

PERFORM ELECTRICAL INSTALLATION

UNIT CODE: ENG/OS/EI/CR/02/6

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, facilitating work team and other service providers throughout the installation and finally maintaining housekeeping.

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 safety regulations are applied 1.2 Occupational health and safety standards are applied 1.3 Good housekeeping practices are applied 1.4 Accidents, incidents and near misses are reported to management immediately 1.5 First aid is applied, and specialised treatment sought where necessary
2. Prepare working drawings	2.1 Installation drawing is interpreted 2.2 Symbols and nomenclatures are applied in accordance with British Standards [BS 3939] 2.3 Appropriate drawing tools are applied 2.4 Components and their ratings are identified 2.5 Cable sizes and lengths are clearly shown 2.6 Power supply and distribution circuits are shown using single line diagrams 2.7 Phase balancing of the loads is done as per the usage 2.8 Cable routes are clearly indicated 2.9 Working drawing is prepared and any deviations shared with relevant bodies
3. Assemble tools, equipment & materials	3.1 Tools, equipment and materials are checked for the proper specifications and functionality 3.2 Tools, equipment and materials are assembled and stored as per the established procedure

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4. Install electrical system	4.1 Appropriate installation procedures and technical standards are applied 4.2 The working drawing is implemented 4.3 IEE regulations were adhered to during installation 4.4 Safety procedures are adhered to for each activity 4.5 Cables, conductors, conduits, enclosures and support systems are installed to specifications using appropriate techniques, tools and equipment as per the working drawing 4.6 Labelling of the installation for identification is done
5. Facilitate other service providers	5.1 <i>Other service providers</i> on the site are identified 5.2 Communication protocols and procedures are applied 5.3 Service providers are communicated before, during, and after the installation, as necessary 5.4 The requirements of other service providers are obtained and agreed upon 5.5 Provision for other <i>services</i> are made according to the design
6. Maintain house keeping	6.1 Safety check list is prepared for electrical equipment and machines 6.2 Regular follow up is done according to the prepared checklist 6.3 Workplace procedures are followed to deal with any accidents and damage of equipment occurring during the cleaning process 6.4 Activities are recorded and reported as per established procedures

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)
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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.
	2.2.1 Interpreting circuits, drawings, specifications and instructions 2.2.2 Preparing work plans in accordance with legislative and regulatory requirements, standard operating procedures and health and safety requirements 2.2.3 Referring and applying adjustable codes, numbers and standards at different circumstances

FOUNDATION SKILLS

The individual needs to demonstrate the following foundation skills:
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<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	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Applied and adhered to safety procedures 1.2 Interpreted layouts/ circuit diagrams correctly 1.3 Applied appropriate technical standards 1.4 Used proper tools and equipment for a given task 1.5 Demonstrated safe selection, placing and wiring of cables/ wires, fixtures and fittings 1.6 IEE regulations were observed during installation 1.7 Installed functional electrical systems
2. Resource Implications	<p>Resources the same as that of workplace are advised to be applied.</p> <ul style="list-style-type: none"> 2.1 Electrical installation tool kit, calculator, stationery 2.2 Electrical installation materials 2.3 Testing equipment 2.4 Storage facility
3. Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Asking the reason what he/she does and why 3.2 Observation with the help of check list 3.3 Practical demonstrations
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>