|  |
| --- |
| **Model Curriculum**  **QP Name: Cold Chain Engineering Specialist**  **QP Code: LSC/Q9201**  **QP Version: 2.0**  **NSQF Level: 6**  **Model Curriculum Version: 2.0** |
| **­**  Logistics Sector Skill Council|| Logistics Sector Skill Council, Ground Floor, Temple Tower, No.476, Anna Salai, Nandanam, Chennai, Tamil Nadu 600035 |

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# Training Parameters

|  |  |
| --- | --- |
| **Sector** | Logistics |
| **Sub-Sector** | Cold Chain |
| **Occupation** | Cold Chain Operations |
| **Country** | India |
| **NSQF Level** | 6 |
| **Aligned to NCO/ISCO/ISIC Code** | NCO-2015/ NIL |
| **Minimum Educational Qualiﬁcation and Experience** | Pursuing first year of 2-year PG program after completing 3 year UG degree or Pursuing PG diploma after 3 year UG degree or Completed 3 year UG degree program after 12th or Pursuing 4th year UG (in case of 4-year UG with honours/ honours with research) or 12th Grade Pass with 2 years of Vocational Education & Training. (Eg. 12th Grade with 1 year NTC plus 1 year NAC/CITS) or 12th grade with 1 year NAC + CITS 2 year relevant experience or 12th grade pass + 4 years relevant experience or Certificate-NSQF (Cold Chain Process Management Specialist/ Perishable Product Handling Specialist/ Refrigeration and Maintenance Equipment Specialist - level 5) + 3 years relevant experience  or Previous relevant Qualification of NSQF Level 5.5 + 1.5 years relevant experience |
| **Pre-Requisite License or Training** | NA |
| **Minimum Job Entry Age** | 21 |
| **Last Reviewed On** | NA |
| **Next Review Date** | NA |
| **NSQC Approval Date** | NA |
| **QP Version** | 2.0 |
| **Model Curriculum Creation Date** | 21-08-2022 |
| **Model Curriculum Valid Up to Date** | 21-08-2022 |
| **Model Curriculum Version** | 2.0 |
| **Minimum Duration of the Course** | 690 |
| **Maximum Duration of the Course** | 690 |

# 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:

* Plan maintenance schedule and allocate resources to ensure effective maintenance of refrigeration equipment
* Manage energy efficiency in cold chain by employing effective and eco-friendly ways to minimize energy consumption
* Administer modified atmosphere requirements of cold storage rooms as per products stored
* Design effective water treatment programme for water circulation and chemical feed to avoid contamination
* Implement effluent treatment programme as per compliance
* Manage engineering systems to minimize energy consumption and improve operational efficiency
* Manage workplace for safe and healthy work environment by following and ensuring compliance to regulatory and safety norms
* Communicate effectively with colleagues and clients for proper information flow

## 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 |
| Bridge Module | **20** | **10** |  |  | **30** |
| Module 1: Introduction to cold chain engineering specialist | 20 | 10 |  |  | 30 |
| LSC/N9201 – Manage energy efficiency in the cold chain  V1.0  5 | **30** | **85** | **5** |  | **120** |
| Module 2: Manage energy efficiency in the cold chain | 30 | 85 | 5 |  | 120 |
| LSC/N9202 – Oversee modified atmosphere requirements for the products  V1.0  5 | **30** | **85** | **5** |  | **120** |
| Module 3: Oversee modified atmosphere requirements for the products | 30 | 85 | 5 |  | 120 |
| LSC/N9203 – Undertake water and effluent treatment Programme  V1.0  5 | **30** | **85** | **5** |  | **120** |
| Module 4: Manage water and effluent treatment programme | 30 | 85 | 5 |  | 120 |
| LSC/N9204 – Manage engineering system for the cold chain  V1.0  3 | **30** | **85** | **5** |  | **120** |
| Module 5: Management of engineering systems | 30 | 85 | 5 |  | 120 |
| LSC/N9901 – Maintain food and personal safety, health, and hygiene in cold storage plant  V1.0  5 | **20** | **35** | **5** |  | **60** |
| Module 6: Compliance to health, safety, and security norms | 20 | 35 | 5 |  | 60 |
| LSC/9902 Communicate effectively with colleagues and clients  V1.0  5 | **20** | **35** | **5** |  | **60** |
| Module 7: Effective Communication | 20 | 35 | 5 |  | 60 |
| Employability Skills | **30**  **30** | **30**  **60** |  |  | **60**  **90** |
| Total Duration | **210**  **210** | **450**  **480** | **30**  **30** |  | **690**  **720** |

