

Domain**Control and Instrumentation****Title:****Apply knowledge of Mass/ Weight
Measurement****Level: 3****Credits: 3****Purpose**

This unit standard specifies the competencies required to apply knowledge of Mass/ Weight Measurement. It includes demonstrate knowledge of Mass/weight Measurement, explain the principles of operation Load cell and Wheatstone bridge circuit and install Mass/ Weight devices

Special Notes

1. Entry information

Prerequisite

- none

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

3. To demonstrate competence, minimum evidence of installing at least measuring device.

5. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' guidelines and instructions.

7. Glossary of terms:

- *"specifications' refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements*
- OEM- original equipment manufacturer

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

- Labour Act 2007, No. 11, 2007
- IEEE 518
- 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.

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

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: Demonstrate knowledge of Mass/weight Measurement

Performance Criteria

- 1.2 Difference between static and dynamic mass/weight is stated.
- 1.3 The use of relative mass unit is explained.
- 1.4. Relative mass calculations are demonstrated SI units are recognised and used
- 1.6 Static weighing systems such as laboratory weigh balances, hopper scale, Weigh Bridge are named and explained.
- 1.7 Dynamic weighing systems such as laboratory weigh balances, hopper scale and weigh bridge are named and explained.
- 1.8 Dynamic weighing systems such as weigh feeders, loss-in-weigh feeders and in-motion weighing systems are named and explained.

Element 2: Explain the principles of operation Load cell and Wheatstone bridge circuit

Performance Criteria

- 2.1 Principal of operation of load cells are explained.
- 2.2 Characteristics of load cells are explained.
- 2.4 Strain gauge and its uses are explained.
- 2.5 Wheatstone bridge and its uses are explained.
- 2.6 Electrical calculations around Wheatstone bridge circuit and unit expressed in SI unit are explained and applied.
- 2.7 Types of load cells and their uses are stated.

Element 3: Install Mass/ Weight devices

Range

Installation may include but is not limited to selecting, and calibrating as per application datasheets and OEM specifications the relevant static mass measurement components for Laboratory weigh Balances.

Static and dynamic mass measurement components for Hopper scale, selecting

Performance Criteria

- 3.1 Work instructions including job cards, diagrams specifications and operational details are obtained, confirmed and applied.
- 3.2 Installation location and devices/hardware is identified in accordance with the type of device and job requirement.

3.3 Materials, tools and equipment are selected to meet job requirements
Weighing device is selected, installed, calibrated and maintained as per application data sheet and OEM specifications

3.4 Device is selected according to process application, environment and designs.

3.5 Static mass measurement components for Laboratory weigh balances are specified.

3.6 Static and dynamic mass measurement components for weigh feeders are specified

3.7 Device is mounted and connected to the process using methods such as bolting, piping and tubing according to designs.

3.8 Wiring is terminated to devices according to manufacturers' specifications and designs.

3.9 Devices are configured and calibrated according to manufacturers' instructions, process requirements and data sheets.

3.10 Device operation is verified within specified parameters by using test equipment and procedures.

3.11 Configuration and calibration settings for future data recovery is backed up and documented.

Registration Data

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