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Curriculum Code		Curriculum Title		[insert image here]
653401000		Bicycle Mechanic		
	Name	Email	Phone	Logo
Development Quality Partner	Wholesale & Retail SETA	imarrian@wrseta.org.za	0126229500	

Table of content

SECTION 1: CURRICULUM SUMMARY	4
1. Occupational Information.....	4
1.1 Associated Occupation	4
1.2 Occupation or Specialisation Addressed by this Curriculum	4
1.3 Alternative Titles used by Industry	4
2. Curriculum Information.....	4
2.1 Curriculum Structure.....	4
2.2 Entry Requirements.....	5
3. Assessment Quality Partner Information	5
4. Part Qualification Curriculum Structure.....	5
SECTION 2: OCCUPATIONAL PROFILE	8
1. Occupational Purpose.....	8
2. Occupational Tasks	8
3. Occupational Task Details.....	8
3.1. Assemble new bicycles and apply safety procedures (NQF Level 2)	8
3.2. Perform minor and major services to maintain bicycles (excluding suspension and wheel building) (NQF Level 3).....	8
3.3. Examine and repair bicycles and replace and repair components and accessories, such as hydraulic brake systems, driving chain mechanism, advanced wheels, etc (NQF Level 4)8	
3.4. Supervise teams and activities in the bicycle workshop ensuring productivity and quality and provide advanced technical advice to the team (NQF Level 4).....	9
3.5. Supervise teams and activities in the bicycle workshop ensuring productivity and quality and provide advanced technical advice to the team (NQF Level 4).....	9
SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS.....	10
SECTION 3A: KNOWLEDGE MODULE SPECIFICATIONS	10
List of Knowledge Modules for which Specifications are included.....	10
1. 653401000-KM-01, Bicycle construction and assembly, NQF Level 2, Credits 3	11
2. 653401000-KM-02, Bicycle servicing and maintenance, NQF Level 3, Credits 3	18
3. 653401000-KM-03, Repair and maintenance of advanced bicycle componentry, NQF Level 04, Credits 3	24

4. 653401000-KM-04, Bicycle consumables, threads and materials technology, NQF Level 04, Credits 5	29
5. 653401000-KM-05, Advice on specialised bicycle componentry, NQF Level 03, Credits 4	33
SECTION 3B: PRACTICAL SKILL MODULE SPECIFICATIONS.....	39
List of Practical Skill Module Specifications.....	39
1. 653401000-PM-01, Wash, clean and assemble new bicycles, NQF Level 2, Credits 440	
2. 653401000-PM-02, Perform minor and major services for the maintenance of bicycles (excluding suspension and wheel building), NQF Level 3, Credits 6	55
3. 653401000-PM-03, Conduct disassembly, servicing/replacement, installation and testing of advanced bicycle componentry, NQF Level 04, Credits 4	64
4. 653401000-PM-04, Advise clients and bicycle mechanics on the technical aspects to identify faults and solve problems, NQF Level 04, Credits 1.....	73
5. 653401000-PM-05, Advise teams in a fair and consistent manner in the bicycle workshop to achieve set targets and outputs and specialised problem solving, NQF Level 03, Credits 1	75
SECTION 3C: WORK EXPERIENCE MODULE SPECIFICATIONS.....	80
List of Work Experience Module Specifications.....	80
1. 653401000-WM-01, Bicycle assembly, cleaning and washing, NQF Level 2, Credits 1181	
2. 653401000-WM-02, Perform minor and major services for the maintenance of bicycles, NQF Level 3, Credits 16.....	86
3. 653401000-WM-03, Advanced bicycle componentry servicing, NQF Level 04, Credits 21	91
4. 653401000-WM-04, Advise and guide a team to solve problems related to specialised bicycle componentry and advise clients, NQF Level 04, Credits 2.....	97
SECTION 4: STATEMENT OF WORK EXPERIENCE.....	102

SECTION 1: CURRICULUM SUMMARY

1. Occupational Information

1.1 Associated Occupation

653401: Bicycle Mechanic

1.2 Occupation or Specialisation Addressed by this Curriculum

653401000: Bicycle Mechanic

1.3 Alternative Titles used by Industry

- Bicycle Repairer
- Bicycle workshop Supervisor

2. Curriculum Information

2.1 Curriculum Structure

This qualification is made up of the following compulsory Knowledge and Practical Skill Modules:

Knowledge Modules:

- 653401000-KM-01, Bicycle construction and assembly, NQF Level 2, Credits 3
- 653401000-KM-02, Bicycle servicing and maintenance, NQF Level 3, Credits 3
- 653401000-KM-03, Repair and maintenance of advanced bicycle componentry, NQF Level 04, Credits 3
- 653401000-KM-04, Bicycle consumables, threads and materials technology, NQF Level 04, Credits 5
- 653401000-KM-05, Advice on specialised bicycle componentry, NQF Level 03, Credits 4

Total number of credits for Knowledge Modules: 18

Practical Skill Modules:

- 653401000-PM-01, Wash, clean and assemble new bicycles, NQF Level 2, Credits 4
- 653401000-PM-02, Perform minor and major services for the maintenance of bicycles (excluding suspension and wheel building), NQF Level 3, Credits 6
- 653401000-PM-03, Conduct disassembly, servicing/replacement, installation and testing of advanced bicycle componentry, NQF Level 04, Credits 4
- 653401000-PM-04, Advise clients and bicycle mechanics on the technical aspects to identify faults and solve problems, NQF Level 04, Credits 1
- 653401000-PM-05, Advise teams in a fair and consistent manner in the bicycle workshop to achieve set targets and outputs and specialised problem solving, NQF Level 03, Credits 1

Total number of credits for Practical Skill Modules: 16

This qualification also requires the following Work Experience Modules:

- 653401000-WM-01, Bicycle assembly, cleaning and washing, NQF Level 2, Credits 11
- 653401000-WM-02, Perform minor and major services for the maintenance of bicycles, NQF Level 3, Credits 16
- 653401000-WM-03, Advanced bicycle componentry servicing, NQF Level 04, Credits 21
- 653401000-WM-04, Advise and guide a team to solve problems related to specialised bicycle componentry and advise clients, NQF Level 04, Credits 2

Total number of credits for Work Experience Modules: 50

2.2 Entry Requirements

NQF Level 2 with communication

OR

3 years of working experience in a bicycle workshop

3. Assessment Quality Partner Information

Name of body: Wholesale & Retail SETA

Address of body: Riverside Office Park Heuwel Avenue Centurion 1303

Contact person name: Inger Marrion

Contact person work telephone number: 0126229500

4. Part Qualification Curriculum Structure

Part Qualification 1:

Title:

Bicycle Repairer, NQF Level 3, Credits 43

Purpose:

Bicycle Repairers work safely and efficiently in the workshop environment and is technically qualified and able to assemble new bicycles and conduct minor and major services to maintain and repair bicycles and basic bicycle componentry to a high standard

Applicable Modules (Rules of Combination)

Knowledge Modules:

- 653401000-KM-01, Bicycle construction and assembly, NQF Level 2, Credits 3
- 653401000-KM-02, Bicycle servicing and maintenance, NQF Level 3, Credits 3

Total number of credits for Knowledge Modules: 6

Practical Skill Modules:

- 653401000-PM-01, Wash, clean and assemble new bicycles, NQF Level 2, Credits 4

- 653401000-PM-02, Perform minor and major services for the maintenance of bicycles (excluding suspension and wheel building), NQF Level 3, Credits 6

Total number of credits for Practical Skill Modules: 10

This qualification also requires the following Work Experience Modules:

- 653401000-WM-01, Bicycle assembly, cleaning and washing, NQF Level 2, Credits 11
- 653401000-WM-02, Perform minor and major services for the maintenance of bicycles, NQF Level 3, Credits 16

Total number of credits for Work Experience Modules: 27

Assessment Qualification Standards:

- Examine, conduct fault finding and trouble shooting and solve problems related to any two (random selection) of these basic bicycle systems: headsets, crank sets, hubs, cable operated breaks, derailleurs and drive chains (25%)

Part Qualification 2:

Title:

Bicycle Special Components Repairer, NQF Level 4, Credits 28

Purpose:

Bicycle Mechanics build, service and repair bicycles and advance bicycle componentry and able to install and calibrate top-level electronic group sets, service complex suspension systems and hydraulic brakes as well as building high-performance wheel sets

Applicable Modules (Rules of Combination)

Knowledge Modules:

- 653401000-KM-03, Repair and maintenance of advanced bicycle componentry, NQF Level 04, Credits 3

Total number of credits for Knowledge Modules: 3

Practical Skill Modules:

- 653401000-PM-03, Conduct disassembly, servicing/replacement, installation and testing of advanced bicycle componentry, NQF Level 04, Credits 4

Total number of credits for Practical Skill Modules: 4

This qualification also requires the following Work Experience Modules:

- 653401000-WM-03, Advanced bicycle componentry servicing, NQF Level 04, Credits 21

Total number of credits for Work Experience Modules: 21

Assessment Qualification Standards:

- Conduct advanced componentry disassembly, servicing/replacement, installation and adjustment of any (random selection) two of the advanced components: hydraulic brakes, suspension system, electronic group set, rear shock bushing replacement and pivot servicing (25%)

- Build an advanced rear wheel (straight pull spoke or fat bike wheel build) to produce a wheel which is correctly dished and trued both laterally and radially within tolerances (25%)

SECTION 2: OCCUPATIONAL PROFILE

1. Occupational Purpose

Bicycle mechanics fit, maintain, service and repair the mechanical and related equipment of bicycles (non-motorized).

2. Occupational Tasks

- Assemble new bicycles and apply safety procedures (NQF Level 2)
- Perform minor and major services to maintain bicycles (excluding suspension and wheel building) (NQF Level 3)
- Examine and repair bicycles and replace and repair components and accessories, such as hydraulic brake systems, driving chain mechanism, advanced wheels, etc. (NQF Level 4)
- Supervise teams and activities in the bicycle workshop ensuring productivity and quality and provide advanced technical advice to the team (NQF Level 4)

3. Occupational Task Details

3.1. Assemble new bicycles and apply safety procedures (NQF Level 2)

Unique Product or Service:

Bicycle cleaning and preparation service

Occupational Responsibilities:

- Clean and prepare bicycles for maintenance and repair

Occupational Contexts:

- Workshop or trail and road assistance

3.2. Perform minor and major services to maintain bicycles (excluding suspension and wheel building) (NQF Level 3)

Unique Product or Service:

Serviced bicycle

Occupational Responsibilities:

- Minor maintenance and repair of a bicycle

Occupational Contexts:

- Basic components on the bike

3.3. Examine and repair bicycles and replace and repair components and accessories, such as hydraulic brake systems, driving chain mechanism, advanced wheels, etc. (NQF Level 4)

Unique Product or Service:

Serviced and operational bicycle

Occupational Responsibilities:

- Major maintenance and repair of bicycles and components

Occupational Contexts:

- Advanced components of a bike

3.4. Supervise teams and activities in the bicycle workshop ensuring productivity and quality and provide advanced technical advice to the team (NQF Level 4)

Unique Product or Service:

Leadership within Bicycle workshop

Occupational Responsibilities:

- Guide teams in a fair and consistent manner in the bicycle workshop to achieve set targets and outputs

Occupational Contexts:

- Leadership and supervision in the bicycle workshop

3.5. Supervise teams and activities in the bicycle workshop ensuring productivity and quality and provide advanced technical advice to the team (NQF Level 4)

Unique Product or Service:

Leadership within Bicycle workshop

Occupational Responsibilities:

- Guide teams in a fair and consistent manner in the bicycle workshop to achieve set targets and outputs

Occupational Contexts:

- Leadership and supervision in the bicycle workshop

SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS

SECTION 3A: KNOWLEDGE MODULE SPECIFICATIONS

List of Knowledge Modules for which Specifications are included

- 653401000-KM-01, Bicycle construction and assembly, NQF Level 2, Credits 3
- 653401000-KM-02, Bicycle servicing and maintenance, NQF Level 3, Credits 3
- 653401000-KM-03, Repair and maintenance of advanced bicycle componentry, NQF Level 04, Credits 3
- 653401000-KM-04, Bicycle consumables, threads and materials technology, NQF Level 04, Credits 5
- 653401000-KM-05, Advice on specialised bicycle componentry, NQF Level 03, Credits 4

1. 653401000-KM-01, Bicycle construction and assembly, NQF Level 2, Credits 3

1.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of Basic knowledge of the construction of a bicycle, the components of a bicycle and the functioning of those components

The learning will enable learners to demonstrate an understanding of:

- KM-01-KT03: Workshop practices and the use and general care of tools and equipment (10%)
- KM-01-KT01: Bicycle components and parts (10%)
- KM-01-KT02: Bicycle types and construction (10%)
- KM-01-KT04: Torque (10%)
- KM-01-KT05: Measurements and calculations (10%)
- KM-01-KT06: Types, uses and functions of lubrication (10%)
- KM-01-KT07: Bicycle wheels (10%)
- KM-01-KT08: Inspection and preparation (10%)
- KM-01-KT09: Pre-delivery inspection (PDI) (10%)
- KM-01-KT10: Legislation relevant to the bicycle workshop (5%)
- KM-01-KT11: Communication with supervisor and customer (5%)

1.2 Guidelines for Topics

1.2.1. KM-01-KT03: Workshop practices and the use and general care of tools and equipment (10%)

Topic elements to be covered include:

- KT0301 Workshop layout and work flow
- KT0302 What is workshop practice
- KT0303 Types of workshop manual and reference materials
- KT0304 Types of general tools
- KT0305 Types of specialist tools e.g. calipers
- KT0306 Types of job cards and inspection sheet
- KT0307 Understand the use and function of job cards and inspection sheets
- KT0308 Work area housekeeping
- KT0309 Understand stock control
- KT0310 Storing facilities
- KT0311 Understand types of waste materials and the disposal thereof

Internal Assessment Criteria and Weight

- IAC0301 Workshop practice is defined using the correct terminology
- IAC0302 The function of the various workshop areas including the storage facilities are described
- IAC0303 Workflow in the workshop is described with reference to the workshop layout
- IAC0304 A range of general workshop tools and specialised tools are identified and the respective functions are explained
- IAC0305 The correct handling, caring and storage of the tools in the workshop is explained
- IAC0306 All aspects on the job cards and inspection sheets are identified and the instructions are explained

(Weight 10%)

1.2.2. KM-01-KT01: Bicycle components and parts (10%)

Topic elements to be covered include:

- KT0101 Basic introduction and terminology
- KT0102 Bicycle components
- KT0103 Bicycle parts
- KT0103 Bicycle parts

Internal Assessment Criteria and Weight

- IAC0101 Bicycle components and parts are identified and the function of each are explained using the correct terminology

(Weight 10%)

1.2.3. KM-01-KT02: Bicycle types and construction (10%)

Topic elements to be covered include:

- KT0201 Understand bicycle geometry
- KT0202 Understand bicycle frame materials
- KT0203 Understand the anatomy of a bicycle
- KT0204 Basic material properties: steel, carbon fiber and aluminum composite
- KT0205 Bike fitment charts
- KT0206 Purpose of manufacturers specifications
- KT0207 Understanding materials such as ferrous, non-ferrous, corrosion

Internal Assessment Criteria and Weight

- IAC0201 Various bicycle types are identified and the respective functions are described

- IAC0202 Basic bicycle geometry and construction are described
- IAC0203 Materials used in the manufacturing of the various bicycle components are identified and a basic description of the characteristics of these materials are given
- IAC0204 The purpose and use of manufacturer specifications during bicycle repair and servicing are justified

(Weight 10%)

1.2.4. KM-01-KT04: Torque (10%)

Topic elements to be covered include:

- KT0401 Understand torque
- KT0402 Understand why torque is used
- KT0403 Understand threaded fasteners
- KT0404 Understand the types of torque wrenches

Internal Assessment Criteria and Weight

- IAC0401 Torque is defined and its use related to a bicycle is described
- IAC0402 The function of threaded fasteners are discussed
- IAC0403 The function of types of torque wrenches is discussed

(Weight 10%)

1.2.5. KM-01-KT05: Measurements and calculations (10%)

Topic elements to be covered include:

- KT0501 Understand rim widths (identify and measure)
- KT0502 Find and measure seat post diameter using a Vernier
- KT0503 Stem length using a tape measure
- KT0504 Bearing sizes identify and measure using Vernier
- KT0505 Calculate wheel circumference

Internal Assessment Criteria and Weight

- IAC0501 Various measurements related to bicycle components are identified and the correct measuring equipment is identified

(Weight 10%)

1.2.6. KM-01-KT06: Types, uses and functions of lubrication (10%)

Topic elements to be covered include:

- KT0601 Understand corrosion and wear
- KT0602 Understand lubricants, thread locks and cleaners
- KT0603 What lubricant contact to avoid

Internal Assessment Criteria and Weight

- IAC0601 Various types of lubrication used in the bicycle maintenance and servicing are listed and the functions of each are explained
- IAC0602 Characteristics of lubricants, thread locks and cleaners are listed
- IAC0603 Compatibility issues are highlighted with specific reference where not to use specific lubrications

(Weight 10%)

1.2.7. KM-01-KT07: Bicycle wheels (10%)

Topic elements to be covered include:

- KT0701 Understand wheels, rims, tyres and valves
- KT0702 Understand rim and tyre sizing
- KT0703 Compatibility between sizes (rim and tyre)

Internal Assessment Criteria and Weight

- IAC0701 The various components of bicycle wheels are listed and the function of each are discussed
- IAC0702 The importance of identification of correct wheel sizes are justified
- IAC0703 The importance of compatibility between the rim and tyre size are argued
- IAC0704 Principles of wheel alignment and truing are reasoned

(Weight 10%)

1.2.8. KM-01-KT08: Inspection and preparation (10%)

Topic elements to be covered include:

