


Curriculum Document				
Curriculum Code	Curriculum Title			
684904-000-00-SP01	Workshop Tool Assistant			
Development Quality Partner	Name	E-mail	Phone	Logo
	QCTO	CentralOffice@qcto.org.za	012 003 1800	

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## **SECTION 1: CURRICULUM SUMMARY**

### **1. Occupational Information**

#### **1.1 Associated Occupation**

684904: Panel Beater

#### **1.2 Skills Addressed by this Curriculum**

684904-000-00-SP01: Workshop Tool Assistant

#### **1.3 Related Occupational Qualification Curriculum**

- 684904000: Panel Beater
- 684904000: Heavy Equipment Mechanic
- 653101000: Automotive Motor Mechanic
- 653306000: Diesel Mechanic
- 653304000: Diesel Fitter
- 653103000: Motorcycle Mechanic
- 653109001: Automotive Engine Fitter

### **2. Curriculum Information**

#### **2.1 Curriculum Structure**

The total credit value for this Skills Programme: 24 Credits

This Skills Programme is at NQF Level 2

This skills programme is made up of the following compulsory Knowledge and Application Modules:

Knowledge Modules:

- 684904-000-00-SP01-KM-01, Foundational Concepts for Panel Beater, NQF Level 2, Credits 8

Number of credits for Knowledge Modules: 8

Application Modules:

- 684904-000-00-SP01-AM-01, Use Tools and Equipment, NQF Level 2, Credits 16

Total number of credits for Application Modules: 16

## **2.2 Learning Assumed to be in Place**

NQF Level 1

### **2.3 2.3 Quality Assurance**

QCTO will facilitate the assessment and quality assurance

### **Possible Learning Pathway**

- Suspension Systems Repairer
- Wheel Balancer
- Wheel Alignment Repairer
- Service Assistant
- Vehicle Serviceperson
- Brake Repairer
- Automotive Workshop Assistant
- Automotive Workshop Repairer
- Automotive Maintenance Repairer
- Automotive Component Fitter and Repairer
- Auto Electrical Assistant

## **SECTION 2: SKILLS PROGRAMME PROFILE**

### **1. Skills programme Purpose**

The purpose of this skills programme is to prepare a learner to operate as a Workshop Tool Assistant.

A Workshop Tool Assistant will be able to identify, select, use, care for, hand and power tools within an automotive body repair environment.

The qualifying learner will know the functioning and operating requirements for hand and power tools, to monitor quality conformance; including health, safety and environmental requirements.

### **2. Skills programme Tasks**

- Identify, select, use and care for hand and power tools

### **3. Skills programme Task Details**

#### **3.1. Identify, select, use and care for hand and power tools (NQF Level 2)**

##### **Unique Product or Service:**

Hand and power tools identified, selected, used and cared for according to tool manufacturers' and industry standards

##### **Occupational Responsibilities:**

- Work safely
- Use hand and power tools
- Care for hand and power tools

## **SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS**

### **SECTION 3A: KNOWLEDGE MODULE SPECIFICATIONS**

List of Knowledge Modules for which Specifications are included

- 684904-000-00-SP01-KM-01, Foundational Concepts for a Panel Beater, NQF Level 2, Credits 8

Total number of credits for Knowledge Modules: 8

## **1. 684904-000-00-SP01-KM-01, Foundational concepts for a Panel Beater, NQF Level 2, Credits 8**

### **1.1 Purpose of the Knowledge Modules**

The main focus of the learning in this knowledge module is to build an understanding of the basic concepts which underlie the workplace, the regulatory and environment and the rules that govern the motor industry.

