

Unit ID: 2216

Domain

**AUTOMOTIVE MECHATRONICS**

Title:

**Demonstrate basic knowledge of  
advanced car technologies**

Level: 3

Credits: 5

### Purpose

This unit standard is intended for those who demonstrate basic knowledge of advanced car technologies. People credited with this unit standard are able to describe hybrid vehicles and systems, describe continuous variable transmissions, describe electric vehicles, describe Fuel-cell vehicles, and describe hydrogen vehicles,

This unit standard is intended for those who work in automotive mechatronics environment.

### Special Notes

1. Entry information

Prerequisite

- *none*

2. This unit standard is to be assessed in the context of automotive mechatronics and should be assessed in conjunction with other relevant technical unit standards selected from this domain.

3. Assessment evidence may be collected at a real workplace or simulated workplace in which safety operations are carried out.

4. Glossary of terms:

- '*Specifications*' refers to any, or all the following: manufacturers' specifications and recommendations, workplace specific requirements, national and international standards and legislations
- '*ISO*' refers to International Organization for Standards

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

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

- Labour Act No. 11 of 2007
- Regulations relating to the health and safety of employees at work under Schedule 1 (2) of the Labour Act No.11 of 2007
- ISO 14001 (Environmental Management Standard) and all subsequent amendments to any of the above.

## **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 on [www.namqa.org](http://www.namqa.org) and the Namibia Training Authority on [www.nta.com.na](http://www.nta.com.na).

## **Elements and Performance Criteria**

### **Element 1: Describe hybrid vehicles and systems**

#### **Performance Criteria**

- 1.1 Hybrid technologies and systems are identified and explained.
- 1.2 Different types of hybrid vehicles are identified.
- 1.3 Characteristics of hybrid vehicles are explained.
- 1.4 Advantages and disadvantages of hybrid vehicles are explained.
- 1.5 Applications of hybrid vehicles are explained.

### **Element 2: Describe continuous variable transmissions**

#### **Performance Criteria**

- 2.1 Continuous variable transmission technology is explained.
- 2.2 Advantages and disadvantages of continuous variable transmission technology are explained.
- 2.3 Applications of continuous variable transmission technology are explained.

### **Element 3: Describe electric vehicles**

#### **Performance Criteria**

- 3.1 Operation principles of electric vehicles are explained.
- 3.2 Characteristics of electric vehicles are explained.
- 3.3 Advantages and disadvantages of electric vehicles are explained.
- 3.4 Applications of electric vehicles are explained.

#### **Element 4: Describe fuel-cell vehicles**

##### **Performance Criteria**

- 4.1 Operation principles of fuel-cell vehicles are explained.
- 4.2 Characteristics of fuel-cell vehicles are explained.
- 4.3 Advantages and disadvantages of fuel-cell vehicles are explained.
- 4.4 Applications of fuel-cell vehicles are explained.

#### **Element 5: Describe hydrogen vehicles**

##### **Performance Criteria**

- 5.1 Operation principles of hydrogen vehicles are explained.
- 5.2 Characteristics of hydrogen vehicles are explained.
- 5.3 Advantages and disadvantages of hydrogen vehicles are explained.
- 5.4 Applications of hydrogen vehicles are explained.

#### **Registration Data**

<b>Subfield:</b>	Automotive Engineering
<b>Date first registered:</b>	22 April 2020
<b>Date this version registered:</b>	22 April 2020
<b>Anticipated review:</b>	2025
<b>Body responsible for review:</b>	Namibia Training Authority