- KT0801 Frame inspection and preparation
- KT0802 Wheel inspection and preparation
- KT0803 Confirm checklist
- KT0804 Damage
- KT0805 Alignment of frame and wheels Use of alignment tools

Internal Assessment Criteria and Weight

- IAC0801 Inspection techniques applied for frame and wheel inspection are described
- IAC0802 The importance of accurate inspection is justified
- IAC0803 Alignment is defined using correct terminology
- IAC0804 The importance of alignment of bicycle components are explained
- IAC0805 Typical faults, damage and wear on a bicycle are listed and possible causes are identified
- IAC0806 The purpose and use of alignment tools are discussed

(Weight 10%)

1.2.9. KM-01-KT09: Pre-delivery inspection (PDI) (10%)**Topic elements to be covered include:**

- KT0901 The purpose and function of a pre-delivery inspection (PDI)
- KT0902 Use and function of an inspection checklists
- KT0903 Use and function of a point to point inspection technique

Internal Assessment Criteria and Weight

- IAC0901 The purpose and function of pre-delivery inspections on a bicycle is discussed
- IAC0902 The use and function of inspection tools (such as checklists and point-to-point inspections) are discussed
- IAC0903 Possible faults and defects are listed

(Weight 10%)

1.2.10. KM-01-KT10: Legislation relevant to the bicycle workshop (5%)**Topic elements to be covered include:**

- KT1001 Understand the Occupational Health and Safety Act
- KT1002 Understand the Compensation of Occupational Injuries and Disease Act (COIDA)
- KT1003 Understand the Hazardous Chemical Substance Regulations
- KT1004 Understand the role and types of personal protection equipment (PPE)
- KT1005 Understand fire precautions and procedures
- KT1006 Understand the causes of accidents
- KT1007 Understand first respondent procedures
- KT1008 Understand the maintenance of a safe working environment

- KT1009 Understand the Consumer Protection Act
- KT1010 Understand the Road safety for the bicycle user

Internal Assessment Criteria and Weight

- IAC1001 The concepts of compliance and non-compliance as applicable to the bicycle workshop is defined
- IAC1002 The importance of compliance with applicable legislation in the bicycle workshop is justified
- IAC1003 The importance of prevention (fire, accidents and incidents in the workshop) is justified
- IAC1004 Road safety principles for the rider are explained

(Weight 5%)

1.2.11. KM-01-KT11: Communication with supervisor and customer (5%)

Topic elements to be covered include:

- KT1101 Receiving and understanding customers
- KT1102 Customer and personal service
- KT1103 Professional appearance and behavior
- KT1104 Receiving and understanding instructions
- KT1105 Reporting to supervisor

Internal Assessment Criteria and Weight

- IAC1101 Communication with the customer is explained and the importance of professional conduct is justified
- IAC1102 The importance of meeting quality standard for service and evaluation is reasoned with reference to customer service
- IAC1103 Techniques to receive and interpret instruction are explained and the importance of ensuring correct understanding of instructions are reasoned
- IAC1104 Purpose and function of reporting to the supervisor is reasoned

(Weight 5%)

1.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance capability for mountain and road bicycles

Human Resource Requirements:

- Facilitator Experience: 2 years of experience as bicycle mechanic
- Facilitator/learner ratio: 1:10

Legal Requirements:

- OHS

1.4 Exemptions

-
- None

2. 653401000-KM-02, Bicycle servicing and maintenance, NQF Level 3, Credits 3

2.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of Assemble a bicycle applying the basic principles of frame alignment and preparation.

The learning will enable learners to demonstrate an understanding of:

- KM-02-KT01: Introduction to bicycle disassembly, servicing or replacement, installation and adjustment (15%)
- KM-02-KT02: Headsets (15%)
- KM-02-KT03: Derailleur (10%)
- KM-02-KT04: Chains (15%)
- KM-02-KT05: Gears (10%)
- KM-02-KT06: Understand crank set wear and damage (5%)
- KM-02-KT07: Understand hub (5%)
- KM-02-KT08: Brake systems (10%)
- KM-02-KT09: Wheel building (10%)
- KM-02-KT10: Pedals (5%)

2.2 Guidelines for Topics

2.2.1. KM-02-KT01: Introduction to bicycle disassembly, servicing or replacement, installation and adjustment (15%)

Topic elements to be covered include:

- KT0101 Requirements for a minor service
- KT0102 Requirements for a major service of components
- KT0103 Types of faults, defects, wear, damage, deviations and possible causes and preventions
- KT0104 Fault finding and troubleshooting techniques
- KT0105 Decision to service or replace
- KT0106 Settings, adjustments and manufacturer requirements
- KT0107 Brand and size compatibility

Internal Assessment Criteria and Weight

- IAC0101 Principles related to disassembly, servicing, replacement, installation and adjustment are defined
- IAC0102 The difference between a minor and major service is reasoned
- IAC0103 Fault finding and troubleshooting techniques are described

- IAC0104 The importance of brand and size compatibility is justified

(Weight 15%)

2.2.2. KM-02-KT02: Headsets (15%)

Topic elements to be covered include:

- KT0201 Understand headset bearing and bearing cup types
- KT0202 Understand headset types
- KT0203 Understand the standardized headset information system (SHIS)
- KT0204 Understand bearing cup interference fit guidelines
- KT0205 Faults, defects and deviations and possible causes and preventions

Internal Assessment Criteria and Weight

- IAC0201 Various types of headsets are differentiated and the characteristics are discussed
- IAC0202 The purpose and functions of headsets are described
- IAC0203 The purpose and function of standardized headset information system (SHIS) are discussed
- IAC0204 Headset components and construction is explained
- IAC0205 Principles related to disassembly, servicing, replacement, installation and adjustment is described

(Weight 15%)

2.2.3. KM-02-KT03: Derailleur (10%)

Topic elements to be covered include:

- KT0301 Understand derailleur components
- KT0302 Understand derailleur capacity and maximum sprocket size
- KT0303 How to set derailleurs according to limits and alignments
- KT0304 Faults, defects and deviations and possible causes and preventions

Internal Assessment Criteria and Weight

- IAC0301 The components, construction and operation of the derailleur is explained
- IAC0302 Derailleur capacity and limits are identified and the implications for installation and adjustments are reasoned
- IAC0303 Principles related to derailleur disassembly, servicing/replacement, installation and adjustment is described

(Weight 10%)

2.2.4. KM-02-KT04: Chains (15%)

Topic elements to be covered include:

- KT0401 Chain components and construction
- KT0402 Chains and chain line
- KT0403 Chain wear and damage
- KT0404 Measurement of chain wear and damage
- KT0405 Chain tension
- KT0406 Faults, defects and deviations and possible causes and prevention

Internal Assessment Criteria and Weight

- IAC0401 Chains and chain lines are defined
- IAC0402 Causes and indicators of chain wear and damage are identified
- IAC0403 Chain sizing and installation principles are discussed

(Weight 15%)

2.2.5. KM-02-KT05: Gears (10%)

Topic elements to be covered include:

- KT0501 Gear cables and housing
- KT0502 Gear shift levers
- KT0503 Gear ratios, meters of development and gear inches
- KT0504 Compatibility (brands and models)
- KT0505 Faults, defects, deviations and possible causes and prevention

Internal Assessment Criteria and Weight

- IAC0501 The purpose and functions of gears, gear housing and components are discussed
- IAC0502 Gear ratios, meters of development and gear inches are defined and the implications for installation and servicing is understood
- IAC0503 Conduct gear housing installation / replacement principles are discussed

(Weight 10%)

2.2.6. KM-02-KT06: Understand crank set wear and damage (5%)

Topic elements to be covered include:

- KT0601 Bottom bracket wear and damage
- KT0602 Bottom bracket standards
- KT0603 Bolt circle diameter
- KT0604 Sprocket and chain ring wear and damage

Internal Assessment Criteria and Weight

- IAC0601 Functions of the crank set and components are described
- IAC0602 Faults, wear, damage, deviations and possible causes and prevention is discussed
- IAC0603 Crank set disassembly, servicing/replacement, installation and adjustment principles are explained

(Weight 5%)

2.2.7. KM-02-KT07: Understand hub (5%)

Topic elements to be covered include:

- KT0701 Hub glossary
- KT0702 Bearings, both cup and cone and sealed cartridge bearing
- KT0703 Freewheel mechanisms
- KT0704 Faults, wear, damage, deviations and possible causes and prevention

Internal Assessment Criteria and Weight

- IAC0701 Hub construction and functions are identified and described
- IAC0702 Freewheel mechanisms are identified and the purpose and functioning is explained
- IAC0703 Hub disassembly, servicing/replacement, installation and adjustment principles are explained

(Weight 5%)

2.2.8. KM-02-KT08: Brake systems (10%)

Topic elements to be covered include:

- KT0801 Overview of various types of braking systems
- KT0802 Understand types of cable operated brakes
- KT0803 Cable operated brake cables and housing
- KT0804 Cable operated brake blocks
- KT0805 Cable operated brake levers
- KT0806 Technical specifications

- KT0807 Faults, wear, damage, deviations and possible causes and prevention is discussed

Internal Assessment Criteria and Weight

- IAC0801 Brake system disassembly, servicing/replacement, installation and adjustment principles are explained
- IAC0802 Brake system construction and components are defined
- IAC0803 Faults, wear, damage, deviations and possible causes and prevention is discussed

(Weight 10%)

2.2.9. KM-02-KT09: Wheel building (10%)

Topic elements to be covered include:

- KT0901 Rim types and materials
- KT0902 Spoke types, materials and designs
- KT0903 Nipple types, materials and designs
- KT0904 Wheel stresses and loads
- KT0905 Spoke patterns
- KT0906 Technical specifications
- KT0907 Spoke tension measurement and conversion

Internal Assessment Criteria and Weight

- IAC0901 What is the max tension for a specific product using a manual or manufacturer specifications
- IAC0902 Confirmation if specific tension is within manufacturer specifications
- IAC0903 What spoke length is required given a hub and rim spec to be build and what tools to use
- IAC0904 Wheel building principles are identified and the importance of applying is justified
- IAC0905 Faults, wear, damage, deviations and possible causes and prevention is discussed

(Weight 10%)

2.2.10. KM-02-KT10: Pedals (5%)

Topic elements to be covered include:

- KT1001 Types of pedals
- KT1002 Types and quality of materials
- KT1003 Pedal construction
- KT1004 Purpose and functions

Internal Assessment Criteria and Weight

- IAC1001 Various types of pedals are differentiated according to manufacturer, size and quality of materials
- IAC1002 The purpose and functions of pedals are discussed

(Weight 5%)

2.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance capability for mountain and road bicycles

Human Resource Requirements:

- Facilitator Experience: 2 years of experience as bicycle mechanic
- Facilitator/learner ratio: 1:10

Legal Requirements:

- OHS

2.4 Exemptions

3. 653401000-KM-03, Repair and maintenance of advanced bicycle componentry, NQF Level 04, Credits 3

3.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of the mechanical principles underpinning the repair and maintenance tasks of advanced bicycle componentry

The learning will enable learners to demonstrate an understanding of:

- KM-03-KT01: Hydraulic brake repair and maintenance (25%)
- KM-03-KT02: Bicycle suspension systems (15%)
- KM-03-KT03: Electronic group set (15%)
- KM-03-KT04: Pivot servicing (10%)
- KM-03-KT05: Electric bicycles (10%)
- KM-03-KT06: Advanced wheel building (15%)
- KM-03-KT07: Using technology in the workshop (10%)

3.2 Guidelines for Topics

3.2.1. KM-03-KT01: Hydraulic brake repair and maintenance (25%)

Topic elements to be covered include:

- KT0101 Hydraulic brake components
- KT0102 Types of hydraulic brake systems
- KT0103 How hydraulic brakes work
- KT0104 Pascal law
- KT0105 Braking power
- KT0106 Brake pads and friction
- KT0107 Rotor care and installation
- KT0108 Hydraulic brake fluid
- KT0109 Heat and fade
- KT0110 Hydraulic brake system care
- KT0111 Fault finding principles related to hydraulic brake systems
- KT0112 Diagnostics and problem solving

Internal Assessment Criteria and Weight

- IAC0101 Methods of the hydraulic brakes repair are explained
- IAC0102 The concept of friction is defined using the correct terminology

- IAC0103 The effects of the friction on the components of the brake system are explained

(Weight 25%)

3.2.2. KM-03-KT02: Bicycle suspension systems (15%)

Topic elements to be covered include:

- KT0201 Understand spring technology
- KT0202 Understand damper technology
- KT0203 Understand suspension system corruption
- KT0204 Understand suspension system friction
- KT0205 Understand suspension system chassis and geometry
- KT0206 Understand suspension system tuning
- KT0207 Fault finding principles related to suspension systems
- KT0208 Diagnostics
- KT0209 Problem solving

Internal Assessment Criteria and Weight

- IAC0201 Methods of fault finding related to the suspension system are explained
- IAC0202 The types of technologies are listed and described for the suspension system
- IAC0203 The concept of bicycle geometry is explained and the application there off discussed

(Weight 15%)

3.2.3. KM-03-KT03: Electronic group set (15%)

Topic elements to be covered include:

- KT0301 Deraillleur system
- KT0302 Junction boxes
- KT0303 Diagnostic software
- KT0304 Different charges
- KT0305 Different manufacturers
- KT0306 Wire lengths for different frame sizes
- KT0307 Internal batteries
- KT0308 Fault finding principles
- KT0309 Diagnostics

- KT0310 Problem solving

Internal Assessment Criteria and Weight

- IAC0301 The electronic group set of the bicycle is identified and described
- IAC0302 The function of front and rear Derailleur system is explained
- IAC0303 Different frame size are described according to the fitment wire length on specification of the bike

(Weight 15%)

3.2.4. KM-03-KT04: Pivot servicing (10%)

Topic elements to be covered include:

- KT0401 Disassembly and assembly
- KT0402 Travel ratios
- KT0403 Understanding bearing types
- KT0404 Understanding bushings
- KT0405 Bearing and bushes care and installation
- KT0406 Fault finding principles
- KT0407 Diagnostics
- KT0408 Problem solving

Internal Assessment Criteria and Weight

- IAC0401 The types and functions of bearings are explained
- IAC0402 The concept of pivot servicing is explained and what tools should be used
- IAC0403 The procedure of disassembling and assembling is explained

(Weight 10%)

3.2.5. KM-03-KT05: Electric bicycles (10%)

Topic elements to be covered include:

- KT0501 Basics (washing and cleaning)
- KT0502 Safety and care related to electric components
- KT0503 Fault finding principles
- KT0504 Diagnostics
- KT0505 Problem solving

Internal Assessment Criteria and Weight

- IAC0501 The concept and function of electric bicycle is explained
- IAC0502 The safety and care handling of electric components are discussed
- IAC0503 The purpose of the diagnostic equipment is explained

(Weight 10%)

3.2.6. KM-03-KT06: Advanced wheel building (15%)**Topic elements to be covered include:**

- KT0601 Types of advanced wheels
- KT0602 Materials and various component profiles and compatibility
- KT0603 Advanced wheel constructions
- KT0604 Advanced wheel constructions
- KT0605 Characteristics of wheel set
- KT0606 Tension documentation and confirmation
- KT0607 Tolerances and variances

Internal Assessment Criteria and Weight

- IAC0601 Various types of advanced wheels are identified
- IAC0602 The material compatibility of the various component are discussed
- IAC0603 The characteristics of the wheel set are discussed and its functions

(Weight 15%)

3.2.7. KM-03-KT07: Using technology in the workshop (10%)**Topic elements to be covered include:**

- KT0701 Point-of-sales system
- KT0702 Electronic diagnostic and group set
- KT0703 Finding any relevant technical documents by using search engines or manufacturing websites

Internal Assessment Criteria and Weight

- IAC0701 The concept and function of technology is explained at the point of sales
- IAC0702 The various technology programmes are identified and described
- IAC0703 The possible effects of the point of sales is explained

(Weight 10%)

3.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance capability for mountain and road bicycles

Human Resource Requirements:

- Facilitator Experience: 2 years of experience as bicycle mechanic
- Facilitator/learner ratio: 1:10

Legal Requirements:

- OHS

3.4 Exemptions

- None

4. 653401000-KM-04, Bicycle consumables, threads and materials technology, NQF Level 04, Credits 5

4.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of advanced technology pertaining to consumables, threads and materials used for bicycles

The learning will enable learners to demonstrate an understanding of:

- KM-04-KT01: Demonstrate an advanced understanding of lubricants (25%)
- KM-04-KT02: Demonstrate an advanced understanding of solvents (20%)
- KM-04-KT03: Demonstrate an advanced understanding of threads and threaded fasteners (10%)
- KM-04-KT04: Demonstrate an advanced understanding of bicycle frame and component materials (20%)
- KM-04-KT05: Demonstrate an advanced understanding of hydraulic fluids (25%)

4.2 Guidelines for Topics

4.2.1. KM-04-KT01: Demonstrate an advanced understanding of lubricants (25%)

Topic elements to be covered include:

- KT0101 Lubricant properties
- KT0102 Friction and wear properties of lubricants
- KT0103 Friction and power loss
- KT0104 Penetration
- KT0105 The effect of additives on lubricant properties
- KT0106 Types of lubricants (commercial, natural base oils)
- KT0107 Lubricant / material compatibility
- KT0108 Applications of lubricants
- KT0109 Lubricant compatibility with bicycle systems
- KT0110 Safe storage, use and disposal of lubricants
- KT0111 Material safety data sheets (MSDS)

Internal Assessment Criteria and Weight

- IAC0101 Advanced properties and characteristics of various types of lubricants are compared and the application possibilities are assessed and evaluated to determine the best product for bicycle system efficiency

(Weight 25%)

4.2.2. KM-04-KT02: Demonstrate an advanced understanding of solvents (20%)

Topic elements to be covered include:

- KT0201 Solutions and solvation
- KT0202 Solvent classification
- KT0203 Physical properties of common solvents
- KT0204 Uses of solvents
- KT0205 Solvent / material compatibility
- KT0206 Safe storage, use and disposal of solvents
- KT0207 Biodegradability
- KT0208 Solvent compatibility with bicycle systems
- KT0209 MSDS
- KT0209 MSDS

Internal Assessment Criteria and Weight

- IAC0201 Advanced properties and characteristics of various types of solvents are compared and the application possibilities are assessed and evaluated to determine the best product for bicycle system efficiency

(Weight 20%)

4.2.3. KM-04-KT03: Demonstrate an advanced understanding of threads and threaded fasteners (10%)

Topic elements to be covered include:

- KT0301 Different applications of threads and threaded fasteners
- KT0302 Design of threaded fasteners
- KT0303 Thread standardisation
- KT0304 Manufacturing of threads and threaded fasteners
- KT0305 Inspection of threads

Internal Assessment Criteria and Weight

- IAC0301 Advanced design parameters of various types of threaded fasteners are compared and the application possibilities are assessed and evaluated to determine the best solution

(Weight 10%)

4.2.4. KM-04-KT04: Demonstrate an advanced understanding of bicycle frame and component materials (20%)

Topic elements to be covered include:

- KT0401 Understand the fundamentals of material science and the care thereof

- KT0402 Understand the mechanical properties of materials
- KT0403 Manufacturing processes
- KT0404 Material applications and advantages
- KT0405 Understand polymer materials
- KT0406 Understand metal alloys
- KT0407 Understand composite materials

Internal Assessment Criteria and Weight

- IAC0401 Advanced properties and characteristics of various types of bicycle frame and components materials are compared in terms of functionality and durability for a specific bicycle / component type

(Weight 20%)

4.2.5. KM-04-KT05: Demonstrate an advanced understanding of hydraulic fluids (25%)

Topic elements to be covered include:

- KT0501 Types of hydraulic fluids
- KT0502 Understand the composition of hydraulic fluids
- KT0503 Understand hydraulic fluid characteristics, properties and functions
- KT0504 The effect of temperature
- KT0505 The effect of air in hydraulic systems
- KT0506 Understand the safe storage, use and disposal of hydraulic fluids
- KT0507 Clean spillages
- KT0508 MSDS

Internal Assessment Criteria and Weight

- IAC0501 Advanced properties and characteristics of various types of hydraulic fluids are compared and the application possibilities are assessed and evaluated to determine the best product for bicycle system efficiency

(Weight 25%)

4.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance capability for mountain and road bicycles

-

Human Resource Requirements:

- Facilitator Experience: 2 years of experience as bicycle mechanic
- Facilitator/learner ratio: 1:10

Legal Requirements:

- OHS

4.4 Exemptions

- None

5. 653401000-KM-05, Advice on specialised bicycle componentry, NQF Level 03, Credits 4

5.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of advisory principles applied in the bicycle workshop to advise clients and coach work team on specialised bicycle componentry

The learning will enable learners to demonstrate an understanding of:

- KM-05-KT01: Supervisory principles (15%)
- KM-05-KT02: Supervision (10%)
- KM-05-KT03: Written, non-verbal and verbal communication (15%)
- KM-05-KT04: Training and coaching (15%)
- KM-05-KT05: Interpersonal relations (15%)
- KM-05-KT06: Labour relations (15%)
- KM-05-KT07: Productivity, motivation and performance (5%)
- KM-05-KT08: Basic research principles (10%)

5.2 Guidelines for Topics

5.2.1. KM-05-KT01: Supervisory principles (15%)

Topic elements to be covered include:

- KT0101 Planning, leading, organising and control
- KT0102 Leadership
- KT0103 Team work and group dynamics
- KT0104 Monitor and assess colleagues work

Internal Assessment Criteria and Weight

- IAC0101 The concepts and principles of planning, leading, organising and control are described
- IAC0102 Planning, leading, organising and control practices are described
- IAC0103 The importance of planning, leading, organizing and control is discussed
- IAC0104 Leadership is defined to illustrate its importance in the industry
- IAC0105 The characteristics of a leader is listed and discussed to highlight the qualities and behaviors that make good leaders but also qualities and behaviors that good leaders actively avoid
- IAC0106 The principles of leadership is given and reviewed
- IAC0107 The best practices of leadership are stated and their relevance to the industry is explained
- IAC0108 The composition of a team is outlined with special attention given to the team composition most prevalent in the current workplace
- IAC0109 Characteristics of a well-functioning team are listed

- IAC0110 Job maturity of individuals in a team is reviewed to assess the effect on team functionality
- IAC0111 The role of a team in a forestry workplace is delineated
- IAC0112 The dynamics of a well-functioning team is explored
- IAC0113 The influence of different team members is discussed with regards to the effect on team performance
- IAC0114 Methods that encourage team cohesion are depicted
- IAC0115 External factors which impact teamwork is identified
- IAC0116 Internal factors which impact teamwork is given

(Weight 15%)

5.2.2. KM-05-KT02: Supervision (10%)

Topic elements to be covered include:

- KT0201 Supervisory Styles
- KT0202 Role of the Supervisor
- KT0203 Ethics
- KT0204 Acknowledging when to call second opinion

Internal Assessment Criteria and Weight

- IAC0201 Different supervisory styles are listed and their impact on team dynamics are explained
- IAC0202 Different supervisory styles are compared and contrasted with respect to their impact on individual team members
- IAC0203 The position of the supervisor in the structure of the workplace is described in terms of roles and duties
- IAC0204 The importance of role clarification, accountability and responsibility is explained to show how it will affect the position and efficacy of the supervisor
- IAC0205 Supervisory techniques and methods are described and contrasted to highlight the advantages and disadvantages of each
- IAC0206 The principles of delegation and authority are defined and their role in supervision is outlined
- IAC0207 The importance of correctly formulating instructions are reviewed in terms of the impact thereof on team members
- IAC0208 The cultural and social pressures on supervisors are identified to show the influence thereof on supervisors
- IAC0209 The role of the code of conduct in the workplace is assessed
- IAC0210 The importance of being honest and truthful even if it means some ramifications is motivated

- IAC0211 The cost of dishonesty to company is explained
- IAC0212 The concepts of nepotism, bribery, theft, corruption, favouritism, honesty, intimidation and instigation, confidentiality, rumour mongering and witch craft and their effects on team members and the workplace are discussed

(Weight 10%)

5.2.3. KM-05-KT03: Written, non-verbal and verbal communication (15%)

Topic elements to be covered include:

- KT0301 The role of verbal, non-verbal and written communication in supervision
- KT0302 Methods of communication
- KT0303 Information, data, record keeping and reporting
- KT0304 Communication in the workshop
- KT0305 How communication in the workshop affects client impression Communication with the client

Internal Assessment Criteria and Weight

- IAC0301 The basic principles of communication are outlined
- IAC0302 Information is appraised in terms of importance, urgency and priority
- IAC0303 The importance of urgent and timely information sharing is reviewed
- IAC0304 Communication flow in the workplace is evaluated for efficiency and scope
- IAC0305 Reporting structures in the workplace are described
- IAC0306 Barriers to communication are identified and ways of overcoming them are related
- IAC0307 The terminology used to describe communication are clearly defined
- IAC0308 Communication methods and techniques are compared in terms of efficiency, relevancy and appropriateness
- IAC0309 Types and purpose of communication technology such as radios and cell phones are reviewed
- IAC0310 The role and purpose of whistles, sirens, hand signals and flags are listed
- IAC0311 The role and purpose of other forms of communication such as bulletins, newsletters are given
- IAC0312 Types of records are described and related to the data they are most suited to store
- IAC0313 Types of data encountered in the workplace are reviewed
- IAC0314 Principles of record keeping are delineated
- IAC0315 The importance and the role of recording, reporting and presentation are given
- IAC0316 The importance of timeous reporting of is argued

- IAC0317 Legal requirements related to the keeping and storage of records are outlined in terms of actions necessary for compliancy
- IAC0318 Reporting and report formats are identified
- IAC0319 The steps to ensure data integrity, accuracy, legibility and currency are defined

(Weight 15%)

5.2.4. KM-05-KT04: Training and coaching (15%)

Topic elements to be covered include:

- KT0401 Importance of skilled workers in terms of the job requirements
- KT0402 Training and coaching methods and techniques
- KT0403 The purpose of skills needs analysis to determine a coaching or training programme for the individual
- KT0404 The repetitive nature of coaching and training
- KT0405 Role of the supervisor in relation to training and coaching

Internal Assessment Criteria and Weight

- IAC0401 The concept of training and coaching is explained
- IAC0402 The role and responsibilities of the supervisor are identified and explained
- IAC0403 Different methods and techniques are explained

(Weight 15%)

5.2.5. KM-05-KT05: Interpersonal relations (15%)

Topic elements to be covered include:

- KT0501 Cultural diversity and social pressures
- KT0502 Types of attitudes and the effect thereof on the team cohesion and achievement
- KT0503 The influence of work ethos on team performance and methods to enhance it
- KT0504 The influence of role clarification on team performance and methods to enhance it
- KT0505 The characteristics of the professional interpersonal relationship with the team workers and the effects on the workers motivation
- KT0506 Gauging own performance within the scope of the performance of the team

Internal Assessment Criteria and Weight

- IAC0501 Different types of interpersonal relations are identified and explained
- IAC0502 The importance of the team performance and methods are defined

- IAC0503 The role of culture diversity are discussed

(Weight 15%)

5.2.6. KM-05-KT06: Labour relations (15%)

Topic elements to be covered include:

- KT0601 Basic understanding of legislation (BCE, OHS) and compliance criteria
- KT0602 Conflict handling methods
- KT0603 Disciplinary procedures
- KT0604 Concept of discipline
- KT0605 The role of discipline and disciplinary measures
- KT0606 Role of labour relations and legislation in the workplace

Internal Assessment Criteria and Weight

- IAC0601 Describe the influence of representation in the workplace on team performance and methods to enhance it
- IAC0602 Describe the influence of safety, health, environment and quality, on team performance and methods to enhance it
- IAC0603 Describe principles of Labour relations with examples
- IAC0604 Evaluate grievance procedures

(Weight 15%)

5.2.7. KM-05-KT07: Productivity, motivation and performance (5%)

Topic elements to be covered include:

- KT0701 The importance of productivity to keep sustainable workplace
- KT0702 The importance of motivation
- KT0703 The importance of performance and quality output to grow client base

Internal Assessment Criteria and Weight

- IAC0701 Discuss principles of productivity
- IAC0702 Describe the aspects of productivity (time, people, money, resources, quality) and how it relates to each other
- IAC0703 Discuss the importance of standards and targets setting for the workplace and the purpose of daily targets, standards and quality
- IAC0704 Define performance
- IAC0705 Explain the implication of not applying a performance measurement system

- IAC0706 Explain the importance of performance standards and measurement
- IAC0707 Indicate ways and means to encourage and support performance
- IAC0708 Discuss principles of motivation

(Weight 5%)

5.2.8. KM-05-KT08: Basic research principles (10%)

Topic elements to be covered include:

- KT0801 Basic research methods
- KT0802 Basic research tools
- KT0803 Manufacturer sources
- KT0804 Writing up of findings
- KT0805 Basic data analysis

Internal Assessment Criteria and Weight

- IAC0801 Appropriate basic research method is selected and described for sourcing information
- IAC0802 Basic data analysis methods are described

(Weight 10%)

5.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance capability for mountain and road bicycles

Human Resource Requirements:

- Facilitator Experience: 2 years of experience as bicycle mechanic
- Facilitator/learner ratio: 1:10

Legal Requirements:

- OHS

5.4 Exemptions

- None
- None

SECTION 3B: PRACTICAL SKILL MODULE SPECIFICATIONS

List of Practical Skill Module Specifications

- 653401000-PM-01, Wash, clean and assemble new bicycles, NQF Level 2, Credits 4
- 653401000-PM-02, Perform minor and major services for the maintenance of bicycles (excluding suspension and wheel building), NQF Level 3, Credits 6
- 653401000-PM-03, Conduct disassembly, servicing/replacement, installation and testing of advanced bicycle componentry, NQF Level 04, Credits 4
- 653401000-PM-04, Advise clients and bicycle mechanics on the technical aspects to identify faults and solve problems, NQF Level 04, Credits 1
- 653401000-PM-05, Advise teams in a fair and consistent manner in the bicycle workshop to achieve set targets and outputs and specialised problem solving, NQF Level 03, Credits 1

1. 653401000-PM-01, Wash, clean and assemble new bicycles, NQF Level 2, Credits 4

1.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to the principles involved in the washing, cleaning and assembling of bicycles and the utilization of tools and equipment in the bicycle workshop.

The learner will be required to:

- PM-01-PS01: Identify bicycle parts and components
- PM-01-PS02: Record or mark bicycle setup prior to washing, cleaning or dismantling
- PM-01-PS03: Clean, wash and lubricate a bicycle
- PM-01-PS04: Use a bicycle work stand
- PM-01-PS05: Identify, use, clean and store tools whilst complying with workshop safety
- PM-01-PS06: Use job cards and inspection sheets when repairing or maintaining a bicycle
- PM-01-PS07: Use of manuals and references to find manufacturer specifications on a specific type of bicycle or component
- PM-01-PS08: Use torque wrenches and other measuring instruments such as specialized ruler, Vernier and caliper
- PM-01-PS09: Use lubricants, thread locks and cleaners to specific areas of the bicycle
- PM-01-PS10: Remove, inspect, repair and install wheels, tyres and tubes
- PM-01-PS11: Inspect for accurate rear triangle alignment
- PM-01-PS12: Inspect for accurate dropout alignment
- PM-01-PS13: Conduct headset tube reaming and facing
- PM-01-PS14: Conduct bottom bracket shell facing and tapping
- PM-01-PS15: Conduct fork threading
- PM-01-PS16: Conduct crown facing
- PM-01-PS17: Conduct seat tube preparation
- PM-01-PS18: Conduct internal tapping
- PM-01-PS19: Conduct rear derailleur alignment
- PM-01-PS20: Perform a pre-delivery inspection
- PM-01-PS21: Apply safe workshop practices and operating procedures, housekeeping and safety
- PM-01-PS22: Assemble a new bicycle
- PM-01-PS23: Basic computer literacy

1.2 Guidelines for Practical Skills

1.2.1. PM-01-PS01: Identify bicycle parts and components

Scope of Practical Skill

Given a bicycle and manufacturers specifications the learner must be able to:

- PA0101 Point out frame components
- PA0102 Point out general components
- PA0103 Point out specialist components
- PA0104 Point out manufacturer type and level of specification
- PA0105 Identify any damage

Applied Knowledge

- AK0101 Frame and general components
- AK0102 Use of manufacturer specifications

Internal Assessment Criteria

- IAC0101 All bicycle parts and components are correctly identified and pointed out
- IAC0102 Damage to the bicycle parts and components are correctly identified and pointed out and the reasons for such damage are given
- IAC0103 Manufacturer specifications are applied according to type and level of specification

1.2.2. PM-01-PS02: Record or mark bicycle setup prior to washing, cleaning or dismantling

Scope of Practical Skill

Given a bicycle, measuring and marking equipment and job card the learner must be able to:

- PA0201 Measure and record seat post height
- PA0202 Measure and record stack height
- PA0203 Visually observe and record angles of levers
- PA0204 Measure and record suspension pressure

Applied Knowledge

- AK0201 Understand the importance of customer setup
- AK0202 Measuring techniques

Internal Assessment Criteria

- IAC0201 All measurements are accurately taken using the appropriate measuring equipment
- IAC0202 All measurements are correctly recorded

1.2.3. PM-01-PS03: Clean, wash and lubricate a bicycle

Scope of Practical Skill

Given access to a wash bay, job card, bicycle stand, cleaning materials, consumables, workshop tools, cleaning tools and compressed air the learner must be able to:

- PA0301 Select and use the correct tools and consumables for the task
- PA0302 Remove wheels
- PA0303 Select and insert the correct dummy components e.g. dummy hub, calliper spacers
- PA0304 Wash frame, wheels and other external components
- PA0305 Inspect frame and components for damage and wear while washing
- PA0306 Dry and shine bicycle
- PA0307 Lubricate the relevant components
- PA0308 Report back on findings

Applied Knowledge

- AK0301 Washing and cleaning agent properties and uses

Internal Assessment Criteria

- IAC0301 A bicycle is prepared for the cleaning and washing task using the correct dummy components
- IAC0302 A bicycle is cleaned, washed and shined using the correct tools and equipment
- IAC0303 The relevant components are lubricated using the correct lubrication for the specific component

1.2.4. PM-01-PS04: Use a bicycle work stand

Scope of Practical Skill

Given work stand and bicycle the learner must be able to:

- PA0401 Determine whether the bicycle stand is correct for the specific bicycle
- PA0402 Lift the bicycle into the stand using ergonomic principles
- PA0403 Clamp the bicycle in the work stand applying the clamp in the correct position ensuring no damage to the bicycle
- PA0404 Measure and record or mark existing seat post height
- PA0405 Use dummy seat post
- PA0406 Adjust the work stand in terms of height and rotation

Applied Knowledge

- AK0401 Measuring technique and units

Internal Assessment Criteria

- IAC0401 The correct work stand is selected
- IAC0402 The bicycle correctly clamped to the work stand ensuring no damage to the bicycle
- IAC0403 Work stand is adjusted in terms of height and rotation complying with ergonomic principles

1.2.5. PM-01-PS05: Identify, use, clean and store tools whilst complying with workshop safety

Scope of Practical Skill

Given a range of workshop tools, work area / tool storage facility, tool cleaners and safety equipment the learner must be able to:

- PA0501 Identify a range of workshop tools
- PA0502 Inspect for damage / wear
- PA0503 Use tools and confirm suitability for the task
- PA0504 Use measuring instruments
- PA0505 Measure a threaded fastener
- PA0506 Remove difficult threaded fasteners
- PA0507 Clean tools
- PA0508 Store tools
- PA0509 Report on tools

Applied Knowledge

- AK0501 Safety requirements for the use of tools
- AK0502 Safe storage requirements for the tools

Internal Assessment Criteria

- IAC0501 Correctly identify tools used in the bicycle workshop
- IAC0502 Correctly use and clean tools in a safe manner
- IAC0503 Tools are inspected and damage and wear is correctly pointed out

1.2.6. PM-01-PS06: Use job cards and inspection sheets when repairing or maintaining a bicycle

Scope of Practical Skill

Given a job card, inspection sheet and standard operating procedure the learner must be able to:

- PA0601 Read and interpret job cards and inspection sheets when repairing or servicing a bicycle and identify all relevant aspects to the task

- PA0602 Apply the instructions on the job card / inspection sheet when repairing or servicing a bicycle
- PA0603 Complete job card / inspection sheet on the executed tasks
- PA0604 Record stock items on job card / inspection sheet
- PA0605 Sign off on job card / inspection sheet

Applied Knowledge

- AK0601 Interpretation of job cards and instructions entailed in the job card

Internal Assessment Criteria

- IAC0601 The instructions on the job card is correctly interpreted and the tasks are accurately derived from the job card
- IAC0602 The inspection sheet is accurately used to conduct an inspection and all relevant information is recorded on the inspection sheet
- IAC0603 All aspects of the completed tasks are recorded and any abnormalities are noted

1.2.7. PM-01-PS07: Use of manuals and references to find manufacturer specifications on a specific type of bicycle or component

Scope of Practical Skill

Given manufacturers specifications / manuals, tool guides and catalogues, component guides and catalogues and a range of components and tools the learner is not familiar with the learner must be able to:

- PA0701 Find information on bicycles, components, tools and consumables using appropriate reference materials
- PA0702 Determine compatibility of components and equipment using the appropriate referencing materials
- PA0703 Determine how to make use of tools
- PA0704 Determine tolerances, variations and standards using appropriate reference materials

Applied Knowledge

- AK0701 Types of reference sources and types of information in the reference sources

Internal Assessment Criteria

- IAC0701 Appropriate reference sources are selected for the information needed
- IAC0703 Reference materials and sources are correctly used to find the information needed
- IAC0703 Accurate information is identified related to the component or tools

1.2.8. PM-01-PS08: Use torque wrenches and other measuring instruments such as specialized ruler, Vernier and caliper

Scope of Practical Skill

Given torque wrench and threaded fasteners and reference sources the learner must be able to:

- PA0801 Identify appropriate torque settings according to manufacturer specifications
- PA0802 Apply torque setting within specified tolerances
- PA0803 Deviances on torque settings are identified
- PA0804 Tension a threaded fastener using a torque wrench
- PA0805 Maintain and store a torque wrench
- PA0806 Use measuring instruments to determine spoke lengths, ball bearing sizes, cotter pin sizes, etc.

Applied Knowledge

- AK0801 Torque specifications

Internal Assessment Criteria

- IAC0801 Torque settings are accurately identified and applied and deviations are identified and corrected
- IAC0802 The torque wrench is correctly used achieving the correct torque setting

1.2.9. PM-01-PS09: Use lubricants, thread locks and cleaners to specific areas of the bicycle

Scope of Practical Skill

Given consumables (lubricants, thread locks and cleaners) and lubricant applicator and bicycle or bicycle components the learner must be able to:

- PA0901 Identify and select correct lubricant for application to a specified section of the bicycle or components
- PA0902 Refill applicator
- PA0903 Contextually apply lubricants, thread locks and cleaners ensuring appropriate coverage of the area and moving sections
- PA0904 Dispose of lubricants, thread locks and cleaners

Applied Knowledge

- AK0901 Lubricant characteristics and compatibility
- AK0902 Safety related to chemical use and storage

Internal Assessment Criteria

- IAC0901 Lubricants, thread locks and cleaners are correctly selected appropriate to the area of application taking compatibility into account
- IAC0902 Lubricants, thread locks and cleaners are correctly applied achieving suitable covering of the area

- IAC0903 Waste (lubricants, thread locks and cleaners) and empty containers are disposed of according to environmental requirements

1.2.10. PM-01-PS10: Remove, inspect, repair and install wheels, tyres and tubes

Scope of Practical Skill

Given a basic bicycle (tubed or tubeless, perma-tube wheels), tools and equipment, consumables, parts the learner must be able to:

- PA1001 Identify and select the correct tools and equipment appropriate to the task
- PA1002 Remove the wheel from the bicycle applying the appropriate tools and techniques
- PA1003 Inspect the tyre, rim, tube, etc. for defects applying fault finding steps for condition and apply discretion deciding whether to replace or repair
- PA1004 Repair or replace defect parts
- PA1005 Reseat the tyre onto the rim and install the wheel back onto the bike
- PA1006 Top-up sealant on a tubeless wheel prior to reseating the tyre onto the rim
- PA1007 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK1001 Inspection techniques

Internal Assessment Criteria

- IAC1001 Wheels, tyres and tubes are correctly removed
- IAC1002 Wheels, tyres and tubes are correctly inspected and all defects and faults are identified and possible causes are identified
- IAC1003 Appropriate measures are taken to repair or replace defective parts
- IAC1004 Wheels, tyres and tubes are correctly installed applying the appropriate techniques

1.2.11. PM-01-PS11: Inspect for accurate rear triangle alignment

Scope of Practical Skill

Given work stand, tools, frame / bicycle, frame geometry the learner must be able to:

- PA1101 Identify and select the correct tools and equipment appropriate to the task
- PA1102 Identify manufacturer specifications for the task
- PA1103 Determine bicycle centre line
- PA1104 Measure in order to determine differences / offset, if applicable

- PA1105 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK1101 Anatomy of the bicycle and alignment principles

Internal Assessment Criteria

- IAC1101 The rear triangle alignment is accurately determined and deviations are specified and recorded

1.2.12. PM-01-PS12: Inspect for accurate dropout alignment

Scope of Practical Skill

Given Work stand, Tools, Frame / bicycle the learner must be able to:

- PA1201 Identify and select the correct tools and equipment appropriate to the task
- PA1202 Identify manufacturer specifications for the task
- PA1203 Measure in order to determine differences / offset and specify deviances (horizontal, vertical and diagonal)
- PA1204 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK1201 Anatomy of the bicycle and alignment principles

Internal Assessment Criteria

- IAC1201 The dropout alignment is accurately determined and deviations (horizontal, vertical or diagonal) are specified and recorded

1.2.13. PM-01-PS13: Conduct headset tube reaming and facing

Scope of Practical Skill

Given a work stand, tools, frame / bicycle and consumables the learner must be able to:

- PA1301 Identify and select the correct tools and equipment appropriate to the task
- PA1302 Identify manufacturer specifications for the task
- PA1303 Identify and use cutting fluid
- PA1304 Measure internal diameter of head tube using measuring equipment
- PA1305 Ream the internal tubing applying prescribed tolerances
- PA1306 Face upper and lower tubing

- PA1307 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK1301 Reaming technique
- AK1302 Facing technique

Internal Assessment Criteria

- IAC1301 The headset tube is correctly dismantled and measured
- IAC1302 Reaming and facing techniques are correctly applied adhering to safety requirements
- IAC1303 Reaming and facing is done according to manufacturer specifications

1.2.14. PM-01-PS14: Conduct bottom bracket shell facing and tapping

Scope of Practical Skill

Given work stand, tools, frame / bicycle and consumables the learner must be able to:

- PA1401 Identify and select the correct tools and equipment appropriate to the task
- PA1402 Identify manufacturer specifications for the task
- PA1403 Select and use cutting fluid
- PA1404 Identify type of bottom bracket
- PA1405 Identify damage or defective threads
- PA1406 Measure internal diameter of bottom bracket using a measuring instrument
- PA1407 Rethread the internal tubing
- PA1408 Face the bottom bracket shell
- PA1409 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK1401 Rethreading technique
- AK1402 Facing technique

Internal Assessment Criteria

- IAC1401 Bottom bracket shell is correctly threaded according to manufacturer specifications and quality standards
- IAC1402 Facing and tapping of bottom bracket shell is correctly performed achieving a flush bottom bracket shell

1.2.15. PM-01-PS15: Conduct fork threading

Scope of Practical Skill

Given stand, tools, fork and consumables the learner must be able to:

- PA1501 Identify and select the correct tools and equipment appropriate to the task
- PA1502 Identify manufacturer specifications for the task
- PA1503 Measure external nominal diameter of steering column thread
- PA1504 Use cutting fluid
- PA1505 Identify damage or defective threads
- PA1506 Rethread the fork thread
- PA1507 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK1501 Rethreading technique

Internal Assessment Criteria

- IAC1501 The steering column is correctly threaded according to manufacturer specifications and quality standards

1.2.16. PM-01-PS16: Conduct crown facing

Scope of Practical Skill

Given Tools, Fork and Consumables the learner must be able to:

- PA1601 Identify and select the correct tools and equipment appropriate to the task
- PA1602 Identify manufacturer specifications for the task
- PA1603 Measure external diameter of crown
- PA1604 Select and use the tool
- PA1605 Use cutting fluid
- PA1606 Face the crown
- PA1607 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK1601 Bicycle fork construction

Internal Assessment Criteria

- IAC1601 Crown facing is correctly performed achieving a flush crown

1.2.17. PM-01-PS17: Conduct seat tube preparation

Scope of Practical Skill

Given Work stand, Bicycle / frame, Tools and Consumables the learner must be able to:

- PA1701 Identify and select the correct tools and equipment appropriate to the task
- PA1702 Identify manufacturer specifications for the task
- PA1703 Measure the internal diameter of the seat tube
- PA1704 Use cutting fluid
- PA1705 Ream the seat tube
- PA1706 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK1701 Bicycle construction and sizes

Internal Assessment Criteria

- IAC1701 The seat tube is cleaned and free from corrosion and contaminants
- IAC1702 A snug fit of the seat post is achieved
- IAC1703 The reamer correctly used to maintain specifications of the seat tube

1.2.18. PM-01-PS18: Conduct internal tapping

Scope of Practical Skill

Given work stand, bicycle / frame, tools and consumables the learner must be able to:

- PA1801 Identify and select the correct tools (size) and equipment appropriate to the task
- PA1802 Identify manufacturer specifications for the task
- PA1803 Measure the internal nominal diameter of the thread
- PA1804 Measure thread pitch
- PA1805 Select the tool
- PA1806 Use cutting fluid
- PA1807 Rethread the internal thread
- PA1808 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK1801 Threaded fasteners (internal and external thread)
- AK1802 Thread diameters and pitch

Internal Assessment Criteria

- IAC1801 Fasteners are correctly threaded (various) avoiding cross-threading and damage to the tap
- IAC1802 The correct size tap is identified and used

1.2.19. PM-01-PS19: Conduct rear derailleur alignment

Scope of Practical Skill

Given work stand, bicycle / frame and tools the learner must be able to:

- PA1901 Identify and select the correct tools and equipment appropriate to the task
- PA1902 Identify manufacturer specifications for the task
- PA1903 Remove the wheel
- PA1904 Centre the wheel
- PA1905 Measure for a discrepancy
- PA1906 Realign the hanger using a derailleur hanger alignment gauge
- PA1907 Check for hanger fastening
- PA1908 Fit and use a drop-out alignment tool
- PA1909 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK1901 Tools and equipment
- AK1902 Derailleur tangent

Internal Assessment Criteria

- IAC1901 Discrepancy is correctly identified applying accurate measuring techniques and instruments
- IAC1902 The bicycle is fitted with a correctly aligned rear derailleur hanger

1.2.20. PM-01-PS20: Perform a pre-delivery inspection

Scope of Practical Skill

Given Work stand, Tools, Bicycle and Inspection sheet the learner must be able to:

- PA2001 Identify and select the correct tools and equipment appropriate to the task
- PA2002 Identify manufacturer specifications for the task
- PA2003 Check bicycle for serviceability
- PA2004 Check component serviceability

- PA2005 Check bicycle for safety
- PA2006 Check all accessories are fitted

Applied Knowledge

- AK2001 Pre-delivery inspection checklist
- AK2002 Bicycle anatomy and accessories
- AK2002 Bicycle anatomy and accessories

Internal Assessment Criteria

- IAC2001 The bicycle and components are inspected and serviceability confirmed
- IAC2002 The bicycle accessories is inspected confirming that all accessories are fitted
- IAC2003 Safety checks are executed and safety confirmed
- IAC2004 All deviations are recorded and reported

1.2.21. PM-01-PS21: Apply safe workshop practices and operating procedures, housekeeping and safety

Scope of Practical Skill

Given personal protective equipment (PPE) and health and safety guidelines, consumables, heavy objects the learner must be able to:

- PA2101 Use the PPE
- PA2102 Adhere to demarcated areas for specified tasks and workplace specifications
- PA2103 Store hazardous chemicals according to requirements
- PA2104 Identify required lifting equipment and lift and carry heavy objects (may be as part of a lifting team)
- PA2105 Dispose of waste in an environmentally friendly manner
- PA2106 Adhere to power tools safety guidelines
- PA2107 Keep work area clean and tidy
- PA2108 Apply personal hygiene
- PA2109 Apply first responder actions to the casualty

Applied Knowledge

- AK2101 Compliance with safety and environmental requirements

Internal Assessment Criteria

- IAC2101 Workshop safety is achieved and maintained in compliance with regulatory requirements

- IAC2102 Safety measures are applied when using tools, equipment and consumables achieving and maintaining compliance with regulatory requirements
- IAC2103 Personal hygiene and workshop tidiness is achieved

1.2.22. PM-01-PS22: Assemble a new bicycle

Scope of Practical Skill

Given bicycle, tools and consumables the learner must be able to:

- PA2201 Inspect all components for potential damages to box
- PA2202 Check all parts are present
- PA2203 Identify and select the correct tools and equipment appropriate to the task
- PA2204 Identify manufacturer specifications for the task
- PA2205 Assemble bicycle to rideable condition ensuring all manufacturer requirements are applied and following assembly procedure
- PA2206 Store extras such as reflectors, owner manuals, etc. in a safe place for client
- PA2207 Dispose of packing material in an environmentally friendly manner
- PA2208 Record any deviations and report on the task

Applied Knowledge

- AK2201 Manufacturer requirements
- AK2202 Tools and equipment and safety

Internal Assessment Criteria

- IAC2201 All bicycle components are identified, available, inspected and good working order is confirmed and deviations are recorded and reported
- IAC2202 The bicycle is assembled using the correct tools and assembly techniques and prepared for pre-delivery inspection
- IAC2203 The assembled bicycle is inspected for compliance with manufacturer requirements and quality

1.2.23. PM-01-PS23: Basic computer literacy

Scope of Practical Skill

Given a computer, smart device the learner must be able to:

- PA2301 Use the workshop software system
- PA2302 Use email programme to communicate with clients and suppliers
- PA2303 Use internet to conduct searches for relevant information

Applied Knowledge

- AK2301 Basic typing, internet, search engines and point-of-sales system

Internal Assessment Criteria

- IAC2301 The ability to use the software and hardware to record workshop information, search information and communicate with clients and suppliers is demonstrated

1.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance capability for mountain and road bicycles

Human Resource Requirements:

- Facilitator Experience: 2 years of experience as bicycle mechanic
- Facilitator/learner ratio: 1:10

Legal Requirements:

- OHS

1.4 Exemptions

- None

2. 653401000-PM-02, Perform minor and major services for the maintenance of bicycles (excluding suspension and wheel building), NQF Level 3, Credits 6

2.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to service and repair a bicycle applying the basic principles of disassembly, servicing or replacement, installation and adjustment.

