



Quality Council for Trades & Occupations

www.qcto.org.za

256 Glyn Street, Hatfield, Pretoria, 0083
Private Bag X278, Pretoria, 0001
+27 12 003 1800

OCCUPATIONAL SKILLS PROGRAMME CURRICULUM DOCUMENT

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

SKILLS PROGRAMME	SKILLS PROGRAMME ID	TITLE (DESCRIPTOR)	NQF LEVEL	CREDITS
Skills Programme	SP-250405	Green Hydrogen Technology	04	29
CURRICULUM CODE	900520-000-00-00			
PARTNER DETAILS	ORGANISATION NAME	WEBSITE ADDRESS	TELEPHONE NUMBER	LOGO
QUALITY PARTNER - DEVELOPMENT	CHIETA	www.chieta.org.za	011 628 7000	

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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

214501 – Chemical Engineer

1.1.2 Skills Programme Type, Title, NQF Level, Credits and Curriculum Code, addressed by this Curriculum.

TYPE	TITLE	NQF LEVEL	CREDITS	CURRICULUM CODE
Skills Programme	Green Hydrogen Technology	04	29	900520-000-00-00

1.1.3 Alternative titles used by industry:

None

1.2 Curriculum Information:

1.2.1 Articulation for Skills Programmes

(a) Work Opportunities:

Chemical Plant Operators, Electricians, Fitters, Process Technicians, Instrument Artisans, Production Planning within the Green Hydrogen environment

(b) Learning Opportunities:

Skills Programmes - Green Hydrogen Production

Skills Programmes - Green Hydrogen Storage and Transfer

1.3 Curriculum Structure:

1.3.1 Knowledge/Theory Modules:

900520-000-00-KM-01, Introduction to Hydrogen energy, NQF Level 4, Credits 3

900520-000-00-KM-02, Green hydrogen technology fundamentals, NQF Level 4, Credits 3

900520-000-00-KM-03, Legislation, Regulations and Compliance, NQF Level 4, Credits 2

900520-000-00-KM-04, Monitor, analyse and reduce risk, NQF Level 4, Credits 5

900520-000-00-KM-05, Teamwork, NQF Level 4, Credits 3

Total number of credits: 16

1.3.2 Practical Skills Modules:

900520-000-00-PM-01, Carry out green hydrogen operational processes and functions, NQF Level 4, Credits 5

900520-000-00-PM-02, Gather and analyse green hydrogen data, NQF Level 4, Credits 5

900520-000-00-PM-03, Complete administrative duties and functions, NQF Level 4, Credits 3

Total number of credits: 13

1.4 Entry Requirements:

NQF Level 4 qualification with Mathematics and Physical Science

1.5 Quality Partner for Assessment:

NAME OF BODY:	Not Applicable
ADDRESS OF BODY:	
WEBSITE:	
TELEPHONE NUMBER:	

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

Skills Programme: Green Hydrogen Production, NQF Level 4, Credits 29

Skills Programme: Green Hydrogen Storage and Transfer, NQF Level 4, Credits 28

SECTION 2: OCCUPATIONAL SKILLS PROGRAMME PROFILE

2.1 Purpose

The purpose of this Green Hydrogen Technology Skills Programme is to prepare the learners to function in the Green Hydrogen Technology value chain.

The Skills Programme will prepare the learner to provide technical expertise in the development, implementation, and management of green hydrogen technologies to ensure compliance with environmental regulations and support long-term sustainability goals.

2.2 Tasks

TASK	LINKS TO ELO
Explain technological developments and regulatory changes to technical and production teams to ensure practical integration of hydrogen systems	ELO1 Research the impact green hydrogen technologies has on the environment
Collaborate with technical teams in the design and implementation of green hydrogen solutions	ELO2 Coordinate green hydrogen activities between technical and production teams to implement optimal green hydrogen solutions
Compare green hydrogen production processes	ELO3 Analyse and compare green hydrogen technologies for optimal performance
Analyse production and performance reports to improve overall performance	

2.3 Occupational Task Details

2.3.1 Explain technological developments and regulatory changes to technical and production teams to ensure practical integration of hydrogen systems

(a) Unique Product or Service:

Safe working environment

(b) Responsibilities:

- Identify sound engineering principles for the development and implementation of hydrogen infrastructure
- Conduct a Risk Assessment and advise on mitigation strategies
- Identify the impact green hydrogen technology has on the environment
- Research methods to dispose of solid and liquid green hydrogen production waste
- Advise on advances in production and storage technologies that are needed for a clean environment and sustainable energy solutions
- Advise technical and production teams on legislation and regulatory standards

(c) Contexts:

- Within a green hydrogen production and storage environment

2.3.2 Collaborate with technical teams in the design and implementation of green hydrogen solutions

(a) Unique Product or Service:

Production plant plans

(b) Responsibilities:

- Read and interpret technical drawings
- Identify required information to create the technical infrastructure for hydrogen production, storage, and distribution
- Coordinate activities between technical and/or production teams
- Communicate effectively with all relevant stakeholders

(c) Contexts:

- Within a green hydrogen production and storage environment

2.3.3 Compare green hydrogen production processes

(a) Unique Product or Service:

Monitored production plant

(b) Responsibilities:

- Use various tools and technologies to monitor performance of renewable energy systems
- Use various tools and technologies to monitor the green hydrogen production facilities
- Monitor process upsets and harmful emissions
- Monitor the emissions of auxiliary systems
- Monitor adherence to relevant green hydrogen production regulations

(c) Contexts:

- Within a green hydrogen production environment

2.3.4 Analyse production and performance reports to improve overall performance

(a) Unique Product or Service:

High purity green hydrogen gas

(b) Responsibilities:

- Analyse production data, including but not limited to renewable energy systems, production processes, emissions and compliance
- Identify trends, inefficiencies and challenges in the green hydrogen production facility
- Make recommendations to optimise system efficiency
- Report findings and recommendations to relevant stakeholders
- Create environmental reports

(c) Contexts:

- Within a green hydrogen production and storage environment

SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS

3.1 Knowledge Module Specifications:

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900520-000-00-KM-01	Introduction to Hydrogen energy	4	3	Blended
900520-000-00-KM-02	Green hydrogen technology fundamentals	4	3	Blended
900520-000-00-KM-03	Legislation, Regulations and Compliance	4	2	Blended
900520-000-00-KM-04	Monitor, analyse and reduce risk	4	5	Blended
900520-000-00-KM-05	Teamwork	4	3	Blended

3.1.1 Detailing Knowledge Module (KM) contents

Knowledge Module (KM) – 01

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900520-000-00-KM-01	Introduction to Hydrogen energy	4	3	Blended

(a) Purpose of Knowledge Module:

The main focus of learning in this knowledge module is to build an understanding of green hydrogen as a clean alternative energy and the opportunities that exist to create a cleaner and greener energy environment.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-01-KT01	Hydrogen as clean energy	30%
KM-01-KT02	Green hydrogen Infrastructure	30%
KM-01-KT03	Legal and regulatory framework	20%
KM-01-KT04	4IR Technologies	20%

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

KM-01-KT01: Hydrogen as clean energy 30%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	The role of hydrogen energy	35%
KT0102	Properties of hydrogen - the Material Safety Data Sheet (MSDS)	35%
KT0103	Classification of hydrogen	15%
KT0104	Applications of hydrogen	15%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Discuss the role of hydrogen in the transition to clean energy to reduce greenhouse emissions	40%
IAC0102	Explain the properties of hydrogen	15%
IAC0103	Explain the purpose of Safety Data Sheet (SDS) in the chemical manufacturing process environment	15%
IAC0104	Explain the colours of hydrogen	15%
IAC0105	Identify at least six (6) areas of application for hydrogen	15%

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

KM-01-KT02: Green hydrogen Infrastructure 30%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	Components of the Green hydrogen infrastructure	15%
KT0202	Green Hydrogen production	35%
KT0203	Storage and Distribution	35%
KT0202	Transport and Pipelines	15%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Discuss the facilities and systems required in green hydrogen infrastructure	15%
IAC0202	Explain wind and solar as renewable energy technologies	15%
IAC0203	List the steps taken to produce green hydrogen	15%
IAC0204	Explain the electrolysis technology used in green hydrogen production	20%
IAC0205	Describe safe storage systems for green hydrogen	20%
IAC0206	Identify the requirements for pipeline transportation of green hydrogen	15%

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

KM-01-KT03: Legal and regulatory framework 20%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0301	Safety and Environmental Regulations	50%
KT0302	Regulations of the OHS Act	50%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0301	Identify safety and environmental regulations related to hydrogen infrastructure, including but not limited to NERSA, NEMA, Gas Act	50%
IAC0302	Examine Regulations of the OHS Act relevant to working within the hydrogen production environment, including but not limited to: – Hazardous Chemical Substances Regulations, 1995 – Pressure Equipment Regulations, 2009 – Construction Regulations, 2010 – Explosives Regulations, 2003 – Major Hazard Installation Regulations, 1993	50%

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

KM-01-KT04: 4IR Technologies 20%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0401	Artificial Intelligence	25%
KT0402	Chemistry 4.0	25%
KT0402	The future of hydrogen	50%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0401	Discuss how AI can be used to explore technologies used in hydrogen infrastructure	25%
IAC0402	Discuss the seven circular economy levers that a chemical business should consider	25%
IAC0403	Explore future opportunities for South Africa in the green hydrogen market	50%

