Quality Council for Trades & Occupations
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OCCUPATIONAL SKILLS PROGRAMME CURRICULUM DOCUMENT

IN LINE WITH THE OQSF POLICY (2021) OCCUPATIONAL QUALIFICATION TYPE (NOMENCLATURE)

QUALIFICATION/PART-QUALIFICATION/SKILLS PROGRAMME	SKILLS PROGRAMME-ID	TITLE (DESCRIPTOR)	NQF LEVEL	CREDITS
Skills Programme	SP-250122	Battery Based Domestic Energy System Mounter	4	60
CURRICULUM CODE	900242-000-00-00			
PARTNER DETAILS	**ORGANISATION NAME**	**WEBSITE ADDRESS**	**TELEPHONE NUMBER**	**LOGO**
QUALITY PARTNER - DEVELOPMENT	Energy & Water Sector Education Training Authority (EWSETA)	https://ewseta.org.za	+27 10 109 3278	EW SETA

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SECTION 1: CURRICULUM SUMMARY

1.1 Occupational Information:

1.1.1 Associated, Organising Framework for Occupations (OFO) Occupational Code and Title

313109: Solar Photovoltaic Service Technician

1.1.2 Occupation/Specialisation/Part-Qualification/Skills Programme Type, Title, NQF Level, Credits and Curriculum Code, addressed by this Curriculum.

TYPE	TITLE	NQF LEVEL	CREDITS	CURRICULUM CODE
Skills Programme	Battery Based Domestic Energy System Mounter	4	60	313109-001-00-00

1.1.3 Alternative titles used by industry:

none

1.2 Curriculum Information:

1.2.1 Articulation for Skills programmes

(a) Work Opportunities:

- Solar Photovoltaic Service Technician

(b) Learning Opportunities:

- Occupational Certificate: Solar Photovoltaic Service Technician

1.3 Curriculum Structure:

1.3.1 Knowledge/Theory Modules:

- 313109-001-00-00-KM-01: Fundamentals of electricity and a Battery Energy Storage Systems, NQF Level 4, Credits 20.
- 313109-001-00-00-KM-02: Basic Workplace Safety Principles and Concepts related to mounting Battery Energy Storage Systems, NQF Level 4, Credits 15.
- 313109-001-00-00-KM-03: Principles of operating a business as entrepreneur, NQF Level 3, Credits 10.

Total number of credits for Knowledge Modules: 45

1.3.2 Practical Skills Modules:

- 313109-001-00-00-PM-01: Mount and maintain a Battery Energy Storage System, NQF Level 4, Credits 10.
- 313109-001-00-00-PM-02: Apply business principles in a business that mount Battery Energy Storage Systems, NQF Level 4, Credits 5

Total number of credits for Application Modules: 15

1.3.3 Work Experience Modules:

N/A

Total number of credits: N/A

Total Number of credits for the Skills Programme: 28

1.4 Entry Requirements:

NQF Level 3 qualification

1.5 Recognition of Prior Learning (RPL):

1.5.1 RPL for Access:

Learners may use the RPL process to gain access to training opportunities for a programme of learning, qualification, part-qualification, or skills programme if they do not meet the formal, minimum entry requirements for admission.

RPL assessment provides an alternative access route into a programme of learning, qualification, part-qualification, or skills programme.

Such an RPL assessment may be developed, moderated, and conducted by the accredited Skills Development Provider which offers that specific qualification/part qualification/skills programme. Such an assessment must ensure that the learner is able to display the equivalent level of competencies required for access, based on the NQF level descriptors.

1.5.2 RPL for Exemption:

For exemption from modules through RPL, learners who have gained the stipulated competencies of the modules of a programme of learning, qualification, part-qualification, or skills programme through any means of formal, informal, or non-formal learning and/or work experience, may be awarded credits towards relevant modules, and gaps identified for training, which is then concluded.

1.5.3 RPL for awarding credits:

Learners who have gained the stipulated competencies of the modules of a programme of learning, qualification, part-qualification, or skills programme through any means of formal, informal, or non-formal learning and/or work experience, may be awarded credits towards relevant modules, and gaps identified for training, which is then concluded.

A valid Statement of Results is required for admission to the EISA in which confirmation of achievement is provided that all internal assessment criteria for all modules in the related curriculum document have been achieved.

For a Skills Programme, the accredited Skills Development Provider (SDP) must ensure all modular competency requirements are met prior to the FISA and keep record of such evidence.

Upon successful completion of the EISA/FISA, RPL learners will be issued with the QCTO certificate for the qualification, part-qualification, or skills programme. Quality Partners are responsible for ensuring the RPL mechanism and process for qualifications and part-qualification is approved by the QCTO.

1.6 Quality Partner for Assessment:

NAME OF BODY:	Energy & Water Sector Education Training Authority (EWSETA)
ADDRESS OF BODY:	Ground Floor, 22 Wellington Road, Parktown
WEBSITE:	www.ewseta.org.za
TELEPHONE NUMBER:	+ 27 10 109 3278

1.7 List of Qualification(s)/Part- Qualification(s)/Skills Programme(s) Related to this Curriculum.

- 99447: Occupational Certificate: Solar Photovoltaic Service Technician.

SECTION 2: OCCUPATIONAL/SPECIALISATION/PART-QUALIFICATION/SKILLS PROGRAMME PROFILE

2.1 Purpose:

The purpose of this Skills Programme is to facilitate the effective functioning of Battery Based Domestic Energy System Mounters within the Energy Sector.

A Battery Based Domestic Energy System Mounter mounts, maintains, trouble shoots, remove and replaces faulty equipment components of domestic Battery Energy Storage DC Systems and solar panels and brief users on the safe use of the system.

A qualified learner will be able to:

- Mount a domestic Battery Energy Storage DC System and solar panels.

- Maintain and service a domestic Battery Energy Storage System (BESS).
- Trouble shoot, remove, and replace faulty equipment components of a domestic Battery Energy Storage System (BESS).
- Brief users on safe use and maintenance of the Battery Energy Storage Systems.
- Conduct basic processes to sustain a small business.