The learner will be required to:

- PM-02-PS01: Conduct headset disassembly, servicing or replacement, installation and adjustment
- PM-02-PS02: Conduct gear and brake cable and housing installation / replacement
- PM-02-PS03: Conduct derailleur disassembly, servicing/replacement, installation and adjustment
- PM-02-PS04: Conduct chain sizing and installation
- PM-02-PS05: Conduct crank set disassembly, servicing/replacement, installation and adjustment
- PM-02-PS06: Conduct bottom bracket disassembly, servicing/replacement, installation and adjustment
- PM-02-PS07: Conduct pedal disassembly, servicing/replacement, installation and adjustment
- PM-02-PS08: Conduct hub disassembly, servicing/replacement, installation and adjustment
- PM-02-PS09: Conduct cable operated brake disassembly, servicing/replacement, installation and adjustment
- PM-02-PS10: Conduct advanced wheel building

2.2 Guidelines for Practical Skills

2.2.1. PM-02-PS01: Conduct headset disassembly, servicing or replacement, installation and adjustment

Scope of Practical Skill

Given a bicycle, work stand, tools, consumables and manufacturers specifications or reference material the learner must be able to:

- PA0101 Identify and select the correct tools needed for the task
- PA0102 Determine headset type and size
- PA0103 Disassemble headset
- PA0104 Inspect bearing system for wear
- PA0105 Remove, inspect and install bearing cups
- PA0106 Remove, inspect and install crown races
- PA0107 Conduct steering column sizing
- PA0108 Install star nuts and compression plugs
- PA0109 Reassemble headset

- PA0110 Adjust headset pre-load
- PA0111 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK0101 Headset disassembly and installation techniques
- AK0102 Headset inspection techniques
- AK0103 Headset servicing techniques

Internal Assessment Criteria

- IAC0101 The bicycle headset is correctly dismantled using the correct tools and applying the correct sequence of dismantling the various components
- IAC0102 The bicycle headset components are inspected and abnormal wear and tear is noted
- IAC0103 The bicycle headset is correctly preloaded and correctly assembled applying the correct sequence
- IAC0104 The correct orientation of the various components are applied
- IAC0105 All adjustments are performed to render the headset functional

2.2.2. PM-02-PS02: Conduct gear and brake cable and housing installation / replacement

Scope of Practical Skill

Given a bicycle, work stand, tools, consumables and manufacturers specifications / reference material the learner must be able to:

- PA0201 Identify and select tools the correct tools needed for the task
- PA0202 Identify cable and housing type
- PA0203 Remove cable and housing from bicycle
- PA0204 Determine correct cable housing lengths
- PA0205 Fit housing to bicycle
- PA0206 Accurately route the brake cable
- PA0207 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK0201 Gear and brakes replacement/installation technique
- AK0202 Cable and housing inspection technique

Internal Assessment Criteria

- IAC0201 The cable housing of the correct length and type and is correctly routed

2.2.3. PM-02-PS03: Conduct derailleur disassembly, servicing/replacement, installation and adjustment

Scope of Practical Skill

Given a bicycle, work stand, tools, consumables and manufacturers specifications / reference material the learner must be able to:

- PA0301 Identify and select tools the correct tools needed for the task
- PA0302 Identify the derailleur type
- PA0303 Remove derailleur system from bicycle
- PA0304 Inspect derailleur for damage and wear
- PA0305 Service and repair derailleur
- PA0306 If repairable, establish if smaller components on derailleur need replacing
- PA0307 If replacement is necessary, correctly select replacement
- PA0308 Reinstall derailleur system
- PA0309 Check for wear on rear sprockets
- PA0310 Remove and replace cassette or freewheel
- PA0311 Set and adjust gears
- PA0312 Conduct derailleur system trouble shooting
- PA0313 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK0301 Derailleur construction and operation

Internal Assessment Criteria

- IAC0301 The bicycle derailleur is correctly dismantled using the correct tools and applying the correct sequence of dismantling various components
- IAC0302 The bicycle derailleur components are inspected and abnormal wear and tear is noted
- IAC0303 The replacement is of the correct type and specification
- IAC0304 Derailleur is correctly installed and functioning

2.2.4. PM-02-PS04: Conduct chain sizing and installation

Scope of Practical Skill

Given a bicycle, work stand, tools, consumables and manufacturers specifications / reference material the learner must be able to:

- PA0401 Identify and select tools the correct tools needed for the task
- PA0402 Identify the chain type for the bicycle
- PA0403 Inspect the chain for wear
- PA0404 Conduct chain sizing according to manufacturer specifications
- PA0405 applying calculations
- PA0406 Reconnect the chain
- PA0407 Clean and lubricate a chain
- PA0408 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK0401 Chain sizing techniques
- AK0402 Chain function and operation

Internal Assessment Criteria

- IAC0401 Chain sizing is correct and the bicycle has a full range of available gears
- IAC0402 Correct type of chain is selected and installed
- IAC0403 All safety requirements are applied

2.2.5. PM-02-PS05: Conduct crank set disassembly, servicing/replacement, installation and adjustment

Scope of Practical Skill

Given a bicycle, work stand, tools, consumables and manufacturers specifications / reference material the learner must be able to:

- PA0501 Identify and select the correct tools needed for the task
- PA0502 Identify the crank set type
- PA0503 Identify the relevant manufacturer specifications for the task
- PA0504 Remove crank set from bike
- PA0505 Check for wear on chain rings
- PA0506 Replace chain rings
- PA0507 Reinstall crank set
- PA0508 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK0501 Crank set construction, assembly and operation

Internal Assessment Criteria

- IAC0501 The bicycle crank set is correctly dismantled using the correct tools and applying the correct sequence of dismantling the various components
- IAC0502 The bicycle crank set components are inspected and abnormal wear and tear is noted
- IAC0503 The crank set is correctly preloaded and correctly assembled applying the correct sequence
- IAC0504 The orientation of the chain rings on the crank set is correct and there is no play on the crank set
- IAC0505 The appropriate chain line is achieved
- IAC0506 The q-factor is accurately calculated
- IAC0507 Torque correctly: thread lock applied

2.2.6. PM-02-PS06: Conduct bottom bracket disassembly, servicing/replacement, installation and adjustment

Scope of Practical Skill

Given a bicycle, work stand, tools, consumables and manufacturers specifications / reference material the learner must be able to:

- PA0601 Identify and select the correct tools needed for the task
- PA0602 Identify the bottom bracket type
- PA0603 Identify the relevant manufacturer specifications for the task
- PA0604 Remove / disassemble bottom bracket
- PA0605 Check for bottom bracket wear
- PA0606 Service bottom bracket
- PA0607 Install bottom bracket
- PA0608 Adjust bottom bracket preload if applicable
- PA0609 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK0601 Bottom bracket components, construction and operation

Internal Assessment Criteria

- IAC0601 In the instance of threaded bottom brackets, the correct cup orientation and bottom bracket is applied
- IAC0602 Installation is performed according to manufacture specifications

- IAC0603 Spacers are correctly used preventing rotation and play
- IAC0604 Correct adaptors are used when applicable
- IAC0605 Correct cranks are used

2.2.7. PM-02-PS07: Conduct pedal disassembly, servicing/replacement, installation and adjustment

Scope of Practical Skill

Given a pedal, tools, consumables and manufacturer's specifications / reference material the learner must be able to:

- PA0701 Identify and select the correct tools needed for the task
- PA0702 Identify pedal type and its serviceability
- PA0703 Identify the relevant manufacturer specifications for the task
- PA0704 Remove pedal from crank set
- PA0705 Disassemble pedal
- PA0706 Service pedal
- PA0708 Reassemble pedal
- PA0709 Install pedal on bicycle
- PA0710 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK0701 Pedal components, construction and operation

Internal Assessment Criteria

- IAC0701 The bicycle pedals are correctly dismantled using the correct tools and applying the correct sequence of dismantling the various components
- IAC0702 The bicycle pedal components are inspected and abnormal wear and damage is noted
- IAC0703 Correct pre-load on the pedals achieved
- IAC0704 No play on pedals is achieved
- IAC0705 Any coarseness on the bearing is Eliminated

2.2.8. PM-02-PS08: Conduct hub disassembly, servicing/replacement, installation and adjustment

Scope of Practical Skill

Given wheel, work stand, tools, consumables and manufacturers specifications / reference material the learner must be able to:

- PA0801 Identify and select the correct tools needed for the task

- PA0802 Identify the hub type
- PA0803 Identify the relevant manufacturer specifications for the task
- PA0804 Disassemble hub
- PA0805 Remove cassette or freewheel
- PA0806 Identify bearing system type (cup and cone or sealed cartridge bearing)
- PA0807 Remove freehub body
- PA0808 Inspect bearing system for damage
- PA0809 Replace or service bearing system components
- PA0810 Install freehub body
- PA0811 Assemble hub
- PA0812 Adjust hub pre-load
- PA0813 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK0801 Hub components, construction and operation

Internal Assessment Criteria

- IAC0801 The bicycle hub is correctly dismantled using the correct tools and applying the correct sequence of dismantling the various components
- IAC0802 The bicycle hub components are inspected and abnormal wear and damage is identified
- IAC0803 The bicycle hub is correctly preloaded and correctly assembled
- IAC0804 Correct free-hub body installed and functioning correctly
- IAC0805 Spacing on axel is correct
- IAC0806 Correct end-cups used where applicable
- IAC0807 All adjustments are performed to render the hub functional

2.2.9. PM-02-PS09: Conduct cable operated brake disassembly, servicing/replacement, installation and adjustment

Scope of Practical Skill

Given bicycle with cable operated brake, work stand, tools, consumables and manufacturers specifications / reference material the learner must be able to:

- PA0901 Identify and select the correct tools needed for the task
- PA0902 Identify type of braking system

- PA0903 Identify the relevant manufacturer specifications for the task
- PA0904 Disassemble brake system
- PA0905 Inspect parts for wear and functioning
- PA0906 Assemble brake system
- PA0907 Align brake blocks
- PA0908 Tension cables achieving the correct tension
- PA0909 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK0901 Cable operated brake components, assembly and operation

Internal Assessment Criteria

- IAC0901 The cable operated brake is correctly dismantled using the correct tools and applying the correct sequence of dismantling the various components
- IAC0902 The cable operated brake components are inspected and abnormal wear and damage is noted
- IAC0903 Brake pads are aligned with the rims or rotors
- IAC0904 All adjustments are performed to render the cable operated brake functional

2.2.10. PM-02-PS10: Conduct advanced wheel building

Scope of Practical Skill

Given a bicycle wheel, truing stand, tools, consumables and manufacturer's specifications / reference material the learner must be able to:

- PA1001 Identify and select the correct tools needed for the task
- PA1002 Identify type of wheel
- PA1003 Identify the relevant manufacturer specifications for the task
- PA1004 De-tension a wheel
- PA1005 Disassemble a wheel
- PA1006 Inspect wheel parts for wear or damage
- PA1007 Conduct spoke length calculation
- PA1008 Determine spoke tension
- PA1009 Conduct wheel lacing
- PA1010 Conduct wheel dishing

- PA1011 Conduct wheel truing
- PA1012 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Applied Knowledge

- AK1001 Wheel building requirements and settings

Internal Assessment Criteria

- IAC1001 The wheel is correctly dished and trued both laterally and radially within tolerances
- IAC1002 Spokes are correctly tensioned

2.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance capability for mountain and road bicycles

Human Resource Requirements:

- Facilitator Experience: 2 years of experience as bicycle mechanic
- Facilitator/learner ratio: 1:10

Legal Requirements:

- OHS

2.4 Exemptions

- None

3. 653401000-PM-03, Conduct disassembly, servicing/replacement, installation and testing of advanced bicycle componentry, NQF Level 04, Credits 4

3.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to acquire the skills and competence for the disassembly, servicing/replacement, installation and testing of advanced bicycle componentry

The learner will be required to:

- PM-03-PS01: Conduct fault finding, trouble shooting and problem solving to determine the functionality of the advanced bicycle systems
- PM-03-PS02: Prepare the surface of the mounting interface by facing disc brake posts and mounts
- PM-03-PS03: Connect a hydraulic brake hoses
- PM-03-PS04: Service and install a hydraulic brake system
- PM-03-PS05: Conduct brake bleeding
- PM-03-PS06: Conduct suspension fork disassembly, servicing/replacement, installation and testing
- PM-03-PS07: Conduct rear shock disassembly, servicing/replacement, installation and testing
- PM-03-PS08: Conduct dropper post disassembly, servicing/replacement, installation and testing
- PM-03-PS09: Conduct pivot system disassembly, servicing/replacement, installation and testing
- PM-03-PS10: Install an electronic group set
- PM-03-PS11: Conduct advanced wheel building (straight pull spoke and fat bike wheel build)
- PM-03-PS12: Provide professional customer service

3.2 Guidelines for Practical Skills

3.2.1. PM-03-PS01: Conduct fault finding, trouble shooting and problem solving to determine the functionality of the advanced bicycle systems

Scope of Practical Skill

Given manufacturers specifications and a range of faulty advanced bicycle systems and tools the learner must be able to:

- PA0101 Inspect and conduct diagnostic assessment of the system to determine material defects and wear, alignment faults or componentry faults or compatibility faults
- PA0102 Identify the manufacturer requirements for the advanced system
- PA0103 Find faults on advanced bicycle systems using diagnostic and testing devices
- PA0104 Apply a fault finding checklist
- PA0105 Confirm compatibility of all the equipment on the bicycle
- PA0106 Correctly identify causes of faults, misalignment and incompatibility

Applied Knowledge

- AK0101 Fault finding techniques related to advanced bicycle components

Internal Assessment Criteria

- IAC0101 Fault finding checklist and troubleshooting techniques are correctly applied to identify faults, wear and damage on a range of advanced bicycle systems
- IAC0102 Wear, damage and faults are correctly identified and noted on the checklist upon inspection

3.2.2. PM-03-PS02: Prepare the surface of the mounting interface by facing disc brake posts and mounts

Scope of Practical Skill

Given a work stand, workbench, tools, bicycle, hydraulic brake system and consumables the learner must be able to:

- PA0201 Identify and select the correct tools and consumables needed for the task
- PA0202 Source and identify applicable manufacturer specification
- PA0203 Identify the components of the mounting interface ensuring compatibility
- PA0204 Use cutting fluid
- PA0205 Face brake calliper posts correctly using the tools
- PA0206 Face brake mounts correctly using the tools
- PA0207 Inspect completed work to confirm quality and compliance with manufacturer specifications

Applied Knowledge

- AK0201 Execute Facing or brake posts and mounts technique

Internal Assessment Criteria

- IAC0201 The mounting interface is correctly inspected for wear and damage and prepared for the task
- IAC0202 The surface of the mounting interface is correctly prepared
- IAC0203 The brake calliper is centered to the rotor

3.2.3. PM-03-PS03: Connect a hydraulic brake hoses

Scope of Practical Skill

Given a work stand, workbench, tools, bicycle, hydraulic brake system and consumables the learner must be able to:

- PA0301 Identify hydraulic brakes hoses ensuring compatibility
- PA0302 Identify and select the tools relevant to the task
- PA0303 Source and identify applicable manufacturer specifications

- PA0304 Determine hose length
- PA0305 Route hosing accurately
- PA0306 Replace damaged hosing
- PA0307 Connect hosing to callipers and levers
- PA0308 Inspect completed work to confirm quality and compliance with manufacturer specifications

Applied Knowledge

- AK0301 How the hydraulic brakes work

Internal Assessment Criteria

- IAC0301 Hydraulic brake hoses are correctly measured, routed and connected
- IAC0302 No hydraulic brake fluid leakages occur in the system once bled

3.2.4. PM-03-PS04: Service and install a hydraulic brake system

Scope of Practical Skill

Given, work stand, workbench, tools, bicycle, hydraulic brake system, consumables and brake servicing parts the learner must be able to:

- PA0401 Identify components of hydraulic brake system
- PA0402 Identify and select the tools relevant to the task
- PA0403 Source and identify applicable manufacturer specifications
- PA0404 Service brake levers
- PA0405 Service brake callipers
- PA0406 Mount brake levers
- PA0407 Mount brake callipers
- PA0408 Centre callipers
- PA0409 Replace brake pads
- PA0410 Replace brake rotors
- PA0411 Inspect completed work to confirm quality and compliance with manufacturer specifications

Applied Knowledge

- AK0401 Apply inspection check list on the completed work

Internal Assessment Criteria

- IAC0401 Hydraulic brake system is dismantled, serviced and installed according to the manufacturer specifications and quality standards using the correct tools and techniques for the task
- IAC0402 Breaking system works efficiently when subjected to testing

3.2.5. PM-03-PS05: Conduct brake bleeding

Scope of Practical Skill

Given a work stand, workbench, tools, hydraulic brake system, consumables, brake servicing parts and manufacturers specifications the learner must be able to:

- PA0501 Identify different components of the hydraulic brake systems
- PA0502 Identify and select the tools and technique relevant to the task and type of system (open and closed system)
- PA0503 Source and identify applicable manufacturer specifications
- PA0504 Select brake fluid ensuring compatibility
- PA0505 Bleed brake system to remove all air (bubbles) from the system
- PA0506 Inspect completed work to confirm quality and compliance with manufacturer specifications

Applied Knowledge

- AK0501 Knowing the different types of brake fluids
- AK0502 Knowledge of the types hydraulic systems

Internal Assessment Criteria

- IAC0501 Appropriate technique is applied (closed and open systems) and no air is present in the system (all bubbles released)

3.2.6. PM-03-PS06: Conduct suspension fork disassembly, servicing/replacement, installation and testing

Scope of Practical Skill

Given a work stand, workbench, suspension fork, service kit the learner must be able to:

- PA0601 Identify different components of the hydraulic brake systems
- PA0602 Identify and select the tools and technique relevant to the task and type of system (open and closed system)
- PA0603 Source and identify applicable manufacturer specifications
- PA0604 Inspect and assess the suspension fork to determine level of service
- PA0605 Disassemble a suspension fork
- PA0606 Conduct defect / damage assessment
- PA0607 Replace internals
- PA0608 Select and replace suspension fluids
- PA0609 Replace damaged parts

- PA0610 Complete full service where applicable
- PA0611 Tune / setup suspension
- PA0612 Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications

Applied Knowledge

- AK0601 Know the different types of hydraulic fluids
- AK0602 Knowledge of different hydraulic systems

Internal Assessment Criteria

- IAC0601 The suspension fork functions as per manufacturer specification and customer request
- IAC0602 Technique is applicable to the suspension brand

3.2.7. PM-03-PS07: Conduct rear shock disassembly, servicing/replacement, installation and testing

Scope of Practical Skill

Given a workbench, rear shock, service kit, tools, consumables and manufacturer's specifications the learner must be able to:

- PA0701 Identify different components of the hydraulic brake systems
- PA0702 Identify and select the tools and technique relevant to the task and type of system (open and closed system)
- PA0703 Source and identify applicable manufacturer specifications
- PA0704 Inspect and assess the hydraulic brake systems to determine level of service
- PA0705 Determine level of service
- PA0706 Disassemble rear shock
- PA0707 Conduct defect / damage assessment
- PA0708 Replace internals
- PA0709 Replace suspension fluids
- PA0710 Replace damaged parts
- PA0711 Complete full service where applicable
- PA0712 Tune / setup suspension
- PA0713 Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications

Applied Knowledge

- AK0701 Knowledge of different types of hydraulic fluids

- AK0702 Knowledge of different hydraulic systems

Internal Assessment Criteria

- IAC0701 The rear shock is tested and functions as per manufacturer specification and customer request
- IAC0702 Technique is applicable to the shock manufacturer

3.2.8. PM-03-PS08: Conduct dropper post disassembly, servicing/replacement, installation and testing

Scope of Practical Skill

Given a work bench, dropper post, service kit, tools, consumables and manufacturers specifications the learner must be able to:

- PA0801 Identify different components of the dropper post
- PA0802 Identify and select the tools and technique relevant to the task
- PA0803 Source and identify applicable manufacturer specifications
- PA0804 Inspect and assess the dropper post to determine level of service
- PA0805 Disassemble dropper post
- PA0806 Identify defects / damage to the dropper post
- PA0807 Replace internals
- PA0808 Replace suspension fluids
- PA0809 Replace damaged parts
- PA0810 Complete full service
- PA0811 Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications

Applied Knowledge

- AK0801 Knowledge of different types of hydraulic fluids
- AK0802 Knowledge of different hydraulic systems

Internal Assessment Criteria

- IAC0801 The dropper post is tested and functions as per manufacturer specification
- IAC0802 Technique used is applicable to the dropper post manufacturer

3.2.9. PM-03-PS09: Conduct pivot system disassembly, servicing/replacement, installation and testing

Scope of Practical Skill

Given a work stand, work bench, bicycle, tools, consumables, bolts and bearing kits and manufacturers specifications the learner must be able to:

- PA0901 Identify different components of the pivot systems
- PA0902 Identify and select the tools and technique relevant to the task
- PA0903 Source and identify applicable manufacturer specifications
- PA0904 Inspect and assess the pivot system to determine level of service
- PA0905 Identify defects or damage
- PA0906 Disassemble pivot system applying the correct technique and tools
- PA0907 Select and replace bearings or bushings ensuring compatibility of parts
- PA0908 Assemble pivot system applying the correct technique and tools
- PA0909 Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications

Applied Knowledge

- AK0901 Knowledge of different pivot systems
- AK0902 Knowledge of sealed cartridge bearings

Internal Assessment Criteria

- IAC0901 Free rotation without friction or lateral movement is achieved
- IAC0902 The pivot system is correctly assembled with all components correctly placed

3.2.10. PM-03-PS10: Install an electronic group set

Scope of Practical Skill

Given a work stand, bicycle, tools, consumables and manufacturers specifications the learner must be able to:

- PA1001 Identify the group set type and the different components of the electronic group set
- PA1002 Identify and select the tools and technique relevant to the task
- PA1003 Source and identify applicable manufacturer specifications
- PA1004 Inspect and assess the electronic group set to determine level of service
- PA1005 Select and install components ensuring compatibility
- PA1006 Run wiring
- PA1007 Connect system
- PA1008 Update software and firmware
- PA1009 Set and adjust gears both manually and electronically

- PA1010 Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications

Applied Knowledge

- AK1001 Knowledge of different electronic group set

Internal Assessment Criteria

- IAC1001 The electronic group set is correctly dismantled, and components are correctly installed
- IAC1002 The electronic group set software and firmware is accurately updated and operate according to manufacturer specifications
- IAC1003 Technique selected and applied is accurate and specific to manufacturer specifications
- IAC1004 The task is completed without damage to the frame

3.2.11. PM-03-PS11: Conduct advanced wheel building (straight pull spoke and fat bike wheel build)

Scope of Practical Skill

Given wheel, truing stand, tools, consumables and manufacturer's specifications / reference material the learner must be able to:

- PA1101 Identify different components of the wheel according to the type of wheel
- PA1102 Identify and select the tools and technique relevant to the task and type of wheel
- PA1103 Source and identify applicable manufacturer specifications
- PA1104 De-tension a wheel
- PA1105 Inspect wheel parts for wear or damage
- PA1106 Conduct spoke length calculation
- PA1107 Determine spoke tension
- PA1108 Conduct wheel lacing
- PA1109 Conduct wheel dishing
- PA1110 Conduct wheel truing
- PA1111 Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications

Applied Knowledge

- AK1101 Knowledge of basic wheel building

Internal Assessment Criteria

- IAC1101 The wheel is correctly dished and trued both laterally and radially within tolerances and according to type
- IAC1102 Spokes are correctly measured, laced and tensioned

3.2.12. PM-03-PS12: Provide professional customer service

Scope of Practical Skill

Given standard operating procedures and supply chain procedures as well as customer details and customer request the learner must be able to:

- PA1201 Complete documentation on the task
- PA1202 Provide customer information
- PA1203 Give the customer feed-back on the task and related information such as time, cost

Applied Knowledge

- AK1201 Solve customer queries through standard operating procedure

Internal Assessment Criteria

- IAC1201 Standard operating procedure of supply chain are adhered to

3.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance capability for mountain and road bicycles

Human Resource Requirements:

- Facilitator Experience: 2 years of experience as bicycle mechanic
- Facilitator/learner ratio: 1:10

Legal Requirements:

- OHS

3.4 Exemptions

- None

4. 653401000-PM-04, Advise clients and bicycle mechanics on the technical aspects to identify faults and solve problems, NQF Level 04, Credits 1

4.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to acquire the techniques and skills to compare and contrast the characteristics of a range of consumables (lubricants, solvents, and hydraulic fluids), threads and materials using available resources and information on the MSDS

The learner will be required to:

- PM-04-PS01: Compare and contrast a range of consumables (lubricants, solvents, hydraulic fluids) and advise on the most suitable for the bicycle, componentry, riding context and budget of the client

4.2 Guidelines for Practical Skills

4.2.1. PM-04-PS01: Compare and contrast a range of consumables (lubricants, solvents, hydraulic fluids) and advise on the most suitable for the bicycle, componentry, riding context and budget of the client

Scope of Practical Skill

Given manufacturers specifications of a bicycle, componentry and advances systems and the material safety data sheets of consumables and client information (context of riding and budget) the learner must be able to:

- PA0101 Source information from applicable resources
- PA0102 Read and interpret the information on the MSDS
- PA0103 Analyse and compare various consumables
- PA0104 Analyse the context of riding and the client budget
- PA0105 Advise on the most suitable product based on durability, efficiency and cost effectiveness

Applied Knowledge

- AK0101 Properties and characteristic of consumables
- AK0102 Manufacturer specifications

Internal Assessment Criteria

- IAC0101 A range of consumables (lubricants, solvents, hydraulic fluids) are compared and contrasted and the most suitable for the bicycle, componentry, riding context and budget of the client is selected

4.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance capability for mountain and road bicycles

Human Resource Requirements:

- Facilitator Experience: 2 years of experience as bicycle mechanic
- Facilitator/learner ratio: 1:10

Legal Requirements:

- OHS

4.4 Exemptions

- None

5. 653401000-PM-05, Advise teams in a fair and consistent manner in the bicycle workshop to achieve set targets and outputs and specialised problem solving, NQF Level 03, Credits 1

5.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to acquire the techniques and skills to advise and guide activities of a work team to achieve the production targets of a bicycle workshop and solve problems related to specialised bicycle componentry

The learner will be required to:

- PM-05-PS01: Supervise a team in the bicycle workshop
- PM-05-PS02: Allocate tasks, equipment and resources to achieve set targets and give instructions to team members and receive feedback
- PM-05-PS03: Discipline poor performance
- PM-05-PS04: Coach members to enhance skills
- PM-05-PS05: Enforce occupational health and safety plans, policies and procedures
- PM-05-PS06: Find and apply information on a specific product, consumable, thread or material to solve a bicycle related problem

5.2 Guidelines for Practical Skills

5.2.1. PM-05-PS01: Supervise a team in the bicycle workshop

Scope of Practical Skill

Given case studies related to work performance and achievement of targets the learner must be able to:

- PA0101 Identify areas of poor time keeping
- PA0102 Identify areas of poor performance
- PA0103 Identify areas of poor quality
- PA0104 Identify opportunities of maximising resource allocation
- PA0105 Identify opportunities of rewarding excellent performance
- PA0106 Identify corrective actions where required

Applied Knowledge

- AK0101 Time keeping skills
- AK0102 Determining quality
- AK0103 Rewarding performance techniques

Internal Assessment Criteria

- IAC0101 Corrective actions to address poor work performance and non-achievement of targets are proposed and are in line with the incident
- IAC0102 Resource allocation is maximised

- IAC0103 Excellent performance is rewarded

5.2.2. PM-05-PS02: Allocate tasks, equipment and resources to achieve set targets and give instructions to team members and receive feedback

Scope of Practical Skill

Given a weekly action plan as well as different scenarios related to incorrect interpretation of instructions, monitoring and control the learner must be able to:

- PA0201 Allocate each team member a daily task or set of tasks
- PA0202 Allocate equipment and resources
- PA0203 Give clear instructions and ensure that the team member understood it
- PA0204 Identify the correct way of formulating the instruction
- PA0205 Identify areas of poor monitoring and control, poor feedback and identify corrective actions

Applied Knowledge

- AK0201 Planning techniques
- AK0202 Resource allocation
- AK0203 Instructions
- AK0204 Monitoring and controlling techniques

Internal Assessment Criteria

- IAC0201 The task and resource allocation and instructions are clear and in support of the action plan
- IAC0202 Write clear, unambiguous and concise instructions and test for the correct understanding thereof
- IAC0203 Corrective actions are appropriate to the identified problem areas

5.2.3. PM-05-PS03: Discipline poor performance

Scope of Practical Skill

Given information on worker performance, attendance and work policies and procedures the learner must be able to:

- PA0301 Identify the area of poor work performance
- PA0302 Identify the applicable disciplinary policy and procedure to apply
- PA0303 Conduct a disciplinary procedure
- PA0304 Keep records of the disciplinary procedure and actions

Applied Knowledge

- AK0301 Disciplinary policies and procedures

- AK0302 Performance evaluation

Internal Assessment Criteria

- IAC0301 The disciplinary procedures (oral warning and first written warning) is correctly applied and is appropriate to the poor work performance

5.2.4. PM-05-PS04: Coach members to enhance skills

Scope of Practical Skill

Given occupational health and safety policies and procedures and taken to a site the learner must be able to:

- PA0401 Identify poor skills leading to poor performance and safety risks
- PA0402 Rectify by demonstrating correct application of the skill or tasks to improve performance or compliance with requirements
- PA0403 Explain efficiency and effectiveness in concise terms
- PA0404 Coach team members to enhance productivity
- PA0405 Conduct job observations for individual team members

Applied Knowledge

- AK0401 Coaching techniques
- AK0402 Communication techniques

Internal Assessment Criteria

- IAC0401 Coaching in bicycle mechanic skills are provided to individuals to address incorrect technical skills and enhance quality of product or process (demonstrate the correct way of doing the task or showing a DVD)
- IAC0402 An engaging approach is applied when interacting with team members

5.2.5. PM-05-PS05: Enforce occupational health and safety plans, policies and procedures

Scope of Practical Skill

Given a basic related research topic, bicycle problem and access to information sources the learner must be able to:

- PA0501 Complete a risk assessment to determine on site compliance to occupational health and safety requirements

Applied Knowledge

- AK0501 Risk assessment techniques
- AK0502 Recording of information

Internal Assessment Criteria

- IAC0501 The risk assessment indicates all areas of non-conformance and identifies the causes and suggests corrective actions

5.2.6. PM-05-PS06: Find and apply information on a specific product, consumable, thread or material to solve a bicycle related problem

Scope of Practical Skill

Given a basic related research topic, bicycle problem and access to information sources the learner must be able to:

- PA0601 Identify and access suitable information sources
- PA0602 Investigate the topic at hand
- PA0603 Identify and select relevant information
- PA0604 Analyse the information
- PA0605 Select the most relevant information and formulate and justify the solution
- PA0606 Explain the methodology applied to select the solution

Applied Knowledge

- AK0601 Search engines and other sources of information
- AK0602 Basic research methodologies
- AK0603 Problem solving methodologies

Internal Assessment Criteria

- IAC0601 Various solutions are offered and analysed to select the most appropriate option based on durability, efficiency and cost effectiveness in writing

5.3 Provider Programme Accreditation Criteria

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance capability for mountain and road bicycles

Human Resource Requirements:

- Facilitator Experience: 2 years of experience as bicycle mechanic
- Facilitator/learner ratio: 1:10

Legal Requirements:

- OHS

5.4 Exemptions

- None

SECTION 3C: WORK EXPERIENCE MODULE SPECIFICATIONS

List of Work Experience Module Specifications

- 653401000-WM-01, Bicycle assembly, cleaning and washing, NQF Level 2, Credits 11
- 653401000-WM-02, Perform minor and major services for the maintenance of bicycles, NQF Level 3, Credits 16
- 653401000-WM-03, Advanced bicycle componentry servicing, NQF Level 04, Credits 21
- 653401000-WM-04, Advise and guide a team to solve problems related to specialised bicycle componentry and advise clients, NQF Level 04, Credits 2
- 653401000-WM-, , NQF Level , Credits 0

1. 653401000-WM-01, Bicycle assembly, cleaning and washing, NQF Level 2, Credits 11

1.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Assemble a bicycle applying the basic principles of frame alignment and preparation.

The learner will be required to:

- WM-01-WE01: Apply workshop practices
- WM-01-WE02: Apply safe workshop practices and operating procedures, housekeeping and safety
- WM-01-WE03: Clean and wash minimum of ten bicycles in the washing bay of the workshop and prepare for delivery to the client
- WM-01-WE04: Assemble a minimum of ten new bicycles within a given time requirement
- WM-01-WE05: Perform a pre-delivery inspection of a minimum of ten bicycles within a given time
- WM-01-WE06: Remove, inspect, repair and install wheels, tyres and tubes (20 items)
- WM-01-WE07: Prepare and inspect minimum of ten bicycles within a given time (frame alignment and preparation)
- WM-01-WE08: Apply basic computer literacy in the bicycle workshop

1.2 Guidelines for Work Experiences

1.2.1. WM-01-WE01: Apply workshop practices

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Use a bicycle work stand
- WA0102 Use, care for and store tools
- WA0103 Use basic mechanical skills
- WA0104 Interpret and correctly apply workplace procedures

Supporting Evidence

- SE0101 Attendance register

1.2.2. WM-01-WE02: Apply safe workshop practices and operating procedures, housekeeping and safety

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0201 Apply housekeeping procedures
- WA0202 Apply safety procedures in the workshop

- WA0203 Conduct first responder actions in the case of an incident
- WA0204 Apply personal hygiene
- WA0205 Apply correct lifting and carrying techniques ensuring safe handling of equipment and bicycles
- WA0206 Correctly dispose of waste (chemical and other) and return unused equipment and consumables to the store
- WA0207 Keep tools, equipment and work area clean and free of hazards

Supporting Evidence

- SE0201 Attendance register
- SE0202 Safety, health and environment (SHE) inspection report

1.2.3. WM-01-WE03: Clean and wash minimum of ten bicycles in the washing bay of the workshop and prepare for delivery to the client

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0301 Read and interpret the job instructions
- WA0302 Select, mix and use cleaning agents
- WA0303 Use lubricants, thread locks and cleaners
- WA0304 Select the required lubricants and apply to the relevant sections of the bicycle
- WA0305 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Supporting Evidence

- SE0301 Completed checklist Completed job card

1.2.4. WM-01-WE04: Assemble a minimum of ten new bicycles within a given time requirement

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0401 Prepare the workstation, tools and equipment for the operation
- WA0402 Read and interpret the job instructions
- WA0403 Read and interpret manufacturer specifications from the instruction sheet, diagrams and pictures
- WA0404 Obtain information from manuals and reference materials
- WA0405 Check and confirm that all parts are included in the package

- WA0406 Fit and fasten parts and components following the correct assembling sequence and using correct tools and techniques according to the prescribed specifications and tolerances
- WA0407 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Supporting Evidence

- SE0401 Completed checklist
- SE0402 Completed job card

1.2.5. WM-01-WE05: Perform a pre-delivery inspection of a minimum of ten bicycles within a given time

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0501 Use job cards and inspection sheets
- WA0502 Identify bicycle parts and components
- WA0503 Use of manuals and references to determine specifications and tolerances
- WA0504 Fit and fasten nuts to specifications and tolerances using a torque wrench
- WA0505 Inspect and confirm that all parts are in good condition and working order

Supporting Evidence

- SE0501 Completed checklist
- SE0502 Completed job card

1.2.6. WM-01-WE06: Remove, inspect, repair and install wheels, tyres and tubes (20 items)

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0601 Read and interpret job cards and use inspection sheets
- WA0602 Prepare the workstation, tools and equipment for the operation
- WA0603 Remove and inspect wheels, tyres and tubes
- WA0604 Repair wheels, tyres and tubes
- WA0605 Install wheels, tyres and tubes
- WA0606 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Supporting Evidence

- SE0601 Completed checklist

- SE0602 Completed job card

1.2.7. WM-01-WE07: Prepare and inspect minimum of ten bicycles within a given time (frame alignment and preparation)

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0701 Conduct rear triangle alignment using the correct tools and accurately applying the alignment technique
- WA0702 Conduct frame dropout alignment using the correct tools and accurately applying the alignment technique
- WA0703 Conduct rear derailleur alignment using the correct tools and accurately applying the alignment technique
- WA0704 Check for quality
- WA0705 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings

Supporting Evidence

- SE0701 Completed checklist
- SE0702 Completed job card

1.2.8. WM-01-WE08: Apply basic computer literacy in the bicycle workshop

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0801 Use appropriate software to record production information
- WA0802 Operate the point-of-sales system to receive and record payment

Supporting Evidence

- SE0801 Completed checklist and job card

1.3 Contextualised Workplace Knowledge

1.4 Criteria for Workplace Approval

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance processes for mountain and road bicycles

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance processes for mountain and road bicycles
- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance processes for mountain and road bicycles
- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance processes for mountain and road bicycles

Human Resource Requirements:

- Coach/supervisor: 2 years of experience as bicycle mechanic
- Supervisor/learner ratio:1:2
- Coach/supervisor: 4 years of experience as bicycle mechanic
- Supervisor/learner ratio: 1:2
- Coach/supervisor: 2 years of experience as bicycle mechanic
- Supervisor/learner ratio: 1:2
- Coach/supervisor: 2 years of experience as bicycle mechanic
- Supervisor/learner ratio:1:2

Legal Requirements:

- OHS
- OHS
- OHS
- OHS

1.5 Additional Assignments to be Assessed Externally

None

None

None

None

None

2. 653401000-WM-02, Perform minor and major services for the maintenance of bicycles, NQF Level 3, Credits 16

2.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Service and repair a bicycle applying the basic principles of disassembly, servicing or replacement, installation and adjustment.