3.1.2 Criteria for accreditation

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	• A desk and chair for each learner • Audio visual display, such as projector and screen that is visible to all learners • A whiteboard • Sufficient computers with access to the internet and Word processing Software • Learning material
CONSUMABLES	• Not applicable

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE - FACILITATOR	• NQF Level 4 Trade qualification in Electrical, Mechanical or Instrumentation, or

	• NQF Level 4 Chemical Plant Operations qualification, or • Diploma in hydrogen technology, energy systems or extensive engineering industry experience, or • Higher Certificate in Engineering (Chemical, Mechanical, Electrical, Industrial) or Applied Sciences (Chemistry, Physics and Mathematics) and • Minimum 3 years industrial experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
QUALIFICATIONS & EXPERIENCE - ASSESSOR	• Registered assessors with 3-5 years' experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
• Compliance with the OHS Act and relevant legislation such as the Basic Conditions of Employment Act and the POPI Act

3.1.3 Exemptions

None

3.1.1 Detailing Knowledge Module (KM) contents

Knowledge Module (KM) – 02

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900520-000-00-KM-02	Green hydrogen technology fundamentals	4	3	Blended

(a) Purpose of Knowledge Module:

The main focus of learning in this knowledge module is to build an understanding of the fundamentals of green hydrogen technology and the principles of building the green hydrogen infrastructure

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-02-KT01	Green hydrogen technology and the environment	40%
KM-02-KT02	Resource supply and management	30%
KM-02-KT03	Optimise green hydrogen technologies	30%

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

KM-02-KT01: Green hydrogen technology and the environment 40%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Green hydrogen benefits	25%
KT0102	Green hydrogen risks	25%
KT0103	Effects of green hydrogen production	25%
KT0104	Disposal of solid and liquid production waste	25%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Compare using renewable energy to other energy sources such as fossil fuels currently used to produce hydrogen	12.5%
IAC0102	Explain how pollution effects water and air quality	12.5%
IAC0103	Explain how green hydrogen will reduce greenhouse emissions	12.5%
IAC0104	Discuss why green hydrogen is the preferred clean energy carrier	5%
IAC0105	Identify the risks associated with green hydrogen production	15%
IAC0106	Explain the impacts of green hydrogen production on air, water consumption and ecosystems (salt water/Fresh water)	12.5%

IAC0107	Consider additives such as caustic soda used to improve the electrolysis process	5%
IAC0108	Explain how pollution from by-products and auxiliary equipment used in green hydrogen production effects water and air quality	12.5%
IAC0109	Identify methods to dispose of solid and liquid production waste, including auxiliary equipment. Production waste includes but is not limited to spent catalysts, fuel cell system membranes, anodes, cathodes, salt and effluent water	12.5%

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

KM-02-KT02: Resource supply and management 30%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	Green Electricity Sources	20%
KT0202	Influence of geographical location on energy source and supply patterns	30%
KT0203	Green energy storage	30%
KT0204	Water quality	10%
KT0205	Water usage	10%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Explain how green hydrogen is produced from the following electricity sources (Solar, Wind, geothermal, hydroelectric)	15%
IAC0202	Verify the electricity source is green for green hydrogen production	15%
IAC0203	Select suitable renewable energy sources based on climate, seasons and weather patterns for different geographical areas in South Africa	20%
IAC0204	Explain why li-ion batteries are used to store green energy that has been collected	15%

IAC0205	Explain the ISO and EU standards of water quality and the requirements to produce hydrogen. This includes the use of salt water	20%
IAC0206	Explain the impact of water usage and restrictions in a green hydrogen production plant	15%

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

KM-02-KT03: Optimise green hydrogen technologies 30%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0301	Green hydrogen production technologies	35%
KT0302	European Union (EU) and International Organization for Standardization (ISO) certification process for correct green hydrogen production	30%
KT0303	System performance and energy usage	35%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0301	Discuss advantages and disadvantages of the three different Electrolyser technologies currently used (PEMS, Alkaline and Solid State Alkaline)	30%
IAC0302	Compare energy sources and production technologies used in South African green hydrogen production facilities. Consider the geographical locations of the facilities you compare	20%
IAC0303	Compare the efficiencies of different technologies	15%
IAC0304	Identify ways to reduce the cost of green hydrogen production. Consider ways to improve energy efficiency and reduce maintenance expenses without compromising quality	20%
IAC0305	Reduce energy loss during green hydrogen production and usage	15%

3.1.2 Criteria for accreditation

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	• A desk and chair for each learner • Audio visual display equipment, such as projector and screen that is visible to all learners • A whiteboard • Sufficient computers with access to the internet and Word processing Software • Learning material
CONSUMABLES	• Not applicable

