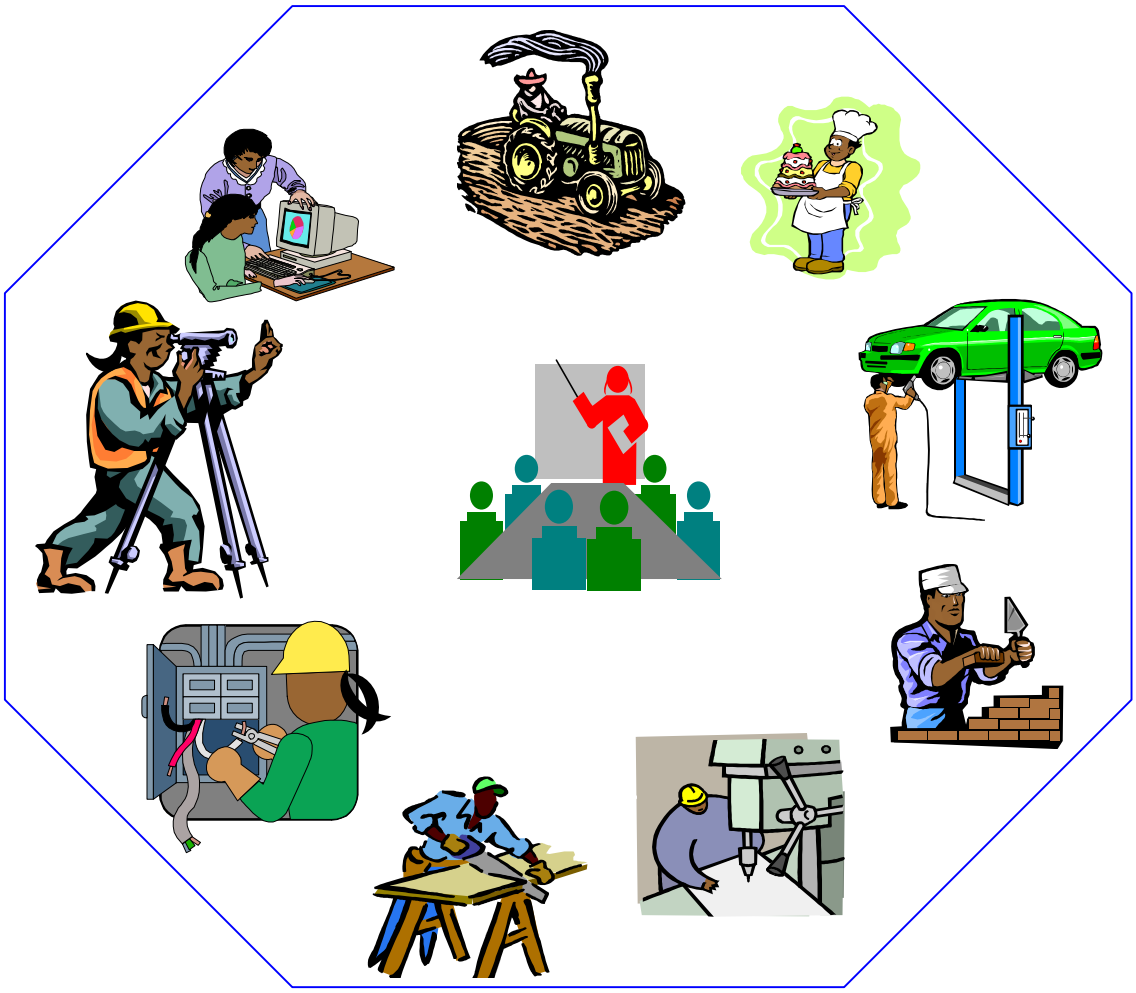
Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

POWER GENERATION AND SUBSTATION INSTALLATION AND MAINTENANCE-ELECTRICAL AND ELECTRONICS

NTQF Level III and IV



Ministry of Education

June 2012

Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopia Occupational Standards (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF). They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title and NTQF level
- Unit title
- Unit code
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the occupation with all the key components of a Unit of Competence:

- chart with an overview of all Units of Competence for the respective level (Unit of Competence Chart) including the Unit Codes and the Unit Titles
- contents of each Unit of Competence (competence standard)
- occupational map providing the technical and vocational education and training (TVET) providers with information and important requirements to consider when designing training programs for this standards and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Power Generation and Substation Installation and Maintenance - Electrical and Electronics

Occupational Code: EIS EEM

NTQF Level III

EIS EEM3 01 0612 Install Electrical Equipment	EIS EEM3 02 0612 Diagnose and Repair Faults in Electronic Equipment	EIS EEM3 03 0612 Install Electronic Electrical Equipment
EIS EEM3 04 0612 Maintain Electrical Equipment	EIS EEM3 05 0612 Modify Electronic Electrical Equipment	EIS EEM3 06 0612 Maintain Electrical Electronic Equipment
EIS EEM3 07 0612 Install Instrumentation Equipment	EIS EEM3 08 0612 Modify Electrical Equipment	EIS EEM3 09 0612 Conduct Routine Generator Electrical Maintenance
EIS EEM3 10 0612 Install Electrical Wiring System	EIS EEM3 11 0612 Maintain Electronic Instrumentation Equipment	EIS EEM3 12 0612 Maintain Instrumentation Equipment
EIS EEM3 13 0612 Diagnose and Repair Faults in Electrical Equipment	EIS EEM3 14 0612 Test and Commission Electronic Electrical Equipment	EIS EEM3 15 0612 Install Instrumentation Wiring Systems
EIS EEM3 16 0612 Diagnose and Repair Faults in Instrumentation Equipment	EIS EEM3 17 0612 Modify Instrumentation Equipment	EIS EEM3 18 0612 Test and Commission Instrumentation System
EIS EEM3 19 0612 Terminate Fiber Optic Cables	EIS EEM3 20 0612 Sample, Test, Filter, and Reinstate Insulating	EIS EEM3 21 0612 Install and Maintain Substation DC System
EIS EEM3 22 0612 Maintain HV Power System Breakers	EIS EEM3 23 0612 Carry-out Thermo Vision Surveys	EIS EEM3 24 0612 Maintain Discrete Protection and Control System

EIS EEM3 25 0612 Carry-out Substation Inspections	EIS EEM3 26 0612 Assemble, Set Up and Test Personal Computer	EIS EEM3 27 0612 Use Basic Computer Applications Relevant to a Workplace
EIS EEM3 28 0612 Install and Configure Computer Operating System and Software	EIS EEM3 29 0612 Set-up and Configure Basic Local Area Network	EIS EEM3 30 0612 Apply Quality Control
EIS EEM3 31 0612 Monitor Implementation of Work Plan/Activities	EIS EEM3 32 0612 Lead Workplace Communications	EIS EEM3 33 0612 Lead Small Teams
EIS EEM3 34 0612 Improve Business Practice	EIS EEM3 35 1012 Maintain Quality System and Continuous Improvement Processes (Kaizen)	

NTQF Level IV

EIS EEM4 01 0612 Monitor Compliance with OHS Policy and Procedures	EIS EEM4 02 0612 Monitor and Implement Environmental Plans and Procedures	EIS EEM4 03 0612 Diagnose and Repair Faults in Complex Refrigeration/Air Conditioning Equipment
EIS EEM4 04 0612 Diagnose and Repair Faults in Complex Instrumentation Equipment	EIS EEM4 05 0612 Install Complex Electrical Equipment	EIS EEM4 06 0612 Diagnose and Repair Faults in Complex Electrical Equipment
EIS EEM4 07 0612 Maintain Complex Electrical Equipment	EIS EEM4 08 0612 Test and Commission Electrical Equipment	EIS EEM4 09 0612 Maintain Complex Instrumentation Equipment
EIS EEM4 10 0612 Install Complex/ Electronic Instrumentation Equipment	EIS EEM4 11 0612 Modify Complex Electrical Equipment	EIS EEM4 12 0612 Modify Electronic Instrumentation Equipment