The learning will enable learners to demonstrate an understanding of:

- KM-01-KT01: Fluids, lubricants, materials and metals applicable to the trade (50%)
- KM-01-KT02: Physics (25%)
- KM-01-KT03: Fundamentals of electricity (25%)

### **1.2 Guidelines for Topics**

#### **1.2.1. KM-01-KT01: Fluids, lubricants, materials and metals applicable to the trade (50%)**

##### ***Topic elements to be covered include:***

- KT0101 Terminology and definitions related to properties of fluids, lubricants, materials and metals including viscosity, flammability, expansion, contraction, heating, cooling, tensile strength
- KT0102 Types, names, properties, safety considerations and application of fluids, lubricants and materials including petrol, paraffin, diesel oil, water, anti-freeze, automatic transmission fluid, alcohol, acids such as battery acid, brake fluid, engine oil, gear oil, mineral oil, grease, paint, solvents, wax, polish, cleaning chemicals
- KT0103 Types, names, properties, safety considerations and application of non-metallic materials including asbestos, carbon, graphite, cork, cloth, felt, glass, fibre glass, hardboard, leather, plastics, rubber, silicone rubber, wood
- KT0104 Types, names, properties, safety considerations and application of metals including ferrous metals such as cast iron, low carbon steel or mild steel, high carbon steel or high tensile steel, stainless steel, and non-ferrous metals such as copper, lead, brass, chrome, aluminium, tin and metal alloys
- KT0105 Advanced materials, including polymer composites and ceramics
- KT0106 Safe handling, storage and disposal of fluids, lubricants, materials and metals applicable to engines, vehicles and equipment

##### ***Internal Assessment Criteria and Weight***

- IAC0101 Explain the meaning of terminology and define concepts related to properties of fluids, lubricants, materials and metals
- IAC0102 Identify a variety of typical fluids and lubricants and describe their basic properties
- IAC0103 Identify types of non-metallic materials and describe their basic properties
- IAC0104 Identify types of metals and describe their basic properties
- IAC0105 State the functions, purpose and applications of fluids, lubricants, materials and metals (ferrous and non-ferrous) applicable to engines, vehicles and equipment
- IAC0106 Describe requirements for handling and storing fluids, lubricants, materials and metals (ferrous and non-ferrous) applicable to engines, vehicles and equipment
- IAC0107 Describe the role and application of advanced materials and ceramics

**(Weight 50%)**

**1.2.2. KM-01-KT02: Physics (25%)**

**Topic elements to be covered include:**

- KT0201 Basic physics principles including gears, levers and pulleys
- KT0202 Principles of pneumatics and hydraulics, their application to engines, vehicles and equipment, and maintenance requirements
- KT0203 Friction, wear, corrosion and aging - their causes, effects and prevention
- KT0204 Heating, cooling and changes of state
- KT0205 Systems and units of measurement
- KT0206 Tolerances and fits

**Internal Assessment Criteria and Weight**

- IAC0201 Describe and explain, with the aid of sketches where relevant, the application of basic physics, pneumatics and hydraulics in the trade
- IAC0202 Describe and explain the causes, effects and prevention of friction, wear, corrosion and aging related to engines, vehicles and equipment
- IAC0203 Describe and explain the principles of heating and cooling in relation to engines, vehicles and equipment
- IAC0204 Identify and apply the various units of measure that are used for engines, vehicles and equipment
- IAC0205 Describe and explain the application of tolerances and fits to engines, vehicles and equipment

**(Weight 25%)**

**1.2.3. KM-01-KT03: Fundamentals of electricity (25%)**

**Topic elements to be covered include:**

- KT0301 Fundamentals of electricity, including current, voltage, resistance and power, alternating and direct current
- KT0302 Conductors, insulators and semiconductors
- KT0303 Working safely with electricity
- KT0304 Simple circuits including types of circuit, circuit construction principles and circuit diagrams, Ohm's and Kirchhoff's Laws and basic circuit faults
- KT0305 Electric circuit diagrams
- KT0306 Basic electrical components, including batteries, switches, fuses, resistors, condensers, relays, lights, hooters, spark plugs
- KT0307 Electrical terms, notation and symbols and various national standards
- KT0308 Measuring electricity, including units and measuring equipment
- KT0309 Electrical calculations
- KT0310 Common electrical faults and tests
- KT0311 Magnetic fields, electro magnetism and applications, including electrical motors, generators and alternators
- KT0312 Capacitance and various types and applications of capacitors

- KT0313 Application of electricity in vehicles and equipment, and vehicle and equipment systems

### ***Internal Assessment Criteria and Weight***

- IAC0301 Define and explain electrical terms and electrical symbols
- IAC0302 Describe, explain and discuss the basic application of electricity in vehicle and equipment systems
- IAC0303 Describe and explain safe work practices for working with electricity
- IAC0304 Identify components in electrical circuits, and describe the function of each component using the correct terminology
- IAC0305 Identify and explain the terms, definitions and instruments used in testing electrical circuits
- IAC0306 Describe common electrical faults and the process followed to diagnose electrical problems

***(Weight 25%)***

### **1.3 Provider Programme Accreditation Criteria**

#### *Physical Requirements:*

- Standard facilities for classroom training, including relevant training materials, models, audio-visual resources, learner management systems.