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE - FACILITATOR	• NQF Level 4 Trade qualification in Electrical, Mechanical or Instrumentation, or • NQF Level 4 Chemical Plant Operations qualification, or • Diploma in hydrogen technology, energy systems or extensive engineering industry experience, or • Higher Certificate in Engineering (Chemical, Mechanical, Electrical, Industrial) or Applied Sciences (Chemistry, Physics and Mathematics) and • Minimum 3 years industrial experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
QUALIFICATIONS & EXPERIENCE - ASSESSOR	• Registered assessors with 3-5 years' experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
• Compliance with the OHS Act and relevant legislation such as the Basic Conditions of Employment Act and the POPI Act

3.1.3 Exemptions

None

3.1.1 Detailing Knowledge Module (KM) contents

Knowledge Module (KM) – 03

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900520-000-00-KM-03	Legislation, Regulations and Compliance	4	2	Blended

(a) Purpose of Knowledge Module:

The main focus of the learning in this knowledge module is to develop an understanding of the key concepts, principles and theories of the occupational health, safety and environmental requirements associated with green hydrogen technology

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-03-KT01	Occupational health and safety in the workplace	70%
KM-03-KT02	Risk and Compliance	10%
KM-03-KT03	Environmental controls, regulations and sustainability standards	20%

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

KM-03-KT01: Occupational health and safety in the workplace 70%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Applicable Legislation including OHS in the green hydrogen environment	30%
KT0102	Internal compliance and Safety Operating Procedures (SOP's)	40%
KT0103	Emergency preparedness and response	20%
KT0104	Safe work environment	10%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	List legislation applicable in the green hydrogen environment and state how they affect own role in work context	10%
IAC0102	Demonstrate understanding of the concepts and application of occupational health, safety and environmental requirements	15%
IAC0103	Explain the functions of Standard Operating Procedures (SOP's) in the workplace	15%
IAC0104	Explain the importance of adhering to SOP's	15%
IAC0105	Discuss the consequences of non-compliance to safety, health and environmental legislative and regulatory requirements in the green hydrogen environment	15%
IAC0106	Explain emergency preparedness and responses. Emergencies include but are not limited to hydrogen leaks and electrical faults	10%
IAC0107	Identify basic emergency drills and evacuation procedures in a green hydrogen production and storage facility	10%
IAC0108	Identify the components that create a safe and secure environment. Components include but are not limited to: safety guards around machinery and equipment, isolation of faulty machinery and proper ventilation	10%

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

KM-03-KT02: Risk and Compliance 10%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	Hazard identification and risk assessment principles	50%
KT0202	Safety signage	30%
KT0203	Personal Protection Equipment (PPE)	20%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Describe the potential risks and hazards in a green hydrogen environment and associated control measures	30%
IAC0202	Explain the basic hazards identification and risk assessment procedures in accordance with organisational policies and procedures	30%
IAC0203	Identify and describe the safety signs associated with hazards and risks and the importance of observing these when working in a green hydrogen facility	20%
IAC0204	Identify and describe the various types of personal protective equipment in terms of their uses when working in a green hydrogen facility	20%

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

KM-03-KT03: Environmental controls, regulations and sustainability standards 20%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0301	Measuring equipment, including sensors for emissions	15%
KT0302	Artificial Intelligence (AI) for monitoring and identifying emissions	15%
KT0303	Remote monitoring	15%
KT0304	Environment legislation	15%
KT0305	Environment regulators	15%
KT0306	International Renewable Energy Agency (IRENA)	12.5%
KT0307	Renewable Energy Directive (RED II) certification	12.5%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0301	Identify different types of sensors to detect various emissions	15%

IAC0302	Discuss how AI is used to monitor emissions	15%
IAC0303	Explain how Internet of Things (IOT) can be used for remote monitoring	15%
IAC0304	Identify legislation and regulations relating to emissions control and sustainability standards including but not limited to water usage, air quality, emissions and set environmental standards	15%
IAC0305	Identify environment regulators and why they are needed	15%
IAC0306	Discuss the role of the IRENA and its impact on GH technology	12.5%
IAC0307	Explain the requirements to get RED II certified	12.5%

3.1.2 Criteria for accreditation

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	• A desk and chair for each learner • Audio visual display equipment, such as projector and screen that is visible to all learners • A whiteboard • Sufficient computers with access to the internet and Word processing Software • Learning material
CONSUMABLES	• Not applicable

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE - FACILITATOR	• NQF Level 4 Trade qualification in Electrical, Mechanical or Instrumentation, or • NQF Level 4 Chemical Plant Operations qualification, or • Diploma in hydrogen technology, energy systems or extensive engineering industry experience, or • Higher Certificate in Engineering (Chemical, Mechanical, Electrical, Industrial) or Applied Sciences (Chemistry, Physics and Mathematics) and