EIS EEM4 13 0612 Test and Commission Complex Electrical Equipment	EIS EEM4 14 0612 Test and Commission Complex Instrumentation Equipment	EIS EEM4 15 0612 Test and Commission Electronic Instrumentation Equipment
EIS EEM4 16 0612 Inspect Electrical Generators and Diagnose Faults	EIS EEM4 17 0612 Overhaul Electrical Generator	EIS EEM4 18 0612 Write Programs for Control Systems
EIS EEM4 19 0612 Perform Electrical / Electronic Drafting	EIS EEM4 20 0612 Modify Complex Instrumentation Equipment	EIS EEM4 21 0612 Conduct Technical Inspection of Process Plant and Equipment
EIS EEM4 22 0612 Conduct Performance Testing on Process Plant and Equipment	EIS EEM4 23 0612 Maintain Voltage Regulating Equipment – On Load Tap Changers	EIS EEM4 24 0612 Diagnose and Rectify Faults in Power Systems Substation Environment
EIS EEM4 25 0612 Maintain HV Power System – Transformers and Instrument Transformers	EIS EEM4 26 0612 Install High Current DC Switchgear and Equipment	EIS EEM4 27 0612 Maintain High Current DC Switchgear and Equipment
EIS EEM4 28 0612 Maintain HV Power System Static VAR Compensators	EIS EEM4 29 0612 Test and Maintain Metering Schemes	EIS EEM4 30 0612 Commission Metering Schemes
EIS EEM4 31 0612 Perform Accuracy Checks on Instrument Transformers	EIS EEM4 32 0612 Use Engineering Applications Software	EIS EEM4 33 0612 Develop, Enter and Verify Programs for PLC Using Ladder Instruction Set
EIS EEM4 34 0612 Develop, Enter and Verify Programs in Supervisory Control and Data Acquisition Systems	EIS EEM4 35 0612 Administer User Networks	EIS EEM4 36 0612 Plan and Organize Work

EIS EEM4 37 0612 Establish Quality Standards	EIS EEM4 38 0612 Migrate to New Technology	EIS EEM4 39 0612 Develop Individuals and Team
EIS EEM4 40 0612 Utilize Specialized Communication Skills	EIS EEM4 41 0612 Manage and Maintain Small/Medium Business Operation	EIS EEM4 42 1012 Manage Continuous Improvement System

NTQF Level III

Occupational Standard: Power Generation and Substation Installation and Maintenance-Electrical and Electronics Level III	
Unit Title	**Install Electrical Equipment**
Unit Code	**EIS EEM3 01 0612**
Unit Descriptor	This unit refers to the installation of electrical equipment including, but not limited to, rotating and static machines, appliances, luminaries and associated control equipment, but excludes H.V. equipment

Elements	Performance Criteria
1. Plan and prepare for the work	1.1 Work requirements are identified from request/work orders or equivalent and clarified/confirmed with appropriate parties or by site inspection 1.2 Occupational health and safety standards, statutory requirements, relevant Ethiopian standards, codes of practice, manufacturers' specifications, environmental requirements and enterprise procedures are identified, applied and monitored throughout the work procedure 1.3 Resources required to satisfy the work plan are identified, obtained and inspected for compliance with the job specifications 1.4 Relevant plans, drawings and texts are selected and interpreted in accordance with the work plan 1.5 Correct size, type and quantity of materials/components are determined, obtained and inspected for compliance with the job specifications 1.6 Work is planned in detail including sequencing and prioritizing and considerations made, where appropriate, for the maintenance of plant security and capacity in accordance with system/site requirements 1.7 Co-ordination requirements, including requests for isolations where appropriate, are resolved with others involved, affected or required by the work 1.8 Potential hazards are identified and prevention and/or control measures are selected in accordance with the ***work plan and site*** procedures 1.9 Work area is prepared in accordance with work requirements and site procedures 1.10 Where appropriate, the teams and individuals roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the-job training