#### *Human Resource Requirements:*

- Facilitator with relevant industry experience and a knowledge of the work of hand and power tools
- Facilitator/learner ratio 1 to 15.

#### *Legal Requirements:*

- Compliant with relevant health and safety requirements.

### **1.4 Exemptions**

- None

## **SECTION 3B: APPLICATION MODULE SPECIFICATIONS**

### List of Application Module Specifications

- 684904-000-01-00-AM-01, Use tools and equipment, NQF Level 2, Credits 16

### **1. 684904-000-01-00-AM-01, Use tools and equipment, NQF Level 2, Credits 16**

#### **1.1 Purpose of the Application Modules**

The focus of the learning in this module is on providing the learner an opportunity to use the tools and equipment, including information technology, equipment and measuring instruments related to



vehicle maintenance and repair, and become familiar with their maintenance and storage requirements.

The learner will be required to:

- AM-01-AT01: Read and respond to safety signage
- AM-01-AT02: Identify, use and care for basic hand tools
- AM-01-AT03: Identify, use and care for workshop tools and equipment
- AM-01-AT04: Identify, use and care for measuring equipment
- AM-01-AT05: Fabricate simple components using basic hand tools

## **1.2 Guidelines for Application**

### **1.2.1. AM-01-AT01: Read and respond to safety signage**

#### ***Scope of Application***

Given a range of general, prohibitive, fire safety, exits, warning, mandatory, vehicle and overhead crane signage, the learner must be able to:

- PA0101 Identify and describe the purpose of various types of safety signage
- PA0102 Explain the precautions or actions that have to be taken in response to each safety sign
- PA0103 Explain the implications and consequences of not responding correctly to safety signage

#### ***Applied Knowledge***

- AK0101 Purpose of warning, mandatory, statutory and informative signs
- AK0102 Workplace safety, health and environmental principles and procedures
- AK0103 Specified requirements pertaining to employers' and employees' duties concerning occupational safety and health
- AK0104 Consequences of not obeying safety signage

#### ***Internal Assessment Criteria***

- IAC0101 All signs are correctly and immediately recognised and their purpose explained
- IAC0102 The correct relevant actions or precautions in response to safety signs are described and explained
- IAC0103 The implications and consequences of not responding to safety signage are described

### **1.2.2. AM-01-AT02: Identify, use and care for basic hand tools**

#### ***Scope of Application***

Given a range of hand tools applicable to the trade, personal protective equipment, a variety of materials and components for working on, cleaning material, storage facilities and work instructions for a range of typical tasks, the learner must be able to:

- AT0201 Identify the given tools and describe and explain their functions
- AT0202 Inspect tools for defects and report on findings

- AT0203 Interpret a variety of work instructions, select the relevant tools, materials and personal protective equipment for each task, prepare the work area and conduct a risk assessment
- AT0204 Use all relevant personal protective equipment and apply all relevant health, safety and environmental precautions
- AT0205 Use the tools to achieve the requirements of the work instruction
- AT0206 Clean, maintain and store tools and clean the work area

### ***Applied Knowledge***

- AK0201 Techniques for using and maintaining basic hand tools
- AK0202 Safety procedures and requirements
- AK0203 Manufacturers' procedures and specifications
- AK0204 Safety and housekeeping standards related to tools
- AK0205 Correct application of tools
- AK0206 Typical hazards and risks associated with trade hand tools
- AK0207 Safe working procedures
- AK0208 Storage and maintenance techniques
- AK0209 Inspection techniques
- AK0210 Hazard identification and risk assessment practices
- AK0211 Environmental requirements and practices for handling and disposing of materials

