Specification of Competency Standards
for the Automotive
Unit of Competency

Functional Area - Vehicle Servicing

Title	Identify the structure and operating principle of vehicle systems and components
Code	111663L2
Range	This unit of competency is applicable in workplaces in relation to the vehicle parts management and vehicle servicing. Practitioners should be able to identify the structure and operating principle of various types of vehicles and associated components and explain their effects on vehicle safety and performance.
Level	2
Credit	6 *(For Reference Only)*
Competency	**Performance Requirements** 1. Knowledge (The system layouts and functions of various types of vehicles, including combustion engine vehicles and electrified vehicles, and their major components) • Differentiate the basics of powertrains amongst vehicle types. • Introduce the basic concepts in system services amongst vehicle types. • Demonstrate the system layouts of various vehicle types and the locations of their major components, including but not limited to fuel supply and control management circuits, the interpretation of wiring circuit diagrams of various low-voltage and high-voltage electrical systems, the application of different cable and wire harnesses, and their protection and conjunction means. • Understand the functions of the major components and their effects on vehicle safety and performance. • Understand the definitions of low-voltage and high-voltage electrical systems onboard.

	2. Performance (Master the operating principle of various vehicle systems and components)
	• Identify the operating and explain the control principle of various vehicle systems and associated components, including but not limited to:
	  ◦ Engine and mechanical components, including emission control systems
	  ◦ Liquid and gaseous fuel supply and metering systems (for light vehicle only)
	  ◦ Diesel fuel supply and metering systems (for commercial vehicles only)
	  ◦ Engine management systems
	  ◦ Hydraulic brake systems and retardation units (for light vehicles only)
	  ◦ Pneumatic brake systems including articulated vehicle brakes and retardation units (for commercial vehicles only)
	  ◦ Steering systems
	  ◦ Suspension systems
	  ◦ Integrated stability control systems
	  ◦ Transmission systems (including power take-off for commercial vehicles)
	  ◦ Low-voltage electrical systems
	  ◦ Advanced electronic control and driver-assistance systems
	  ◦ Body and chassis components
	  ◦ Rechargeable energy storage system including energy management and external power charging (for electrified vehicles only)
	  ◦ Traction motor and corresponding power modulation and controls (for electrified vehicles only)
	  ◦ Hydrogen fuel cell system including associated components and energy management (for hydrogen fuel cell electric vehicle only)
	  ◦ Heating, ventilation and air-conditioning systems
	  ◦ Wheels and tyres
	  ◦ Fifth-wheel couplings and trailer landing gear (for commercial vehicles only)
	  ◦ Other related systems and components
	• Differentiate the low-voltage and high-voltage electrical systems onboard, their applications and safety awareness.

Assessment Criteria	The integrated outcome requirement of this unit of competency is that the practitioner being assessed shall prove that he/she is: • Capable of identifying the system layouts, locations, functions, construction, operating and control principles of various vehicle systems and components, interpreting the fuel supply and wiring circuit diagrams, and explaining their effects on vehicle safety and performance. • Capable of differentiating the low-voltage and high-voltage electrical systems physically and the associated safety awareness.
Remark	The credit value of this unit of competency is set on the presumption that the practitioner concerned has already possessed a basic engineering sense. (This UoC replaced 108633L1)