2.2 Tasks:

TASK	LINKS TO ELO
TASK 01: Mount a domestic Battery Energy Storage DC System and solar panels.	ELO 01: Apply safe mounting methods and techniques to mount a domestic Battery Energy Storage DC System and solar panels.
TASK 02: Maintain and service a domestic Battery Energy Storage System (BESS).	ELO 02: Apply basic principles and processes to maintain and service a domestic Battery Energy Storage System (BESS).
TASK 03: Trouble shoot, remove, and replace faulty equipment components of a domestic Battery Energy Storage System (BESS).	ELO 03: Inspect and restore functionality of mal-functional domestic Battery Energy Storage System (BESS) using appropriate procedures to solve problems to restore the equipment to manufacturer's specifications.
TASK 04: Brief users on safe use and maintenance of the Battery Energy Storage Systems.	ELO 04: Apply communication style and content suitable to the user of domestic Battery Energy Storage System (BESS) to conduct user briefings on the safe use and maintenance of the Battery Energy Storage Systems.
TASK 05:	ELO 05:

Conduct basic processes to sustain a business.	Apply processes and principles to sustain a business that address customer needs for Battery Energy Storage Systems.

2.3 Occupational Task Details:

2.3.1 Task 1

Mount a domestic Battery Energy Storage DC System and solar panels.

(a) Unique Product or Service:

- Mounted domestic Battery Energy Storage DC System and solar panels.

(b) Responsibilities:

- Assess the site where the Battery Energy Storage equipment mounting will be done.
- Assess the roof or structure where the solar panels will be installed.
- Mount the Battery Energy Storage equipment.
- Mount the solar panels.
- Mount the cables.
- Test the Battery Energy Storage System and solar panel mounting.

(c) Contexts:

- Domestic low-income households.
- Limited roof size.
- Includes urban and rural households.
- Includes Solar panels.
- Basic Inverters with an AC plug only, no wiring to distribution board / wiring of premises.
- Max 48V Battery configuration.
- Exclude any AC components and connections.
- Component based UPS system, with charge controller.
- Limited to Less than 50V DC (extra low voltage).

2.3.2 Task 2

Maintain and service a domestic Battery Energy Storage System (BESS).

(a) Unique Product or Service:

- Functional Battery Energy Storage DC System and solar panels.

(b) Responsibilities:

- Conduct inspections of equipment and panels.
- Monitor system performance via remote access network.
- Monitor health of batteries.
- Service Batteries.

(c) Contexts:

- Domestic low-income households, but not limited to, could include leisure equipment applications.
- Battery Energy Storage DC System critical data status parameters.

2.3.3 Task 3

Trouble shoot, remove, and replace faulty equipment components of a domestic Battery Energy Storage System (BESS).

(a) Unique Product or Service:

- Functional restored Battery Energy Storage System.

(b) Responsibilities:

- Troubleshoot problems to determine causes of malfunction.
- Remove faulty components.
- Replace faulty components.
- Submit faulty components for repair.

(c) Contexts:

- Factory warranty detail.
- Replace not repair of faulty components.
- Troubleshoot sequences for electrical appliances.

2.3.4 Task 4

Brief users on safe use and maintenance of the Battery Energy Storage Systems.

(a) Unique Product or Service:

- Informed Battery Energy Storage Systems users.

(b) Responsibilities:

- Explain operating principles at the level of the client, in language of client.
- Guide client to perform basic maintenance and troubleshooting on the system.

- Introduce remote monitoring principles to the client.
- Explain difference between DC and AC and implications for appliance and load.
- Help clients to understand the basic principles of energy calculation and usage.

(c) Contexts:

- Communicate with clients.
- DC system parameters and implications.
- Technical principles explained in client language.
- Remote monitoring.
- Technophobia considerations.

2.3.5 Task 5

Conduct basic processes to sustain a business.

(a) Unique Product or Service:

- Business acumen.

(b) Responsibilities:

- Compile and manage basic contracts.
- Monitor and manage inventory and stock levels.
- Compile and manage an operational business budget.
- Perform basic accountancy functions.
- Perform customers care functions.
- Market business services.

(c) Contexts:

- Basic business acumen principles.
- Entrepreneurial business principles.

SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS

3.1 Knowledge Module Specifications:

KNOWLEDGE/THEORY COMPONENT

State compulsory modules:

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
313109-001-00-00-KM-01	Fundamentals of electricity and a Battery Energy Storage Systems	4	20	BLENDED
313109-001-00-00-KM-02	Basic Workplace Safety Principles and Concepts related to mounting Battery Energy Storage Systems	4	15	BLENDED
313109-001-00-00-KM-03	Principles of operating a business as entrepreneur	3	10	BLENDED

Total credits for compulsory knowledge, modules = 45

n/a.

Category A

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY

Total credits of the selected modules = n/a

Total Credits for the Knowledge modules = 45

3.1.1 Detailing Knowledge Module (KM) contents

Knowledge Module (KM) - 01

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
313109-001-00-00-KM-01	Fundamentals of electricity and a Battery Energy Storage Systems	4	20	BLENDED

(a) Purpose of Knowledge Module:

The purpose of the " Fundamentals of electricity and a Battery Energy Storage Systems" module is to equip entrepreneurs in the Energy Sector with a basic understanding of electricity and the operating principles of a Battey Energy Storage System. This module aims to provide insights into the safe use of electricity and the regulations regarding installations that is limited to less than 50-volt DC. Learners will gain basic knowledge of component based Uninterrupted Power Supply (UPS), charge controller and solar installations for domestic and leisure applications.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-01-KT01	Electricity regulations and compliance requirements.	10%
KM-01-KT02	Principles of AC/DC.	10%
KM-01-KT03	Ohms law.	10%
KM-01-KT04	Basic principles of calculating energy.	12%
KM-01-KT05	Interpreting drawings.	12%
KM-01-KT06	Interpreting mounting manuals and guidelines.	10%
KM-01-KT07	Operating principles of solar panels.	10%
KM-01-KT08	Principles of testing and troubleshooting Battey Energy Storage Systems.	14%
KM-01-KT09	Principles of battery technology.	12%

(c) Detailing each topic listed above into topic elements:

KM-01-KT01 Electricity regulations and compliance requirements (10%)

TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Legislation, regulations, standards, including SANS.	60%
KT0102	Legislation and regulations for workplace safety pertaining to PV installations.	40%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Explain the regulations related to extra low voltage installations.	50%
IAC0102	Explain what the legal requirements are for any electrical installations more than 50V DC.	50%

KM-01-KT02 Principles of AC/DC (10%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0201	Fundamentals of alternating current (AC) and direct current (DC).	40%
KT0202	Key differences between AC and DC.	30%
KT0203	Applications of AC and DC in energy storage systems.	30%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Describe the differences between alternating current (AC) and direct current (DC).	40%
IAC0201	Safety considerations specific to AC and DC systems.	60%

KM-01-KT03 Ohms law (10%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0301	Introduction to Electrical Circuits.	30%

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KT0302	Understanding Voltage (V).	10%
KT0303	Understanding Current (I).	10%
KT0304	Understanding Resistance (R).	10%
KT0305	Explanation of the mathematical relationship between voltage, current, and resistance.	10%
KT0306	Using Ohm's Law to solve for voltage, current, and resistance.	15%
KT0307	How Ohm's Law applies to series and parallel circuits.	15%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0301	Explain what voltage, current, and resistance are.	33%
IAC0302	Explain the mathematical relationship between voltage, current, and resistance using practical examples.	33%
IAC0303	Explain the calculations for total resistance, current, and voltage in series and parallel circuits.	34%

KM-01-KT04	Basic principles of calculating energy (12%)	
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0401	Energy Production from PV.	15%
KT0402	Battery Storage System and Capacity.	15%
KT0403	Charging and Discharging.	15%
KT0404	State of Charge (SOC).	15%
KT0405	Energy Efficiency.	10%
KT0406	Calculating Energy Flow.	15%
KT0407	Control strategies to maximize energy capture, storage, and utilization.	15%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0401	Explain energy efficiency and how to optimise charging/discharging schedules and manage SOC.	33%
IAC0402	Explain how the energy produced by PVs are stored.	33%
IAC0403	Explain battery capacity and discharge/charge considerations.	34%

KM-01-KT05	Interpreting drawings (12%)	
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0501	Symbols and Abbreviations.	15%
KT0502	Drawing Types.	15%
KT0503	Component Identification.	15%
KT0504	Wiring and Connection Details.	15%
KT0505	Scale and Dimensions.	10%
KT0506	Annotations and Notes.	15%
KT0507	Wiring Diagrams.	15%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0501	Identify the common symbols and abbreviations used in electrical drawings.	15%
IAC0502	Identify the different drawing types, such as Single-line diagrammes, Schematic diagrammes and Layout drawings	15%
IAC0503	Identify and understand the purpose of each component depicted in drawings, such as batteries, inverters, transformers, switches, meters, and protective devices.	15%
IAC0504	Identify the routing of conductors, cable sizes, connection points, and termination methods as specified in drawings.	15%
IAC0505	Explain scale and dimension considerations indicated on the drawings to understand the physical size and layout of the components and equipment within the installation site.	10%

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IAC0506	Explain the importance of notes, or legends provided on the drawings for additional information about specific components, connections, or design considerations.	15%
IAC0507	Interpret wiring diagrams that depict the electrical connections between components, including the routing of conductors, wire sizes, connection points, and terminal markings.	15%

KM-01-KT06	Interpreting mounting manuals and guidelines (10%)	
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0601	Safety Precautions.	10%
KT0602	Equipment Identification.	8%
KT0603	Assembly Instructions.	10%
KT0604	Mounting Requirements.	10%
KT0605	Electrical Connections.	10%
KT0606	Alignment and Levelling.	10%
KT0607	Anchoring and Fastening.	12%
KT0608	Clearances and Ventilation.	10%
KT0609	Testing and Commissioning.	10%
KT0610	Documentation and Record-Keeping.	5%
KT0611	Manufacturer Support.	5%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0601	Explain the importance of checking for precautions related to electrical hazards, lifting, handling heavy equipment, working at heights, and using personal protective equipment (PPE).	10%
IAC0602	Explain the importance of identifying the specific components and equipment included in the BESS system by referring to illustrations, part numbers, and descriptions provided in the mounting manual.	8%

IAC0603	Explain the importance of following step-by-step assembly instructions provided in the manual to correctly assemble and install each component of the BESS system.	10%
IAC0604	Explain the importance of the mounting requirements for each component, including the type of mounting surface (e.g., concrete pad, wall, rack), recommended mounting hardware, and load-bearing capacity	10%
IAC0605	Explain the importance of adhering to the wiring diagrams and connection diagrams provided in the mounting manual to correctly wire and connect electrical components.	10%
IAC0606	Explain the importance of alignment and levelling of equipment during installation to prevent structural stress, misalignment, and performance issues.	10%
IAC0607	Explain the importance of adhering to the anchoring and fastening requirements for securing equipment to mounting surfaces.	12%
IAC0608	Explain the importance of following guidelines provided in the mounting manual for minimum clearance distances and ventilation requirements.	10%
IAC0609	Explain the importance of verifying the proper mounting and functionality of BESS equipment by conducting testing and commissioning procedures outlined in the mounting manual.	10%
IAC0610	Explain the importance of keeping accurate records of the installation process, including photographs, assembly checklists, and equipment specifications.	5%
IAC0611	Explain the importance of contacting the manufacturer for technical support or clarification if encountering difficulties or uncertainties during the installation process.	5%

KM-01-KT07	Operating principles of solar panels (10%)	
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0701	Photovoltaic Effect.	5%
KT0702	Solar Cell Construction.	5%

KT0703	Generation of Direct Current (DC).	5%
KT0704	Maximum Power Point (MPP).	10%
KT0705	Temperature Dependence.	10%
KT0706	Angle and Orientation.	15%
KT0707	Shading Effects.	15%
KT0708	Series and Parallel Connections.	10%
KT0709	Monitoring and Maintenance.	5%
KT0710	Mounting principles.	20%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0701	Explain the Photovoltaic Effect.	5%
IAC0702	Describe the basics of solar cell construction.	5%
IAC0703	Explain that solar panels generate Direct Current (DC).	5%
IAC0704	Explain what Maximum Power Point (MPP) is and what aspects impacts maximising energy generation.	10%
IAC0705	Explain the effect temperature has on solar efficiency.	10%
IAC0706	Explain the principles of solar tracking and optimal tilt angles for maximising energy capture throughout the day and across seasons.	15%
IAC0707	Explain the effect shading from nearby objects such as buildings, trees, or other obstructions can have in reducing solar panel performance.	15%
IAC0708	Discuss the considerations for connecting solar panels in series and parallel to achieve the desired voltage and current levels.	10%
IAC0709	Describe the basic maintenance tasks such as cleaning, inspection, and troubleshooting of solar panel systems.	5%
IAC0710	Describe the mounting principles to consider and adhere to when mounting solar panels safely.	20%

KM-01-KT08	Principles of testing and troubleshooting Battey Energy Storage Systems (14%)

TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0801	Testing and Commissioning Battey Energy Storage Systems.	30%
KT0802	Trouble Shooting Symptom Identification.	20%
KT0803	Isolating components to identify the root cause of the problem.	25%
KT0804	Replacing components and referral to supplier for repairs.	25%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0801	Describe the principles for testing and commissioning Battey Energy Storage Systems.	60%
IAC0802	Describe the process and considerations of troubleshooting and restoring functionality of defective Battey Energy Storage Systems.	40%

KM-01-KT09	Principles of battery technology (12%)	
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0901	Fundamental operating principles of batteries.	25%
KT0902	Battery capacity.	25%
KT0903	Charging and Discharging.	20%
KT0904	Safety Considerations.	10%
KT0905	Maintenance Requirements.	10%
KT0906	Environmental Impact.	5%
KT0907	Manufacturer Specifications.	5%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0901	Describe the fundamental operating principles of battery technology, including the different battery chemistries used in	50%

	energy storage systems, such as lithium-ion, lead-acid, flow batteries, and others.	
IAC0902	Describe the aspects that impact battery capacity, charging and discharging.	40%
IAC0903	Describe the important aspects of battery maintenance and disposal considerations.	10%

3.1.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	• Battery Energy Storage Systems Components. • Solar panels and mounting equipment. • Classroom that is ventilated and luminated with tables, chairs, and whiteboards. • Learning Management System (LMS). • Laptops and Computers. • Internet Connectivity. • Data Projector and Screen. • Flip Charts and Markers.
CONSUMABLES	• Battery Energy Storage Systems Mounting Consumables such as mounting brackets, cables, fasteners, etc. • Curriculum Aligned Learning Materials. • Stationery: Basic stationery supplies like pens, notepads, and highlighters. • Flip Chart Papers and Markers. • Training Evaluation Forms.

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	• NQF Level 5 qualification in Solar Photovoltaic or Battery Energy Storage Systems Technology.

	• Four years practical experience in Battery Energy Storage Systems.
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
	• Registered Legal entity. • Infrastructure compliant with Occupational Health and Safety Act. • Display of Labour Laws in the buildings. • Valid Tax Compliance Pin / Exemption.

3.1.3 Exemptions

Normal RPL processes can be used by the SDP to provide exemption for completed learning.

Knowledge Module (KM) - 02

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
313109-001-00-00-KM-02	Basic Workplace Safety Principles and Concepts related to mounting Battery Energy Storage Systems	4	15	BLENDED

(a) Purpose of Knowledge Module:

The purpose of the "Basic Workplace Safety Principles and Concepts related to mounting Battery Energy Storage Systems" module is to develop the mounter's capabilities of safely mounting equipment and solar panels. This module focuses on site safety considerations when mounting equipment in domestic sites and for leisure utilisation.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT

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KM-02-KT01	Safety principles of Mounting Battery Energy Storage Equipment.	40%
KM-02-KT02	Principles of mounting Battery Energy Storage Equipment.	40%
KM-02-KT03	Principles of using hand tools.	20%

(b) Detailing each topic listed above into topic elements:

KM-02-KT01 Safety principles of Mounting Battery Energy Storage Equipment (40%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0101	Understanding Electrical Hazards.	10%
KT0102	Personal Protective Equipment (PPE).	8%
KT0103	Safe Work Practices.	15%
KT0104	Risk Assessment of Mounting Sites.	5%
KT0105	Proper Mounting Techniques.	12%
KT0106	Electrical Isolation.	10%
KT0107	Battery Handling and Storage.	10%
KT0108	Fire Safety.	10%
KT0109	Emergency Procedures.	10%
KT0110	Work at Height Safety Principles.	10%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	**IAC DESCRIPTION**	**% OF TIME TO BE SPENT**
IAC0101	Explain Electrical Hazards and what to look out for to prevent them.	10%
IAC0102	Explain the importance and use of Personal Protective Equipment (PPE) when having to mount Battery Energy Storage Equipment.	8%
IAC0103	Explain the Safe Work Practices that apply to mounting Battery Energy Storage Equipment.	15%
IAC0104	Discuss what risks need to be assessed and addressed in the processes of mounting Battery Energy Storage Equipment.	5%

IAC0105	Outline the proper mounting techniques that need to be used to mount Battery Energy Storage Equipment.	12%
IAC0106	Explain the importance and procedures of electrical isolation before any work commences.	10%
IAC0107	Explain the considerations of handling and storage of batteries.	10%
IAC0108	Explain Fire Safety as precaution in any workplace or mounting site.	10%
IAC0109	Discuss the emergency procedures that mounters of Battery Energy Storage Equipment need to be prepared for and how to perform them.	10%
IAC0110	Discuss the Work at Height Safety Principles and how they apply to mounting of Battery Energy Storage Equipment.	10%

KM-02-KT02 Principles of mounting Battery Energy Storage Equipment (40%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0201	Site Assessment.	12%
KT0202	Equipment Specifications.	8%
KT0203	Mounting Location.	8%
KT0204	Mounting Structure.	8%
KT0205	Anchoring and Foundations.	8%
KT0206	Clearances and Accessibility.	8%
KT0207	Alignment and Levelling.	8%
KT0208	Fastening and Securing.	8%
KT0209	Electrical Connections.	8%
KT0210	Ventilation and Cooling.	8%
KT0211	Safety Precautions.	10%
KT0212	Cable wiring Principles.	6%

IAC CODE	**IAC DESCRIPTION**	**% OF TIME TO BE SPENT**
IAC0201	Describe the site elements to assess before any mounting is done.	40%

IAC0202	Describe the process and considerations for safely mounting Battery Energy Storage Systems	60%

KM-02-KT03 Principles of using hand tools (20%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0201	Tool Selection.	12%
KT0202	Tool Inspection.	12%
KT0203	Proper Tool Handling.	14%
KT0204	Correct Technique.	12%
KT0205	Fastening and Tightening.	14%
KT0206	Precision and Accuracy.	12%
KT0207	Safety Precautions.	12%
KT0208	Tool Maintenance.	12%

IAC CODE	**IAC DESCRIPTION**	**% OF TIME TO BE SPENT**
IAC0201	Describe the principles for selecting and proper use of a variety of tools, including power tools.	70%
IAC0202	Describe the aspects to consider ensuring limited wastage, accuracy and precision when mounting Battery Energy Storage Equipment.	30%

3.1.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	• Battery Energy Storage Systems Components. • Solar panels and mounting equipment. • Classroom that is ventilated and luminated with tables, chairs, and whiteboards.

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	• Learning Management System (LMS). • Laptops and Computers. • Internet Connectivity. • Data Projector and Screen. • Flip Charts and Markers. • Hand and power tools for mounting equipment.
CONSUMABLES	• Battery Energy Storage Systems Mounting Consumables such as mounting brackets, cables, fasteners, etc. • Curriculum Aligned Learning Materials. • Stationery: Basic stationery supplies like pens, notepads, and highlighters. • Flip Chart Papers and Markers. • Training Evaluation Forms.

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	• NQF Level 5 qualification in Solar Photovoltaic or Battery Energy Storage Systems Technology. • Four years practical experience in Battery Energy Storage Systems.
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
	• Registered Legal entity. • Infrastructure compliant with Occupational Health and Safety Act. • Display of Labour Laws in the buildings. • Valid Tax Compliance Pin / Exemption.

3.1.3 Exemptions

Normal RPL processes can be used by the SDP to provide exemption for completed learning.

Knowledge Module (KM) - 03

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
313109-001-00-00-KM-03	Principles of operating a business as entrepreneur	3	10	BLENDED

(a) Purpose of Knowledge Module:

The purpose of the " Principles of operating a business as entrepreneur " module is to develop the mounter's entrepreneurial business capabilities. This module focuses on business acumen aspects that will enable mounters to operate a sustainable business that serves the rural and urban domestic households' need for Battery Energy Storage Systems. The business could also expand its value proposition to focus on catering for the leisure industry.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-03-KT01	Fundamentals of customer service.	10%
KM-03-KT02	Communicating with customers and sharing technical concepts.	15%
KM-03-KT03	Basic principles of managing business finances.	15%
KM-03-KT04	Project planning and scheduling principles.	15%
KM-03-KT05	Computer skills.	15%
KM-03-KT06	Stock and inventory management.	15%
KM-03-KT07	Legal compliance and business regulations.	15%

(c) Detailing each topic listed above into topic elements:

KM-03-KT01 Fundamentals of customer service (10%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0101	Principles of explaining or marketing the advantages or value-add of Battery Energy Storage Systems.	50%

KT0102	Principles of offering accessible support channels and follow up services to customers.	50%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Explain the value-add aspects that need to be communicated to customers.	60%
IAC0102	Outline the options available to provide customers with continued support.	40%

KM-03-KT02 Communicating with customers and sharing technical concepts (15%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0201	Principles of listening and responding to customer needs and questions.	40%
KT0202	Principles of explaining technical principles in non-technical terms at the level of customers.	60%

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Describe the principles of active listening and engaging with clients and their world of understanding.	40%
IAC0202	Discuss the ways of explaining using and operating battery energy storage systems in non-technical terms.	60%

KM-03-KT03 Basic principles of managing business finances (15%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0301	Principles of compiling and managing a budget.	10%
KT0302	Principles of managing cashflow.	10%
KT0303	Principles of basic financial record keeping.	10%

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KT0304	Understanding profitability.	10%
KT0305	Basic principles of debt management.	10%
KT0306	Basic principles of managing business risk.	10%
KT0307	Tax planning and compliance principles.	10%
KT0308	Investment decision-making principles.	10%
KT0309	Basic financial forecasting principles.	10%
KT0310	Basic principles of compiling quotations, invoices, and basic delivery contracts.	10%

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0301	Describe the principles budgeting, financial forecasting and managing cash-flow.	20%
IAC0302	Describe the aspects to consider when calculating profit.	15%
IAC0303	Explain the considerations and importance of managing risks and credit.	20%
IAC0304	Describe the basic principles of interpreting and maintaining financial records.	15%
IAC0305	Explain the basic considerations for tax compliance.	15%
IAC0306	Explain the principles to consider when compiling quotations, delivery contracts and invoices.	15%

KM-03-KT04 Project planning and scheduling principles (15%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0401	Principles of defining project deliverables, milestones, and priorities.	25%
KT0402	Principles of sequencing and scheduling deliverables and milestones.	25%
KT0403	Principles of allocating responsibilities and creating feedback on progress opportunities.	25%
KT0404	Principles of co-ordinating service providers.	15%
KT0405	Basic project report and record keeping.	10%

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IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0401	Describe the principles of budgeting, financial forecasting and managing cash-flow.	20%
IAC0402	Describe the aspects to consider when calculating profit.	20%
IAC0403	Explain the considerations and importance of managing risks and credit.	20%
IAC0404	Describe the basic principles of interpreting and maintaining financial records.	20%
IAC0405	Explain the basic considerations for tax compliance.	20%

KM-03-KT05 Computer Skills (15%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0501	Basic principles of operating a personal computer.	10%
KT0502	Principles of using word processing software.	10%
KT0503	Principles of using spreadsheet software.	10%
KT0504	Principles of sending and receiving e-mails.	10%
KT0505	Principles of browsing the internet.	10%
KT0506	Principles of managing files and folders.	10%
KT0507	Principles of collaboration tools.	10%
KT0508	Principles of Cybersecurity.	10%
KT0509	Backup and Data Storage Principles.	10%
KT0510	Basic troubleshooting principles.	10%

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0501	Explain the function of computer operating systems.	10%
IAC0502	Explain and ability to produce a word document using word processing software.	10%
IAC0503	Explain and ability to produce a spreadsheet using spreadsheet software.	10%

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IAC0504	Explain and ability to receive and send e-mails.	10%
IAC0505	Explain and ability to browse the internet to search for specific items.	10%
IAC0506	Explain and ability to manage files and folders.	10%
IAC0507	Explain and ability to use collaboration tools.	10%
IAC0508	Explain the principles of Cybersecurity.	10%
IAC0509	Explain backup and data storage principles.	10%
IAC0510	Explain basic troubleshooting principles.	10%

KM-03-KT06 Stock and inventory management (15%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0601	Stock vs. Inventory.	25%
KT0602	Inventory and stock control and management methods.	25%
KT0603	Inventory and stock replenishment principles.	25%
KT0604	Principles of supplier relationship management.	25%

IAC CODE	**IAC DESCRIPTION**	**% OF TIME TO BE SPENT**
IAC0601	Describe the difference between stock and inventory assists and items.	50%
IAC0602	Describe the methods to manage inventory and stock.	25%
IAC0603	Explain the considerations for inventory and stock replenishment.	25%

