

SHORT TERM CURRICULUM

FOR

Basic Plumbing

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**Council For Technical Education And Vocational Training (CTEVT),
Curriculum Development Division
Sanothimi, Bhaktapur
2005**

1. AIM AND OBJECTIVE

The aim of this short-term curriculum for "Basic Plumbing" is to equip trainees with basic skills and knowledge of basic plumbing so that they would be employed or self-employed in the field of plumbing occupation.

2. COURSE DESCRIPTION

This short course provides most of the skills and related technical knowledge necessary for basic plumbing.

There will be both demonstrations of skills/tasks and opportunity by the trainees to perform tasks of basic plumbing to their confidence level.

The trainees successfully completing this curriculum/training will be able to estimate plumbing work quantity, install pipes, perform filing, connect internal waterline, install sewerage fittings, install sanitary ware and maintain the system, and also will be able to either employed or self-employed in the plumbing occupation.

3. Course Structure

S.N.	Subjects	Nature of Course	Total hours	Full Marks
1.	Work Quantity Estimation	P	78	50
2.	Installation of Pipes	P	78	50
3.	Filing	P	117	75
4.	Internal Waterline Connection	P	117	75
5.	Installation of Sewerage Fittings	P	117	75
6.	Installation of Sanitary wares	P	39	25
7.	System Maintenance	P	78	50
Total:			624	400

4. **Duration:** 624 hours

5. **Pattern of Attendance:**

- Regular attendance in classes

6. **Entry requirements:**

1. Seven class pass
2. Age: 15-30 years old
3. Entrance examination
4. Citizenship: Nepali

7. SUBJECTS

Subject: Work Quantity Estimation

Duty	Tasks	Related Technical Knowledge
Estimate Plumbing Work Quantity	1. Read scale	1. Types of scale, scale divisions, reading scale divisions and conversion of mm, cm, m to inches and vice versa
	2. Read drawing	2. Identification, reading and interpretation of drawings and related symbols/fittings Calculation of scale
	3. Inspect the site	3. Selecting, reading and interpreting drawings/specifications and visiting the site to decide where to install pipes and fittings according to the drawing
	4. Take measurement/mark the point	4. Horizontal and vertical measurement, process of measuring distance and marking the points
	5. Estimate pipe/fittings	5. Symbol of plumbing accessories, <ul style="list-style-type: none"> • dimension • Calculation/estimation of the quantity of <ul style="list-style-type: none"> ⇒ Pipe ⇒ Fittings/and sizes ⇒ Labour ⇒ Accessories
	6. Calculate cost	6. Knowledge of calculating the cost involved

Subject: Installation of Pipes

Duty	Tasks	Related Technical Knowledge
Install pipe	1. Measure the pipe	1. Size of pipe, 2. GI and 3. HDP, 4. measuring process
	2. Mark on the pipe	5. Process of marking on the pipe as per the measurement
	3. Cut pipe	6. Clamping pipe in vice, adjusting pipe cutter and cutting pipe at marked lines.
	4. Set pipes/accessories/ fittings	7. Knowledge of setting pipe, accessories and fittings as per drawing
	5. Join pipes	8. Procedure of joining pipes
	6. Check pipe installation	9. Completion of pipe installation and process of its checking

7.3 Subject: Filing

Duty	Tasks	Related Technical Knowledge
Perform Filing	1. File pipe	<ul style="list-style-type: none"> • Types of files, use of file/ways of doing file • Clamping the pipe • Filing the pipe/cutting HDP/GI
	2. Cut thread	<ul style="list-style-type: none"> • No of thread, depth of thread, die size, pipe size & teeth size • Handling die • Using lubricant • Process of <ul style="list-style-type: none"> ⇒ Clamping pipe in vice ⇒ Setting die ⇒ Inserting die in pipe ⇒ Swinging die in clockwise and anticlockwise direction ⇒ Putting lubricant on pipe etc.
	3. Make HDP Tee	<ul style="list-style-type: none"> • Angle of cutting, heating plate and its temperature, method of heating plate, way of tee joining, use of Teflon cloth, and chrome check. • Procedure of making HDP tee
	4. Make HDP elbow	<ul style="list-style-type: none"> • Size and thickness of pipe • Teflon cloth • Thermo chrome check • Procedure of making HDP elbow safely
	5. Make HDP "Y"	<ul style="list-style-type: none"> • Knowledge of angle, fixing hacksaw frame, how to cut and join the pipe and maintaining the temperature • Process of making HDP "Y" according to the given success criteria
	6. Make HDP Reducer	<ul style="list-style-type: none"> • Concept of HDP reducer, size and thickness of pipe, lighting blow torch and way of making HDP reducer without leakage
	7. Join GI pipe	<ul style="list-style-type: none"> • Using jute thread in between the threads of pipe, • Fitting socket, union elbow, cross etc. • Procedure of joining GI pipe • "Z" dimension • Safety measures
	8. Join HDP pipe elbow	<ul style="list-style-type: none"> • Procedure of joining HDP pipe elbow • Maintaining temperature • Dimension • Teflon cloth • Thermo chrome check • Lighting torch

7.3 Subject: Internal Waterline Connection

Duty	Tasks	Related Technical Knowledge
Connect Internal Waterline	1. Install Tee/nipple	1. Use of jute in thread, identification of Tee & its size, knowledge of where to use joining; and procedure of installing nipple/Tee in the pipe
	2. Install cross Tee	2. Identification of cross Tee/sizes; applying jute, putting or pipe tape in thread; and procedure of installing cross Tee tightly
	3. Install elbow	3. Identification of elbow; Applying jute, tape and putting in thread, and procedure of fitting or installing elbow tightly
	4. Install the followings: a) Gate b) Float c) Globe d) Check valve e) Sucket	4. Identification and procedure of fitting/installing the following fitting materials a) Gate b) Float c) Globe d) Check valve e) Socket
	5. Fix the alignment	5. Water pressure, alignment, and procedure of fixing alignment allowing water flow with appropriate pressure

7.5 Subject: Installation of Sewerage Fittings

Duty	Tasks	Related Technical Knowledge
Install Sewerage Fittings	1. Install siphon	1. Concept of siphon, purpose of using siphon, and procedure of installing/fitting siphon
	2. Install sink	2. Concept, need and procedure of installing sink
	3. Install hand wash basin	3. Concept, need and procedure of installing hand wash basin
	4. Install toilet pan	4. Concept, need and procedure of installing toilet pan
	5. Install bath tub	5. Concept, need and process of installing bath tub
	6. Install waste pipe	6. Identification, function and method of installing waste pipe
	7. Install vent pipe	7. Identification, function and procedure of installing vent pipe
	8. Install gutter pipe	8. Identification, function and process of fittings gutter pipe
	9. Install manhole cover	9. Identification, function and process of fitting man hole cover.

Subject: Installation of Sanitary Ware

Duty	Tasks	Related Technical Knowledge
Install Sanitary Wares	1. Install sink	1. Knowledge of drilling process, drilling bits, load calculation and process of installing sink
	2. Install wash basin	2. Concept, function and process of installing wash basin
	3. Install cistern	3. Concept, function and knowledge of installing/fixing cistern
	4. Install urinal	4. Concept, function & process of installing urinal
	5. Install water closet	5. Purpose of water closet and procedure of installing water closet.

Subject: System Maintenance

Duty	Tasks	Related Technical Knowledge
Maintain the system	1. Detect the fault in the system	1. <ul style="list-style-type: none"> • Causes of faults, location of faults • Inspection/checking the system to detect fault
	2. Prevent leak	2. <ul style="list-style-type: none"> • Inspecting and detecting pipe leakage in the pipe line, digging pipe where it leaks and tighten pipes with tube/tape/putting • Procedure of preventing leak
	3. Repair/replace water tank	3. <ul style="list-style-type: none"> • Concept, need and function of water tank • Checking, cleaning, drying, repairing/ replacing water tank • Joining pipe
	4. Replace cistern	4. <ul style="list-style-type: none"> • Purpose, uses and futures of cistern • Procedure of replacing cistern
	5. Replace waterline fittings	5. Uses of fittings, detecting faults of fittings and process of default fittings
	6. Replace pipe	6. Digging trench along the pipeline, finding out fault, and replacing default pipe
	7. Replace sanitary wares	7. Checking sanitary wares, detecting fault, determine whether to replace or repair and procedure of repairing and replacing sanitary wares as per the need
	8. Replace sewerage line	8. Checking leakage, digging the sewerage line, replacing the default line and covering the sewerage line.

8. Certificate requirement:

Trainees should pass all the subjects mentioned in the curriculum to get the certificate of completion of the training on "Basic Plumbing".

9. Facilities:

- Well equipped model class room
- Well equipped model workshop

10. Equipment/Tools/Materials

1.	Scale
2.	Drawings
3.	Marker/pencil/chalk
4.	Pipe cutter/cutting set
5.	Hacksaw set
6.	Vice/vice die set
7.	Files (different types)
8.	Knife
9.	Heating plate
10.	Blow torch
11.	Teflon cloth
12.	Different types of tapes/pipe tape
13.	Tape putting
14.	Wrench (different types)
15.	Screen
16.	Grip
17.	Screw/screw driver
18.	Drill machine/bits
19.	Clamp
20.	Digging tools
21.	Jute and hemp
22.	Lubricants
23.	Waste box
24.	Thermo chrome
25.	Leak detection device
26.	Measuring tape
27.	HDP/GI pipe
28.	Fitting materials and accessories etc.

11. Trainees' Evaluation Details:

1. Regular evaluation of trainees is to be conducted by related trainers to ensure the proficiency over each tasks (skills) in each subjects
2. Related technical knowledge of the tasks learnt by trainees is to be evaluated through written tests
3. 80% mark is allotted to the practical work and 20% is allotted to the related technical knowledge in each subjects
4. 60% marks is to be secured by the trainees to pass the subject having practical nature (P)
5. Each subject involves three internal assessments and one final examination.

12. Trainers' Qualification:

1. Plumbing level - 2 or equivalent
2. Work experiences
3. Good communicative skills