2. Install the equipment	2.1 ***Required isolations*** are confirmed where appropriate in accordance with site requirements. 2.2 ***Equipment*** is assembled, positioned and secured in accordance with appropriate plans, drawings and texts 2.3 Equipment is installed in conjunction with others involved in, or affected by, the work in accordance with the work plan 2.4 Cables, wires and bus bars are identified and appropriately labeled/color coded in accordance with the work plan 2.5 Cables, wires and bus bars are secured, glanced and terminated to appropriate specifications in accordance with the work plan 2.6 Final job inspection is carried out and permits relinquished in accordance with the work plan
3. Complete the work	3.1 ***Work*** is completed and appropriate personnel notified in accordance with site/enterprise requirements 3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with site/enterprise procedures 3.3 Plant, tools and equipment are maintained and stored in accordance with site/enterprise procedures 3.4 Work completion details are finalized in accordance with site/enterprise procedures

Variable	**Range**
Equipment	May include but not limited to: • AC motors, alternators, DC motors, generators, pumps, electro/mechanical motor starters, low voltage transformers/switchgear and associated control panels, motor operated valves, hoists and cranes, arc welders, resistive heaters, hot water units, exhaust fans, luminaries, batteries, metal detectors, general low voltage lighting, power circuits, control/indication and alarm circuits, electrical tools/appliances, workshop machinery and compressors
Materials	May include but not limited to: • masonry anchors, bolts, nuts, washers, screws, rivets, saddles, clips, brackets, solvents, adhesives, insulation tapes, heat shrink, sleeving, spiral binding, cable ties, solder, lubricants, oils, greases, sealants, lugs, connectors, terminal blocks, cable markers and identification labels

Components	May include but not limited to: • fuses/circuit breakers, earth leakage breakers, timers, contactors, contacts, coils, relays, resistors, ballasts, capacitors, solenoids, overloads, switches, plugs, bus bar, cable, fans, thermostats, elements, seals, motor bearings and brush gear
Test and measurement instruments	May include but not limited to: • tong testers, insulation resistance/continuity tester and multi meters
Work completion details	May include but not limited to: • plant and maintenance records, job cards, check sheets and on device labeling updates
Work site environment	may be affected by: • nearby plant or process, e.g. heat, noise, dust, oil, water and chemical
Isolations	• can refer to: electrical/mechanical or other associated processes

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • Occupational, health and safety legislation; • Statutory legislation; • Enterprise/site safety procedures; • Enterprise/site emergency procedures • Attainment of electrical license, deeming competence associated with electrical work • Preparation and planning of work • Installation techniques and procedures • Completion of work procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational health and safety standards; • Relevant statutory requirements and codes of practice; • Relevant Ethiopian standards; • Equipment and material required to perform the work; • Isolation procedures; • General layout of plant/work site and operation of its equipment; Installation requirements of the equipment; • Electrical equipment; • Regulatory aspects; • Electrical fundamentals; • Leveling and aligning procedures; • Test and measurement instruments; • Electrical installation practice; • Circuit plan appreciation; • Engineering and workshop practice; • Communication principles

Underpinning Skills	Demonstrates skills to: • Apply occupational health and safety standards; • Follow relevant statutory regulations and codes of practice; Apply relevant Ethiopian standards; • Use and update plans, drawings and texts; • Level and align; • Use tools and relevant equipment; • Use test and measurement instruments; • Use correct termination procedures; • Use correct installation procedures for the equipment; • Identify and select materials for the job; • Apply regulatory procedures; • Communicate effectively; • Apply data analysis techniques and tools.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

Occupational Standard: Power Generation and Substation Installation and Maintenance-Electrical and Electronics Level III	
Unit Title	**Diagnose and Repair Faults in Electronic Equipment**
Unit Code	**EIS EEM3 02 0612**
Unit Descriptor	This unit deals with the skills and knowledge required to diagnose and repair faults in electronic equipment to board and component level and may involve the work to be carried out with equipment online.