KM-03-KT07 Legal compliance and business regulations (15%)		
TOPIC ELEMENT CODE	**TOPIC ELEMENT TITLE**	**% OF TIME TO BE SPENT**
KT0701	Principles of establishing a business legal entity.	25%
KT0702	Insurance and liability.	25%
KT0703	Legislation and regulation compliance.	25%
KT0704	Principles of employment contracting.	25%

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0701	Describe the different types of business structures to consider when starting a business.	25%
IAC0702	Describe the basic legal and regulatory compliance considerations for a business to operate in South Africa.	25%
IAC0703	Describe the importance and considerations of insurance and managing liability.	25%
IAC0704	Describe the basic principles of appointing and employing people.	25%

3.1.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	• Battery Energy Storage Systems Components. • Solar panels and mounting equipment. • Classroom that is ventilated and luminated with tables, chairs, and whiteboards. • Learning Management System (LMS). • Laptops and Computers. • Internet Connectivity. • Data Projector and Screen. • Flip Charts and Markers. • Hand and power tools for mounting equipment.
CONSUMABLES	• Battery Energy Storage Systems Mounting Consumables such as mounting brackets, cables, fasteners, etc. • Curriculum Aligned Learning Materials. • Stationery: Basic stationery supplies like pens, notepads, and highlighters. • Flip Chart Papers and Markers. • Training Evaluation Forms.

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	• NQF Level 5 qualification in Business Management. • Four years practical experience in Battery Energy Storage Systems.
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
	• Registered Legal entity. • Infrastructure compliant with Occupational Health and Safety Act. • Display of Labour Laws in the buildings. • Valid Tax Compliance Pin / Exemption.

3.1.3 Exemptions

Normal RPL processes can be used by the SDP to provide exemption for completed learning.

3.2 Practical Skill Module (PM) Specifications:

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
313109-001-00-00-PM-01	Mount and maintain a Battery Energy Storage System.	4	10	BLENDED
313109-001-00-00-PM-02	Apply business principles in a business that mount Battery Energy Storage Systems.	4	5	BLENDED

Total Credits for Practical Skills = 15.

3.2.1 Detailing Practical Module (PM) contents

Practical Module (PM) - 01

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
313109-001-00-00-PM-01	Mount and maintain a Battery Energy Storage System.	4	10	BLENDED

(a) Purpose of the Practical Skills Module:

The purpose of the module, “Mount and Maintain a Battery Energy Storage System” is to capacitate entrepreneurs with the applied knowledge, tools, and mindset required to mount a Battery Energy Storage System in a domestic or leisure setting. This module aims to cultivate operational skills to conduct the processes and activities related to mounting, maintaining, and troubleshooting dysfunctional Battery Energy Storage Systems whilst considering all related regulations and safety protocols. The module will also focus on introducing the mounted Battery Energy Storage System to users, considering their level of understanding of battery storage technology.

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-01-PS01	Mount a domestic Battery Energy Storage DC System and solar panels.
PM-01-PS02	Maintain and Service a Battery Energy Storage System.
PM-01-PS03	Trouble shoot, remove, and replace faulty equipment components.
PM-01-PS04	Brief users on safe use and maintenance of the Battery Energy Storage Systems.

(c) Scope of each Practical Skill Activity:

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PM-01-PS01 Mount a domestic Battery Energy Storage DC System and solar panels	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Creating a simulated environment to teach the skills related to mounting a domestic Battery Energy Storage DC System and solar panels requires an authentic domestic setting. The simulated environment should closely mimic real-world scenarios, challenges, and complexities that mounters may encounter in a domestic or leisure application environment. The key elements and characteristics of such a simulated environment should consider the following aspects: • **Rural or Urban Domestic Dwelling:** The system will typically be installed in a small rural or domestic dwelling. Consideration should be given to identify safe mounting points for the solar panels and components, considering the stability of structures and limited roof space. • **Technological Understanding:** The user of the mounted systems usually will have no or little understanding of the technology related to battery energy storage systems. All communications with users should thus be sensitive to the level of understanding of users and stressing the extra low voltage nature of the systems' relation to equipment being powered by the system. • **Maintenance:** The Battery Energy Storage DC System and solar panels requires minimal maintenance, users still must be briefed on safe operating and maintenance principles, especially the danger of water ingress could have on damaging the components.	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	**PRACTICAL SKILL ACTIVITY ELEMENTS**
PA0101	Assess the site where the Battery Energy Storage equipment mounting will be done.
PA0102	Assess the roof or structure where the solar panels will be installed.
PA0103	Mount the Battery Energy Storage equipment.
PA0104	Mount the solar panels.
PA0105	Mount the cables.
PA0106	Connect and test the Battery Energy Storage System and solar panel mounting.

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLDEGE CODE	APPLIED KNOWLEDGE
AK0101	Principles for using hand tools.
AK0102	Principles for assessing a site for safe mounting of Battery Energy Storage System Components.

AK0103	Principles for reading and interpreting manufacturing guides and instructions.
AK0104	Regulations pertaining electrical installations.

(e) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION
IAC0101	The site for mounting Battery Energy Storage equipment is assessed for safe mounting.
IAC0102	The roof or structure where the solar panels will be installed is assessed for safe mounting.
IAC0103	The Battery Energy Storage equipment is safely mounted.
IAC0104	The solar panels are safely mounted and secured.
IAC0105	The cables are safely mounted, secured, and connected.
IAC0106	The mounted Battery Energy Storage System components and solar panels are safely connected and tested to confirm optimal functionality.

PM-01-PS02 Maintain and Service a Battery Energy Storage System

PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:

Creating a simulated environment to teach the skills related to maintain and servicing a mounted domestic Battery Energy Storage DC System and solar panels requires an authentic domestic setting. The simulated environment should closely mimic real-world scenarios, challenges, and complexities that mounters may encounter in a domestic or leisure application environment. The key elements and characteristics of such a simulated environment should consider the following aspects:

- **Rural or Urban Domestic Dwelling:** The system will typically be installed in a small rural or domestic dwelling. Consideration should be given to identify safe mounting points for the solar panels and components, considering the stability of structures and limited roof space.
- **Technological Understanding:** The user of the mounted systems usually will have no or little understanding of the technology related to battery energy storage systems. All communications with users should thus be sensitive to the level of understanding of users and stressing the extra low voltage nature of the systems' relation to equipment being powered by the system.
- **Maintenance:** The Battery Energy Storage DC System and solar panels requires minimal maintenance, users still must be briefed on safe operating and maintenance principles, especially the danger of water ingress could have on damaging the components.

PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0201	Conduct inspections of mounted Battery Energy Storage Systems equipment and panels.
PA0202	Maintain mounted Battery Energy Storage Systems.

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLDEGE CODE	APPLIED KNOWLEDGE
AK0201	Principles for using hand tools.
AK0202	Principles for assessing a site for safe mounting of Battery Energy Storage System Components.
AK0203	Principles for reading and interpreting manufacturing guides and instructions.
AK0204	Regulations pertaining electrical installations.

(e) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION
IAC0201	Inspections of mounted Battery Energy Storage Systems equipment and panels are conducted.
IAC0202	Maintenance procedures on mounted Battery Energy Storage Systems are performed.

PM-01-PS03 Trouble shoot, remove, and replace faulty equipment components
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:
Creating a simulated environment to teach the skills related to trouble shooting, removing, and replacing faulty equipment components a domestic Battery Energy Storage DC System and solar panels requires an authentic domestic setting. The simulated environment should closely mimic real-world scenarios, challenges, and complexities that mounters may encounter in the contemporary business landscape. Here's a description of the key elements and characteristics of such a simulated environment: • **Rural or Urban Domestic Dwelling:** The system will typically be installed in a small rural or domestic dwelling. Consideration should be given to identify safe mounting points for the solar panels and components, considering the stability of structures and limited roof space.

- **Technological Understanding:** The user of the mounted systems usually will have no or little understanding of the technology related to battery energy storage systems. All communications with users should thus be sensitive to the level of understanding of users and stressing the extra low voltage nature of the systems' relation to equipment being powered by the system.
- **Maintenance:** The Battery Energy Storage DC System and solar panels requires minimal maintenance, users still must be briefed on safe operating and maintenance principles, especially the danger of water ingress could have on damaging the components.

PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0301	Troubleshoot problems to determine causes of malfunction.
PA0302	Remove and replace faulty components.
PA0303	Test Battery Energy Storage System and confirm restored optimal functionality.

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLDEGE CODE	APPLIED KNOWLEDGE
AK0301	Principles for using hand tools.
AK0302	Principles for assessing a site for safe mounting of Battery Energy Storage System Components.
AK0303	Principles for reading and interpreting manufacturing guides and instructions.
AK0304	Regulations pertaining electrical installations.
AK0305	Principles of diagnosing faults in electrical installations.

(e) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION
IAC0301	Causes of malfunctioning Battery Energy Storage System is diagnosed to identify faulty component.
IAC0302	Faulty components are removed and replaced.
IAC0303	Battery Energy Storage System is tested to confirm optimal restored functionality.

PM-01-PS04 Brief users on safe use and maintenance of the Battery Energy Storage Systems
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:
Creating a simulated environment to teach the skills related to briefing users on the safe use of Battery Energy Storage DC System and solar panels requires an authentic domestic setting. The simulated environment should closely mimic real-world scenarios, challenges, and complexities that mounters may encounter in the contemporary business landscape. Here's a description of the key elements and characteristics of such a simulated environment: • **Rural or Urban Domestic Dwelling:** The system will typically be installed in a small rural or domestic dwelling. Consideration should be given to identify safe mounting points for the solar panels and components, considering the stability of structures and limited roof space. • **Technological Understanding:** The user of the mounted systems usually will have no or little understanding of the technology related to battery energy storage systems. All communications with users should thus be sensitive to the level of understanding of users and stressing the extra low voltage nature of the systems' relation to equipment being powered by the system. • **Maintenance:** The Battery Energy Storage DC System and solar panels requires minimal maintenance, users still must be briefed on safe operating and maintenance principles, especially the danger of water ingress could have on damaging the components.

PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0401	Introduce the advantages and application of Battery Energy Storage DC System to users.
PA0402	Obtain written approval for the mounting and generate an invoice for the work to be done.
PA0403	Brief users on the safe use and maintenance of the mounted Battery Energy Storage System.

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLDEGE CODE	APPLIED KNOWLEDGE
AK0401	Principles for assessing a site for safe mounting of Battery Energy Storage System Components.
AK0402	Principles for reading and interpreting manufacturing guides and instructions.

AK0403	Regulations pertaining to electrical installations.
AK0404	Principles of marketing technology such as Battery Energy Storage System.
AK0405	Principles of communicating technical information in non-technical terms.

(e) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION
IAC0401	The advantages and application of Battery Energy Storage DC System are introduced to users at their level of understanding.
IAC0402	Written approval for the mounting of a Battery Energy Storage DC System is obtained and an invoice for the work to be done is generated.
IAC0403	Users are briefed on the safe use and maintenance of the mounted Battery Energy Storage System

3.2.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	• Access to authentic simulated domestic setting to apply the skills of the module. • Classroom that is ventilated and luminated with tables, chairs, and whiteboard. • Learning Management System (LMS). • Laptops and Computers. • Internet Connectivity. • Data Projector and Screen. • Content Creation Tools. • Learning Content Repository. • Flip Charts and Markers. • Audio and Video Recording Equipment.

CONSUMABLES	• Battery Energy Storage Systems Mounting Consumables such as mounting brackets, cables, fasteners, etc. • Curriculum Aligned Learning Materials. • Stationery: Basic stationery supplies like pens, notepads, and highlighters. • Flip Chart Papers and Markers. • Training Evaluation Forms.

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	• NQF Level 5 qualification in Solar Photovoltaic or Battery Energy Storage Systems Technology. • Four years practical experience in Battery Energy Storage Systems.
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
	• Registered Legal entity. • Infrastructure compliant with Occupational Health and Safety Act. • Display of Labour Laws in the buildings. • Valid Tax Compliance Pin / Exemption.

3.2.3 Exemptions

Normal RPL processes can be used by the SDP to provide exemption for completed learning.

Practical Module (PM) - 02

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
313109-001-00-00-PM-02	Apply business principles in a business that mount Battery Energy Storage Systems.	4	5	BLENDED

(a) Purpose of the Practical Skills Module:

The purpose of the module, “Apply business principles in a business that mount Battery Energy Storage Systems.” is to capacitate entrepreneurs with the applied knowledge, tools, and mindset required to conduct basic business management principles. This module aims to cultivate critical skills to conduct the processes and activities related to financial and compliance management of a small business that mounts Battery Energy Storage System to domestic users and leisure activity customers.

