	Unit ID: 873
Domain	**ELECTRICAL ENGINEERING- CORE**
Title:	**Design and construct a single-phase electrical circuit**
Level: 2	**Credits: 3**

Purpose

This unit standard is intended for those who design and construct a single phase electrical circuit. People credited with this unit standard are able to plan and prepare for work; sketch a basic electrical circuit diagram; construct and power-test a single phase circuit; and clean-up work area.

This unit standard is intended for those who work in electrical workplace environment.

Special Notes

1. Entry information:

   Prerequisite
   - *Unit 1157 – Demonstrate basic knowledge of workplace health and safety*

2. To demonstrate competence, at a minimum, evidence is required of designing and construct a single-phase electrical circuit, including selecting of tools and materials, identifying symbols and components, sketch and construct basic single- phase circuit to specifications.

3. Assessment evidence may be collected from a real workplace or a simulated workplace environment in which electrical operations are carried out.

4. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' specifications and/or company's guidelines and instructions.

5. Glossary of terms
   - *'Tools for electrical work'* refers to hand and power tools used for electrical, electronic and instrumentation works.
   - *'Specifications'* refer to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements.
   - *'SANS'* refers to South Africa National Standards.
   - *'IEC'* refers to International Electrotechnical Commission.
   - *'ISO'* refers to International Organisation for Standards.

6. Performance of all elements in this unit standard must comply with industry standards.

7. Regulations and legislation relevant to this unit standard include the following:

- Labour Act, No. 11, 2007.
- Regulations relating to the health & safety of employees at work under Schedule 1 (2) of the Labour Act No.11 of 2007 and all subsequent amendments.
- SANS 10142-1.
- Namibia Electricity Safety Code 2009: Electricity Act 2007

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority. All approved unit standards, qualifications and national assessment arrangements are available on the Namibia Training Authority website www.nta.com.na.

Elements and Performance Criteria

Element 1: Plan and prepare for work

Performance criteria

1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and interpreted.

1.2 Personal Protective Equipment are selected in line with job and safety requirements.

1.3 Tools and equipment selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.

1.4 Material quantity requirements are calculated in line with plans, specifications and quality requirements.

1.5 Environmental protection requirements are identified and applied in line with environmental plans and regulatory obligations.

Element 2: Sketch a basic electrical circuit diagram

Range

Electrical circuits may include but not limited to single phase sub-circuits, single way switching, two ways switching, intermediate switching, switch and relay, rotary switches and socket outlets.

Performance Criteria

2.1 Instructions are interpreted according to job specification.

2.2 Symbols and components in an electrical circuit are identified and used in line with ISO and IEC standards.

2.3 Circuit diagrams are sketched symmetrically according to instructions.

2.4 Circuit diagrams are functional according to instructions.

Element 3: Construct and power-test a single-phase circuit

Performance Criteria

3.1 Required components and tools are obtained according to sketched diagram.

3.2 Components are connected according to diagram.

3.3 Circuit is connected to the power supply according to industry regulations and standards.

3.4 Operation of the circuit is tested for functionality and is in line with given instructions.

3.5 Reason for using over current (overload and short circuit) protection is explained.

3.6 Work area is cleaned according to workplace housekeeping standards.

Element 4: Clean-up work area

Performance Criteria

4.1 Work area is cleared, cleaned, restored and secured in line with workplace procedures.

4.2 Tools and equipment are cleaned, checked and stored in line with manufacturer specifications and workplace procedures.

4.3 Materials and wastes are disposed of, reused, or recycled in accordance with legislation, regulations, codes of practice and job specifications.

Registration Data

Subfield:	Electrical Engineering
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