**Module Details**

## Module 1: Introduction to Cold Chain engineering Specialist

***Mapped to Bridge Module***

**Terminal Outcomes:**

* Describe the basic structure and function of supply chain
* Detail the various functions of a cold chain engineering specialist

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *10:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Classify the components of supply chain and logistics sector * Detail the various sub-sectors and the opportunities in them * Identify various activities in cold chain, warehouse etc. * Detail your job role as cold chain engineering specialist and its interface with other job roles * Detail the various cold storage equipment such as evaporators, compressors, sensors etc. * Discuss the documentation requirements in cold storage maintenance operations | * Perform the job role of a cold chain engineering specialist * Explain the various documentation involved in cold chain maintenance operation |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
|  | |

## Module 2: Manage energy efficiency in the cold chain

***Mapped to LSC/9201, v1.0***

**Terminal Outcomes:**

* Demonstrate the steps to be followed for management of energy efficiency in the cold chain

|  |  |
| --- | --- |
| Duration: *30:00* | Duration: *85:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * List the parameters impacting energy usage * Discuss the process of analysing energy consumption and corresponding threshold parameters to identify inefficiencies * Explain the process of thermographic inspection * Explain the procedure for designing Design solutions to optimize energy consumption by using day light and occupancy sensors, adjusting chillers, improving evaporator performance etc. * State effective ways to maximize energy efficiencies in cold storage * Describe eco-friendly techniques to optimize energy usage conditions * Discuss the process of identifying appropriate condenser, reduce heat load and engage automatic refrigerant leak detection systems | * Identify parameters impacting energy usage * Analyse energy consumption and corresponding threshold parameters to identify inefficiencies * Perform thermographic inspection to analyse cold areas with poor insulation * Identify ways to fix inefficiencies to improve performance * Design solutions to optimize energy consumption by using day light and occupancy sensors, adjusting chillers, improving evaporator performance etc. * Identify avenues to promote renewable energy such bio gas plants * Implement effective ways to maximize energy efficiencies in cold storage * Apply eco-friendly techniques to optimize energy usage conditions * Identify appropriate condenser, reduce heat load and engage automatic refrigerant leak detection systems |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Project, MS Office, Computer, Projector, TV, Stationery, Worksheets, Statistical Tools compressor, condenser, evaporator, temperature and humidity sensor, thermostat, occupancy sensor and daylight sensor, insulation equipment/ system, cold room setup, piping set up, leak detection system, | |

## Module 3: Oversee modified atmosphere requirements for the products

***Mapped to LSC/N9202, V1.0***

**Terminal Outcomes:**

* Detail the steps in overseeing atmosphere requirements for products

|  |  |
| --- | --- |
| Duration: *30:00* | Duration: *85:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Define the right temperature to be maintained as per the commodity stored * Explain the right mix of gas to maintain the chilling effect and proper sanitation to avoid pathogenic microorganisms * Explain the process of evaluating products for chilling injuries * List the documentation relevant to statutory compliances and cleaning * Discuss the process of documenting faults in the readings of required modified atmosphere conditions | * Define the right temperature to be maintained as per the commodity stored * Apply the right mix of gas to maintain the chilling effect and proper sanitation to avoid pathogenic microorganisms * Evaluate products for chilling injuries * Record periodically the adjustments done to maintain the moderate temperature * Prepare documentation relevant to statutory compliances and cleaning * Document faults in the readings of required modified atmosphere conditions |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Project, MS Office, Computer, Projector, TV, Stationery, Worksheets, Statistical Tools compressor, condenser, evaporator, temperature and humidity sensor, thermostat, CO2 tanks, Oxygen tanks, Ethylene tanks, Nitrogen generator, cold room, process monitoring equipment, gas flow control and monitoring equipment | |

## Module 4: Manage water and effluent treatment programme

***Mapped to LSC/N9203, v1.0***

**Terminal Outcomes:**

* Detail the appropriate steps for management of water and effluent treatment programme

|  |  |
| --- | --- |
| Duration: *30:00* | Duration: *85:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * List the steps in designing effective water treatment programme incorporating controlled water circulation, chemical feed, and routine monitoring * State cost effective ways for treatment and recycling COD (chemical oxygen demand) of waste water * Analyse treated effluent for compliance to specifications * Discuss the inspection process for safety and hygiene of treatment area * Explain rain water harvesting * Discuss the inspection process for chemical feed system for leaks * Explain the inspection process for overfeed/ underfeed of water treatment chemicals | * Design effective water treatment programme incorporating controlled water circulation, chemical feed and routine monitoring * Identify cost effective ways for treatment and recycling COD (chemical oxygen demand) of waste water * Examine treated effluent for compliance to specifications * Report efficacy of water treatment programme * Examine safety and hygiene of treatment area * Identify faults and take corrective actions * Implement rain water harvesting * Inspect chemical feed system for leaks * Inspect for overfeed/ underfeed of water treatment chemicals |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Project, MS Office, Computer, Projector, TV, Stationery, Worksheets, Statistical Tools, cold room, water circulation unit, mini effluent treatment set up, chemical testing facility, biological testing facility | |