Elements	Performance Criteria
1. Plan and prepare for the work	1.1 Work requirements are identified from request/work orders or equivalent and clarified/confirmed with appropriate parties or by site inspection 1.2 Occupational Health and Safety standards, statutory requirements, relevant Ethiopian standards, codes of practice, manufacturers' specifications, environmental requirements and enterprise procedures are identified, applied and monitored throughout the work procedure 1.3 Resources required to satisfy the work plan are identified, obtained and inspected for compliance with the job specifications 1.4 Relevant plans, drawings and texts are selected and interpreted in accordance with the work plan 1.5 Correct size, type and quantity of ***materials/components*** are determined, obtained and inspected for compliance with the job specifications 1.6 Work is planned in detail including sequencing and prioritizing and considerations made, where appropriate, for the maintenance of plant security and capacity in accordance with system/site requirements 1.7 Co-ordination requirements, including requests for isolations where appropriate, are resolved with others involved, affected or required by the work 1.8 Potential hazards are identified and prevention and/or control measures are selected in accordance with the work plan and site procedures 1.9 Work area is prepared in accordance with work requirements and site procedures 1.10 Where appropriate, the teams and individuals roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the-job training
2. Verify the fault	2.1 Normal performance and function of the equipment is ascertained by consulting appropriate reference sources in accordance with the work plan

	2.2 Fault indicators and appropriate technical information/diagnostic techniques are used to verify reported symptoms/faults in accordance with the work plan 2.3 Symptoms are reproduced and monitored if possible, whilst due regard for personnel safety and plant security is observed in accordance with the work plan.
3. Find the fault	3.1 Required isolations are confirmed where appropriate in accordance with site requirements 3.2 Fault finding is carried out in conjunction with others involved in, or affected by, the work in accordance with enterprise/job requirements 3.3 Equipment components, wires, cables, terminations and support fixings are inspected for obvious faults in accordance with the work plan 3.4 All appropriate fault finding/diagnostic techniques are identified, selected and used to determine the fault in accordance with the work plan 3.5 All appropriate components are disconnected to enable ***accurate test measurements*** of suspected faulty components without the concern of "back-feed" readings in accordance with the work plan 3.6 Test and measurement instruments are used in accordance with manufacturer's instructions and job requirements
4. Determine cause of fault	4.1 All appropriate personnel are consulted in order to obtain as many details relating to the faulty equipment as possible in accordance with the work plan 4.2 Appropriate use is made of any information from fault indicators and maintenance records in accordance with the work plan 4.3 Valid conclusions about the nature and cause of the fault are reached from analysis of available evidence in accordance with the work plan
5. Repair or rectify the fault	5.1 Required ***isolations*** are confirmed where appropriate in accordance with site requirements 5.2 Appropriate repair procedures are undertaken in conjunction with others involved in, or affected by, the work in accordance with the work plan 5.3 Faulty, worn, damaged or unsecured components are replaced, repaired or secured in accordance with the work plan 5.4 Parts and components are selected and replaced as

	required in accordance with appropriate specifications and the work plan 5.5 Components disconnected for testing are reconnected having been proven free of faults and all terminations are then checked to ensure they are electrically and mechanically sound in accordance with the work plan 5.6 All faults are repaired or rectified in accordance with the work plan 5.7 Final job inspection is performed and permits are relinquished as required in accordance with the work plan
6. Complete the work	6.1 ***Work is completed*** and appropriate personnel notified in accordance with site/enterprise requirements 6.2 Work area is cleared of waste, cleaned, restored and secured in accordance with site/enterprise procedures 6.3 Plant, tools and ***equipmen***t are maintained and stored in accordance with site/enterprise procedures 6.4 Work completion details are finalized in accordance with site/enterprise procedures

