	Unit ID: 2014
Domain	**ELECTRONICS**
Title:	**Demonstrate introductory knowledge of circuit concepts and measurements for electronics**
Level: 1	**Credits: 3**

Purpose

This unit standard is intended for those who demonstrate introductory knowledge of circuit concepts and measurements for electronics. People credited with this unit standard are able to explain and define electrical parameters, explain the concept of an electric circuit, use a multi-meter to make electrical measurements.

This unit standard is intended for people who carry out electronic tasks in an electronics industry.

Special Notes

1. Entry information

   Prerequisite
   - *Unit 2011 - Apply health and safety rules and regulations in electronics workplace.*

2. Assessment evidence may be collected from a real workplace or a simulated workplace in which electronics operations are carried out.

3. The evidence required to demonstrate competency in this unit standard must be relevant to workplace operations. Minimum evidence of explaining the concepts of electrical parameters and electric circuit and the use of Multimeter to check electrical measurements.

4. Glossary of terms:
   - *"parameters"* refers to charge, current, voltage, resistance, work (energy change), and power
   - IEC 60617- International Electro-Technical Commission deals with Graphical Symbols for Diagrams
   - IEEE- Institute of Electrical and Electronics Engineers.

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

6. 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.

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 on www.nta.com.na.

Elements and Performance Criteria

Element 1: Explain and define electrical parameters

Performance Criteria

1.1 Electric charge is explained in terms of electrons and examples of charged bodies are given.

1.2 Electric current is defined in terms of electric charge and time, and the units stated.

1.3 Potential Difference (P.D.) or voltage is defined in terms of energy and charge, and the units stated.

1.4 Ohm's Law is stated with units, and the effect of a change in one quantity or two.

1.5 Power is calculated in terms of work done in unit time and in terms of heat dissipated in a resistance.

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Element 2: Explain the concept of an electric circuit

Performance Criteria

2.1 Connection of battery, wires, insulation, and resistances to form a circuit is explained in the context of flow of charge, voltage, current, and power.

2.2 Conventional and electronic directions of current flow are explained.

2.3 Voltage levels are indicated on a diagram of the circuit.

Element 3: Use a multi-meter to make electrical measurements

Range

Multi-meter includes digital or analogue
Measurements refers to voltage, current, resistance

Performance Criteria

3.1 Precautions in the use of the instrument are described with respect to personal safety, damage to the instrument, damage to the circuit being measured, and battery life.

3.2 Purpose and operation of different meter ranges are explained, with reference to measurement accuracy.

3.3 Measurements state quantity and units, and a use optimum meter range is explained.

3.4 Use of the instrument to check electrical continuity is demonstrated.

Registration Data

Subfield:	Electrical Engineering
Date first registered:	29 November 2018
Date this version registered:	29 November 2018
Anticipated review:	2023
Body responsible for review:	Namibia Training Authority