



Model Curriculum

QP Name: Plumber - General

QP Code: PSC/Q0104

QP Version: 2.0

NSQF Level: 4

Model Curriculum Version: 1.0

Indian Plumbing Skills Council || Unit- 606 & 609, Tower-C, DLF Prime Towers, Phase-1, Okhla, Delhi, 110020

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Training Parameters

Sector	PLUMBING
Sub-Sector	Industrial / Non-Industrial Plumbing (As per NBC 2016 Classification)
Occupation	Plumbing Systems Installation and Maintenance
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7126.0101
Minimum Educational Qualification and Experience	5th Class 1-2 years of experience as an assistant plumber.
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years
Last Reviewed On	19/06/2020
Next Review Date	19/06/2025
NSQC Approval Date	
QP Version	2.0
Model Curriculum Creation Date	19/06/2020
Model Curriculum Valid Up to Date	19/06/2025
Model Curriculum Version	1.0
Minimum Duration of the Course	432 Hours
Maximum Duration of the Course	432 Hours

Program Overview

This program is for training the candidates to become competent as an Assistant Plumber General so that s/he can perform tasks to assist the plumber in installation and repair of plumbing fittings and fixtures.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Prepare the work area and piping materials for plumbing.
- Install water supply system, drainage pipes, fittings and components, and plumbing fixtures.
- Identify and resolve faults in domestic/commercial plumbing systems and fixtures.
- Adhere to health and safety practices at the workplace
- Work in an effective manner
- Optimize resource utilization at the workplace

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module	08:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	08:00 Hours
Introduction to the sector and the job role	08:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	08:00 Hours
PSC/N0132 Prepare for plumbing installations and maintenance NOS Version No.: 1.0 NSQF Level: 4	16:00 Hours	28:00 Hours	00:00 Hours	00:00 Hours	44:00 Hours
Basics of plumbing	08:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	08:00 Hours
Preparation for plumbing installations and maintenance	08:00 Hours	28:00 Hours	00:00 Hours	00:00 Hours	36:00 Hours
PSC/N0133 Install water supply systems NOS Version No.: 1.0 NSQF Level: 4	28:00 Hours	56:00 Hours	00:00 Hours	00:00 Hours	84:00 Hours
Installation of water supply systems	28:00 Hours	56:00 Hours	00:00 Hours	00:00 Hours	84:00 Hours
PSC/N0135 Install drainage systems NOS Version No.: 1.0 NSQF Level: 4	20:00 Hours	52:00 Hours	00:00 Hours	00:00 Hours	72:00 Hours

Installation of the drainage systems	20:00 Hours	52:00 Hours	00:00 Hours	00:00 Hours	72:00 Hours
PSC/N0134 Install plumbing fixtures NOS Version No.: 1.0 NSQF Level: 4	20:00 Hours	44:00 Hours	00:00 Hours	00:00 Hours	64:00 Hours
Installation of plumbing fixtures	20:00 Hours	44:00 Hours	00:00 Hours	00:00 Hours	64:00 Hours
PSC/N0136 Perform troubleshooting and maintenance for domestic plumbing fixtures and systems NOS Version No.: 1.0 NSQF Level: 4	16:00 Hours	48:00 Hours	00:00 Hours	00:00 Hours	64:00 Hours
Troubleshooting and maintenance for plumbing	16:00 Hours	48:00 Hours	00:00 Hours	00:00 Hours	64:00 Hours
PSC/N9901 Apply health and safety practices at the workplace NOS Version No.: 1.0 NSQF Level: 3	08:00 Hours	24:00 Hours	00:00 Hours	00:00 Hours	32:00 Hours
Health and safety	08:00 Hours	24:00 Hours	00:00 Hours	00:00 Hours	32:00 Hours
SGJ/N1702 Optimize Resources Utilization at workplace NOS Version No.: 1.0 NSQF Level: 3	08:00 Hours	24:00 Hours	00:00 Hours	00:00 Hours	32:00 Hours
Optimum utilization of resources	08:00 Hours	24:00 Hours	00:00 Hours	00:00 Hours	32:00 Hours
PSC/N9902 Work effectively with others NOS Version No.: 1.0 NSQF Level: 3	08:00 Hours	24:00 Hours	00:00 Hours	00:00 Hours	32:00 Hours
Working effectively	08:00 Hours	24:00 Hours	00:00 Hours	00:00 Hours	32:00 Hours
Total Duration	132:00 Hours	300:00 Hours	00:00 Hours	00:00 Hours	432:00 Hours

Module Details

Module 1: Introduction to the sector and the job role

Bridge Module

Terminal Outcomes:

- Explain the importance of plumbing industry.
- Describe the key responsibilities of a plumber general.

