



# Model Curriculum

**QP Name: Green Hydrogen Tank Farm Manager**

**QP Code: LSC/Q3904**

**QP Version: 1.0**

**NSQF Level: 6**

**Model Curriculum Version: 1.0**

# Table of Contents

Training Parameters.....	2
Training Outcomes.....	4
Compulsory Modules.....	4
Module 1: Introduction to Green Hydrogen Tank Farm Manager .....	6
Module 2: GH2 tank farm planning .....	7
Module 3: Commissioning of GH2 tank farm.....	8
Module 4: Compliance with the GH2 storage and handling norms. ....	9
Module 5: Trend forecasting and scheduling movement of GH2.....	10
Module 6: Tank farm inspections and operations management. ....	11
Module 7: Safety and Security Guidelines for Green Hydrogen Tank Farms .....	12
Module 8: Handling Emergencies, Disasters and pollution control at GH2 Tank Farms. ....	13
Module 9: Employability Skills .....	14
Annexure.....	16
Trainer Requirements .....	16
Assessor Requirements.....	17
Assessment Strategy.....	18
References .....	20
Glossary.....	20
Acronyms and Abbreviations.....	21

# Training Parameters

<b>Sector</b>	Logistics
<b>Sub-Sector</b>	Port Terminals, ICD and CFS, Liquid Logistics
<b>Occupation</b>	Green Hydrogen Operations/Handling, Port Operations Coordination, Documentation and Reporting, Engineering/Maintenance
<b>Country</b>	India
<b>NSQF Level</b>	6
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/1324
<b>Minimum Educational Qualification and Experience</b>	<p>Completed 4 year UG program (Petrochemical Engineering/ Chemical Engineering) with 3 Years of experience in handling DG/ Chemicals</p> <p>OR</p> <p>Completed 3 year UG degree (Chemistry) with 4 Years of experience in handling DG/ Chemicals</p> <p>OR</p> <p>2-year Diploma after 12th grade (Petrochemical/ Chemical Engineering) with 5 Years of experience in handling DG/ Chemicals</p> <p>OR</p> <p>Completed 3 year diploma after 10th (Petrochemical/Chemical Engineering) with 7 Years of experience in handling DG/ Chemicals</p> <p>OR</p> <p>Previous relevant Qualification of NSQF Level (5) with 3 Years of experience in handling DG/ Chemicals</p>
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	25
<b>Last Reviewed On</b>	30-04-2024
<b>Next Review Date</b>	30-04-2027
<b>NSQC Approval Date</b>	30-04-2024
<b>QP Version</b>	1.0
<b>Model Curriculum Creation Date</b>	15-03-2024
<b>Model Curriculum Valid Up to Date</b>	30-04-2027
<b>Model Curriculum Version</b>	1.0

<b>Minimum Duration of the Course</b>	600
<b>Maximum Duration of the Course</b>	600

# Program Overview

This section summarizes the end objectives of the program along with its duration.

## Training Outcomes

At the end of the program, the learner will be able to:

## Compulsory Modules

The table lists the modules, their duration and mode of delivery.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<b>Bridge Module</b>	<b>20</b>	<b>10</b>			<b>30</b>
<b>Module 1:</b> Introduction to Green Hydrogen Tank Farm Manager	20	10			30
<b>LSC/N3919 - Assist in GH2 tank farm planning</b> V1.0 NSQF Level 6	<b>20</b>	<b>40</b>			<b>60</b>
<b>Module 2:</b> GH2 tank farm planning	20	40			60
<b>LSC/N3920 - Support in commissioning of GH2 tank farm</b> V1.0 NSQF Level 6	<b>20</b>	<b>60</b>	<b>10</b>		<b>90</b>
<b>Module 3:</b> Commissioning of GH2 tank farm	20	60	10		90
<b>LSC/N3921 - Ensure compliance for the storage and handling of green hydrogen.</b> V1.0 NSQF Level 6	<b>20</b>	<b>60</b>	10		<b>90</b>
<b>Module 4:</b> Compliance with the GH2 storage and handling norms	20	60	10		90
<b>LSC/N3922 - Analyse trends, prepare forecasts and schedules for the movement of GH2</b> V1.0 NSQF Level 6	<b>20</b>	<b>60</b>	10		<b>90</b>
<b>Module 5:</b> Trend forecasting and scheduling movement of GH2	20	60	10		90
<b>LSC/N3923 - Conduct periodic operational and tank farm inspections</b> V1.0 NSQF Level 6	<b>20</b>	<b>40</b>			<b>60</b>