## Module 5: Management of engineering systems

***Mapped to LSC/N9204, v1.0***

**Terminal Outcomes:**

* Demonstrate the steps to be followed for effective management of engineering systems

|  |  |
| --- | --- |
| Duration: *30:00* | Duration: *85:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Explain the steps to be followed in management of control systems to minimize power consumption of evaporators, condensers and compressors through automation and hydraulic checks * List engineering system components which need periodic inspection * Examine pressure drops, corrosion, forst etc. to decide on maintenance requirements * List components which require revamping, upgradation, reinsulation * Discuss the process of reporting power consumption of refrigeration systems and revamps identified * Discuss the process of reporting information on operation of evaporation, condesors etc. | * Manage control systems to minimize power consumption of evaporators, condensers and compressors through automation and hydraulic checks * Identify engineering system components which need periodic inspection * Analyse pressure drops, corrosion, frost etc. to decide on maintenance requirements * Identify components which require revamping, upgradation, reinsulation * Report power consumption of refrigeration systems and revamps identified * Record information on operation of evaporation,condesors etc. |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Project, MS Office, Computer, Projector, TV, Stationery, Worksheets, Statistical Tools compressor, condenser, evaporator, temperature and humidity sensor, thermostat, different types of refrigerants, cold room, piping systems, monitor and control systems, pressure gauges, tools and tackles, | |

## Module 6: Compliance to health, safety and security norms

***Mapped to LSC/N9901, v1.0***

**Terminal Outcomes:**

* Describe health, safety, and security procedures in cold storage plants
* Demonstrate the inspection procedure to ensure appropriate and safe conditions of activity area and equipment
* Illustrate the standard protocol to be followed during emergency situations, accidents and breach of safety

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *35:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Detail health, safety and security procedures in cold storage plants * Explain the inspection procedure to ensure appropriate and safe conditions of activity area and equipment * Detail hygiene and sanitation standards as per regulatory bodies such as FSSAI, APEDA * Evaluate protective devices, pipelines and cold storage areas as per SOP * Detail the pest control methods to be followed to ensure zero pest infestation * Describe the SOP for safe handling of goods * Explain the protocol to be followed during accident, emergency etc. | * Perform health and safety procedure in cold storage plants * Follow safety precautionary methods * Check the activity area and equipment for compliance to safety * Check the pipeline and cold storage area are as per SOP * Perform pest control as per SOP to avoid infestation * Inspect adherence to standard operating procedures (SOP) while handling goods * Implement standard protocol in case of emergency situations, accidents, and breach of safety |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Project, MS Office, Computer, Projector, TV, Stationery, Worksheets, Statistical Tools  compressor, condenser, evaporator, temperature and humidity sensor, simulator, tools and tackles, consumables | |

## Module 7: Effective Communication

***Mapped to LSC/N9902, v1.0***

**Terminal Outcomes:**

* Demonstrate effective communication skills to understand targets and performance indicators
* Establish good client relationships and maintain them effectively

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *35:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Understand the target and performance indicator from seniors * Detail the progress to superiors * Explain the behavior to be followed in workplace * Breakdown issues among colleagues * Interpret cooperation, coordination to be established with colleagues and clients * Recognize the client requirement * Manage client escalation immediately * Manage good client relationship | * Communicate effectively with seniors to understand targets, performance indicators * Practice responsible, disciplined and respectful behavior in the workplace * Resolve conflicts amongst colleagues * Practice cooperation, coordination, etiquette and collaboration with colleagues and clients * Provide expert inputs and guide colleagues * Communicate effectively with clients to understand work requirements * Solve client escalations effectively * Establish and maintain good client relationships |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Project, MS Office, Computer, Projector, TV, Stationery, Worksheets, Statistical Tools  compressor, condenser, evaporator, temperature and humidity sensor, simulator, tools and tackles, consumables | |

