

ENGINEERING DRAWING

SYLLABUS FOR HIGHER SECONDARY COURSE

OBJECTIVE :

- ❖ To enable the student to understand and develop clear concept and perception of form, proportion and purpose and connect these to daily life phenomenon.
- ❖ To enable the student to develop the skill of expressing the two-dimensional and three-dimensional objects into professional language and vice versa.
- ❖ To enable the student to acquire to readily draw neat sketches often needed in “on-job-situations”.
- ❖ To prepare the student to develop a clear understanding of plane and solid geometry and to some extent machine drawing so as to apply the same in relevant practical fields such as technology and industry
- ❖ To enable the student to acquire speed and accuracy in use of drawing instruments,
- ❖ To equip the student to apply theoretical knowledge of graphics fruitfully in other areas in the future.

CURRICULUM FOR +2 STAGE IN SCIENCE & ARTS

Infrastructure :

- (a) SPACE : 2m²/ Student
- (b) **FURNITURE :**
 - (i) One Drawing board for each student (700×1000, Thickness = 25 mm)
of well-seasoned soft wood.
 - (ii) The black board measuring 1.5m × 3 m.
 - (iii) A typical almirah to keep the drawing sheets and other accessories required for drawing.
- (c) **DRAWING TOOLS FOR STUDENTS**
 - (i) T-square
 - (ii) Set-square (30°/ 60° & 45°)
 - (a) 30°/ 60° -set square of 25 cm length.
 - (b) 45° set square of 20cm length.
 - (iii) Protractor- Circular on semicircular of 100 mm diameter.
 - (iv) **DRAWING INSTRUMENT BOX, CONTAINING**
 - (a) Large-size compass with inter-changeable pencil and pen legs.
 - (b) Large size divider.
 - (c) Small bow pencil.
 - (d) Small bow pen
 - (e) Small bow divider.
 - (f) Lengthening bar.
 - (g) Inking pen.
 - (v) **SCALES :** Made of wood, steel celluloid or plastic
15 cm long and 2 cm wide or, 30 cm long and 3 cm wide fiat scales are in common use.
 - (vi) French curves:

- (vii) Drawing paper:
- (viii) Drawing pencils:
- (ix) Rubber eraser:
- (x) Drawing pins:
- (xi) Small-paper-block.
- (xii) Duster

BOOKS RECOMMENDED :

1. Engineering Drawing: by N.D.Bhatt and V.M. Panchal ISBN-81-85594-58-9.
Publication : CHAROTAR PUBLISHING HOUSE.
2. Engineering Graphics; by A.M.Chandra and Satish Chandra, Publication : NARORA

ENGINEERING DRAWING**SYLLABUS FOR HIGHER SECONDARY FINAL YEAR COURSE****One Paper (Theory)****Three Hours****Marks 50****Periods 90****Unitwise Distribution of Marks and Periods :**

Unit No.	Title	Marks	Periods
Unit-1	Pictorial drawing ,isometric sketching, isometric projection of solids.	10	18
Unit-2	Graphical representation of information	8	12
Unit-3	Orthographic projection of machine blocks and machine elements.	10	21
Unit-4	Thread profiles	4	9
Unit-5	Screwed fastenings	3	9
Unit-6	Rivets	3	9
Unit-7	Free hand sketch of bearing rod-joint pipe joint Couplings, pulleys, keys, gears, screw jack.	12	12
Total		50	90

Unitwise Distribution of Course contents :

- Unit-1** Pictorial drawing (isometric sketching) of cubes, rectangles (simple variation), circles and irregular curves, objects having planes all parallel to the corresponding pictorial planes, objects in planes which are not parallel to them, corresponding pictorial planes, objects having hole, cylindrical feature or rounded corners, dimensioning, free hand pictorial drawing from models and multi view projection drawings.
- Unit-2** *Graphical representation of information* : Bar charts, pie charts, rectilinear chart, triangular chart, polar charts, semi-log and log-log graphs, Nomography, concurrency charts, alignment charts, BIS and ISO conversion.
- Unit-3** *Orthographic projection* : Orthographic projection of standard machine elements. Conversion of pictorial views into orthographic views and vice-versa (1st and 3rd angle projection systems) Sectional views.
- Unit-4** Thread profiles for (i) for power transmission, for fastenings (ii) ISO Metric screw thread profile IS-4218, (iii) B S W, BSF, BSP, BA (iv) IS-2643, IS 554, etc. (v) unified thread, (vi) knuckle thread.

- Unit-5** *Screwed fastenings* : (i) Sectional representation of external and internal threaded assembly (IS-696), (ii) Hexagonal and square nut and bolt, their proportional dimensional standards, (ii) Different types of bolts and nuts as used in practical fields and screw head.
- Unit-6** Rivets: (i) Sanap head, pan head, Flat countersunk head (60), (ii) Joints lap, butt, double riveted double strap butt joint, (iii) Zigzag riveting offset full section, (iv) proportions.
- Unit-7** Free hand sketch of bearing, rod-joint, pipe-joint Couplings, pulleys, keys, gears, screwjack.

SYLLABUS FOR ENGINEERING DRAWING PRACTICAL

One Paper (Practical) Three Hours

Marks 50 (Total Periods 75)

Part-A

To perform the following jobs from the two given views of the prescribed machine blocks (two) **Marks**

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| 1. Copy of the given views | 5 |
| 2. Drawing the missing view with hidden lines | 5 |
| 3. Sketching the Isometric view without hidden edges | 10 |

Part-B

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| 1. Drawing of Bar charts, Pie charts, rectilinear chart, triangular chart polar charts, semi-log and log-log graphs, Nomography, charts, alignment charts from a given problem. (9 Periods) | 5 |
| 2. Drawing of different of thread profiles as prescribed in the theory part. (9 periods) | 5 |
| 3. Drawing of sectional view of assembly with screwed fosterlings Involving nuts and bolts. (9 Periods) | 5 |
| 4. Drawing of sectional view of different types of rivets as prescribed in the theory. (9 Periods) | 5 |
| 5. Free hand drawing of bearing. Rod-joint, pipe, couplings keys, gears, screw jack. (15 Periods) | 10 |
