Apply coordinate geometry to solve real-world problems, such as distance calculations and area determinations.
2. Solve geometric problems involving straight lines, including determining angles, intersections, and perpendiculars.
3. Demonstrate understanding of conic sections and their equations, and solve problems involving parabolas, hyperbolas, and ellipses.