The learner will be required to:

- WM-02-WE01: Conduct diagnostic, fault finding, quality control inspections on bicycles received for servicing and repairs
- WM-02-WE02: Perform 10 minor services and repair bicycles
- WM-02-WE03: Service and repair bicycles (5 major services) by repairing and/or replacing damaged or worn-out components and accessories during the service
- WM-02-WE04: Fit equipment items to a bicycle
- WM-02-WE05: Build at least 5 wheel sets of which 3 are mountain bikes and 2 are road bikes
- WM-02-WE06: Use the software system or smart device to find and record information (stock control, job card, etc.)

2.2 Guidelines for Work Experiences

2.2.1. WM-02-WE01: Conduct diagnostic, fault finding, quality control inspections on bicycles received for servicing and repairs

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Apply the pre service-check technique to inspect a bicycle and identify material faults, componentry faults and alignment faults
- WA0102 Inspect the bicycle to diagnose problems and faults and apply quality control
- WA0103 Identify faults, alignment faults, damage and wear to the frame and componentry
- WA0104 Record findings on a job card

Supporting Evidence

- SE0101 Diagnostic report (online or written submission)

2.2.2. WM-02-WE02: Perform 10 minor services and repair bicycles

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0201 Read and apply instructions specifying the work to be done

- WA0202 Source and apply manufacturer specifications in the selection of components and servicing and repairing the bicycle
- WA0203 Apply dismantle procedure, servicing procedure and assembly procedure applicable to the type of bicycle and componentry
- WA0204 Select and control the correct components for the bicycle ensuring compatibility and compliance with manufacturer specifications
- WA0205 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings
- WA0206 Complete job card and stock control forms

Supporting Evidence

- SE0201 Completed job card and stock control forms

2.2.3. WM-02-WE03: Service and repair bicycles (5 major services) by repairing and/or replacing damaged or worn-out components and accessories during the service

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0301 Conduct headset disassembly, servicing/replacement, installation and adjustment
- WA0302 Conduct gear and brake cable and housing installation / replacement
- WA0303 Conduct derailleur disassembly, servicing/replacement, installation and adjustment
- WA0304 Conduct chain sizing and installation
- WA0305 Remove and replace a cassette
- WA0306 Conduct crankset disassembly, servicing/replacement, installation and adjustment
- WA0307 Conduct bottom bracket disassembly, servicing/replacement, installation and adjustment
- WA0308 Conduct pedal disassembly, servicing/replacement, installation and adjustment
- WA0309 Conduct hub disassembly, servicing/replacement, installation and adjustment
- WA0310 Conduct cable operated brake disassembly, servicing/replacement, installation and adjustment
- WA0311 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings
- WA0312 Complete job card and stock control forms

Supporting Evidence

- SE0301 Copy of the signed job card

2.2.4. WM-02-WE04: Fit equipment items to a bicycle

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0401 Remove and install a variety of equipment items such as grips, handbars, seat posts, saddles applying the requirements of the manufacturer specifications
- WA0402 Select products ensuring the correct compatibility between products
- WA0403 Install equipment items as per manufacturer specifications ensuring safe and correct selection and use of tools, equipment and consumables
- WA0404 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings
- WA0405 Complete job card and stock control forms

Supporting Evidence

- SE0401 Copy of the signed job card

2.2.5. WM-02-WE05: Build at least 5 wheel sets of which 3 are mountain bikes and 2 are road bikes

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0501 Determine spoke tension using a tension meter according to manufacturer specifications
- WA0502 Determine spoke length using appropriate measuring equipment
- WA0503 Conduct wheel lacing
- WA0504 Conduct wheel dishing using a wheel truing stand and dishing tool
- WA0505 Conduct wheel truing using an accurately calibrated wheel truing stand
- WA0506 Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings
- WA0507 Complete job card and stock control forms

Supporting Evidence

- SE0501 Copy of the signed job card

2.2.6. WM-02-WE06: Use the software system or smart device to find and record information (stock control, job card, etc.)

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0601 Check stock on hand
- WA0602 Fill and finalise a job card and export to point of sales

- WA0603 Request stock/service parts
- WA0604 Check prices on request from customer and inform customer on cost and availability

Supporting Evidence

- SE0601 Print of the data/information

2.3 Contextualised Workplace Knowledge

2.4 Criteria for Workplace Approval

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance processes for mountain and road bicycles
- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance processes for mountain and road bicycles
- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance processes for mountain and road bicycles

Human Resource Requirements:

- Coach/supervisor: 4 years of experience as bicycle mechanic
- Supervisor/learner ratio:1:2
-
- Coach/supervisor: 2 years of experience as bicycle mechanic
- Supervisor/learner ratio: 1:2
- Coach/supervisor: 2 years of experience as bicycle mechanic
- Supervisor/learner ratio: 1:2

Legal Requirements:

- OHS
- OHS
- OHS

2.5 Additional Assignments to be Assessed Externally

None

None

3. 653401000-WM-03, Advanced bicycle componentry servicing, NQF Level 04, Credits 21

3.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Gain experience in the servicing of advance bicycle componentry

The learner will be required to:

- WM-03-WE01: Conduct advanced bicycle and componentry disassembly, servicing/replacement, installation and adjustment of two open and two closed hydraulic brake systems for road bicycle and mountain bicycles
- WM-03-WE02: Conduct advanced bicycle and componentry disassembly, servicing/replacement, installation and adjustment of a minimum of two front and two rear suspension systems from various manufacturers
- WM-03-WE03: Conduct advanced bicycle frame servicing of five bicycles including componentry disassembly, servicing/replacement, installation and adjustment
- WM-03-WE04: Conduct advanced bicycle and componentry disassembly, servicing/replacement, installation and adjustment of two electronic group sets
- WM-03-WE05: Examine, fault finding, trouble shooting and problem solving (advanced fault finding : type of bike and experience related) (20 bikes) (problem solving related to hydraulic brakes, suspension system, electronic group set, frame problem, advanced components and high-end wheel sets) (diagnostic or fault report)
- WM-03-WE06: Build minimum of 10 advanced wheels (3 straight spoke wheel sets) + (race wheel sets, custom wheel build)

3.2 Guidelines for Work Experiences

3.2.1. WM-03-WE01: Conduct advanced bicycle and componentry disassembly, servicing/replacement, installation and adjustment of two open and two closed hydraulic brake systems for road bicycle and mountain bicycles

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Read and apply instructions specifying the work to be done
- WA0102 Inspect the hydraulic system and identify faults or damage and complete an inspection sheet and stock list
- WA0103 Identify and select the tools relevant to the task
- WA0104 Source and identify applicable manufacturer specifications
- WA0105 Identify and select the correct components ensuring compatibility
- WA0106 Repair and maintain hydraulic brakes
- WA0107 Connect a hydraulic brake hoses
- WA0108 Service and install a hydraulic brake system installation

- WA0109 Conduct brake bleeding
- WA0110 Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications
- WA0111 Complete a job card and stock control forms

Supporting Evidence

- SE0101 Booking schedule
- SE0102 Work order
- SE0103 Signed job card
- SE0104 Signed stock list
- SE0105 Inspection sheet
- SE0106 Customer invoice

3.2.2. WM-03-WE02: Conduct advanced bicycle and componentry disassembly, servicing/replacement, installation and adjustment of a minimum of two front and two rear suspension systems from various manufacturers

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0201 Read and apply instructions specifying the work to be done
- WA0202 Inspect the front or rear suspension system and identify faults or damage and complete an inspection sheet and stock list
- WA0203 Identify and select the tools relevant to the task
- WA0204 Source and identify applicable manufacturer specifications
- WA0205 Identify and select the correct components ensuring compatibility
- WA0206 Conduct suspension fork disassembly, servicing/replacement, installation and testing
- WA0207 Conduct rear shock disassembly, servicing/replacement, installation and testing
- WA0208 Conduct dropper post disassembly, servicing/replacement, installation and testing
- WA0209 Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications
- WA0210 Complete a job card and stock control forms

Supporting Evidence

- SE0201 Signed job card
- SE0202 Signed stock list
- SE0203 Inspection sheet

3.2.3. WM-03-WE03: Conduct advanced bicycle frame servicing of five bicycles including componentry disassembly, servicing/replacement, installation and adjustment

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0301 Read and apply instructions specifying the work to be done
- WA0302 Inspect the pivot system and identify faults or damage and complete an inspection sheet and stock list
- WA0303 Identify and select the tools relevant to the task
- WA0304 Source and identify applicable manufacturer specifications
- WA0305 Identify and select the correct components ensuring compatibility
- WA0306 Conduct pivot system disassembly, servicing/replacement, installation and testing
- WA0307 Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications

Supporting Evidence

- SE0301 Signed job card
- SE0302 Signed stock list
- SE0303 Inspection sheet

3.2.4. WM-03-WE04: Conduct advanced bicycle and componentry disassembly, servicing/replacement, installation and adjustment of two electronic group sets

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0401 Read and apply instructions specifying the work to be done
- WA0402 Inspect the front or rear suspension system and identify faults or damage and complete an inspection sheet and stock list
- WA0403 Identify and select the tools relevant to the task
- WA0404 Source and identify applicable manufacturer specifications
- WA0405 Identify and select the correct components ensuring compatibility
- WA0406 Charge the battery
- WA0407 Update firmware
- WA0408 Check manufacturer specifications for wire routing
- WA0409 Route internal wiring

- WA0410 Install hardware (derailleurs, shifters, cranks and other components)
- WA0411 Run diagnostic
- WA0412 Set up gears (manually and electronically)
- WA0413 Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications

Supporting Evidence

- SE0401 Signed job card
- SE0402 Signed stock list
- SE0403 Inspection sheet

3.2.5. WM-03-WE05: Examine, fault finding, trouble shooting and problem solving (advanced fault finding : type of bike and experience related) (20 bikes) (problem solving related to hydraulic brakes, suspension system, electronic group set, frame problem, advanced components and high-end wheel sets) (diagnostic or fault report)

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0501 Ask customer for feedback: interaction with customer about symptoms
- WA0502 Process of elimination
- WA0503 Visual and audio inspection
- WA0504 Use diagnostic device for electronic components
- WA0505 Use gauges to determine wear and tear and cause of the fault
- WA0506 Use knowledge
- WA0507 Test the componentry or ride the bike
- WA0508 Inspect for material faults
- WA0509 Inspect for componentry faults
- WA0510 Inspect for alignment faults
- WA0511 Compile a diagnostic or fault report indicating findings and work instructions

Supporting Evidence

- SE0501 Booking schedule
- SE0502 Work order
- SE0503 Signed job card
- SE0504 Signed stock list

- SE0505 Inspection sheet
- SE0506 Customer invoice
- SE0507 Diagnostic/ fault report

3.2.6. WM-03-WE06: Build minimum of 10 advanced wheels (3 straight spoke wheel sets) + (race wheel sets, custom wheel build)

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0601 Conduct advanced wheel building (straight pull spoke and fat bike wheel build)
- WA0602 Use correct tools
- WA0603 Use measuring tools
- WA0604 Spoke length calculations
- WA0605 Use the correct consumables
- WA0606 Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications

Supporting Evidence

- SE0601 Booking schedule
- SE0602 Work order
- SE0603 Signed job card
- SE0604 Signed stock list
- SE0605 Inspection sheet
- SE0606 Customer invoice

3.3 Contextualised Workplace Knowledge

- 1 Workshop layout, process flow and work procedures
- 2 Availability and stock control of parts and components
- 3 Customer relations
- 4 Forms, reports, checklists and other workshop documentation

3.4 Criteria for Workplace Approval

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment, diagnostic tools (hardware and software)

- Specialized tools and consumables: such as hydraulic brakes, suspension, electronic group set, advanced wheel building, etc.
- Servicing and maintenance processes for mountain and road bicycles
- Computer system
- Sufficiently equipped workshop: Hand tools, measuring equipment, diagnostic tools (hardware and software)
- Specialised tools and consumables: such as hydraulic brakes, suspension, electronic group set, advanced wheel building, etc.
- Servicing and maintenance processes for mountain and road bicycles
- Computer system
- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance processes for mountain and road bicycles

Human Resource Requirements:

- Coach/supervisor: 2 years of experience as bicycle mechanic
- Supervisor/learner ratio: 1:2
- Coach/supervisor: 4 years of experience as bicycle mechanic
- Supervisor/learner ratio: 1:1
-
- Coach/supervisor: 2 years of experience as bicycle mechanic
- Supervisor/learner ratio: 1:2
-

Legal Requirements:

- OHS and Consumer Protection Act
- OHS and Consumer Protection Act
- OHS

3.5 Additional Assignments to be Assessed Externally

None

4. 653401000-WM-04, Advise and guide a team to solve problems related to specialised bicycle componentry and advise clients, NQF Level 04, Credits 2

4.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

acquire experience in leading the problem solving activities of bicycle repairers to repair specialised bicycle componentry and meeting targets

The learner will be required to:

- WM-04-WE01: Assess own capability to do the job and verify the method of doing it (work procedures)
- WM-04-WE02: Supervise a team and coach (attendance register of coaching sessions, task allocations)
- WM-04-WE03: Maintain high level of professionalism with customers and apply customer care (customer service cards)
- WM-04-WE04: Use the computer or smart device to find and record information (stock control, job card, etc.)
- WM-04-WE05: Use acquired knowledge (consumables, materials, threads) to identify and solve problems in order to advise subordinates and clients on a practical solution for a given scenario

4.2 Guidelines for Work Experiences

4.2.1. WM-04-WE01: Assess own capability to do the job and verify the method of doing it (work procedures)

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Assess the full extent of the job and develop options for repair
- WA0102 Select the most appropriate plan of action taking into account capabilities, cost, time vs. client needs
- WA0103 Use available resources

Supporting Evidence

- SE0101 Booking schedule
- SE0102 Work orders
- SE0103 Signed job card
- SE0104 Signed stock list
- SE0105 Customer invoice

4.2.2. WM-04-WE02: Supervise a team and coach (attendance register of coaching sessions, task allocations)

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0201 Allocate jobs and monitor progress
- WA0202 Assess quality of work produce and identify skills gaps related to standard operating procedures and product knowledge
- WA0203 Plan and conduct a coaching session to improve or maintain productivity and quality
- WA0204 Motivate the team to achieve optimum productivity and efficiency

Supporting Evidence

- SE0201 Booking schedule
- SE0202 Work orders and signed job card
- SE0203 Appraisals session
- SE0204 Training/coaching schedule
- SE0205 Facilitation notes

4.2.3. WM-04-WE03: Maintain high level of professionalism with customers and apply customer care (customer service cards)

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0301 Establish customer relations
- WA0302 Maintain communication between the customer and store
- WA0303 Give feedback to the customer on progress and any delays and change in costs
- WA0304 Keep record of communication with the customer and customer decisions
- WA0305 Keep record to maintain a auditable trial
- WA0306 Use booking system and backup system

Supporting Evidence

- SE0301 Customer feedback forms
- SE0302 Electronic communication feedback
- SE0303 Job card and work orders
- SE0304 Customer invoice
- SE0305 Booking schedule

4.2.4. WM-04-WE04: Use the computer or smart device to find and record information (stock control, job card, etc.)

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0401 Email customers (conformation on product pricing, quotes, proof of purchase for warrantees, invoices,)
- WA0402 Email suppliers ordering of parts
- WA0403 Use available technical specification resources effectively
- WA0404 Pull reports on workshop output and job achievement and productivity

Supporting Evidence

- SE0401 Electronic communication feed back
- SE0402 Productivity reports
- SE0403 Inspection sheet

4.2.5. WM-04-WE05: Use acquired knowledge (consumables, materials, threads) to identify and solve problems in order to advise subordinates and clients on a practical solution for a given scenario

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0501 Research sources of information using resources effectively to identify suitable options
- WA0502 Research product specifications to identify possible faults, defects and possible causes
- WA0503 Analyse and compare options for practicality, efficiency, durability and cost effectiveness and apply problems solving principles
- WA0504 Advise subordinates and clients on most suitable solution and delegate the execution of the repair

Supporting Evidence

- SE0501 Research results

4.3 Contextualised Workplace Knowledge

4.4 Criteria for Workplace Approval

Physical Requirements:

- Sufficiently equipped workshop: Hand tools, measuring equipment,
- Specialized tools: such as torque wrench, facing and threading tools,
- Servicing and maintenance processes for mountain and road bicycles

Human Resource Requirements:

- Coach/supervisor: 2 years of experience as bicycle mechanic
- Supervisor/learner ratio: 1:2

Legal Requirements:

- OHS

4.5 Additional Assignments to be Assessed Externally

5.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

acquire experience in leading the problem solving activities of bicycle repairers to repair specialised bicycle componentry and meeting targets

The learner will be required to:

5.2 Guidelines for Work Experiences

5.3 Contextualised Workplace Knowledge

5.4 Criteria for Workplace Approval

Physical Requirements:

Human Resource Requirements:

Legal Requirements:

5.5 Additional Assignments to be Assessed Externally

SECTION 4: STATEMENT OF WORK EXPERIENCE

Curriculum Number:	653401000
Curriculum Title:	Bicycle Mechanic

Learner Details	
Name:	
ID Number:	

Employer Details	
Company Name:	
Address:	
Supervisor Name:	
Work Telephone:	
E-Mail:	