**Module 8: Employability Skills**

***Mapped to*** ***DGT/VSQ/N0103, 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

|  |  |
| --- | --- |
| Duration: *30:00* | Duration: *60:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Outline the importance of Employability Skills for the current job market and future of work * List different learning and employability related GOI and private portals and their usage * 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 relevant 21st century skills required for employment * Highlight the importance of practicing 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 * Explain the importance of communication etiquette including active listening for effective communication * Discuss the significance of escalating sexual harassment issues as per POSH act * Discuss various financial institutions, products, and services * Explain the common components of salary such as Basic, PF, Allowances (HRA, TA, DA, etc.), tax deductions * Discuss the legal rights, laws, and aids * Describe the role of digital technology in day-to-day life and the workplace * Discuss the significance of displaying responsible online behaviour while using various social media platforms * Explain the types of entrepreneurship and enterprises * Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan * Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement * Discuss various tools used to collect customer feedback * Discuss the significance of maintaining hygiene and dressing appropriately * Discuss the significance of maintaining hygiene and dressing appropriately for an interview * List the steps for searching and registering for apprenticeship opportunities | * Research and prepare a note on different industries, trends, required skills and the available opportunities * Demonstrate how to practice different environmentally sustainable practices * Create a pathway for adopting a continuous learning mindset for personal and professional development * Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone * Read and understand text written in basic English * Write a short note/paragraph / letter/e -mail using correct basic English * Create a career development plan * Identify well-defined short- and long-term goals * Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette * Write a brief note/paragraph on a familiar topic * Role play a situation on how to work collaboratively with others in a team * Demonstrate how to behave, communicate, and conduct appropriately with all genders and PwD * Demonstrate how to conduct offline and online financial transactions, safely and securely and check passbook/statement * Calculate income and expenditure for budgeting * Demonstrate how to operate digital devices and use the associated applications and features, safely and securely * Demonstrate how to connect devices securely to internet using different means * Follow the dos and don’ts of cyber security to protect against cyber crimes * Create an e-mail id and follow e- mail etiquette to exchange e -mails * Show how to create documents, spreadsheets and presentations using appropriate applications * Utilize virtual collaboration tools to work effectively * Create a sample business plan, for the selected business opportunity * Classify different types of customers * Demonstrate how to identify customer needs and respond to them in a professional manner * Draft a professional Curriculum Vitae (CV) * Use various offline and online job search sources to find and apply for jobs * Role play a mock interview |
| **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*** |  |
| Graduate or Diploma | Engineering | 6 | cold storage/refrigeration / air conditioning equipment maintenance operations | 1 | cold storage/refrigeration / air conditioning equipment maintenance operations |  |

|  |  |
| --- | --- |
| Trainer Certification | |
| Domain Certification | **Platform Certification** |
| Certified for Job Role: “ Cold Chain Engineering Specialist” mapped to QP: “LSC/Q9201, v2.0”. Minimum accepted score is 80% | Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q2601”. Minimum accepted score is 80% |

## Assessor Requirements

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Assessor Prerequisites | | | | | | |
| Minimum Educational Qualification | **Specialization** | **Relevant Industry Experience** | | **Training/Assessment Experience** | | **Remarks** |
| ***Years*** | ***Specialization*** | ***Years*** | ***Specialization*** |  |
| 12th Pass | NA | 2 | cold storage/refrigeration / air conditioning equipment maintenance operations | 1 | cold storage/refrigeration / air conditioning equipment maintenance operations | Graduation is preferred |

|  |  |
| --- | --- |
| Assessor Certification | |
| Domain Certification | **Platform Certification** |
| Certified for Job Role: “Cold Chain Engineering Specialist” mapped to QP: “LSC/Q9201, v2.0”. Minimum accepted score is 80% | Recommended that the Assessor is certified for the Job Role: “Assessor”, mapped to the Qualification Pack: “MEP/Q2601”. Minimum accepted score is 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.

1. **Viva/Structured Interview:** This tool is used to assess the conceptual understanding and the behavioral aspects with regard to the job role and the specific task at hand. It also includes questions on safety, quality, environment, and equipment etc.
2. **On-Job Training:** OJT would be evaluated based on standard logbook capturing departments worked on, key observations of learner, feedback and remarks of supervisor or mentor.
3. **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:
   1. True / False Statements
   2. Multiple Choice Questions
   3. Matching Type Questions.
   4. Fill in the blanks
   5. Scenario based Questions
   6. 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 |
| Declarative Knowledge | Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem. |
| Key Learning Outcome | 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). |
| OJT (M) | On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site |
| OJT (R) | On-the-job training (Recommended); trainees are recommended the specified hours of training on site |
| Procedural Knowledge | Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills. |
| Training Outcome | Training outcome is a statement of what a learner will know, understand and be able to do **upon** **the** **completion of the training**. |
| Terminal Outcome | 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 |