### ***Internal Assessment Criteria***

- IAC0201 Hazards and risks are identified and responded to in a responsible manner in accordance with accepted hazard identification and risk assessment practices
- IAC0202 All tools and their functions are correctly identified, described and explained
- IAC0203 All defective tools are identified and reported
- IAC0204 Tools are selected and used correctly and safely in accordance with the given tasks
- IAC0205 Safety standards are applied
- IAC0206 Tools are not damaged during or after use
- IAC0207 Tools are cleaned, maintained and stored according to their requirements
- IAC0208 Appropriate personal protective equipment is used for each activity
- IAC0209 Consequences of incorrect use of tools and lack of maintenance are described and explained
- IAC0210 Materials are handled and disposed of in an environmentally acceptable manner
- IAC0211 Work area is cleaned in accordance with requirements

### **1.2.3. AM-01-AT03: Identify, use and care for workshop tools and equipment**

#### ***Scope of Application***

Given a variety of pneumatic, hydraulic and electrical power tools and workshop equipment applicable to the trade, appropriate personal protective equipment and task instructions, the learner must be able to:

- AT0301 Identify workshop tools and equipment and explain their functions

- AT0302 Inspect tools and equipment for defects and report on findings
- AT0303 Interpret a variety of work instructions, select the relevant tools, equipment, materials and personal protective equipment for each task, prepare the work area and conduct a risk assessment
- AT0304 Use all relevant personal protective equipment and apply all relevant health, safety and environmental precautions
- AT0305 Demonstrate the start-up and shut-down procedures, where relevant, for tools and equipment
- AT0306 Use the tools to achieve the requirements of the work instruction
- AT0307 Use power tools and equipment to perform operations
- AT0308 Select grinding wheels for various materials and grinder speeds
- AT0309 Identify correct drilling speeds for various types of materials
- AT0310 Clean, maintain and store tools and equipment and clean the work area

### ***Applied Knowledge***

- AK0301 Identification, function, use and care of workshop equipment and power tools
- AK0302 Inspection techniques
- AK0303 Techniques for using and maintaining workshop tools and equipment
- AK0304 Safety procedures and requirements
- AK0305 Safety and housekeeping standards related to tools and equipment
- AK0306 Manufacturers' procedures and specifications
- AK0307 Identification and characteristics of relevant materials including, types of metals, composites and plastics
- AK0308 Correct application of tools
- AK0309 Typical hazards and risks associated with workshop tools and equipment
- AK0310 Hazard identification and risk assessment practices
- AK0311 Practices related to quality, health and safety when using power tools
- AK0312 Environmental requirements and practices for handling and using tools and equipment and disposing of materials

### ***Internal Assessment Criteria***

- IAC0301 All potential hazards are identified and appropriate steps are taken to reduce the risk according to the specific requirements for each task
- IAC0302 All tools and equipment and their functions are correctly identified, described and explained
- IAC0303 Tools and equipment are examined for damage and all defects are identified and reported
- IAC0304 Power tools and workshop equipment are selected, used and operated correctly and safely in accordance with the given tasks
- IAC0305 Correct personal protective equipment is used for each task
- IAC0306 Tools and equipment are not damaged and are cleaned, maintained and stored in accordance with requirements
- IAC0307 Materials are handled and disposed of in an environmentally acceptable manner
- IAC0308 Work area is cleaned in accordance with requirements

#### **1.2.4. AM-01-AT04: Identify, use and care for measuring equipment**

##### ***Scope of Application***

Given a range of measuring devices and instruments applicable to the trade including, cleaning and lubricating materials, storage facilities, task instructions and typical items to be measured, the learner must be able to:

- AT0401 Identify the given measuring devices, and explain their purpose and function
- AT0402 Inspect measuring equipment for defects and report on findings
- AT0403 Inspect tools and equipment where applicable for accuracy
- AT0404 Interpret a variety of work instructions, select the relevant measuring devices, and instruments and personal protective equipment for each task, identify possible hazards and prepare the work area
- AT0405 Use all relevant personal protective equipment and apply all relevant health, safety and environmental precautions
- AT0406 Determine applicable tolerances and use different measuring devices for a variety of tasks
- AT0407 Take and record accurate readings or measurements
- AT0408 Clean, lubricate and store measuring equipment after use

