

CBSE Class XI Syllabus

Engineering Graphics Class 11 Syllabus

Course Structure

S.No.	Chapter / Topic	Marks
Unit-I	Plane Geometry	16
1	Lines, angles and rectilinear figures	
2	Circles and tangents	
3	Special curves: ellipse, parabola, involute, cycloid, helix and sine-curve	
Unit-II	Solid Geometry	27
4	Orthographic-projections of points, lines laminae, (plane) and solids	
5	Section of solid-figures	
Unit-III	Machine Drawing	27
6	Orthographic projections of simple machine-blocks	
7	Isometric-projection of laminae (plane) figures	
8	Development of surfaces	
IV.	Practical	30
	Total Marks	100

I. PLANE GEOMETRY

Printing English alphabets (capital and small) numerals in standard proportions.

Unidirectional/aligned system of dimensioning as per SP: 46-2003 (Revised)

Unit 1:

Construction of lines, angles and their divisions. Simple questions based on triangles, square, rhombus, trapeziums, regular polygons-pentagon, hexagon and octagon.

Unit 2:

Construction of circles, external and internal tangents of circles, inscribing, circumscribing circles in equilateral triangle, square, rhombus, regular polygons-pentagon, hexagon and octagon.

Unit 3:

Construction of Engineering curves:

- (a) Ellipses by concentric circles, intersecting arcs and intersecting lines.
- (b) Parabola by intersecting lines and intersecting arcs.

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- (c) Involute of a circle, cycloid, helix and sine curve.

II. SOLID GEOMETRY

Unit 4:

Methods of orthographic projections and dimensioning strictly as per SP: 46- 2003 revised conventions. Projection of points, lines, regular plane figure and right regular solids such as cubes, prisms and pyramids (square, triangular, pentagonal and hexagonal), cones, cylinders, spheres, hemi-spheres and frustum of pyramids and cone when they are kept with their axis (a) perpendicular, to HP/VP (b) parallel to one plane and inclined to the other (c) parallel to HP and VP both.

Unit 5:

Section of solids under the same conditions mentioned above made by the horizontal, vertical and inclined planes, also showing true-shape of section.

III. MACHINE DRAWING

Unit 6:

Orthographic projections of simple machine blocks.

Unit 7:

Construction of isometric scale showing main divisions of 10 mm and smaller divisions of 1 mm each. Isometric projection (drawn to isometric scale) of figures such as triangles, squares, pentagons, hexagons, circles and semi-circles with their surface parallel to HP or VP and its one side or diagonal or diameter should be either parallel or perpendicular to HP/VP.

Unit 8:

Development of the surfaces of following solids:

- 1. Cube, cuboid, prisms-triangular, square, pentagonal and hexagonal.
- 2. Pyramids (triangular, square, pentagonal and hexagonal).
- 3. Right circular cylinder and cone.

IV. PRACTICALS

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1. Developing "Prisms" and "Pyramids" with the help of card board (thick paper).
2. Developing different types of packing boxes (cartons).
3. Making different types of graphic designs/murals for interior/exterior decorations in colour using the knowledge of geometrical figures with the use of any Computer Software such as Collab-CAD, CORAL DRAW, PHOTOSHOP, etc.
4. Drawing ellipse by Trammel and Thread method on the ground / drawing sheet / plywood / cardboard, etc.
5. Preparing top-view (plan) of a class room, Home: Drawing room / Bedroom / Study room / Kitchen, Engineering Graphics room drawing different objects therein.
6. Drawing through activities: Involutives, cycloid, helix and sine curves listing their uses in daily life.
7. Preparing the following sections of solids (prisms, pyramids, spheres, etc.) with clay, soap, thermocol, plasticine, wax or any other material easily and economically available. When the cutting plane is: parallel to the base, perpendicular to the base and inclined to the base. Also creating different objects with combination of above solids.

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