

PERFORMING ELECTRICAL INSTALLATION

UNIT CODE: ENG/CU/EI/CR/02/5

Relationship to Occupational Standards

This unit addresses the unit of competency: Perform Electrical Installation

Duration of Unit: 180 hours

Unit Description

This unit specifies the competencies required to perform electrical installation work for single phase and three phase systems. It focuses on the application of health, safety and environmental standards, preparation of working drawings, communicating with other service providers and maintaining housekeeping during the installation process.

Summary of Learning Outcomes

1. Apply health, safety and environmental standards
2. Prepare working drawings
3. Assemble tools, equipment, materials and drawing instruments
4. Perform electrical installation
5. Facilitate other service providers
6. Maintain housekeeping

Learning Outcomes, Content and Suggested Assessment Methods:

Learning Outcome	Content	Suggested Assessment Methods
1. Apply health, safety and environmental standards	<input type="checkbox"/> Relevant clauses in appropriate Acts e.g. <ul style="list-style-type: none">• Occupational safety and health act (OSHA)• Work injury benefits act (WIBA)• Environment management and coordination Act (EMCA) Relevant regulations: <ul style="list-style-type: none">• IEE regulations• KPLC by-laws• County by-laws	<input type="checkbox"/> Written tests <input type="checkbox"/> Oral questioning

	<ul style="list-style-type: none"> <input type="checkbox"/> Causes of accidents and sources of danger e.g burns, cuts, electric shock, falling from heights, falling objects, noise, dust, chemicals <input type="checkbox"/> Meaning of term PPE <input type="checkbox"/> Purpose of PPE <input type="checkbox"/> Types of PPE <input type="checkbox"/> Safe and correct handling, use, maintenance and storage of different types of PPE <input type="checkbox"/> Classes of fires and fire fighting equipment <input type="checkbox"/> First aid procedures <ul style="list-style-type: none"> • Rescuing electric shock victim • Methods of resuscitation 	
2. Prepare working drawings	<ul style="list-style-type: none"> <input type="checkbox"/> Working drawings <ul style="list-style-type: none"> • Meaning of working drawings • Identification and care of drawing instruments and equipment • Identification of drawing paper sizes • Drawing various types of lines • Drawing title block • Drawing standard electrical symbols • Conversion of scales • Interpretation of orthographic projections • Dimensioning of drawings • Drawing of electrical diagrams <ul style="list-style-type: none"> ➤ Block ➤ Circuits ➤ Schematic ➤ Wiring ➤ Line 	<ul style="list-style-type: none"> <input type="checkbox"/> Observation <input type="checkbox"/> Oral questioning <input type="checkbox"/> Practical tests <input type="checkbox"/> Written tests

	<ul style="list-style-type: none"> • Reading and Interpretation of architectural drawings • Reading and Interpretation of electrical drawings • Use of Computer Aided Design (CAD) applications e.g. AutoCAD 	
3. Assemble tools, equipment and materials	<input type="checkbox"/> Types, application, care, maintenance and storage of: <ul style="list-style-type: none"> • Tools e.g. <ul style="list-style-type: none"> ➤ Cable strippers ➤ Pliers ➤ Screw drivers ➤ Hammers ➤ Chisels ➤ Allen keys ➤ Electrician knives ➤ Crimping tools ➤ Bending springs ➤ Steel tapes ➤ Draw wires ➤ Hack saws ➤ Drills • Equipment e.g. <ul style="list-style-type: none"> ➤ Stock and die ➤ Vice • Materials e.g. <ul style="list-style-type: none"> ✓ Cables ✓ Fittings ✓ Accessories • Inventory management 	<input type="checkbox"/> Observation <input type="checkbox"/> Oral questioning <input type="checkbox"/> Practical tests <input type="checkbox"/> Written tests
4. Perform electrical installation	<input type="checkbox"/> Single phase systems <input type="checkbox"/> Cables and cable joints <input type="checkbox"/> Wiring systems and accessories <ul style="list-style-type: none"> • Meaning of terms • Types and applications e.g. <ul style="list-style-type: none"> ➤ Conduits ➤ Cable trays ➤ Cable ducts ➤ Trunkings 	<input type="checkbox"/> Observation <input type="checkbox"/> Oral questioning <input type="checkbox"/> Practical tests <input type="checkbox"/> Written tests

	<ul style="list-style-type: none"> • Preparation of wiring systems <ul style="list-style-type: none"> ➤ Marking out, cutting, bending, threading, chiselling, trenching ❑ Laying of cable routes ❑ Installation of final circuits <ul style="list-style-type: none"> • Lighting circuits <ul style="list-style-type: none"> ➤ One way, two way, intermediate ➤ Looping in methods at ceiling rose, joint boxes, switches • Power circuits <ul style="list-style-type: none"> ➤ Radial circuits, ring circuits • Water heating circuits • Electric cooker circuits • Basic call and alarm circuits • Bell circuits • Electrical machines circuits <ul style="list-style-type: none"> Direct online (DOL) Star-delta ❑ Relevant technical standards e.g. <ul style="list-style-type: none"> ➤ IEE regulations ➤ British standards ➤ Kenya bureau of standards (KEBS) ➤ Kenya power by-laws ➤ County by-laws 	
5. Facilitate other service providers	<ul style="list-style-type: none"> ❑ Communication with other service providers e.g. <ul style="list-style-type: none"> ➤ Plumbers ➤ Air conditioning technicians ➤ Carpenters ➤ Masons ➤ Fitters ➤ Welders 	<ul style="list-style-type: none"> ❑ Written tests ❑ Oral questioning

6. Maintain housekeeping	<input type="checkbox"/> Housekeeping <ul style="list-style-type: none"> ➤ Meaning of terms ➤ Safety considerations ➤ Sufficient lighting in work place ➤ Proper tools storage facility ➤ Clean workplace ➤ Proper waste disposal 	<input type="checkbox"/> Written tests <input type="checkbox"/> Oral questioning <input type="checkbox"/> Observation
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Suggested Methods of Delivery

- Projects
- Demonstration by trainer
- Practice by the trainee
- Field trips
- On-job training
- Discussions

Recommended Resources

Tools and equipment	Materials and supplies
<ul style="list-style-type: none"> ➤ Cable Strippers ➤ Pliers ➤ Screw drivers ➤ Hammers ➤ Chisels ➤ Allen keys ➤ Electrician knives ➤ Crimping tools ➤ Bending springs ➤ Bending machine ➤ Steel tapes ➤ Draw wires ➤ Hack saws ➤ Drilling tools ➤ Stock and die ➤ Bench vice ➤ Machine vice ➤ PPE – hand gloves, dust coats, dust masks, helmets, ear muffs, industrial 	<ul style="list-style-type: none"> • Stationery • Cables • Light fittings • Accessories • Conduits and fittings • Cable trays • Cable ducts • Trunkings • Computers • Drawing instruments • Screws

boots	
Reference materials <ul style="list-style-type: none">• IEE regulations• Occupational safety and health act (OSHA)• Work injury benefits act (WIBA)• Manufacturers' catalogues• British standards• KEBS standards	

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