11.1.0 ENGINEERING DRAWING

11.1.01 Introduction

This module unit intended to assist the trainee in developing the abilities to communicate ideas within the engineering field correctly and be able to interpret engineering drawings.

11.1.02 General Objectives

At the end of the module unit the trainee should be able to:

a) understand drawings of common components in proportion
b) appreciate concepts applied in technical drawing
c) interpret working drawings
d) produce drawings in various projections and
e) perspectives

11.1.03 Module Unit Summary and Time Allocation

Engineering Drawing

Code	Sub Module Unit	Content	Time Hrs
11.1.1	Basic Concepts of Engineering Drawing	• Drawing as a means of communication • Use and care of drawing instruments • Lines and Lettering • Dimensioning Techniques • Scales	8
11.1.2	Plane geometry	• Construction of Polygons • Construction of Circles Hyperbola, loci.	14
11.1.3	Development and interpretation	• Elevations • Auxiliary views • Projection of points of intersection • Surface development	16
11.1.4	Projections	• Terminologies • Forms of projections	16
11.1.5	Engineering Working drawings	• Interpretation of part drawings • Production of sketches from parts drawing	12
Total time			**66**

11.1.1 BASIC CONCEPTS OF ENGINEERING DRAWING

Theory

11.1.1T0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:

a) state the role of drawing as a means of communication.
b) Use and care for drawing instruments appropriately
c) draw and print quality lines and letters
d) dimension a given drawing
e) draw to a given scale.

Content

11.1.1T1 Drawing as a means of communication
- i) Use and care of drawing tools
- ii) Use of Scaled rule
- iii) Free Hand Sketch of Engineering tools

11.1.1T2 Lines and Lettering
- i) Types of lines
- ii) Choice of pencils leads
- iii) Upper and lower case

11.1.1T3 Techniques of Dimensioning
- i) Linear dimensioning
- ii) Angular dimensioning

11.1.1T4 Construction to scales
- Reproduction of drawing to scale.

11.1.2 PLANE GEOMETRY

Theory

11.1.2T0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:

a) construct the various types of polygons
b) draw circles hyperbola, loci

Content

11.1.2T1 Constructions Polygons

11.1.2T2 Constructions of Circles, Hyperbola, loci.

11.1.3 DEVELOPMENT AND INTERPRETATION

Theory

11.1.3T0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:

a) draw the front elevation and plan of a sectional solid.
b) produce an auxiliary view from a given elevation and plan.
c) project points of intersecting solids.
d) develop surfaces of intersecting solids.

Content

11.1.3T1 Section of Solids
- i) Prisms
- ii) Pyramids
- iii) Cones

11.1.3T2 Auxiliary views and plans

11.1.3T3 Projection of intersecting solids
- i) Core
- ii) Pyramid
- iii) Triangular prisms

11.1.3T4 Development of surfaces
- i) cylinder to cone
- ii) cylinder to pyramid
- iii) cylinder to triangular prism

11.1.4 PROJECTIONS

Theory

11.1.4T0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:
- a) define terms related to projections
- b) identify forms of projection

Content

11.1.4T1 Definition of terms related to projection
- i) Axes
- ii) Horizontal
- iii) Vertical
- iv) Side elevation
- v) Planes of projection
- vi) Horizontal
- vii) Vertical

11.1.4T2 Identification of forms of projections
- i) Orthographic
- ii) 1st angle
- iii) 3rd angle
- iv) Pictorial
- v) isometric
- vi) Oblique
- vii) Axonometric
- viii) Auxiliary
- ix) Orthographic
- x) Isometric
- xi) Oblique
- xii) Axonometric
- xiii) Auxiliary drawings
- xiv) Perspective

11.1.4T3 Sectioning
- i) Types of sectional views
- ii) Full sectional views
- iii) Off-set sectional views
- iv) Half-sectional views
- v) Aligned section views
- vi) Resolved sectional views
- vii) Removed sectional views
- viii) Broken out sectional views

11.1.5 ENGINEERING WORKING DRAWING

Theory

11.1.5T0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:
- a) extract information as required from given simple part drawing and assembly.
- b) produce sketches and drawings

Content

11.1.5T1 Reading and interpretation of drawings
- i) Representation of pictorial drawing in 1st and 3rd angle
- ii) Exploded
- iii) Part list
- iv) Dimensioning
- v) Types of Clearance
- vi) Orthographic

11.1.5T3 Produce drawings in orthographic projection

11.1.5C Competence

The trainee should have the ability to:

i) Draw and print quality lines and letters.
ii) Dimension a give drawing
iii) Draw to a given scale.
iv) Construct various types of polygons
v) Draw circles, hyperbola, loci etc
vi) Draw the front elevation and plan of a sectional solid.
vii) Produce an auxiliary view from a given elevation and plan.
viii) Develop surfaces of intersecting solids.
ix) Extract information as required from given simple part drawing and assembly

Suggested Teaching/Learning Resources

- Text books
- Drawing equipments
- Appropriate stationery