

PERFORM ELECTRICAL INSTALLATION

UNIT CODE: ENG/OS/EI/CR/01/4/A

UNIT DESCRIPTION

This unit covers the competencies required to perform an electrical installation work. Installation work includes application of EHS standards, interpretation of drawings and development of working drawing, preparation of tools, equipment and materials, installation of electrical systems.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT 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 <i>(Bold and italicised terms are elaborated in the Range)</i>
1. Apply EHS standards	1.1 Appropriate <i>safety regulations</i> are applied as per OSHA 1.2 <i>Good housekeeping</i> practices are applied as per standard operating procedures 1.3 Accidents, incidents and near misses are reported as per standard operating procedures 1.4 First aid is applied as per standard operating procedures
2. Prepare working drawings	2.1 Design drawing is interpreted as per established standards 2.2 Symbols and nomenclatures are applied in accordance with British Standards [BS 3939] 2.3 Appropriate drawing tools are applied as per established standards 2.4 Components and their ratings are identified as per established procedure 2.5 Cable sizes and lengths are marked as per established procedures 2.6 Power supply and distribution circuits are drawn using line diagrams 2.7 Cable routes are indicated as per established procedures 2.8 Working drawing is prepared and any deviations from design drawing are shared with relevant parties as per the standard operating procedures
3. Assemble tools, equipment & materials	3.1 Tools, equipment and materials are checked for the proper specifications and functionality as per established standards

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	These are assessable statements which specify the required level of performance for each of the elements <i>(Bold and italicised terms are elaborated in the Range)</i>
	3.2 Tools, equipment and materials are used as per established procedure 3.3 Tools and equipment are calibrated as per established standards 3.4 Tools, equipment and materials are assembled and stored as per the established procedure
4. Install electrical system	4.1 Installation safety procedures are observed as per established standards 4.2 Working drawing is implemented as per established procedure 4.3 Installation is performed in line with IEE and other applicable standards 4.4 Cables, conductors, conduits, enclosures and support systems are installed to specifications using appropriate techniques, tools and equipment as per the working drawing 4.5 Labelling of the installation for identification is performed as per established standards 4.6 Disposal of waste materials is performed in line with environmental regulations

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 <i>May include but is not limited to:</i>
1. Safety regulations	1.1 IEE regulations 1.2 Occupational Safety and Health Act (OSHA) 1.3 Work injury benefits Act (WIBA)
2. Good house keeping	2.1 Adequate ventilation 2.2 Adequate lighting 2.3 clean and dry surfaces in the workplace 2.4 Avoid oil spillage 2.5 Tools in the appropriate storage place 2.6 Proper waste disposal in the designated places
3. Working drawings	3.1 Lighting and small power 3.2 Power distribution 3.3 Fire alarm and detection

	3.4 Burglar alarm 3.5 CCTV 3.6 Access control 3.7 Electric fence
4. Power supply	4.1 Single phase, 2 wire 4.2 Single phase 3 wire 4.3 3phase 4wire 4.4 3phase 5 wire 4.5 Dc: 2 wire and 3 wire
5. Technical standards	5.1 IEE standard 5.2 British Standard 5.3 KEBS standard
6. Service providers	6.1 Plumbers 6.2 Air conditioning 6.3 Data networks 6.4 Security 6.5 Carpenters 6.6 Masons 6.7 Welders 6.8 Fitters
7. Services	7.1 Laying conduits/trays 7.2 Trunking 7.3 Providing temporary power 7.4 Installing power points
8. Installation	8.1 Domestic installation 8.2 Commercial installation 8.3 Industrial Installation 8.4 Agriculture/ horticulture 8.5 Power Generator 8.6 Security 8.7 Water heating installations 8.8 Power transmission and distribution 8.9 IBMS (integrated building Management system)

REQUIRED KNOWLEDGE AND UNDERSTANDING

The individual needs to demonstrate knowledge and understanding of: 1. Organisational and legislative requirements including:	
1.1	The manufacturer's warranty requirements relating to electrical installation systems and related components.
1.2	The legal requirements relating to electrical installations
1.3	Kenyan legislation and workplace procedures relevant to:

	1.3.1 Health and safety; 1.3.2 The environment (including waste disposal); 1.3.3 Appropriate personal protective equipment (PPE).
1.4	Workplace procedures for: 1.4.1 Work place communication; 1.4.2 Time management 1.4.3 Team building and team work 1.4.4 Notifying danger and hazard zones to workers 1.4.5 Materials management
1.5	The importance of documentation and keeping records
1.7	The relationship between time and costs
2. The use of technical information including:	
2.2	The importance of using the correct sources of technical information.
	2.1.1 Interpreting circuits, drawings, specifications and instructions 2.1.2 Preparing work plans in accordance with legislative and regulatory requirements, standard operating procedures and health and safety requirements 2.1.3 Referring and applying adjustable codes, numbers and standards at different circumstances

FOUNDATION SKILLS

The individual needs to demonstrate the following foundation skills:	
<ul style="list-style-type: none"> • Communications (verbal and written); • Time management; • Technical drawing; • circuit tracing; • Use of measuring tools & equipment • Problem solving; 	<ul style="list-style-type: none"> • Decision making; • Planning; • First aid; • Report writing; • Creativity • Customer care

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: 1.1 Applied and adhered to safety procedures 1.2 Interpreted layouts/ circuit diagrams correctly 1.3 Applied appropriate technical standards
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	<p>1.4 Used proper tools and equipment for a given task</p> <p>1.5 Demonstrated safe selection, placing and wiring of cables/ wires, fixtures and fittings</p> <p>1.6 IEE regulations were observed during installation</p> <p>1.7 Installed functional electrical systems</p>
2. Resource Implications	<p>Resources the same as that of workplace are advised to be applied.</p> <p>2.1 Electrical installation tool kit, calculator, stationery</p> <p>2.2 Electrical installation materials</p> <p>2.3 Testing equipment</p> <p>2.4 Storage facility</p>
3. Methods of Assessment	<p>Competency may be assessed through:</p> <p>3.1 Asking the reason what he/she does and why</p> <p>3.2 Observation with the help of check list</p> <p>3.3 Practical demonstrations</p>
4. Context of Assessment	<p>Competency may be assessed individually in the actual workplace or a simulated work place setting</p>
5. Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>