<b>Module 6:</b> Tank farm inspections and operations management	20	40			60
<b>LSC/N3924: Follow Safety and Security Guidelines for Green Hydrogen Tank Farms V1.0</b> <b>NSQF Level 6</b>	20	40			60
<b>Module 7:</b> Safety and Security Guidelines for Green Hydrogen Tank Farms	20	40			60
<b>LSC/N3925: Respond to Emergencies, Disasters and pollution control at GH2 Tank Farms V1.0</b> <b>NSQF Level 6</b>	20	40			60
<b>Module 8:</b> Handling Emergencies, Disasters and pollution control at GH2 Tank Farms	20	40			60
<b>Employability Skills DGT/VSQ/N0102</b>	<b>30</b>	<b>30</b>			<b>60</b>
<b>Total Duration</b>	<b>190</b>	<b>380</b>	<b>30</b>		<b>600</b>

# Module Details

## Module 1: Introduction to Green Hydrogen Tank Farm Manager

### Mapped to Bridge Module

#### Terminal Outcomes:

- Describe the Basics of Green Hydrogen
- Brief the applications of green hydrogen in industry, transport and power production.

<b>Duration: 20:00</b>	<b>Duration: 10:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Describe the properties and characteristics of Hydrogen</li> <li>• Discuss various colour code nomenclature of Hydrogen</li> <li>• Elaborate the role of Green Hydrogen in sustainable energy transition.</li> <li>• Discuss key aspects related to production, storage and transportation of Green Hydrogen</li> <li>• Brief the applications of green hydrogen in industry, transport and power production.</li> <li>• Discuss the various activities in a port yard and tank farm</li> <li>• Brief about the various documentations followed in GH2 tank farm and liquid transport</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate with chart colour code nomenclature of Hydrogen.</li> <li>• Perform an activity to match the process and source of production of different colour codes of hydrogen.</li> <li>• Draw a flow diagram of the green hydrogen value chain.</li> <li>• List down the potential end uses of GH2 across the energy system.</li> <li>• Illustrate the role and responsibilities of the Green Hydrogen Tank Farm Manager.</li> <li>• Illustrate the basics of hazardous goods handling</li> </ul>
<b>Classroom Aids</b>	
Training kit (Facilitator Guide, PowerPoint Presentations), Whiteboard, Flip Chart, Markers, Duster, Projector, Laptop/Computer with Internet, Projector Screen, Visual aids (Videos, diagrams, charts)	
<b>Tools, Equipment and Other Requirements</b>	
Green Hydrogen colour charts, LLMS(learning version)	

## Module 2: GH2 tank farm planning

Mapped to LSC/N3919, v1.0

### Terminal Outcomes:

- Analyse GH2 cargo movement trends, and liquid cargo market in the region.
- Detail the technical and layout requirements of a tank farm and its supporting equipment such as piping network, pumping equipment, GH2 control and measurement systems etc.
- Coordinate with Engineering Procurement and Construction (EPC) contractors regarding the layout of the terminal, different buildings, the distance between tanks, evacuation routes, Depressurization methods of Hydrogen Storage System - vent stack system and other safety and regulatory requirements, etc.

