

Syllabus for the subject  
of  
**ENGINEERING DRAWING**  
(For 1<sup>st</sup> & 2<sup>nd</sup> semester)

Under

**CRAFTSMEN TRAINING SCHEME (CTS)**

(For all Engineering Trades with 8<sup>th</sup> pass entry qualification)

Designed in

- 2015 -

By

**Government of India  
Ministry of Skill Development & Entrepreneurship  
Directorate General of Training  
CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE  
Block - EN - 81 SECTOR – V, SALT LAKE CITY,  
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## A. RATIONALE

Core skills enhance knowledge, analytical ability, problem solving ability, understanding or comprehending drawings & designs and also enriches on scientific principles. At the same time it creates the base for achieving Hard skills. To carry out any skill related task the knowledge about basic Engineering Drawing is essential as *drawing is the language of engineers*.

Knowledge of Engineering Drawing complements the skills of an Artisan / Trade person. More importantly, ability to read drawing increases the productivity of a person besides enhancing confidence to perform task competently.

Recognising this importance the core skills (Engineering Drawing) made an integral part of all Engineering Trades under NCVT.

The content of Engineering Drawing is common for 1st & 2nd semesters for all Engineering Trades with 8th pass entry qualification.

## **B. GENERAL INFORMATION**

1. **Name of the Subject :** ENGINEERING DRAWING

2. **Applicability :**

- CTS- For all engineering trades with 8th pass entry qualification
- ATS- For all engineering trades with 8th pass entry qualification

3. **Hours of Instruction:** 44 Hrs for 1<sup>st</sup> semester  
42 rs for 2<sup>nd</sup> semester

4. **Examination pattern :**

- The examination for the subject will be held at the end of each semester.

5. **Marks Distribution :**

	Full marks
Examination	75
Sessional	20
TOTAL	95

6. **Instructor Qualification:** Degree in Engineering with one year experience

**OR**

Diploma in Engineering with two years' experience

**OR**

NCVT / NAC in the Draughtsman (Mechanical)  
with three years' experience.

7. **Desirable:** Craft Instructor Certificate in Draughtsman (Mechanical) or RoD & A course under NCVT.

8. **Instructor Requirement :**

- One full time instructor is required for 144 seats and additional instructor(s) will be required on increase in every 144 seats
- For seats less than 144, the instructor may be out sourced/ hired on contract basis

**C. ALLOTMENT OF TIME AMONG THE TOPICS**

<b>To be covered in</b>	<b>Topics</b>	<b>Allotted time in Hours</b>
<b>First semester</b>	Introduction to Engineering Drawing and Drawing Instruments	<b>3</b>
	Lines	<b>3</b>
	Free hand drawing	<b>8</b>
	Lettering and Numbering	<b>6</b>
	Dimensioning	<b>3</b>
	Drawing of Geometrical Figures	<b>9</b>
	Sizes and Layout of Drawing Sheets	<b>6</b>
	Method of presentation	<b>3</b>
	Symbolic Representation	<b>3</b>
	<b>TOTAL:</b>	<b>44</b>
<b>Second semester</b>	Dimensioning practice	03
	Drawing of Solid figures	06
	Free hand Drawing of Solid figures	03
	Free Hand sketch of hand tools and measuring tools used in respective trades	06
	Projections	06
	Drawing of Orthographic projection of blocks	09
	Free hand Drawing of simple fastener	03
	Free hand Drawing of simple objects	03
	Reading of fabricated engineering drawing	03
	<b>TOTAL:</b>	<b>42</b>