Variable	**Range**
Materials	May include but not limited to: • Cables, solder/flux, lubricants, cleaning solvents, contact cleaners, connectors, adhesives and sealants.
Components	May include but not limited to: • analyzer sensing elements, load cells, PLC input/output blocks, printed circuit boards, protection devices, switches, diodes, transistors, SCR's, triacs, diacs, LED"s, integrated circuits, resistors, capacitors, inductors and transformers.
Test and measurement instruments	May include but not limited to: • Multi meter, decade box, DC, I/V standard, potentiometer, radiation meter, hand-held communicator/ programmer, frequency counter, function generator, CRO, LCR bridge, logic analyzer and specialized test equipment.
Isolations	can refer to: • electrical/mechanical or other associated processes
Work completion details	May include but not limited to: • plant and maintenance records, job cards, check sheets and on device labeling updates
Work site environment	May be affected by : • nearby plant or processes, e.g. heat, noise, dust, oil, water and chemical

Equipment	May include: • analyzers, recorders, nuclear devices, fire panels, T/C converters, electronic controllers, smart transmitters, coal feeders, belt weighed, PLC"s, ultrasonic sensors, turbine/compressor supervisory equipment, combustion control equipment, wear monitors, water ingress protection equipment, printers, compressor surge control equipment, fuel governor equipment, gas detection panels, temperature monitoring equipment, VCRs, closed circuit TVs, communications equipment and protection equipment.

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • The knowledge and application of relevant sections of: Occupational Health and Safety legislation; statutory legislation; Enterprise/site safety procedures; Enterprise/site emergency procedures. Where appropriate attainment of an appropriate electrical license, deeming competence associated with electrical work • Preparation and planning of work • Verification techniques • Diagnostic and fault finding techniques and procedures • Repair techniques and procedures • Completion of work procedures • Dealing with an unplanned event by drawing on essential knowledge and skills to provide appropriate solutions
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational Health and Safety standards • Relevant statutory requirements and codes of practice • Relevant Ethiopian standards • Equipment and material required to perform the work • Isolation procedures • Layout of plant/work site and operation of its equipment • Fault finding and diagnostic techniques • Repair techniques • Electronic equipment • Regulatory procedures • Electrical principles • Test and measurement instruments • Circuit plan appreciation • Engineering and electronic workshop practice • Communication principles
Underpinning Skills	Demonstrates skills to: • Apply Occupational Health and Safety standards • Follow relevant statutory regulations and codes of practice

	• Apply relevant Ethiopian standards • Use and update plans, drawings and texts • Use tools and relevant equipment • Use test and measurement instruments • Verify and identify faults • Use appropriate fault finding and diagnostic techniques • Repair faults • Select materials for the job • Apply regulatory procedures • Apply electrical principles • Communicate effectively • Apply data analysis techniques and tools • Apply engineering and electronic workshop practices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Power Generation and Substation Installation and Maintenance-Electrical and Electronics Level III	
Unit Title	**Install Electronic Electrical Equipment**
Unit Code	**EIS EEM3 03 0612**
Unit Descriptor	This unit refers to the installation of electronic electrical equipment containing solid state components, complex control panels and complex control equipment.

Elements	Performance Criteria
1. Plan and prepare for the work	1.1 ***Work*** requirements are identified from request/work orders or equivalent and clarified/confirmed with appropriate parties or by site inspection 1.2 Occupational health and safety standards, statutory requirements, relevant Ethiopian standards, codes of practice, manufacturers' specifications, environmental requirements and enterprise procedures are identified, applied and monitored throughout the work procedure 1.3 Resources required to satisfy the work plan are identified, obtained and inspected for compliance with the job specifications 1.4 Relevant plans, drawings and texts are selected and interpreted in accordance with the work plan 1.5 Correct size, type and quantity of ***materials/components*** are determined, obtained and inspected for compliance with the job specifications 1.6 Work is planned in detail including sequencing and prioritizing and considerations made, where appropriate, for the maintenance of plant security and capacity in accordance with system/site requirements 1.7 Co-ordination requirements, including requests for isolations where appropriate, are resolved with others involved, affected or required by the work 1.8 Potential hazards are identified and prevention and/or control measures are selected in accordance with the work plan and site procedures 1.9 Work area is prepared in accordance with work requirements and site procedures 1.10 Where appropriate, the teams and individuals roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the- job training

2. Install the equipment	2.1 Required ***isolations*** are confirmed where appropriate in accordance with site requirements 2.2 ***Equipment*** is assembled, positioned and secured in accordance with appropriate plans, drawings and texts 2.3 Equipment is installed in conjunction with others involved in, or affected by, the work in accordance with the work plan 2.4 Cables, wires and bus bars are identified and appropriately labeled/ color coded in accordance with the work plan 2.5 Cables, wires and bus bars are secured, glanded and terminated to appropriate specifications in accordance with the work plan 2.6 Final job inspection is carried out and permits relinquished in accordance with the work plan
3. Complete the work	3.1 Work is completed and appropriate personnel notified in accordance with site/enterprise requirements 3.2 Work area is cleared of waste, cleaned, restored and secured in accordance with site/enterprise procedures 3.3 Plant, tools and equipment are maintained and stored in accordance with site/enterprise procedures 3.4 Work completion details are finalized in accordance with site/enterprise procedures

Variable	**Range**
Materials	May refer but not limited to: • insulation tapes, heat shrink, sleeving, spiral binding, cable ties, solder, lubricants, oil, greases, sealants, lugs, connectors, terminal blocks, cable markers and identification labels
Components	May include but not limited to: • fuses/circuit breakers, timers, contactors, contacts, coils, relays, resistors, inductors, capacitors, bridge rectifiers, diodes, heat sinks, solenoids, overloads, plug in printed circuit boards, switches, plugs, cable and thermostats
Test and measurement instruments	May refer but not limited to: • insulation resistance/continuity tester and multimeter
Work completion details	May include but not limited to: • plant and maintenance records, job cards, check sheets and on device labeling updates
Work site environment	may be affected by: • nearby plant or processes, e.g. heat, noise, dust, oil, water and chemical

Isolations	can refer to: • electrical/mechanical or other associated processes
Equipment	May refer but not limited to: • PLC's, I/O modules, VDU's, soft start motor starters, alarms, stabilized power supply units and uninterrupted power supply units

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • Occupational, health and safety legislation; • Statutory legislation; • Enterprise/site safety procedures; • Enterprise/site emergency procedures • Attainment of electrical license, deeming competence associated with electrical work • Preparation and planning of work • Installation techniques and procedures • Completion of work procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Occupational health and safety standards; • Relevant statutory requirements and codes of practice; • Relevant Ethiopian standards; • Equipment and material required to perform the work; • Isolation procedures; • General layout of plant/work site and operation of its equipment; • Installation requirements of the equipment; • Electrical equipment; • Regulatory aspects; • Electrical fundamentals; • Leveling and aligning procedures; • Test and measurement instruments; • Electrical installation practice; • Circuit plan appreciation; • Engineering and electronic workshop practice; • Communication principles
Underpinning Skills	Demonstrates skills to: • Apply occupational health and safety standards; • Apply relevant Ethiopian standards; • Use and update plans, drawings and texts; • Level and align; • Use tools and relevant equipment; • Use test and measurement instruments; • Use correct termination procedures; • Use correct installation procedures for the • equipment; Identify and select materials for the job;

	• Apply regulatory procedures; • Communicate effectively; • Apply data analysis techniques and tools; • Apply engineering and electronic workshop practices
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting