

**TCPL 204: COMPUTER AIDED PLUMBING DRAWING
(TEACHER'S GUIDE)**

Year 2 Term 1

TCPL 204: Computer Aided Plumbing Drawing

Duration: 30 Hours

Module Overview

This module equips the learner with the basic knowledge and skills of using a computer to design and draw various fittings as applied in plumbing. It equips the learner with the skills to develop an intended outlook and template of the required fitting and interpret given drawings for effective implementation.

Learning Outcomes

By the end of this module, the learner should be able to design and draw plumbing fittings.

Preparatory Assignment

Before teaching this module, task learners to design and develop the sketch of a Wash Hand basin and kitchen sink for a client and make presentations in the class.

Result

Learners design and make neat sketches of the proposed Wash Hand Basin and kitchen sink for a client.

Sub-module 1: AutoCAD Basics

Duration: 30 Hours

Competences	Content	Teaching / learning Strategies
<p>The learner:</p> <ul style="list-style-type: none">• installs AutoCAD into the computer.• identifies and uses AutoCAD commands during the development of the drawing.• develops the design perception of some form, makes the sketch and uses AutoCAD to draw it.• draws the ground plan, the	<ul style="list-style-type: none">• Introduction to computer aided drawing (CAD)• Need for CAD• AutoCAD commands (lines, offset, trim, extend, erase, mirror, fillet, hatch, scale, dimension, layers, blocks, zoom, chamfer, circle and arcs)• Designing of rain water pipes, gutters, rain water bends• Design of brackets for wash hand basins, kitchen sinks and	<ul style="list-style-type: none">• Lead a guided discussion on CAD applications and types.• Together with learners discuss on the need for one to be able to use a computer and CAD application in relation to design, creativity and innovations in the plumbing industry.• Guide learners in a demonstration on the procedure of installing AutoCAD and task them to practice.• With aid of a projector or computer, guide the learners to open AutoCAD window interface and guide them through the identification and use of AutoCAD commands such as lines, offset, trim, extend, erase, mirror, fillet, hatch, scale selection, dimensioning, layers selection and application, creation of blocks, zooming in and out, chamfer, circle and arc

<p>correct section and the elevations.</p> <ul style="list-style-type: none"> • designs and draws the roof details, the door and window elevations. • makes the title block and writes supporting specifications for foundation, neat walls, roof, ceilings and schedules. • prints the complete drawing. 	<p>heaters</p> <ul style="list-style-type: none"> • Designing of intercepting trap and gully trap 	<p>selections and guide learners as they practice.</p> <ul style="list-style-type: none"> • Together with learners go through the steps followed when making a drawing, starting from mind perception, sketch formation and drawing implementation. Prompt learners to design and draw objects as they have conceived it. • Illustrate drawing of one fitting, the plan, sections and elevation development and task learners to draw it using the CAD applications. • Demonstrate the development of rain water pipes, rain water bends, brackets for wash hand basins, kitchen sinks and heaters, intercepting trap and gully trap, the relationship of orthographic and AutoCAD drawings and make the title block, write the text in AutoCAD and task learners to practice. • Demonstrate the procedure followed to print an AutoCAD drawn item and task learners to practice.
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Assessment Strategy

Assign the learner to:

- develop the design of a direct system of cold water supply for the client and use AutoCAD to draw its plan, elevation and section.
- write specifications of the materials and proportions to be used during implementation.

Teaching/ Learning Resources

- Computers
- Drawing sheets
- Printers
- The Internet

Year 2 Term 2

TCPL 204: Computer Aided Plumbing Drawing

Duration: 30 Hours

Module Overview

This module equips the learner with the knowledge and skills of using a computer to construct and develop shapes of various fittings as applied in plumbing.

Learning Outcome

By the end of this module, the learner should be able to design, construct and develop shapes of various fittings as applied in plumbing.

Preparatory Assignment

Before teaching this module, show learners drawings of concrete and cast iron covers, cesspool, septic tank and task them to design.

Result

Learners design concrete and cast iron covers, cesspool and septic tank using AutoCAD software.

Sub-module 2: Geometric Construction

Duration: 30 Hours

Competences	Content	Teaching/ Learning Strategies
<p>The learner:</p> <ul style="list-style-type: none">designs and draws combined system, separate system and partially separate systemdesigns septic tank, cesspool and soak away pitsdesigns and draws manholes and benchingdesigns open channels, benching and invertdesigns concrete and cast iron covers	<ul style="list-style-type: none">designing and drawing of combined sewer system, separate sewer system and partially separate systemdesigns of septic tank, cesspool and soak away pitsdesigning and drawing of manholes and benchingdesigns of open channels benching and invertdesign of concrete and cast iron covers	<ul style="list-style-type: none">Demonstrate the procedure of designing a combined sewer system and task learners to practiceDemonstrate the procedure of designing a septic tank, cesspool and soak away and task learners to practice.

Assessment Strategy

Assign the learner to:

- Design a combined sewer system and septic tank for a house.

Teaching and Learning Resources

- Computer

Year 2 Term 3

TCPL 204: Computer Aided Plumbing Drawing

Duration: 24 Hours

Module Overview

This module introduces the learner to the basic skills of designing kitchen sinks, wash basins, tile patterns and waste disposals using CAD software.

Learning Outcome

By the end of this module, the learner should be able to design kitchen sinks, wash basins, tile patterns and waste disposals.

Preparatory Assignment

Show the learners different shapes of kitchen sinks, wash basins, tile patterns and waste disposals and task them to design.

Result

The learners design kitchen sink, wash basins, tile patterns and waste disposals.

Sub-module 3: Orthographic Projection

Duration: 24 Hours

Competences	Content	Teaching/ Learning Strategies
<p>The learner:</p> <ul style="list-style-type: none">• Identifies symbols of 1st and 3rd angle projections in CAD.• Applies drawing of timbering to shallow, moderately and deep trenches• Designs kitchen sinks, wash basins, tile patterns and waste disposals• dimensions the drawing.• hatches the drawing.	<ul style="list-style-type: none">• Symbols of 1st and 3rd angle orthographic projections• Drawing of timbering to shallow, moderately and deep trenches• Designs of kitchen sinks, wash basins, tile patterns and waste disposals	<ul style="list-style-type: none">• Demonstrate to the learners the procedure of searching for 1st and 3rd angle symbols and task them to practice.• Demonstrate the procedure of timbering a deep trench and task them to practice.• Demonstrate the procedure of designing kitchen sink, wash basins and task them to practice.• Demonstrate the procedure of dimensioning and hatching a given drawing and task them to practice.

Assessment Strategy

Assign the learner to demonstrate the procedure of designing kitchen sink and wash basins.

Teaching and Learning Resources

- Real objects
- Computer