DIRECTORATE OF EDUCATION GNCT OF DELHI

ANNUAL SYLLABUS

CLASS XI

ENGINEERING GRAPHICS (Code 046)

(2026-27)

COURSE STRUCTURE

THEORY

I. PLANE GEOMETRY

Unit 1: Introduction: English alphabets (capital and small) and numerals in standard proportions; Unidirectional/aligned system of dimensioning and conventions as per SP 46:2003 (Revised); Engineering drawing instruments.

Unit 2: Construction of lines, angles, and their divisions. Simple questions based on triangles, square, rhombus, regular polygons-pentagon, and hexagon.

Unit 3: Construction of circles, inscribing and circumscribing of circles in equilateral triangle, square, rhombus, regular polygons-pentagon and hexagon.

Introduction to Engineering Curves: Definition and applications of Ellipse, Parabola, Hyperbola, Involute, Helix, Cycloids and Sine Curve (FOR INTERNAL ASSESSMENT ONLY).

II. SOLID GEOMETRY

Unit 4: Orthographic projection: dimensioning and conventions strictly as per SP 46:2003 (Revised). Orthographic projection of points and lines.

Unit 5: Orthographic projection of regular plane figures - triangle, square, pentagon, hexagon, circle, and semi-circle.

Unit 6: Orthographic projection of right regular solids such as cubes; prisms and pyramids (triangular, square, pentagonal, and hexagonal); cone; cylinder; sphere; hemi-sphere; frustum of pyramids and cone, when they are kept with their axis (a) perpendicular to HP/VP (b) parallel to HP and VP both.

Mid Term syllabus to be completed by 05 September 2026

MID TERM EXAMINATION

Unit 7: Section of right regular solids such as cube; prisms and pyramids (square, triangular, pentagonal, and hexagonal); cone; cylinder; sphere, kept with their axis perpendicular to HP/VP, made by a vertical cutting plane.

III. MACHINE DRAWING

Unit 8: Orthographic projection of simple machine blocks.

Unit 9: Isometric Projection - Construction of isometric scale showing main divisions of 10 mm and smaller divisions of 1 mm each. Isometric projection (drawn to isometric scale) of regular plane figures - triangle, square, pentagon, hexagon, circle, and semi-circle with their surface parallel to HP or VP (keeping one side either parallel or perpendicular to HP/VP).

Isometric view (drawn to full size scale) of regular plane figures (FOR INTERNAL ASSESSMENT ONLY)

Annual syllabus to be completed by 30/01/2027

PRACTICALS

1. Making different types of graphic designs/ murals for interior/ exterior decorations in colour using the knowledge of geometrical figures or 3D solids with the use of any Computer Software such as CollabCAD or any equivalent pertinent software.
2. Drawing the following engineering curve through activities - ellipse (by trammel & thread method) on the ground/ drawing sheet/ plywood/ cardboard etc.
3. Developing the following solids with the help of cardboard/ thick paper.

    a) cube, cuboid
    b) prisms & pyramids (triangular, square, pentagonal, and hexagonal)
    c) right circular cylinder and cone

4. Preparing the section of solids (prisms, pyramids, sphere, etc.) with clay, soap-cake, plasticine, wax or with the 3D printing technology. When the cutting plane is: parallel to the base, perpendicular to the base or inclined to the base.
5. Preparing the top-view (plan) of a class-room/lab, home (Drawing Room/ Bedroom/ Study Room, Kitchen) drawing different objects therein.

Note:

I. **I.** 15 practical (minimum three each from aforementioned five points) are to be assessed.

II. **II.** In all the practicals, drawing/sketching of the views should be incorporated and evaluated accordingly.

III. **III.** The scheme of evaluation is as follows:

IV.

(a)	Practicals (2)	15 Marks
(b)	Drawing/ Sketch	05 Marks
(c)	Viva-voce	05 Marks
(d)	Sessional Work	05 Marks
	Total	**30 Marks**

ACTIVITY

Industrial Visits (Two) to any industry/manufacturing plant/higher educational institute to acquaint the students with the present - day methods & technology for better conceptual understanding.