<b>Duration: 20:00</b>	<b>Duration: 40:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Describe the geographical requirements for establishing a tank farm</li> <li>• Detail the technical and layout requirements of a tank farm and its supporting equipment such as piping network, pumping equipment, GH2 control and measurement systems etc.</li> <li>• Discuss tendering process, evaluation process and contractor selection process</li> <li>• Explain the coordination and interlinkages required between different vendors and subcontractors</li> </ul>	<ul style="list-style-type: none"> <li>• Analyse GH2 cargo movement trends, and liquid cargo market in the region.</li> <li>• Prepare a tank farm business model based on estimated volume, mix of cargo, connectivity, loading/unloading frequency, etc</li> <li>• Check with the relevant ministry for approval and subsidies for setting up GH2 tank farms.</li> <li>• Illustrate the stages in tank farm construction, installation and commissioning</li> <li>• Coordinate with Engineering Procurement and Construction (EPC) contractors regarding the layout of the terminal, different buildings, the distance between tanks, evacuation routes, Depressurization methods of Hydrogen Storage System - vent stack system and other safety and regulatory requirements, etc.</li> <li>• Supervise integration of IT systems and other control systems with tank farm hardware.</li> </ul>
<b>Classroom Aids</b>	
Training kit (Facilitator Guide, PowerPoint Presentations), Whiteboard, Flip Chart, Markers, Duster, Projector, Laptop/Computer with Internet, Projector Screen, Visual aids (Videos, diagrams, charts)	
<b>Tools, Equipment and Other Requirements</b>	
ERP, MIS, regulatory norms, tank farm business planning model/software, tank farm infrastructure/equipment specifications, control software specification, models or videos of Hydrogen Storage System - vent stack system, pressure gauge system, samples of OEM recommendation and checklist. Tank farm model, pipeline, pumps, controls and valves, central control unit, simulator, performance review software, budgeting and forecasting software, PPE, MHE, instructional material, MSDS, IMDG, HAZCHEM documentation, GH2 - hazardous goods handling manual.	



## Module 3: Commissioning of GH2 tank farm

Mapped to LSC/N3920, v1.0

### Terminal Outcomes:

- Implement safety and security features
- Assist in commissioning of the terminal

<b>Duration: 20:00</b>	<b>Duration: 60:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Describe the process involved in Commissioning of GH2 tank farm.</li> <li>• Detail the regulatory requirements to be complied with for tank farms and for GH2.</li> <li>• Explain the approval process for commissioning of the tank farm</li> <li>• Detail the commissioning tests to be undertaken and the expected operational parameters</li> <li>• Explain the escalation procedure in case of delays.</li> </ul>	<ul style="list-style-type: none"> <li>• List the safety and security features to implement specifically for GH2.</li> <li>• Perform the inspections to be undertaken during the construction/installation of the tank farm.</li> <li>• Follow the Green hydrogen system installation, testing and commissioning as per OEM recommendation and checklist.</li> <li>• Perform trial runs and pre-commissioning tests by the applicable norms/ statutory requirements and regulatory standards.</li> <li>• Provide final go-ahead for commissioning once the components are thoroughly tested and required approvals are received.</li> </ul>
<b>Classroom Aids</b>	
Training kit (Facilitator Guide, PowerPoint Presentations), Whiteboard, Flip Chart, Markers, Duster, Projector, Laptop/Computer with Internet, Projector Screen, Visual aids (Videos, diagrams, charts)	
<b>Tools, Equipment and Other Requirements</b>	
ERP, MIS, regulatory norms, tank farm business planning model/software, tank farm infrastructure/equipment specifications, control software specification, models or videos of Hydrogen Storage System - vent stack system, pressure gauge system, samples of OEM recommendation and checklist. Tank farm model, pipeline, pumps, controls and valves, central control unit, simulator, performance review software, budgeting and forecasting software, PPE, MHE, instructional material, MSDS, IMDG, HAZCHEM documentation, GH2 - hazardous goods handling manual.	