	Minimum 3 years industrial experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
QUALIFICATIONS & EXPERIENCE - ASSESSOR	Registered assessors with 3-5 years' experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
Compliance with the OHS Act and relevant legislation such as the Basic Conditions of Employment Act and the POPI Act

3.1.3 Exemptions

None

3.1.1 Detailing Knowledge Module (KM) contents

Knowledge Module (KM) – 04

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900520-000-00-KM-04	Monitor, Analyse and Reduce Risk	4	5	Blended

(a) Purpose of Knowledge Module:

The main focus of learning in this knowledge module is to build an understanding of the value monitoring and analysing of green hydrogen processes to optimise production and to reduce the risks within the green hydrogen environment

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-04-KT01	Technical drawings	10%
KM-04-KT02	Green hydrogen production facility	20%
KM-04-KT03	Monitor production	30%
KM-04-KT04	Data analysis	30%
KM-04-KT05	Risk assessment	10%

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

KM-04-KT01: Technical drawings 10%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Purpose of Technical drawings	50%
KT0102	Types of technical drawings	25%
KT0103	Symbols in technical drawings	25%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Explain the purpose of technical drawings in a green hydrogen technology	25%
IAC0102	List the types of technical drawings including electrical, mechanical, pneumatic	25%
IAC0103	Recognise the symbols used in electrical, mechanical, pneumatic drawings	50%

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

KM-04-KT02: Green hydrogen production facility 20%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	Components of a green hydrogen production plant	25%
KT0202	Electrolysers	25%
KT0203	Fuel Cell systems	25%
KT0204	Water purification plants - Desalination plant	25%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Identify components on a green hydrogen production plant drawing	25%

IAC0202	Explain electrolyser technology	25%
IAC0203	Explain fuel cell system with the use of a diagram	25%
IAC0204	Explain the need for a water purification plant at a green hydrogen production facility	25%

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

KM-04-KT03: Monitor production 30%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0301	Operational Plans	30%
KT0302	Production process reports	10%
KT0303	Raw materials and consumables	30%
KT0304	Production upsets and emission	20%
KT0305	Record keeping	10%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0301	Evaluate a green hydrogen operational plan and determine whether processes and resource allocations are efficient.	30%
IAC0302	Read production process reports, including but not limited to electrolyser and/or fuel cell systems.	10%
IAC0303	Monitor raw materials and consumable usage including but limited to water and electricity	30%
IAC0304	Monitor production upsets and emissions using various monitoring equipment	20%
IAC0305	Record your findings in an organised manner	10%

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

KM-04-KT04: Data analysis 30%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0401	Production Data	35%
KT0402	Process reliability	30%
KT0403	Trends	35%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0401	Analyse production data, including but not limited to renewable energy systems, production processes, emissions and compliance	35%
IAC0402	Determine process reliability	30%
IAC0403	Identify optimal operating conditions	15%
IAC0404	Identify trends, inefficiencies and challenges in the green hydrogen production facility	20%

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

KM-04-KT05: Risk assessment 10%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0501	Purpose of a risk assessment	25%
KT0502	Potential risks and hazards	50%
KT0503	Contingency planning	25%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0501	Explain the purpose and importance of conducting risk assessments in green hydrogen production facility	25%

IAC0502	Identify potential risks and hazards in green hydrogen facilities	25%
IAC0503	Evaluate risk (severity and likelihood) and establish suitable precautions	25%
IAC0504	Identify actions to manage and control the risks in green hydrogen facilities	25%

3.1.2 Criteria for accreditation

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	• A desk and chair for each learner • Audio visual display equipment, such as projector and screen that is visible to all learners • A whiteboard • Sufficient computers with access to the internet and Word processing Software • Learning material
CONSUMABLES	• Not applicable

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE - FACILITATOR	• NQF Level 4 Trade qualification in Electrical, Mechanical or Instrumentation, or • NQF Level 4 Chemical Plant Operations qualification, or • Diploma in hydrogen technology, energy systems or extensive engineering industry experience, or • Higher Certificate in Engineering (Chemical, Mechanical, Electrical, Industrial) or Applied Sciences (Chemistry, Physics and Mathematics) and • Minimum 3 years industrial experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
QUALIFICATIONS & EXPERIENCE - ASSESSOR	• Registered assessors with 3-5 years' experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
Compliance with the OHS Act and relevant legislation such as the Basic Conditions of Employment Act and the POPI Act

3.1.3 Exemptions

None

3.1.1 Detailing Knowledge Module (KM) contents

Knowledge Module (KM) – 05

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900520-000-00-KM-05	Teamwork	4	3	Blended

(a) Purpose of Knowledge Module:

The main focus of learning in this knowledge module is to build an understanding of working with teams within the green hydrogen environment

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-05-KT01	Cross functional teams	50%
KM-05-KT02	Effective Communication	50%

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

KM-05-KT01: Cross functional teams 50%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Green hydrogen Team collaboration	30%
KT0102	Green hydrogen Team activities	40%
KT0103	Findings and recommendations	30%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Identify various teams and their roles in a green hydrogen facility	10%
IAC0102	Explain the importance of collaboration between the various teams	20%
IAC0103	Identify activities of both the technical team designing green hydrogen solutions and the production team implementing the green hydrogen solutions	10%
IAC0104	Promote knowledge sharing between collaborating teams	10%
IAC0105	Update team members regarding upcoming activities and any potential challenges relating to the activity	20%
IAC0106	Report design progress, production findings, potential challenges and latest technology developments to relevant stakeholders	30%

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

KM-05-KT02: Effective Communication 50%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	Communication types	10%
KT0202	Communication methods	20%
KT0203	Barriers to effective communication	20%
KT0204	Telephone etiquette	10%
KT0205	Report writing	20%
KT0206	Presentation skills	20%

(d) Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Discuss a range of communication types, including the advantages and disadvantages of each	10%

IAC0202	Describe the criteria for selecting an appropriate communication method	20%
IAC0203	Explain the importance of closed loop communication (confirmation of information)	20%
IAC0204	Explain the importance of telephone etiquette when communicating with relevant stakeholders	10%
IAC0205	Explain the five pillars of report writing	20%
IAC0206	List at least five critical communication skills to apply when presenting your findings and recommendations to relevant stakeholders	20%

3.1.2 Criteria for accreditation

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	• A desk and chair for each learner • Audio visual display equipment, such as projector and screen that is visible to all learners • A whiteboard • Sufficient computers with access to the internet and Word processing Software • Learning material
CONSUMABLES	• Not applicable

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE - FACILITATOR	• NQF Level 4 Trade qualification in Electrical, Mechanical or Instrumentation, or • NQF Level 4 Chemical Plant Operations qualification, or • Diploma in hydrogen technology, energy systems or extensive engineering industry experience, or • Higher Certificate in Engineering (Chemical, Mechanical, Electrical, Industrial) or Applied Sciences (Chemistry, Physics and Mathematics) and • Minimum 3 years industrial experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment

QUALIFICATIONS & EXPERIENCE - ASSESSOR	Registered assessors with 3-5 years' experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
Compliance with the OHS Act and relevant legislation such as the Basic Conditions of Employment Act and the POPI Act

3.1.3 Exemptions

None

3.2 Practical Skill Module (PM) Specifications:

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900520-000-00-PM-01	Carry out green hydrogen operational processes and functions	4	5	Face to Face
900520-000-00-PM-02	Gather and analyse green hydrogen data	4	5	Face to Face
900520-000-00-PM-03	Complete administrative duties and functions	4	3	Face to Face

3.2.1 Detailing Practical Module (PM) contents

Practical Module (PM) - 01

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900520-000-00-PM-01	Carry out green hydrogen operational processes and functions	4	5	Face to Face

(a) Purpose of the Practical Skills Module:

The focus of the learning in this module is on providing the learner an opportunity to read, draw and interpret basic green hydrogen production drawing within a simulated production environment. This module will also enable the learner to build on skills and confidence required to work in teams

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-01-PS01	Exercise health, safety and environmental requirements
PM-01-PS02	Locate plant components on green hydrogen production plant drawings
PM-01-PS03	Coordinate team activities

(c) Scope of each Practical Skill Activity:

PM-01-PS01: Exercise health, safety and environmental requirements	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
In a simulated situation, the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0101	Adhere to safe work practices in green hydrogen
PA0102	Inspect and confirm that all personnel have the required personal protective equipment and clothing (PPE) and are safe to work
PA0103	Carry out hazard identification and risk assessment; describe and categorise risks; determine measures required to eliminate or mitigate risks; complete risk assessments
PA0104	Participate in health, safety and environment inspections
PA0105	Participate in incident and accident investigations

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0101	OHS Act, Regulations and SOP's
AK0102	PPE requirements
AK0103	Hazard identification and risk assessment

(e) Internal Assessment Criteria (IAC)

IAC CODE	IAC DESCRIPTION
IAC0101	Safety components and safety procedures are identified and demonstrated
IAC0102	The correct PPE is selected in accordance with various operating requirements
IAC0103	Hazard identification and risk assessment is completed in accordance with operating requirements. Risks include but are not limited to gas leaks, electrical safety and pressure related issues
IAC0104	Regular OHS regulatory inspections are scheduled and conducted
IAC0105	Participation in incident and accident investigations is completed, in accordance with operating requirements

(c) Scope of each Practical Skill Activity:

PM-01-PS02: Locate plant components on green hydrogen production plant drawings	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a task, the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0201	Develop a basic process flow diagram for a given plant, including all the sections, process equipment, material flows, safety and measuring / monitoring equipment

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0201	Types of drawings PFD's, P&ID's,

(e) Internal Assessment Criteria (IAC)

IAC CODE	IAC DESCRIPTION
IAC0201	A process flow diagram of a green hydrogen production plant is created depicting the sections that make up the plant, equipment, material flow, safety and measuring equipment

(c) Scope of each Practical Skill Activity:

PM-01-PS03: Coordinate team activities	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a simulated task, the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0301	Coordinate design team and production team activities to ensure the system is optimised for the most efficient and scalable production based on available resources

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0301	Green hydrogen production team activities

(e) Internal Assessment Criteria (IAC)

IAC CODE	IAC DESCRIPTION
IAC0301	Activities between design and production teams are coordinated for optimised production

3.2.2 Criteria for accreditation

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	• A training venue with sufficient resources to cover all practical activities in this module, such as: • Health, Safety and Environmental Regulations and Checklists • PPE

	• Plant drawings • Design team activity list • Production team activity list • Desk and chair for each learner • Adequate area to accommodate the number of learners, as set out in the OHS Act 85 of 1993. • Sufficient computers with access to the internet and Word processing Software • A safe or strong room to store documents
CONSUMABLES	• Not applicable

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE - FACILITATOR	• NQF Level 4 Trade qualification in Electrical, Mechanical or Instrumentation, or • NQF Level 4 Chemical Plant Operations qualification, or • Diploma in hydrogen technology, energy systems or extensive engineering industry experience, or • Higher Certificate in Engineering (Chemical, Mechanical, Electrical, Industrial) or Applied Sciences (Chemistry, Physics and Mathematics) and • Minimum 3 years industrial experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
QUALIFICATIONS & EXPERIENCE - ASSESSOR	• Registered assessors with 3-5 years' experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
• Compliance with the OHS Act and relevant legislation such as the Basic Conditions of Employment Act and the POPI Act • Compliance to Safety Health Environmental Risk and Quality (SHERQ)

3.2.3 Exemptions

None

3.2.1 Detailing Practical Module (PM) contents

Practical Module (PM) - 02

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900520-000-00-PM-02	Gather and analyse green hydrogen data	4	5	Face to Face

(a) Purpose of the Practical Skills Module:

The focus of the learning in this module is on providing the learner an opportunity to monitor different green hydrogen manufacturing equipment to standards within a simulated production environment. The learners will be practicing skills related to gathering production data, data analysis and researching green hydrogen developments.

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-02-PS01	Monitor electrolyser and/or fuel cell systems
PM-02-PS02	Gather green hydrogen production/plant data including raw materials quality and usage
PM-02-PS03	Analyse and report on green hydrogen production processes
PM-02-PS04	Conduct research - stay up to date on latest info relating to green hydrogen

(c) Scope of each Practical Skill Activity:

PM-02-PS01: Monitor electrolyser and/or fuel cell systems	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a simulated situation, the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0101	Monitor the efficiency of electrolyser and fuel cell systems in real-time

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0101	Monitoring systems

(e) Internal Assessment Criteria (IAC)

IAC CODE	IAC DESCRIPTION
IAC0101	Results of real-time system monitoring is recorded

(c) Scope of each Practical Skill Activity:

PM-02-PS02: Gather green hydrogen production data	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a simulated situation, the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0201	Gather and accurately record green hydrogen production/plant data including raw materials quality and usage

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0201	Monitoring systems

(e) Internal Assessment Criteria (IAC)

IAC CODE	IAC DESCRIPTION
IAC0201	Data is analysed and presented in a graphical format to show usage trends and patterns

(c) Scope of each Practical Skill Activity:

PM-02-PS03: Analyse and report on green hydrogen production processes	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	

Given a simulated situation, the learner must be able to::	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0301	Apply statistical analysis for production and process control
PA0302	Report production emissions
PA0303	Recommend improvements

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0301	Monitoring and analysis software
AK0302	Emission regulations
AK0303	Optimal production parameters

(e) Internal Assessment Criteria (IAC)

IAC CODE	IAC DESCRIPTION
IAC0301	Data is analysed and presented in a graphical format to show usage trends and patterns
IAC0302	Production emissions are presented in graphical / tabular format
IAC0303	recommendations are made to ensure process improvement

(c) Scope of each Practical Skill Activity:

PM-02-PS04: Conduct research	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a task, the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0401	Research green hydrogen technology advancements, keep abreast with latest developments

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0401	Research techniques

(e) Internal Assessment Criteria (IAC)

IAC CODE	IAC DESCRIPTION
IAC0401	Research is conducted on electrolyser and/or fuel cell technology to identify cost effective green hydrogen production

3.2.2 Criteria for accreditation

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	- A training venue with sufficient resources to cover all practical activities in this module desk and chair for each learner, such as: - Electrolyser and/or Fuel Cell, actual or simulator - Monitoring equipment, actual or simulator - Production reports - Report templates - Adequate area to accommodate the number of learners, as set out in the OHS Act 85 of 1993.. - Sufficient computers with access to the internet and Word processing Software - A safe or strong room to store documents
CONSUMABLES	Not applicable

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE - FACILITATOR	- NQF Level 4 Trade qualification in Electrical, Mechanical or Instrumentation or - NQF Level 4 Chemical Plant Operations qualification or - Diploma in hydrogen technology, energy systems or extensive engineering industry experience, or - Higher Certificate in Engineering (Chemical, Mechanical, Electrical, Industrial) or Applied Sciences (Chemistry, Physics and Mathematics)

	and Minimum 3 years industrial experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
QUALIFICATIONS & EXPERIENCE - ASSESSOR	Registered assessors with 3-5 years' experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
- Compliance with the OHS Act and relevant legislation such as the Basic Conditions of Employment Act and the POPI Act - Compliance to Safety Health Environmental Risk and Quality (SHERQ)

3.2.3 Exemptions

None

3.2.1 Detailing Practical Module (PM) contents

Practical Module (PM) - 03

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900520-000-00-PM-03	Complete administrative duties and functions	4	3	Face to Face

(a) Purpose of the Practical Skills Module:

The focus of the learning in this module is on providing the learner opportunities to develop report writing and presentation skills, giving the learner confidence to engage with stakeholders.

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-03-PS01	Prepare stakeholder documents

(c) Scope of each Practical Skill Activity:

PM-03-PS01: Prepare stakeholder documents

PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a task, the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0101	Participate in policy and procedure reviews
PA0102	Compile stakeholder reports
PA0103	Present reports to relevant stakeholders

(d) Applied Knowledge that underpins the Practical Skill

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0101	Standards, policies and procedures
AK0102	Report writing
AK0103	Presentation skills

(e) Internal Assessment Criteria (IAC)

IAC CODE	IAC DESCRIPTION
IAC0101	Participation in policy, procedures, standards and codes of practice updates and reviews is presented, in accordance with operating requirements
IAC0102	Reports are completed, in accordance with organisation requirements
IAC0103	Reports are presented to relevant stakeholders using digital media such as slide presentation

3.2.2 Criteria for accreditation

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	- A training venue with sufficient resources to cover all practical activities in this module, such as: - Organisations Policies and Procedures - Report templates - Desk and chair for each learner

	• Adequate area to accommodate the number of learners, as set out in the OHS Act 85 of 1993. • Sufficient computers with access to the internet and Word processing and PowerPoint/Slide producing Software • A safe or strong room to store documents
CONSUMABLES	• Not applicable

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE - FACILITATOR	• NQF Level 4 Trade qualification in Electrical, Mechanical or Instrumentation, or • NQF Level 4 Chemical Plant Operations qualification, or • Diploma in hydrogen technology, energy systems or extensive engineering industry experience, or • Higher Certificate in Engineering (Chemical, Mechanical, Electrical, Industrial) or Applied Sciences (Chemistry, Physics and Mathematics) and • Minimum 3 years industrial experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
QUALIFICATIONS & EXPERIENCE - ASSESSOR	• Registered assessors with 3-5 years' experience within the energy, chemical and/or engineering environment or within the Applied Sciences environment
FACILITATOR/LEARNER RATIO	1:20

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
• Compliance with the OHS Act and relevant legislation such as the Basic Conditions of Employment Act and the POPI Act • Compliance to Safety Health Environmental Risk and Quality (SHERQ)

3.2.3 Exemptions

None

3.4 POSSIBLE SEQUENCING AND INTEGRATION

ORDER	MODULE TITLE	MODULE CODE	LEVEL	CREDITS
1.	Introduction to Hydrogen energy	900520-000-00-KM-01	4	3
2.	Green hydrogen technology fundamentals	900520-000-00-KM-02	4	3
3.	Legislation, Regulations and Compliance	900520-000-00-KM-03	4	2
4.	Monitor, analyse and reduce risk	900520-000-00-KM-04	4	5
5.	Teamwork	900520-000-00-KM-05	4	3
6.	Carry out green hydrogen operational processes and functions	900520-000-00-PM-01	4	5
7.	Gather and analyse green hydrogen data	900520-000-00-PM-02	4	5
8.	Complete administrative duties and functions	900520-000-00-PM-03	4	3