



REPUBLIC OF KENYA

COMPETENCY BASED CURRICULUM

FOR

ELECTRICAL OPERATION (POWER OPTION)

KNQF LEVEL 5

ISCED CODE: 07130554 B



TVET CDACC
P.O BOX 15745-00100
NAIROBI

ELECTRICAL INSTALLATION

UNIT CODE: ENG/CU/PO/CR/01/5/B

Relationship to Occupational Standards

This unit addresses the unit of competency: Perform Electrical Installation

Duration of Unit: 60 hours

Unit Description

This unit specifies the competencies required for performing electrical installation.

Competencies required includes; applying EHS Standard, preparation of working drawings, preparation of list of tools equipments and materials, performing of marking, piping and fixing accessories, performing installation, terminating installation testing and inspecting installation.

Summary of Learning Outcomes

1. Apply EHS Standards
2. Prepare working drawings
3. Prepare list of tools, equipment and materials
4. Perform marking, pipe and fixing of accessories
5. Perform Installation
6. Terminate Installation
7. Test and Inspect Installation

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Apply EHS standards	<ul style="list-style-type: none">• Relevant clauses in appropriate Acts e.g.• 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">• Written tests• Oral questioning• Observation

Learning Outcome	Content	Suggested Assessment Methods
	<ul style="list-style-type: none"> • IEE regulations • KPLC by-laws • County by-laws • Causes of accidents and sources of danger e.g burns, cuts, electric shock, falling from heights, falling objects, noise, dust, chemicals • Meaning of term PPE • Purpose of PPE • Types of PPE • Safe and correct handling, use, maintenance and storage of different types of PPE • Classes of fires and fire fighting equipment • First aid procedures • Rescuing electric shock victim <p>Methods of resuscitation</p>	
Prepare working drawings	<ul style="list-style-type: none"> • Working drawings • Meaning of working drawings • Identification and care of drawing instruments and equipment • Identification of drawing paper sizes • Drawing various types of lines 	<ul style="list-style-type: none"> • Observation • Oral questioning • Practical tests • Written tests

Learning Outcome	Content	Suggested Methods	Assessment
	<ul style="list-style-type: none"> • 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 • Reading and Interpretation of architectural drawings <p>Reading and Interpretation of electrical drawings</p>		
Prepare list of tools, equipment and materials	<ul style="list-style-type: none"> • Identification of tools and materials e.g. • Cutting tools • Measuring tools • Measuring equipment • Cables and conductors • Crimping tools • Conduits • Trunking • Consumables • Types, application, care, maintenance and storage of: 	<ul style="list-style-type: none"> • Oral questioning • Written tests • Observation • Practicals 	

Learning Outcome	Content	Suggested Assessment Methods
	<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 • Assemble tools, equipment and materials 	
2. Perform marking, piping and fixing of accessories	<ul style="list-style-type: none"> • Meaning of marking, piping, fixing and accessories in electrical installation • Importance of marking • Tools used in marking 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questioning • Practical tests

Learning Outcome	Content	Suggested Methods	Assessment
	<ul style="list-style-type: none"> • Accessories used in Electrical installation e.g. • Lamp holders • Conduits • Ceiling roses • Patress 		
Perform installation	<ul style="list-style-type: none"> • Meaning of terms • Single phase and three phase installation • Domestic Installation • Industrial Installation • Commercial Installation ➤ Phase/load balancing • Cables and cable joints • Wiring systems and accessories <ul style="list-style-type: none"> • Types and applications e.g. <ul style="list-style-type: none"> ➤ Conduits ➤ Cable trays ➤ Cable ducts ➤ Trunkings • Preparation of wiring systems <ul style="list-style-type: none"> ➤ Marking out, cutting, bending, threading, chiselling, trenching • Draw –in/Lay of cables routes • Cable Identification • Installation of final circuits • Lighting circuits 	<ul style="list-style-type: none"> • Written tests • Observation • Oral questioning • Practical test 	

Learning Outcome	Content	Suggested Methods	Assessment
	<ul style="list-style-type: none"> ➤ One way, two way, intermediate ➤ Looping in methods at ceiling rose, joint boxes, switches • Power circuits ➤ Radial circuits, ring circuits • Water heating circuits • Electric cooker circuits • Call and alarm circuits ➤ Bell circuits ➤ Intruder alarm circuits Fire alarm circuits 		
Terminate installation	<ul style="list-style-type: none"> • Meaning of Terms • Importance of termination • Cable labelling • Cable lugging • Tools used in cable termination e.g. • Crimping tool • Strip Knife 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Practical tests 	Observation
3. Test and inspect installation	<ul style="list-style-type: none"> • Meaning of terms • Types of tests e.g. • Earth continuity tests • Ring circuit test • Insulation tests • Short circuit tests • Testing tools e.g. • Multimeter • Insulation tester 	<ul style="list-style-type: none"> • Written tests • Oral questioning • Observation 	

Learning Outcome	Content	Suggested Methods	Assessment
	<ul style="list-style-type: none"> • Ohmmeter • Importance of installation testing 		

Suggested Methods of Instruction

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

Recommended Resources

- Measuring tools
- Cutting tool
- Drawing tools
- Drilling tools
- Fastening tools
- Stationery
- Assorted Cables
- Assorted protective devices
- Pipes and trunkings
- Cable lugs
- Joints
- Accessories
- PPEs (Personal Protective Equipment)
- Measuring equipment
- Communication equipment