## Module 4: Compliance with the GH2 storage and handling norms

*Mapped to LSC/N3921, v1.0*

### Terminal Outcomes:

- Review cargo and compliance documentation
- Coordinate with the stakeholders
- Ensure compliance to legal and regulatory requirements

<b>Duration: 20:00</b>	<b>Duration: 60:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain Participating Government Agencies (PGA).</li> <li>• List down the compliance documents required for storing and moving GH2.</li> <li>• Detail the licenses and documentation requirements for GH2 transportation vehicles.</li> <li>• Describe the regulatory documentation and record maintenance process.</li> <li>• Brief about the various stakeholders involved in GH2 tank farm operations.</li> <li>• Describe the compliance process to legal and regulatory requirements of GH2 tank farms.</li> </ul>	<ul style="list-style-type: none"> <li>• Review cargo and compliance documentation required for storing and moving GH2.</li> <li>• Review fitness certificates and related documents of Material Handling Equipment (MHEs), cranes and terminal equipment.</li> <li>• Prepare compliance and fitness reports per regulatory requirements for GH2, e.g. tank farm layout, disaster response, fitness of equipment, etc.</li> <li>• Coordinate with stakeholders with various stakeholders involved in GH2 tank farm operations.</li> <li>• Perform the steps involved in complying with legal and regulatory requirements</li> <li>• Resolve queries, correspondences, grievances and regulatory documents</li> </ul>
<b>Classroom Aids</b>	
Training kit (Facilitator Guide, PowerPoint Presentations), Whiteboard, Flip Chart, Markers, Duster, Projector, Laptop/Computer with Internet, Projector Screen, Visual aids (Videos, diagrams, charts)	
<b>Tools, Equipment and Other Requirements</b>	
ERP, MIS, regulatory norms, tank farm business planning model/software, tank farm infrastructure/equipment specifications, control software specification, models or videos of Hydrogen Storage System - vent stack system, pressure gauge system, samples of OEM recommendation and checklist. Tank farm model, pipeline, pumps, controls and valves, central control unit, simulator, performance review software, budgeting and forecasting software, PPE, MHE, instructional material, MSDS, IMDG, HAZCHEM documentation, GH2 - hazardous goods handling manual.	

## Module 5: Trend forecasting and scheduling movement of GH2

*Mapped to LSC/N3922, v1.0*

### Terminal Outcomes:

- Analyse cargo trends and prepare forecasts
- Analyse operational trends to estimate maintenance

<b>Duration: 20:00</b>	<b>Duration: 40:00</b>
<p><b>Theory – Key Learning Outcomes</b></p> <ul style="list-style-type: none"> <li>• Elaborate Trend Analysis.</li> <li>• Describe the forecasting process for cargo mix, based on historical data and committed business.</li> <li>• Explain the budgeting process.</li> <li>• Discuss the steps involved in analysing equipment maintenance.</li> </ul>	<p><b>Practical – Key Learning Outcomes</b></p> <ul style="list-style-type: none"> <li>• Analyse cargo movement, frequency of loading/unloading and ageing reports of GH2.</li> <li>• Check trucking process parameters, time taken for loading/unloading, etc.</li> <li>• Prepare alternate solutions for improving utilisation of tank farm assets and reducing turn-around time.</li> <li>• Analyse tank and equipment performance.</li> <li>• Prepare work schedules.</li> <li>• Plan for maintenance of tank equipment.</li> <li>• Prepare near future forecasts regarding mix and quantity based on historical analysis and committed GH2 traffic.</li> </ul>
<p><b>Classroom Aids</b></p> <p>Training kit (Facilitator Guide, PowerPoint Presentations), Whiteboard, Flip Chart, Markers, Duster, Projector, Laptop/Computer with Internet, Projector Screen, Visual aids (diagrams, charts)</p>	
<p><b>Tools, Equipment and Other Requirements</b></p> <p>ERP, MIS, regulatory norms, performance review software, budgeting and forecasting software, PPE, MHE, instructional material, MSDS, IMDG, HAZCHEM documentation, GH2 - hazardous goods handling manual.</p>	

## Module 6: Tank farm inspections and operations management.

### Mapped to LSC/N3923, v1.0

#### Terminal Outcomes:

- Elaborate the importance of reviewing operational performance.
- Illustrate the steps involved in reviewing operations and infrastructure performance.
- Inspect the tank farm as per the checklist prepared.

<b>Duration: 20:00</b>	<b>Duration: 40:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Elaborate the importance of reviewing operational performance.</li> <li>• Describe the GH2 protocols for storage.</li> <li>• Estimate loss and submit reports detailing the loss, status of controls and monitoring parameters.</li> <li>• Detail the significance of performing regular inspections in the tank farm.</li> </ul>	<ul style="list-style-type: none"> <li>• List the parameters to be reviewed for operational performance.</li> <li>• Illustrate the steps involved in reviewing operations and infrastructure performance.</li> <li>• Inspect compliance with hazardous material handling norms.</li> <li>• Take corrective and preventive actions if cargo loss exceeds the prescribed limits.</li> <li>• Prepare a checklist of the parameters to be inspected on a regular basis in the tank farm.</li> <li>• Inspect the tank farm as per the checklist prepared.</li> </ul>
<b>Classroom Aids</b>	
Training kit (Facilitator Guide, PowerPoint Presentations), Whiteboard, Flip Chart, Markers, Duster, Projector, Laptop/Computer with Internet, Projector Screen, Visual aids (diagrams, charts)	
<b>Tools, Equipment and Other Requirements</b>	
ERP, MIS, regulatory norms, performance review software, budgeting and forecasting software, ERP (optional), PPE, MHE, instructional material, MSDS, IMDG, HAZCHEM documentation, GH2 - hazardous goods handling manual, WMS(learning version).	

## Module 7: Safety and Security Guidelines for Green Hydrogen Tank Farms

Mapped to LSC/N3924, v1.0

### Terminal Outcomes:

- Comply with the Regulations and Standards for Handling Green Hydrogen.
- Comply with fire safety protocols.
- Demonstrate basic firefighting techniques.

<b>Duration: 20:00</b>	<b>Duration: 40:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Elaborate why Compliance with Regulations and Standards are of utmost importance while operating with GH2.</li> <li>• Discuss the risks involved while handling GH2.</li> <li>• List down the safety procedures to be followed for handling GH2.</li> <li>• Define the first aid to be done for cryogenic burns and asphyxiation due to inhaling GH2.</li> <li>• Explain infection control guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform the steps for calibrating the performance and safety of equipment.</li> <li>• Comply with the Regulations and Standards for Handling Green Hydrogen.</li> <li>• Follow the safety procedures and SOPs while handling green hydrogen.</li> <li>• Role play with the first aid methods to be followed for cryogenic burns.</li> <li>• Comply with fire safety protocols.</li> <li>• Demonstrate basic firefighting techniques.</li> </ul>
<b>Classroom Aids</b>	
Training kit (Facilitator Guide, PowerPoint Presentations), Whiteboard, Flip Chart, Markers, Duster, Projector, Laptop/Computer with Internet, Projector Screen, Visual aids (diagrams, charts)	
<b>Tools, Equipment and Other Requirements</b>	
Fire extinguisher, First-aid kit, Personal protective equipment (Safety Goggles/Face Shield, Chemical-Resistant Gloves, Flame-Resistant Clothing, Safety Shoes/Boots, neoprene or nitrile gloves, hearing and Respiratory Protection), Safety Data Sheets (SDS) for hydrogen, Handouts of emergency response protocol, LLMS(learning version), Pressure gauges, Flow meters, Temperature sensors, Lubricants, filters, Hydrogen flame detectors (UV, IR, multi-spectrum, video image), Oil-free equipment, intrinsically safe tools, Fire hoses	

## Module 8: Handling Emergencies, Disasters and pollution control at GH2

### Tank Farms

*Mapped to LSC/N3925, v1.0*

#### Terminal Outcomes:

- Describe the emergency evacuation procedure.
- List down the disasters and emergencies that may happen in GH2 tank farm.
- Explain what a fire safety drill is and its importance.
- Follow SOP to contain the disaster or pollution and assist fellow workers in quick response.

<b>Duration: 20:00</b>	<b>Duration: 40:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Elaborate the impact that will be created on the surroundings in case of pollution/ mass leakage from the GH2 tank farm.</li> <li>• Explain what a fire safety drill is and its importance.</li> <li>• Describe emergency shutdown procedures.</li> <li>• Detail the SOP to be followed to contain the disaster or pollution.</li> <li>• Describe the emergency evacuation procedure.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform the steps involved in emergency shutdown.</li> <li>• Demonstrate the steps to be followed in case of fire.</li> <li>• Illustrate the emergency steps to be followed in case of hydrogen leaks.</li> <li>• Conduct regular fire and safety drills.</li> <li>• Follow SOP to contain the disaster or pollution and assist fellow workers in quick response.</li> <li>• List down the disasters and emergencies that may happen in the GH2 tank farm.</li> </ul>
<b>Classroom Aids</b>	
Training kit (Facilitator Guide, PowerPoint Presentations), Whiteboard, Flip Chart, Markers, Duster, Projector, Laptop/Computer with Internet, Projector Screen, Visual aids (diagrams, charts)	
<b>Tools, Equipment and Other Requirements</b>	
Fire extinguisher, First-aid kit, Personal protective equipment (Safety Goggles/Face Shield, Chemical-Resistant Gloves, Flame-Resistant Clothing, Safety Shoes/Boots, neoprene or nitrile gloves, hearing and Respiratory Protection), Safety Data Sheets (SDS) for hydrogen, Handouts of emergency response protocol, LLMS(learning version), Pressure gauges, Flow meters, Temperature sensors, Lubricants, filters, Hydrogen flame detectors (UV, IR, multi-spectrum, video image), Oil-free equipment, intrinsically safe tools, Fire hoses, SOP.	

## Module 9: Employability Skills

Mapped to DGT/VSQ/N0102, v1.0

### Terminal Outcomes:

- Discuss the Employability Skills required for jobs in various industries
- Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
- Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan

<b>Duration: 30:00</b>	<b>Duration: 30:00</b>
<p><b>Theory – Key Learning Outcomes</b></p> <ul style="list-style-type: none"> <li>● Discuss the Employability Skills required for jobs in various industries</li> <li>● List different learning and employability related GOI and private portals and their usage</li> <li>● Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen</li> <li>● Discuss importance of relevant 21st century skills.</li> <li>● Describe the benefits of continuous learning.</li> <li>● Explain the importance of active listening for effective communication</li> <li>● Discuss the significance of working collaboratively with others in a team</li> <li>● Discuss the significance of escalating sexual harassment issues as per POSH act.</li> <li>● List the common components of salary and compute income, expenditure, taxes, investments etc.</li> <li>● Discuss the legal rights, laws, and aids</li> <li>● Describe the role of digital technology in today's life</li> <li>● Discuss the significance of displaying responsible online behaviour while browsing, using various social media platforms, e-mails, etc., safely and securely</li> <li>● Explain the types of entrepreneurship and enterprises</li> <li>● Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan</li> </ul>	<p><b>Practical – Key Learning Outcomes</b></p> <ul style="list-style-type: none"> <li>● Practice different environmentally sustainable practices.</li> <li>● Exhibit 21st century skills like Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.</li> <li>● Demonstrate to use basic English sentences for everyday conversation in different contexts, in person and over the telephone</li> <li>● Read and interpret text written in basic English</li> <li>● Write a short note/paragraph / letter/e - mail using basic English</li> <li>● Create a career development plan with well-defined short- and long-term goals</li> <li>● Communicate effectively using verbal and nonverbal communication etiquette.</li> <li>● Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD</li> <li>● Outline the importance of selecting the right financial institution, product, and service</li> <li>● Demonstrate how to carry out offline and online financial transactions, safely and securely</li> <li>● Operate digital devices and use the associated applications and features, safely and securely</li> <li>● Create sample word documents, excel sheets and presentations using basic features</li> <li>● Utilize virtual collaboration tools to work effectively</li> </ul>

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|--|---|
| <ul style="list-style-type: none"> <li>● Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement</li> <li>● Detail the significance of analysing different types and needs of customers</li> <li>● Explain the significance of identifying customer needs and responding to them in a professional manner.</li> <li>● Discuss the significance of maintaining hygiene and dressing appropriately</li> <li>● Explain the significance of maintaining hygiene and confidence during an interview</li> <li>● List the steps for searching and registering for apprenticeship opportunities</li> </ul> | <ul style="list-style-type: none"> <li>● Devise a sample business plan, for the selected business opportunity</li> <li>● Create a professional Curriculum Vitae (CV)</li> <li>● Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively</li> <li>● Perform a mock interview</li> </ul> |
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**Classroom Aids**

Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser, UPS, LCD Projector, Computer Tables & chairs

**Tools, Equipment and Other Requirements**

Computer (PC) with latest configurations – and Internet connection with standard operating system and standard word processor and worksheet software (Licensed) (all software should either be latest version or one/two version below), Scanner cum Printer.



# Annexure

## Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Any Degree	Handling DG/ Chemicals	2	Handling DG/ Chemicals			

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Green Hydrogen Tank Farm Manager" mapped to QP: "LSC/Q3904, v1.0". Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Trainer (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2601, V2.0". Minimum accepted score is 80%

## Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Any Degree	Handling DG/ Chemicals	2	Handling DG/ Chemicals			

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Green Hydrogen Tank Farm Manager" mapped to QP: "LSC/Q3904, v1.0". Minimum accepted score is 80%	Recommended that the Assessor is certified for the Job Role: "Assessor (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2701, V2.0" with Minimum score of 80%

## Assessment Strategy

The emphasis is on 'learning-by-doing' and practical demonstration of skills and knowledge based on the performance criteria. Accordingly, assessment criteria for each job role is set and made available in qualification pack.

The assessment papers for both theory and practical would be developed by Subject Matter Experts (SME) hired by Logistics Sector Skill Council or with the LSC accredited Assessment Agency as per the assessment criteria mentioned in the Qualification Pack. The assessments papers would also be checked for the various outcome-based parameters such as quality, time taken, precision, tools & equipment requirement etc.

Each NOS in the Qualification Pack (QP) is assigned a relative weightage for assessment based on the criticality of the NOS. Therein each Element/Performance Criteria in the NOS is assigned marks on relative importance, criticality of function and training infrastructure.

The following tools would be used for final assessment:

1. **Practical Assessment:** This comprises of a creation of mock environment in the skill lab which is equipped with all equipment required for the qualification pack.

Candidate's soft skills, communication, aptitude, safety consciousness, quality consciousness etc. is ascertained by observation and marked in observation checklist. The outcome is measured against the specified dimensions and standards to gauge the level of their skill achievements.

2. **Viva/Structured Interview:** This tool is used to assess the conceptual understanding and the behavioural aspects with regard to the job role and the specific task at hand. It also includes questions on safety, quality, environment and equipment etc.
3. **On-Job Training:** OJT would be evaluated based on standard log book capturing departments worked on, key observations of learner, feedback and remarks of supervisor or mentor.
4. **Written Test:** Question paper consisting of 100 MCQs (Hard:40, Medium:30 and Easy: 30) with questions from each element of each NOS. The written assessment paper is comprised of following types of questions:
  - i. True / False Statements
  - ii. Multiple Choice Questions
  - iii. Matching Type Questions
  - iv. Fill in the blanks
  - v. Scenario based Questions
  - vi. Identification Questions

### **QA Regarding Assessors:**

Assessors are selected as per the “eligibility criteria” laid down by LSC for assessing each job role. The assessors selected by Assessment Agencies are scrutinized and made to undergo training and introduction to LSC Assessment Framework, competency-based assessments, assessors guide etc. LSC conducts “Training of Assessors” program from time to time for each job role and sensitize assessors regarding assessment process and strategy which is outlined on following mandatory parameters:

- 1) Guidance regarding NSQF
- 2) Qualification Pack Structure
- 3) Guidance for the assessor to conduct theory, practical and viva assessments
- 4) Guidance for trainees to be given by assessor before the start of the assessments.
- 5) Guidance on assessments process, practical brief with steps of operations practical observation checklist and mark sheet
- 6) Viva guidance for uniformity and consistency across the batch.
- 7) Mock assessments
- 8) Sample question paper and practical demonstration

## References

## Glossary

Term	Description
<b>Key Learning Outcome</b>	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
<b>Training Outcome</b>	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
<b>Terminal Outcome</b>	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

## Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards