PREPARE TECHNICAL DRAWINGS I

UNIT CODE: 0732441 15A

TVET CDACC UNIT CODE: ENG/OS/MDE/CC/09/5/MA

UNIT DESCRIPTION

This unit covers the competencies required to prepare technical drawings. Its competencies include; preparing drawing equipment and materials, producing plane geometry drawings, managing basic operations in AutoCAD, developing 2D Drawings in AutoCAD.

ELEMENTS These describe the key outcomes which make up workplace function.	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range.***
1. Prepare drawing equipment and materials	1.1 ***Drawing equipment*** are identified according to task requirements 1.2 ***Drawing materials*** are identified according to task requirements 1.3 Drawing equipment are used as per technical drawing standards 1.4 Drawing equipment are maintained as per technical drawing standards 1.5 Drawing materials are used as per workplace procedures 1.6 Waste materials are disposed in accordance with workplace procedures and environmental legislations
2. Produce plane geometry drawings	2.1 Different types of lines used in drawing and their meanings are identified according to technical drawing standards

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	2.2 Freehand printing of letters and numbers carried out as per technical drawing standards 2.3 Borderlines and title blocks are drawn as per technical drawing standards. 2.4 Different types of angles are constructed as per technical drawing standards 2.5 Different types of ***geometric figures*** are constructed as per required dimensions 2.6 Different types of ***Tangents*** are constructed according to technical drawing standards.
3. Manage basic operations in AutoCAD	3.1 ***Key features*** of CAD software are identified as per software manual. 3.2 ***AutoCAD visual reference commands*** are operated as per software manual. 3.3 AutoCAD navigation commands option is operated as per software manual. 3.4 AutoCAD ***ribbon*** tools are used as per software manual. 3.5 AutoCAD ***status bar*** tools are used as per software manual. 3.6 AutoCAD drawing files are saved in proper format as per organisational procedures 3.7 AutoCAD drawing work is printed as per software manual.

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4. Develop 2D Drawings in AutoCAD	4.1 Drawing interface is set up as per required specifications. 4.2 Layout is created as per given specification. 4.3 2D drawing is created as per given dimension. 4.4 2D drawing is edited as per given requirement changes. 4.5 AutoCAD drawing is saved in CAD file format as per software manual. 4.6 AutoCAD 2D drawing work is printed as per software manual.

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range
1. Drawing Equipment may include but is not limited to:	• Drawing boards • T and set squares • Drawing set
2. Drawing materials may include but is not limited to:	• Drawing papers • Pencils • Erasers • Masking tapes • 2.5 Paper clips

Variable	Range
3. Geometric figures may include but is not limited to:	• Circles • Triangles • Rectangles • Parallelogram • Polygons • Pyramids • Conic sections • Prisms
4. Tangents may include but is not limited to:	• Exterior tangents to a circle • Interior tangents to a circle
5. Key features may include but is not limited to:	• 2D drafting and drawing • 3D drafting and drawing
6. AutoCAD visual reference commands may include but is not limited to:	• Visual styles • Materials and textures • Writing • Rendering • View port

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required skills

The individual needs to demonstrate the following skills:

- Critical thinking
- Drawing
- Interpretation
- Drawing equipment handling
- Analysis and synthesis
- Basic computer skills
- Communication

- Inter personal

Required knowledge

The individual needs to demonstrate knowledge of:

- Drawing equipment and materials
- Freehand sketching
- Lettering
- Geometrical constructions
- Types of drawings
- Types of lines
- Isometric drawing conventions, features, characteristics, components
- Orthographic drawing conventions, features, characteristics, components
- Sketches and drawings of simple patterns

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and understanding and range.

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: • Used drawing equipment as per technical drawing standards • Used drawing materials as per workplace procedures • Identified different types of lines used in drawing and their meanings according to technical drawing standards • Constructed different types of angles as per technical drawing standards • Constructed different types of Tangents according to technical drawing standards • Constructed different types of geometric figures as per required dimensions

	• Operated AutoCAD visual reference commands as per software manual. • Used AutoCAD ribbon tools as per software manual. • Used AutoCAD status bar tools as per software manual. • Operated AutoCAD navigation commands option as per software manual. • Printed AutoCAD drawing work as per software manual • Printed AutoCAD 2D drawing work as per software manual • Edited 2D drawing as per given requirement changes. • Created 2D drawing as per given dimension • Produced pictorial sketches and pictorial drawings of components as per technical drawing standards. • Produced First and third angle orthographic sketches and drawings of components as per technical drawing standards. • Freehand sketched different types of geometric forms, tools and equipment as per technical drawing standards • Produced ***Pictorial and orthographic drawings*** using AutoCAD software as per software manual • Drew Electrical schematic diagrams as per installation requirement • Produced Electrical and Electronic drawings using appropriate CAD software as per software manual • Placed Electrical installation components on a building plan using AutoCAD as per required design.
2. Resource Implications	Resources the same as that of workplace are advised to be applied. • Drawing room

	• Drawing equipment and materials • Computers • CAD packages • Drawing softwares
3. Methods of Assessment	**Competency may be assessed through:** 3.1 Practical demonstration 3.2 Projects 3.3 Written tests • Oral test
4. Context of Assessment	• Competency may be assessed in a workplace or a simulated workplace.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.