Duration: 08:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Outline the overview of the plumbing industry. • Discuss the scope of employment in the contracting segment of the industry. • List the key responsibilities of a plumber general. • Describe the process of water flow in domestic households and commercial setups. • Discuss the application of various types of plumbing systems in residential and commercial setups. 	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Nil	

Module 2: Basics of plumbing

Mapped to PSC/N0132 v 1.0, PSC/N0133 v 1.0, PSC/N0134 v 1.0, PSC/N0135 v 1.0

Terminal Outcomes:

- Identify the various plumbing related systems, materials, tools and equipment.
- Recognise the common terms, symbols and jargons used by plumbers.

Duration: 08:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Recall the various types of symbols and terminologies and titles used in plumbing installation. • Describe the standards applicable (such as ISI) to piping installations in the plumbing industry. • State the importance of accuracy in measurements and calculations with respect to plumbing work. • State the names, grades, characteristics and applications of different pipes, pipe fittings, fixture supports, fastening hardware and materials such as sealants, adhesives, plumber's putty, marking materials and cement used in plumbing. • Identify various plumbing tools and equipment correctly. • List the lifting/load shifting equipment including ladders, height scaffolding, elevated work platforms, hand trolleys, hoists and jacks used at plumbing installation sites. • Explain the properties of water, including pressure and flow rates. Describe processes such as capillary action and thermal expansion in plumbing. 	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Pipes (such as PVC, cPVC, uPVC, mild steel, cast iron, galvanised iron), fittings, plumbing fixtures, plumbing accessories, tools, solvent cement, power tools, mechanical fasteners (such as nuts, bolts, screws).	

Module 3: Preparation for plumbing installations and maintenance

Mapped to PSC/N0132 v 1.0, PSC/N0134 v 1.0

Terminal Outcomes:

- Perform the steps involved in planning and preparation of plumbing work.

Duration: 08:00	Duration: 28:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the types and purpose of plumbing drawings. • Discuss the purpose of work schedules, work plans, charts, work bulletins, memos and the work-related information that can be obtained from them. • Describe the steps involved in collection of plumbing materials as per type, size and quantities based on specifications from drawings and plans. • Explain the factors to be kept in mind for safe handling, storage and transport of various plumbing materials. • List measures to avoid air and water contamination, erosion and sedimentation. • Discuss the risk and impact of not following defined procedures/work instructions. • Outline the process of reporting and handling hazards at the workplace. 	<ul style="list-style-type: none"> • Demonstrate the extraction of information from job specifications, layouts and measurements from drawings and plans associated with plumbing. • Calculate the quantity, dimensions and type of pipes, pipe fittings, devices and materials required from design drawings/ specifications. • Prepare a work plan as per specified timelines. • Perform inspection of the tools and equipment to check for their proper functioning. • Demonstrate the process of clearing the work area of hazardous substances, debris and waste. • Demonstrate correct storage practices for plumbing materials. • Demonstrate placement of signages and barricades.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Plumbing drawings and plans; plumbing tools, materials and equipment; pipes, tubings, fittings and other accessories, pipes (such as PVC, cPVC, uPVC, mild steel, cast iron, galvanised iron), fittings, plumbing fixtures, plumbing accessories, tools, solvent cement, power tools, mechanical fasteners (such as nuts, bolts, screws).	

Module 4: Installation of water supply systems

Mapped to PSC/N0133 v 1.0

Terminal Outcomes:

- Demonstrate the process of cutting, bending and assembling various types of water supply pipes.
- Perform the installation of the assembled pipes, fittings and other water supply components.
- Perform post-installation activities.

Duration: 28:00	Duration: 56:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the process of water distribution in municipal, residential, and private setups. • List the process and various components of a water supply and distribution system. • State the piping system layouts for various types of water supply systems. • Outline the installation process of pipes and fittings for various plumbing applications. • Describe the various techniques of installing the water piping system in a building such as over ground piping, underground piping, piping embedded in concrete, concealed piping, wall mounted piping. • Explain the properties of the different types of supports, hangers and restraints used in water supply plumbing systems. • List the characteristics of metal used in various plumbing materials and the fabrication methods compatible with them. • Explain the process of electrolysis and problems associated with the use of dissimilar metals. • State the impact of accurate marking on the fabrication process work time and finished work quality. • Describe the measuring and marking out processes for fabrication of pipes • List standard measuring procedures such as center-to-center, end-to-center, and end-to-end. • State the allowances to be considered in measurements and markings during the 	<ul style="list-style-type: none"> • Determine the fitting requirements for specified water supply pipe installations. • Demonstrate the steps involved in marking dimensions for fabrication on the pipes and fittings making allowances for spring-back, distortion and assembly. • Apply appropriate cutting and bending techniques on water supply plumbing pipes. • Demonstrate how to join and fix pipes as per defined specifications. • Demonstrate the steps involved in the installation of water supply piping, fittings and components in buildings. • Perform the inspection of the water supply installation system to ensure proper alignment, size, support and functioning. • Evaluate faults and their causes in dysfunctional piping. • Demonstrate the rectification of common faults found in dysfunctional piping. • Perform post installation activities such as clearing the work area, disposal of waste and cleaning and storage of tools and equipment.

<p>fabrication of pipes.</p> <ul style="list-style-type: none"> • List the types, characteristics and the application of different pipe fittings and fixture supports. • Discuss the various fixing and jointing techniques for water supply piping installations. • Explain the principles underlying various fit-off processes. • State the importance of ensuring alignment and balance in piping installations. • Describe the test procedures to check proper functioning of the pipework installed. • Describe the checks and procedures to be conducted before commissioning. • Explain the importance of reporting any difficulties as soon as they arise. 	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
<p>Pipes such as cPVC, Copper, SS, PPR, PEX, HDPE; fittings such as elbow, coupling, union, reducer, tee, cross, cap, plug, nipple, barb, valves; fixing devices such as screws, plastic plugs, plasterboard fixings, cavity fixing, nails, clips and brackets, bolts and nuts; components of water distribution system such as water mains, ferrule and external stop valve, water meter, internal stop valve, water tank, water pump, main water supply pipes, branch water supply pipes, valves; types of pipe fitting such as threaded pipe, solvent welding, soldering, brazing, compression fitting, flare fitting, flange fitting, mechanical fittings, crimped or pressed fittings; tools for cutting pipes such as hacksaws (junior and frame) –blades for different materials; Pipe cutters –for iron, steel, plastics; Files -for different materials; Tap and Dies; Hand tools for cutting building materials – chisels, hammers; Snips for cutting sheet metal pipes; heating/joining machine, compression joints, solder capillary joints, push-fit joints, threaded joints, solvent-welded joints, push-fit joints.</p>	

Module 5: Installation of the drainage systems

Mapped to PSC/N0135 v 1.0

Terminal Outcomes:

- Demonstrate the cutting, bending and assembling of various types of drainage pipes.
- Perform installation of drainage systems.
- Perform the various post-installation activities.

Duration: 28:00	Duration: 56:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the process of wastewater drainage — from a fixture to the drain and then to the environment — across various residential and commercial setups. • Describe the functions of the components of drainage systems. • Describe the various types of drainage piping systems and the pipes and fittings used in them. • Discuss the type of drainage piping systems and its components used in various types of building. • Explain the characteristics and the application of different pipe fittings, fixture supports and fastening hardware. • Discuss the fit off, fixing and jointing techniques applicable for drainage pipes. • Explain the allowances to be made for spring-back, distortion and assembly during marking for fabrication of pipes. • Explain the procedure of installing various types of drainage systems such as sewage, sullage, stormwater, sub-soil drainage system, drainage for fixtures, etc. • Identify the trap to be installed as per the type of drainage system. • List different types of pumps used in sanitary and drainage systems and their applications. • Discuss the characteristics of the flooring using for installation and levelling of drainage system. • Explain the importance of conducting post-installation and pre-commissioning tests and checks. • Describe the various post installation and pre-commissioning tests and checks. • List the signages to be put up at the site 	<ul style="list-style-type: none"> • Apply appropriate techniques to determine the location of various drainage components and the route of the water drainage piping and traps using plumbing project plans. • Demonstrate the construction of chambers to accommodate drainage systems. • Determine fitting requirements for installing various types of drainage pipes according to given specifications and site requirements. • Perform the necessary checks on the area for laying underground, above ground and overhead piping systems. • Perform fitting activities on various types of pipes such as stoneware (SW) pipes, polyvinyl chloride (PVC) pipes, cast iron (CI) pipes, etc. • Demonstrate the installation of the various components of drainage system such as various pipes and their fittings, manholes, traps, cleanouts, catch basins, inspection chamber, soak pit etc. • Show how to install stormwater and sub-soil drainage system. • Demonstrate the process of installing pipes and related accessories in water and sewage treatment plants. • Perform the steps to install different types of pumps used in sanitary and drainage system. • Perform the various post installation and pre-commissioning tests and checks. • Perform the backfilling of all excavated areas to secure the installation.

after the plumbing task has been completed.	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Components of drainage system (drainage pipes, ventilation/anti-siphonage pipes, pipe fittings, traps, cleanouts, catch basins, manholes, inspection chamber, soak pit, storm water drainage pipes), pipes used in drainage system (SW, PVC, CI, AC, RCC, HDP), water traps (as per shape: P-trap, S-trap, Q-trap, bottle trap; as per function: floor-trap, gully trap, intercepting trap), pumps such as submersible water pumps, dewatering pumps (for rainwater piping).	

Module 6: Installation of plumbing fixtures

Mapped to PSC/N0134 v 1.0

Terminal Outcomes:

- Perform the installation of sanitary fixtures, support and related accessories.

Duration: 20:00	Duration: 44:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> Describe the types, characteristics, materials, finishes, uses, limitations, working principle and performance measures of various plumbing related fixtures. List the accessories, supports and fasteners required for installing various types of wash basin, sinks, water closet, urinals, bathtubs and showers. List the sensor types of fittings and fixtures. Explain the basic working principal of sensor faucet and the principles of solenoid ball valves and sensors in touchless system. Describe the correct practices for installing plumbing fixtures. Explain the importance of traps for the sanitary fittings, both deep seal traps and low seal traps. Explain the working and use of conservancy, water carriage and the combination system. Discuss alignment and elevation techniques used in plumbing systems. List the codes, standards and regulations applicable for the installation of plumbing fixtures. 	<ul style="list-style-type: none"> Show how to tally the count and quality of fixtures, parts, support material provided in the packing with the manufacturer's list or order form. Select the size, type and quantity of fixture and trim required for specific applications based on specifications. Demonstrate how to mark the position of fixtures and fixture supports in structures based on plumbing plans. Demonstrate the procedure of installing various types of sanitary fixtures, supports, and accessories. Demonstrate the installation of sensors and batteries of fixtures with sensor-based or touchless fitting and fixtures. Perform alignment and levelling of supports and fixtures installed. Apply appropriate techniques to check if all installations are properly sized, supported and functioning.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Types of fixtures (taps/faucets, valves, water closet, showers, sinks, bath-tubs, basin, wall hung urinals, pop-up drains, water heaters), dishwashing machines, clothes washing machine, types of fasteners and supports (anchors, screws, nuts, bolts, circlips, clamps, wall hangers, carriers, etc.).	

Module 7: Troubleshooting and maintenance for plumbing

Mapped to PSC/N0136 v 1.0

Terminal Outcomes:

- Demonstrate how to inspect of domestic plumbing systems and fixtures to identify faults.
- Perform repair and maintenance activities.

Duration: 16:00	Duration: 48:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List the various types of faults (such as leakages, improper joints, broken sewer; dripping faucets and water lines, etc.) associated with plumbing systems (such as aerators, septic systems etc.). • List the testing procedures to be performed to check proper functioning of the fixtures and pipework installed. • State the remedial and preventive measures for common plumbing problems with respect to fixtures, pipes and fittings. • Discuss correct practices for troubleshooting and maintenance for plumbing fixtures and systems. • Explain the application of mechanical and hydraulic principles for clearing blockages. • List the methods of corrosion protection such as coatings and tape. • Discuss common organisational policies related to costing, scheduling, procurement and documentation for plumbing maintenance and repair work. 	<ul style="list-style-type: none"> • Show how to detect faults in various types of plumbing systems and fixtures. • Demonstrate the procedures involved in repair and rectification of common faults within the pipes, plumbing fixtures, drainage and water supply systems. • Perform cleaning and clearance related activities after completion of work. • Display how to record daily logs in a specified format for activities such as maintenance and installation . • Role play a situation on how to guide the customers instruct the customers on proper care and maintenance of plumbing systems.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Plunger, pressure gauges, aerators septic systems, roof drain's strainer basket, Allen wrench, shower drain, pipes tube clamp, saws, pipe cutters, sealing compound, dripping faucets, tongue-and-groove plier, water heaters, washing machines, dishwashers, waste containers and logbook.	

Module 8: Health and safety

Mapped to PSC/N9901 v 1.0

Terminal Outcomes:

- Describe the various risks and hazards at the workplace and their preventive and corrective measures
- Employ preventive and corrective measures to protect self and others from common workplace hazards and risk

Duration: 08:00	Duration: 24:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Differentiate between risks and hazards. (KU4) • Discuss the specific safety and health related problems faced in domestic, commercial and institutional setups. • List the various types of hazards (such as physical, fire, chemical compounds and electrical) that could affect the work process. • List the various hazardous environments and common hazards that can occur during plumbing installation and maintenance along with their precautions and remedial measures. • Discuss the importance of various types of personal protective equipment (PPE). • Discuss where the general health and safety equipment commonly is kept at the workplace. • Explain the various types of safety signs and their significance in the work process. • Discuss various causes of fire and precautionary activities to prevent the fire accident. • List the different techniques that employ various methods (such as using extinguishers, water hose, sprinklers, sand bucket, wet blanket, etc.) and materials such as water, powder, foam, CO₂, fire extinguishing chemical, sand, blanket, etc. used for extinguishing fire as per the type (as per class A, B, C and D). • Describe rescue techniques applied during a fire hazard or electrocution. • Discuss appropriate basic first aid treatment relevant to the condition e.g. shock, electrical shock, bleeding, minor 	<ul style="list-style-type: none"> • Perform inspection of a work area in order to identify risks and hazards. (PC1) • Apply various health and safety precautions to be taken during plumbing work. • Apply personal and workspace hygiene and sanitation practices. • Dramatize workplace emergency and evacuation procedures using role plays. • Demonstrate the correct use of fire extinguishers. • Dramatize, using role play, safe methods of freeing a person from electrocution. • Perform appropriate first aid treatment for various conditions such as bleeding, burns, choking, electric shock and poisoning and injury. • Demonstrate the process of providing cardiopulmonary resuscitation (CPR).

<p>burns, poisoning, eye injuries etc.</p> <ul style="list-style-type: none"> • Discuss potential injuries and health problems associated with incorrect handling of tools and equipment. 	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Personal protective equipment (such as eye protector, hard hats, safety belts, gloves, protective clothing), plumbing tools and materials, power tools, required machinery, fire extinguisher, first aid kit.	

Module 9: Working effectively with others

Mapped to PSS/N9902 v 1.0

Terminal Outcomes:

- Apply effective communication techniques.
- Demonstrate teamwork and a positive attitude.
- Demonstrate responsible and disciplined behaviour.

Duration: 08:00	Duration: 24:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • State the importance of effective communication in the workplace. • Describe the typical organisational hierarchy and the various categories of people that one is required to communicate and coordinate with. • List various components of effective communication. • State the importance of using inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive. • State the importance of teamwork and developing effective working relationships for professional success. • Discuss the importance and ways of managing interpersonal conflict effectively. • Discuss how to express and address grievances appropriately and effectively. • State the importance of ethics and discipline for professional success. • Explain what constitutes disciplined behaviour and integrity for a working professional. • Discuss the legislation, standards, policies, and procedures relevant to own employment and performance conditions. • Discuss importance of dress code in organisations. • Explain the impact of gender, disability, cultural and age related biases, stereotyping at the workplace and in society. • List the different types of disabilities and the challenges faced by persons with disability (PWD). • State the laws, acts, provisions and 	<ul style="list-style-type: none"> • Demonstrate techniques used for ensuring timely receipt of complete information and instructions from appropriate sources. • Apply practices that improve effectiveness while providing information. • Demonstrate the use of inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive. • Illustrate the use of appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism. • Dramatise a situation to show effective team work. • Dramatize (through role-play) disciplined behaviours at the workplace. • Dramatize (through role-play) the process of escalation of grievances and problems. • Recognize indicators of harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation and culture at workplace. • Demonstrate practices to eliminate personal bias based on gender, disability, caste, religion, colour, sexual orientation and culture from routine transactions.

<p>schemes defined for PwD by the Government bodies.</p> <ul style="list-style-type: none"> • Discuss gender, disability and cultural biases, stereotypes and impact on others • Discuss basic gender concepts such as gender power relations, gender roles, access and control, gender sensitivity, gender equity and equality. • Discuss the importance of gender sensitivity and equality. • List the indicators of harassment and discrimination based on gender, disability, caste, religion or culture that occurs at a typical workplace. • State general organisational norms and procedures applied to protect against harassment and discrimination. • Discuss the importance of reporting incidents of harassment and discrimination to appropriate authority. 	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Nil	

Module 10: Optimum utilisation of resources

Mapped to SGJ/N1702 v 1.0

Terminal Outcomes:

- Use the material in an optimum way at work.
- Use energy/electricity optimally at work.
- Employ practices for minimization of waste generation.
- Demonstrate the process of waste disposal as per industry approved standards.

Duration: 08:00	Duration: 24:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the practices and impact of inefficient utilization of material and water. • Describe ways of efficiently managing material and water in the process. • Explain the basics of electricity. • List common electrical and thermal equipment used in a plumbing workplace. • Describe the use of prevalent energy efficient devices. • List indicators of common electrical problems. • Discuss common practices of conserving electricity. • Explain the importance of checking if the equipment/machine is functioning normally before commencing work and ensuring it is rectified. • Explain the usage of different colours of dustbins. • Differentiate between recyclable and non-recyclable, and hazardous waste generated. • Discuss efficient waste management practices. • Discuss the common ways employed by organizations, to minimize waste generated from plumbing activities. • Discuss common sources of pollution and ways to minimize it • Explain the importance of reporting malfunctioning (fumes /sparks /emission /vibration /noise) and lapse in the maintenance of equipment on time. 	<ul style="list-style-type: none"> • Identify ways to optimize usage of water and other materials in various tasks/activities/processes. • Perform inspection to check for spills/leakages at a workplace. • Apply various material conservation practices with respect to plumbing work. • Perform inspection of the work area for improperly connected electrical equipment. • Apply appropriate techniques to use energy/electricity in an optimum way. • Categorize waste into dry, wet, recyclable, non-recyclable and items of single-use plastics. • Employ effective waste management / recycling practices.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	

Tools, Equipment and Other Requirements

Energy-saving devices, Non-recyclable, recyclable and reusable waste
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Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
B.E. / B. Tech	Civil or Mechanical Engineering	3	Plumbing	1	Plumbing	
Diploma	Civil or Mechanical Engineering	3	Plumbing	1	Plumbing	
ITI	Civil or Mechanical Engineering	4	Plumbing	1	Plumbing	
12th Pass	Science	4	Plumbing	1	Plumbing	

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: “Plumber – General” mapped to QP: “PSC/Q0104, 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 as per MEPSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
B.E. / B. Tech	Civil or Mechanical Engineering	3	Plumbing	1	Plumbing	
Diploma	Civil or Mechanical Engineering	3	Plumbing	1	Plumbing	
ITI	Civil or Mechanical Engineering	4	Plumbing	1	Plumbing	
12th Pass	Science	4	Plumbing	1	Plumbing	

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Plumber – General" mapped to QP: "PSC/Q0104, v2.0". Minimum accepted score is 80%.	Recommended that the Assessor is certified for the Job Role: "Assessor", mapped to the Qualification Pack: "MEP/Q2701". Minimum accepted score as per MEPSC guidelines is 80%.

Assessment Strategy

Assessment is done through third parties who are affiliated to IPSC as Assessment Body. Assessors are trained & certified by IPSC through Training of Assessors program. The assessment involves two processes. The first process is gathering the evidence of the competency of individuals. The second part of the assessment process is the judgment, based on the evidence as to whether a person is competent as per the standard or not. The assessment plan contains the following information:

- What will be assessed, i.e. the competency based on each NOS
- How assessment will occur i.e. methods of assessment
- When the assessment will occur
- Where the assessment will take place i.e. context of the assessment (workplace/simulation)
- The criteria for decision making i.e. those aspects that will guide judgements and
- Where appropriate, any supplementary criteria used to make a judgement on the level of performance.

The assessment is conducted through theory, viva voce and practical.

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