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-02-PS01	Compile a project plan, business budget and manage cash flow.
PM-02-PS02	Monitor business compliance protocols.
PM-02-PS03	Create basic marketing material for a business that mounts Battery Energy Storage Systems.

(c) Scope of each Practical Skill Activity:

PM-02-PS01 Compile a project plan, business budget and manage cash flow
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:
Creating a simulated environment to teach the skills related to mounting a domestic Battery Energy Storage DC System and solar panels requires an authentic domestic setting. The simulated environment should closely mimic real-world scenarios, challenges, and complexities that mounters may encounter in a domestic or leisure application environment. The key elements and characteristics of such a simulated environment should consider the following aspects: • **Rural or Urban Domestic Dwelling:** The system will typically be installed in a small rural or domestic dwelling. Consideration should be given to identify safe mounting points for the solar panels and components, considering the stability of structures and limited roof space. • **Technological Understanding:** The user of the mounted systems usually will have no or little understanding of the technology related to battery energy storage systems. All communications with users should thus be sensitive to the level of understanding of users and stressing the extra low voltage nature of the systems’ relation to equipment being powered by the system.

- **Maintenance:** The Battery Energy Storage DC System and solar panels requires minimal maintenance, users still must be briefed on safe operating and maintenance principles, especially the danger of water ingress could have on damaging the components.
- **Business Contractual Obligations:** The learner needs to be presented with a typical business scenario of various contracts that require execution with related budgets, time frames and mounting requirements.

PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0101	Compile a budget and cash flow projection for the allocated projects.
PA0102	Compile a detailed project plan for the execution of contracts.
PA0103	Compile a detailed schedule.
PA0104	Compile an inventory management plan for the project.

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLDEGE CODE	APPLIED KNOWLEDGE
AK0101	Principles of project management and scheduling.
AK0102	Principles of budgeting and cash flow management.
AK0103	Principles for managing an inventory.

(e) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION
IAC0101	A budget and cash flow projection for the allocated projects is compiled.
IAC0102	A detailed project plan for the execution of contracts is compiled.
IAC0103	A detailed schedule is compiled.
IAC0104	An inventory management plan for the project is compiled.

PM-02-PS02 Monitor business compliance protocols
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:
Creating a simulated environment to teach the skills related to monitor business compliance protocols related to small business that mounts domestic Battery Energy Storage DC System and solar panels requires authentic scenarios. The simulated environment should closely mimic real-world scenarios, challenges, and complexities that mounters may encounter in a domestic or

leisure application environment. The key elements and characteristics of such a simulated environment should consider the following aspects:

- **Rural or Urban Domestic Dwelling:** The system will typically be installed in a small rural or domestic dwelling. Consideration should be given to identify safe mounting points for the solar panels and components, considering the stability of structures and limited roof space.
- **Technological Understanding:** The user of the mounted systems usually will have no or little understanding of the technology related to battery energy storage systems. All communications with users should thus be sensitive to the level of understanding of users and stressing the extra low voltage nature of the systems' relation to equipment being powered by the system.
- **Maintenance:** The Battery Energy Storage DC System and solar panels requires minimal maintenance, users still must be briefed on safe operating and maintenance principles, especially the danger of water ingress could have on damaging the components.
- **Compliance Protocols.** The scenario the learners are presented with should contain employee, tax, liability, safety and out of scope of a non-registered PV Installer aspects to help the learner apply the principles of monitoring business compliance.

PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0201	Apply the taxation compliance protocols pertaining to transactions.
PA0202	Consider and address liability risks pertaining to projects.
PA0203	Address safety related compliance protocols.
PA0204	Consider and address employee contracts compliance protocols.
PA0205	Consider and address regulatory compliance with electrical and PV installation regulations and out of scope issues.

(e) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLDEGE CODE	APPLIED KNOWLEDGE
AK0201	Taxation compliance protocols.
AK0202	Workplace safety protocols and Work at Height regulations.
AK0203	Employee contracting protocols.
AK0204	Electrical and PV Installation regulations.
AK0205	Insurance Liability Principles.

(e) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION
IAC0201	Liability risks pertaining to projects are considered and addressed.
IAC0202	Safety related compliance protocols are monitored and addressed.
IAC0203	Employee contracts compliance protocols are considered and addressed.
IAC0204	Consider and address Regulatory compliance with electrical and PV installation regulations and out of scope issues are considered and addressed.
IAC0205	Taxation compliance protocols pertaining to transactions and employees are considered and addressed.

PM-02-PS03 Create basic marketing material for a business that mounts Battery Energy Storage Systems

PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:

Creating a simulated environment to teach the skills related to Create basic marketing material for a business that mounts Battery Energy Storage Systems requires an authentic domestic setting. The simulated environment should closely mimic real-world scenarios, challenges, and complexities that mounters may encounter in the contemporary business landscape. Here's a description of the key elements and characteristics of such a simulated environment:

- **Rural or Urban Domestic Dwelling:** The system will typically be installed in a small rural or domestic dwelling. Consideration should be given to identify safe mounting points for the solar panels and components, considering the stability of structures and limited roof space.
- **Technological Understanding:** The user of the mounted systems usually will have no or little understanding of the technology related to battery energy storage systems. All communications with users should thus be sensitive to the level of understanding of users and stressing the extra low voltage nature of the systems' relation to equipment being powered by the system.
- **Maintenance:** The Battery Energy Storage DC System and solar panels requires minimal maintenance, users still must be briefed on safe operating and maintenance principles, especially the danger of water ingress could have on damaging the components.
- **Marketing:** The Battery Energy Storage DC System and solar panels market needs for domestic and leisure activities is growing. Scenarios should help the learner focus on aspects that could be used as point of departure for addressing market needs.

PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS

PA0301	Identify a specific market to focus on with specific Battery Energy Storage DC System and solar panel needs.
PA0302	Develop marketing material or flyers that address a specific Battery Energy Storage System market.
PA0303	Follow up on marketing responses.

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLDEGE CODE	APPLIED KNOWLEDGE
AK0301	Principles of marketing.
AK0302	Principles of communicating technical information regarding Battery Energy Storage Systems to non-technical people.
AK0303	Multimedia and communication technology interaction.

(e) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION
IAC0301	A specific market to focus on with specific Battery Energy Storage DC System and solar panel needs is identified.
IAC0302	Marketing material and flyers that address a specific Battery Energy Storage System market is developed or articulated.
IAC0303	Marketing responses of clients and enquiries of new customers are followed up.