653401000-WM-01, Bicycle assembly, cleaning and washing, NQF Level 2, Credits 11

WM-01-WE01	Apply workshop practices		
	Scope Work Experience	Date	Signature
WA0101	Use a bicycle work stand		
WA0102	Use, care for and store tools		
WA0103	Use basic mechanical skills		
WA0104	Interpret and correctly apply workplace procedures		
	Supporting Evidence	Date	Signature
SE0101	Attendance register		
WM-01-WE02	Apply safe workshop practices and operating procedures, housekeeping and safety		
	Scope Work Experience	Date	Signature
WA0201	Apply housekeeping procedures		
WA0202	Apply safety procedures in the workshop		
WA0203	Conduct first responder actions in the case of an incident		
WA0204	Apply personal hygiene		
WA0205	Apply correct lifting and carrying techniques ensuring safe handling of equipment and bicycles		
WA0206	Correctly dispose of waste (chemical and other) and return unused equipment and consumables to the store		
WA0207	Keep tools, equipment and work area clean and free of hazards		
	Supporting Evidence	Date	Signature
SE0201	Attendance register		

SE0202	Safety, health and environment (SHE) inspection report		
WM-01-WE03	Clean and wash minimum of ten bicycles in the washing bay of the workshop and prepare for delivery to the client		
	Scope Work Experience	Date	Signature
WA0301	Read and interpret the job instructions		
WA0302	Select, mix and use cleaning agents		
WA0303	Use lubricants, thread locks and cleaners		
WA0304	Select the required lubricants and apply to the relevant sections of the bicycle		
WA0305	Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings		
	Supporting Evidence	Date	Signature
SE0301	Completed checklist Completed job card		
WM-01-WE04	Assemble a minimum of ten new bicycles within a given time requirement		
	Scope Work Experience	Date	Signature
WA0401	Prepare the workstation, tools and equipment for the operation		
WA0402	Read and interpret the job instructions		
WA0403	Read and interpret manufacturer specifications from the instruction sheet, diagrams and pictures		
WA0404	Obtain information from manuals and reference materials		
WA0405	Check and confirm that all parts are included in the package		
WA0406	Fit and fasten parts and components following the correct assembling sequence and using correct tools		

	and techniques according to the prescribed specifications and tolerances		
WA0407	Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings		
	Supporting Evidence	Date	Signature
SE0401	Completed checklist		
SE0402	Completed job card		
WM-01-WE05	Perform a pre-delivery inspection of a minimum of ten bicycles within a given time		
	Scope Work Experience	Date	Signature
WA0501	Use job cards and inspection sheets		
WA0502	Identify bicycle parts and components		
WA0503	Use of manuals and references to determine specifications and tolerances		
WA0504	Fit and fasten nuts to specifications and tolerances using a torque wrench		
WA0505	Inspect and confirm that all parts are in good condition and working order		
	Supporting Evidence	Date	Signature
SE0501	Completed checklist		
SE0502	Completed job card		
WM-01-WE06	Remove, inspect, repair and install wheels, tyres and tubes (20 items)		
	Scope Work Experience	Date	Signature
WA0601	Read and interpret job cards and use inspection sheets		
WA0602	Prepare the workstation, tools and equipment for the		

	operation		
WA0603	Remove and inspect wheels, tyres and tubes		
WA0604	Repair wheels, tyres and tubes		
WA0605	Install wheels, tyres and tubes		
WA0606	Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings		
	Supporting Evidence	Date	Signature
SE0601	Completed checklist		
SE0602	Completed job card		
WM-01-WE07	Prepare and inspect minimum of ten bicycles within a given time (frame alignment and preparation)		
	Scope Work Experience	Date	Signature
WA0701	Conduct rear triangle alignment using the correct tools and accurately applying the alignment technique		
WA0702	Conduct frame dropout alignment using the correct tools and accurately applying the alignment technique		
WA0703	Conduct rear derailleur alignment using the correct tools and accurately applying the alignment technique		
WA0704	Check for quality		
WA0705	Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings		
	Supporting Evidence	Date	Signature
SE0701	Completed checklist		
SE0702	Completed job card		

WM-01-WE08	Apply basic computer literacy in the bicycle workshop		
	Scope Work Experience	Date	Signature
WA0801	Use appropriate software to record production information		
WA0802	Operate the point-of-sales system to receive and record payment		
	Supporting Evidence	Date	Signature
SE0801	Completed checklist and job card		

	Contextualised Workplace Knowledge	Date	Signature
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	Additional Assignments to be Assessed Externally	Date	Signature
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653401000-WM-02, Perform minor and major services for the maintenance of bicycles, NQF Level 3, Credits 16

WM-02-WE01	Conduct diagnostic, fault finding, quality control inspections on bicycles received for servicing and repairs		
	Scope Work Experience	Date	Signature
WA0101	Apply the pre service-check technique to inspect a bicycle and identify material faults, componentry faults and alignment faults		
WA0102	Inspect the bicycle to diagnose problems and faults and apply quality control		
WA0103	Identify faults, alignment faults, damage and wear to the		

	frame and componentry		
WA0104	Record findings on a job card		
	Supporting Evidence	Date	Signature
SE0101	Diagnostic report (online or written submission)		
WM-02-WE02	Perform 10 minor services and repair bicycles		
	Scope Work Experience	Date	Signature
WA0201	Read and apply instructions specifying the work to be done		
WA0202	Source and apply manufacturer specifications in the selection of components and servicing and repairing the bicycle		
WA0203	Apply dismantle procedure, servicing procedure and assembly procedure applicable to the type of bicycle and componentry		
WA0204	Select and control the correct components for the bicycle ensuring compatibility and compliance with manufacturer specifications		
WA0205	Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings		
WA0206	Complete job card and stock control forms		
	Supporting Evidence	Date	Signature
SE0201	Completed job card and stock control forms		
WM-02-WE03	Service and repair bicycles (5 major services) by repairing and/or replacing damaged or worn-out components and accessories during the service		
	Scope Work Experience	Date	Signature
WA0301	Conduct headset disassembly, servicing/replacement, installation and adjustment		

WA0302	Conduct gear and brake cable and housing installation / replacement		
WA0303	Conduct derailleur disassembly, servicing/replacement, installation and adjustment		
WA0304	Conduct chain sizing and installation		
WA0305	Remove and replace a cassette		
WA0306	Conduct crankset disassembly, servicing/replacement, installation and adjustment		
WA0307	Conduct bottom bracket disassembly, servicing/replacement, installation and adjustment		
WA0308	Conduct pedal disassembly, servicing/replacement, installation and adjustment		
WA0309	Conduct hub disassembly, servicing/replacement, installation and adjustment		
WA0310	Conduct cable operated brake disassembly, servicing/replacement, installation and adjustment		
WA0311	Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings		
WA0312	Complete job card and stock control forms		
	Supporting Evidence	Date	Signature
SE0301	Copy of the signed job card		
WM-02-WE04	Fit equipment items to a bicycle		
	Scope Work Experience	Date	Signature
WA0401	Remove and install a variety of equipment items such as grips, handlebars, seat posts, saddles applying the requirements of the manufacturer specifications		
WA0402	Select products ensuring the correct compatibility between products		

WA0403	Install equipment items as per manufacturer specifications ensuring safe and correct selection and use of tools, equipment and consumables		
WA0404	Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings		
WA0405	Complete job card and stock control forms		
	Supporting Evidence	Date	Signature
SE0401	Copy of the signed job card		
WM-02-WE05	Build at least 5 wheel sets of which 3 are mountain bikes and 2 are road bikes		
	Scope Work Experience	Date	Signature
WA0501	Determine spoke tension using a tension meter according to manufacturer specifications		
WA0502	Determine spoke length using appropriate measuring equipment		
WA0503	Conduct wheel lacing		
WA0504	Conduct wheel dishing using a wheel truing stand and dishing tool		
WA0505	Conduct wheel truing using an accurately calibrated wheel truing stand		
WA0506	Inspect completed work for accuracy according to manufacturer specifications and quality and report on findings		
WA0507	Complete job card and stock control forms		
	Supporting Evidence	Date	Signature
SE0501	Copy of the signed job card		
WM-02-WE06	Use the software system or smart device to find and record information (stock control, job card, etc.)		

	Scope Work Experience	Date	Signature
WA0601	Check stock on hand		
WA0602	Fill and finalise a job card and export to point of sales		
WA0603	Request stock/service parts		
WA0604	Check prices on request from customer and inform customer on cost and availability		
	Supporting Evidence	Date	Signature
SE0601	Print of the data/information		

	Contextualised Workplace Knowledge	Date	Signature
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	Additional Assignments to be Assessed Externally	Date	Signature
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653401000-WM-03, Advanced bicycle componentry servicing, NQF Level 04, Credits 21

WM-03-WE01	Conduct advanced bicycle and componentry disassembly, servicing/replacement, installation and adjustment of two open and two closed hydraulic brake systems for road bicycle and mountain bicycles		
	Scope Work Experience	Date	Signature
WA0101	Read and apply instructions specifying the work to be done		
WA0102	Inspect the hydraulic system and identify faults or damage and complete an inspection sheet and stock list		

WA0103	Identify and select the tools relevant to the task		
WA0104	Source and identify applicable manufacturer specifications		
WA0105	Identify and select the correct components ensuring compatibility		
WA0106	Repair and maintain hydraulic brakes		
WA0107	Connect a hydraulic brake hoses		
WA0108	Service and install a hydraulic brake system installation		
WA0109	Conduct brake bleeding		
WA0110	Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications		
WA0111	Complete a job card and stock control forms		
	Supporting Evidence	Date	Signature
SE0101	Booking schedule		
SE0102	Work order		
SE0103	Signed job card		
SE0104	Signed stock list		
SE0105	Inspection sheet		
SE0106	Customer invoice		
WM-03-WE02	Conduct advanced bicycle and componentry disassembly, servicing/replacement, installation and adjustment of a minimum of two front and two rear suspension systems from various manufacturers		
	Scope Work Experience	Date	Signature
WA0201	Read and apply instructions specifying the work to be done		

WA0202	Inspect the front or rear suspension system and identify faults or damage and complete an inspection sheet and stock list		
WA0203	Identify and select the tools relevant to the task		
WA0204	Source and identify applicable manufacturer specifications		
WA0205	Identify and select the correct components ensuring compatibility		
WA0206	Conduct suspension fork disassembly, servicing/replacement, installation and testing		
WA0207	Conduct rear shock disassembly, servicing/replacement, installation and testing		
WA0208	Conduct dropper post disassembly, servicing/replacement, installation and testing		
WA0209	Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications		
WA0210	Complete a job card and stock control forms		
	Supporting Evidence	Date	Signature
SE0201	Signed job card		
SE0202	Signed stock list		
SE0203	Inspection sheet		
WM-03-WE03	Conduct advanced bicycle frame servicing of five bicycles including componentry disassembly, servicing/replacement, installation and adjustment		
	Scope Work Experience	Date	Signature
WA0301	Read and apply instructions specifying the work to be done		
WA0302	Inspect the pivot system and identify faults or damage and complete an inspection sheet and stock list		

WA0303	Identify and select the tools relevant to the task		
WA0304	Source and identify applicable manufacturer specifications		
WA0305	Identify and select the correct components ensuring compatibility		
WA0306	Conduct pivot system disassembly, servicing/replacement, installation and testing		
WA0307	Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications		
	Supporting Evidence	Date	Signature
SE0301	Signed job card		
SE0302	Signed stock list		
SE0303	Inspection sheet		
WM-03-WE04	Conduct advanced bicycle and componentry disassembly, servicing/replacement, installation and adjustment of two electronic group sets		
	Scope Work Experience	Date	Signature
WA0401	Read and apply instructions specifying the work to be done		
WA0402	Inspect the front or rear suspension system and identify faults or damage and complete an inspection sheet and stock list		
WA0403	Identify and select the tools relevant to the task		
WA0404	Source and identify applicable manufacturer specifications		
WA0405	Identify and select the correct components ensuring compatibility		
WA0406	Charge the battery		

WA0407	Update firmware		
WA0408	Check manufacturer specifications for wire routing		
WA0409	Route internal wiring		
WA0410	Install hardware (derailleurs, shifters, cranks and other components)		
WA0411	Run diagnostic		
WA0412	Set up gears (manually and electronically)		
WA0413	Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications		
	Supporting Evidence	Date	Signature
SE0401	Signed job card		
SE0402	Signed stock list		
SE0403	Inspection sheet		
WM-03-WE05	Examine, fault finding, trouble shooting and problem solving (advanced fault finding : type of bike and experience related) (20 bikes) (problem solving related to hydraulic brakes, suspension system, electronic group set, frame problem, advanced components and high-end wheel sets) (diagnostic or fault report)		
	Scope Work Experience	Date	Signature
WA0501	Ask customer for feedback: interaction with customer about symptoms		
WA0502	Process of elimination		
WA0503	Visual and audio inspection		
WA0504	Use diagnostic device for electronic components		
WA0505	Use gauges to determine wear and tear and cause of the fault		

WA0506	Use knowledge		
WA0507	Test the componentry or ride the bike		
WA0508	Inspect for material faults		
WA0509	Inspect for componentry faults		
WA0510	Inspect for alignment faults		
WA0511	Compile a diagnostic or fault report indicating findings and work instructions		
	Supporting Evidence	Date	Signature
SE0501	Booking schedule		
SE0502	Work order		
SE0503	Signed job card		
SE0504	Signed stock list		
SE0505	Inspection sheet		
SE0506	Customer invoice		
SE0507	Diagnostic/ fault report		
WM-03-WE06	Build minimum of 10 advanced wheels (3 straight spoke wheel sets) + (race wheel sets, custom wheel build)		
	Scope Work Experience	Date	Signature
WA0601	Conduct advanced wheel building (straight pull spoke and fat bike wheel build)		
WA0602	Use correct tools		
WA0603	Use measuring tools		
WA0604	Spoke length calculations		
WA0605	Use the correct consumables		

WA0606	Inspect completed work and test for functionality and confirm quality and compliance with manufacturer specifications		
	Supporting Evidence	Date	Signature
SE0601	Booking schedule		
SE0602	Work order		
SE0603	Signed job card		
SE0604	Signed stock list		
SE0605	Inspection sheet		
SE0606	Customer invoice		

	Contextualised Workplace Knowledge	Date	Signature
1	Workshop layout, process flow and work procedures		
2	Availability and stock control of parts and components		
3	Customer relations		
4	Forms, reports, checklists and other workshop documentation		

	Additional Assignments to be Assessed Externally	Date	Signature
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653401000-WM-04, Advise and guide a team to solve problems related to specialised bicycle componentry and advise clients, NQF Level 04, Credits 2

WM-04-WE01	Assess own capability to do the job and verify the method of doing it (work procedures)		
	Scope Work Experience	Date	Signature
WA0101	Assess the full extent of the job and develop options for repair		
WA0102	Select the most appropriate plan of action taking into account capabilities, cost, time vs. client needs		
WA0103	Use available resources		
	Supporting Evidence	Date	Signature
SE0101	Booking schedule		
SE0102	Work orders		
SE0103	Signed job card		
SE0104	Signed stock list		
SE0105	Customer invoice		
WM-04-WE02	Supervise a team and coach (attendance register of coaching sessions, task allocations)		
	Scope Work Experience	Date	Signature
WA0201	Allocate jobs and monitor progress		
WA0202	Assess quality of work produce and identify skills gaps related to standard operating procedures and product knowledge		
WA0203	Plan and conduct a coaching session to improve or maintain productivity and quality		
WA0204	Motivate the team to achieve optimum productivity and efficiency		
	Supporting Evidence	Date	Signature
SE0201	Booking schedule		

SE0202	Work orders and signed job card		
SE0203	Appraisals session		
SE0204	Training/couching schedule		
SE0205	Facilitation notes		
WM-04-WE03	Maintain high level of professionalism with customers and apply customer care (customer service cards)		
	Scope Work Experience	Date	Signature
WA0301	Establish customer relations		
WA0302	Maintain communication between the customer and store		
WA0303	Give feedback to the customer on progress and any delays and change in costs		
WA0304	Keep record of communication with the customer and customer decisions		
WA0305	Keep record to maintain a auditable trial		
WA0306	Use booking system and backup system		
	Supporting Evidence	Date	Signature
SE0301	Customer feedback forms		
SE0302	Electronic communication feedback		
SE0303	Job card and work orders		
SE0304	Customer invoice		
SE0305	Booking schedule		
WM-04-WE04	Use the computer or smart device to find and record information (stock control, job card, etc.)		
	Scope Work Experience	Date	Signature

WA0401	Email customers (conformation on product pricing, quotes, proof of purchase for warrantees, invoices,)		
WA0402	Email suppliers ordering of parts		
WA0403	Use available technical specification resources effectively		
WA0404	Pull reports on workshop output and job achievement and productivity		
	Supporting Evidence	Date	Signature
SE0401	Electronic communication feed back		
SE0402	Productivity reports		
SE0403	Inspection sheet		
WM-04-WE05	Use acquired knowledge (consumables, materials, threads) to identify and solve problems in order to advise subordinates and clients on a practical solution for a given scenario		
	Scope Work Experience	Date	Signature
WA0501	Research sources of information using resources effectively to identify suitable options		
WA0502	Research product specifications to identify possible faults, defects and possible causes		
WA0503	Analyse and compare options for practicality, efficiency, durability and cost effectiveness and apply problems solving principles		
WA0504	Advise subordinates and clients on most suitable solution and delegate the execution of the repair		
	Supporting Evidence	Date	Signature
SE0501	Research results		

	Contextualised Workplace Knowledge	Date	Signature
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	Additional Assignments to be Assessed Externally	Date	Signature
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653401000-WM-, NQF Level, Credits 0

	Contextualised Workplace Knowledge	Date	Signature
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	Additional Assignments to be Assessed Externally	Date	Signature
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