##### ***Applied Knowledge***

- AK0401 Techniques for using and reading measuring devices
- AK0402 Safety procedures and requirements
- AK0403 Safe working procedures
- AK0404 Safety and housekeeping standards related to measuring equipment
- AK0405 Inspection techniques
- AK0406 Manufacturers' procedures and specifications related to measuring
- AK0407 Correct application of measuring devices
- AK0409 Clearances and tolerances
- AK0410 Influence of temperature on readings and measurements
- AK0411 Typical hazards and risks associated with measuring equipment
- AK0412 Environmental requirements and practices

##### ***Internal Assessment Criteria***

- IAC0401 All potential hazards are identified and appropriate steps are taken to reduce the risk according to the specific requirements for each task
- IAC0402 All measuring devices and their functions are correctly identified, described and explained according to industry standards
- IAC0403 All defects are identified and reported according to standard operating procedure
- IAC0403 Measuring devices are selected and used correctly for a variety of tasks according to specified requirements
- IAC0404 A variety of measurements are taken within the allowable margin of error as specified by the manufacturer
- IAC0405 Measuring devices are not damaged during or after use

- IAC0406 Measuring devices are cleaned, maintained and stored in accordance with requirements
- IAC0407 Work area is cleaned in accordance with requirements
- IAC0408 Safety standards are followed and applied according to industry standards

### **1.2.5. AM-01-AT05: Fabricate simple components using basic hand tools**

#### ***Scope of Application***

Given a range of relevant tools, personal protective equipment, a variety of materials, drawings and work instructions for a range of typical tasks, the learner must be able to:

- AT0501 Interpret a variety of work instructions, select the relevant tools, materials and personal protective equipment for each task, prepare the work area and conduct a risk assessment
- AT0502 Use all relevant personal protective equipment and apply all relevant health, safety and environmental precautions
- AT0503 Measure and mark off materials using relevant measuring and marking off tools
- AT0504 Use hand tools applicable to the trade and fabricate a work piece
- AT0505 Grind a range of materials using relevant grinding tools
- AT0506 Drill a range of materials using relevant drilling tools
- AT0507 File a range of materials using relevant filing tools
- AT0508 Cut internal and external threads using relevant thread cutting tools
- AT0509 Saw a range of materials using relevant sawing tools
- AT0510 Clean, maintain and store tools and clean the work area

#### ***Applied Knowledge***

- AK0501 Techniques for using and maintaining tools and equipment
- AK0502 Safety procedures and requirements
- AK0503 Manufacturers' procedures and specifications
- AK0504 Identification and characteristics of metals
- AK0505 Measuring techniques
- AK0506 Storage of hand tools
- AK0507 Functions of hand tools
- AK0508 Correct application of tools
- AK0509 Typical hazards and risks associated with basic hand tools
- AK0510 Environmental requirements and practices

#### ***Internal Assessment Criteria***

- IAC0501 Hazards and risks are identified and responded to in a responsible manner in accordance with accepted hazard identification and risk assessment practices
- IAC0502 All practical tasks are completed according to specifications given in drawings and work instructions
- IAC0503 Completed practical tasks are within a prescribed tolerance
- IAC0504 Each practical task is completed within the given time frame specified
- IAC0505 The work piece is fabricated according to the given specification

- IAC0506 Finishes are according to work instructions
- IAC0507 Tools are selected and used correctly and safely for the given tasks
- IAC0508 Tools and equipment are undamaged and stored according to requirements
- IAC0509 Correct personal protective equipment is used applicable to the tasks
- IAC0510 Tools and work area are cleaned and maintained according to standard operating procedure
- IAC0511 All defective tools and equipment are identified and reported according to standard operating procedure

### **1.3 Provider Programme Accreditation Criteria**

#### *Physical Requirements:*

- Access to all relevant equipment and materials for the Application.
- Access to training manuals and other relevant documentation, manufacturer's manuals and specifications.
- A quality management system
- Adequate area to accommodate the number of learners, as prescribed by the OHS Act, that is well lit and well ventilated.

#### *Human Resource Requirements:*

- Trainer to learner ratio of 1:15.
- Trainer/Facilitator with relevant trade experience.
- Successfully completed an appropriate occupational trainer course.

#### *Legal Requirements:*

- Compliant with all applicable legal requirements.

### **1.4 Exemptions**

- None