## D. DETAILS OF SYLLABUS

### SYLLABUS OF ENGINEERING DRAWING FOR 1<sup>ST</sup> SEMESTER– 44 hrs. Duration

Sl. No.	Topics	Duration
1.	Introduction to Engineering Drawing and Drawing Instruments : <ul style="list-style-type: none"><li>- Conventions</li><li>- Viewing of engineering drawing sheets.</li><li>- Method of Folding of printed Drawing Sheet as per BIS SP:46-2003</li><li>- Drawing board, T-Square, Drafter (Drafting M/c), Set Squares, Protractor, Drawing Instrument Box (Compass, Dividers, Scale, Diagonal Scales etc.), Pencils of different Grades, Drawing pins / Clips.</li></ul>	3 hrs.
2.	Lines : <ul style="list-style-type: none"><li>- Definition, types and applications in Drawing as per BIS SP:46-2003</li><li>- Classification of lines (Hidden, centre, construction, Extension, Dimension, Section)</li><li>- Drawing lines of given length (Straight, curved)</li><li>- Drawing of parallel lines, perpendicular line</li><li>- Methods of Division of line segment</li></ul>	3 hrs.
3.	Free hand drawing of <ul style="list-style-type: none"><li>- Lines, polygons, ellipse, etc.</li><li>- geometrical figures and blocks with dimension</li></ul> Transferring measurement from the given object to the free hand sketches.	8 hrs.
4.	Lettering and Numbering as per BIS SP46-2003: <ul style="list-style-type: none"><li>- Single Stroke, Double Stroke, inclined,</li></ul>	6 hrs.
5.	Drawing of Geometrical Figures: Definition, nomenclature and practice of <ul style="list-style-type: none"><li>- Angle: Measurement and its types, method of bisecting.</li><li>- Triangle -different types</li><li>- Rectangle, Square, Rhombus, Parallelogram.</li><li>- Circle and its elements.</li></ul>	9 hrs.
6.	Sizes and Layout of Drawing Sheets <ul style="list-style-type: none"><li>- Selection of sizes</li><li>- Title Block, its position and content</li><li>- Item Reference on Drawing Sheet (Item List)</li></ul>	6 hrs.
7.	Method of presentation of Engineering Drawing <ul style="list-style-type: none"><li>- Pictorial View</li><li>- Orthographic View</li><li>- Isometric view</li></ul>	3 hrs.
9.	Symbolic Representation used in the related trade (as per BIS SP:46-2003) of : <ul style="list-style-type: none"><li>- Fastener (Rivets, Bolts and Nuts)</li><li>- Bars and profile sections</li><li>- Weld, brazed and soldered joints.</li><li>- Electrical and electronics element</li><li>- Piping joints and fittings</li></ul>	6 hrs.

**SYLLABUS OF ENGINEERING DRAWING FOR 2<sup>nd</sup> SEMESTER– 42 hrs. Duration**

<b>Sl. No.</b>	<b>Topics</b>	<b>Duration</b>
1.	Dimensioning practice: <ul style="list-style-type: none"><li>- Position of dimensioning (unidirectional, aligned, as per BIS SP:46-2003)</li><li>- Types of arrowhead</li><li>- Leader Line with text</li><li>- Symbols preceding the value of dimension and dimensional tolerance.</li></ul>	3 hrs.
2.	- Drawing of Solid figures (Cube, Cuboids, Cone) with dimensions.	6 hrs.
3.	Free hand Drawing of Solid figures (Prism, Pyramid, Frustum of Cone and Pyramid.) with dimensions.	3 hrs.
4.	Free Hand sketch of hand tools and measuring tools used in respective trades.	6 hrs.
5.	Projections: <ul style="list-style-type: none"><li>- Concept of axes plane and quadrant.</li><li>- Orthographic projections</li><li>- Method of first angle and third angle projections (definition and difference)</li><li>- Symbol of 1<sup>st</sup> angle and 3<sup>rd</sup> angle projection as per IS specification.</li></ul>	6 hrs.
6.	Drawing of Orthographic projection in 3 <sup>rd</sup> angle.	9 hrs.
7.	Free hand Drawing of simple fastener (Rivet, Bolts, Nuts & Screw)	3 hrs.
8.	Free hand sketching of simple objects related to trade.	3 hrs.
9.	Reading of fabricated engineering drawing	3 hrs.

### **E. LIST OF TOOLS & EQUIPMENTS**

<b>Sl. No.</b>	<b>NAME OF TOOLS / EQUIPMENTS</b>	<b>QUANTITY</b>
1	Drawing Board	20
2	Models : Solid & cut section	as required
3	Table for trainees	20
4	Stool for trainees	20
5.	Cupboard (big)	01
6	White Board (size: 8ft. x 4ft.)	01
7	Trainer's Table	01
8	Trainer's Chair	01