Republic of Rwanda

WORKFORCE DEVELOPMENT AUTHORITY – WDA

Ministry of Education

Empowering people with employable skills and entrepreneurship capacity

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CSTPL1001-TVET FOUNDATION CERTIFICATE IN PLUMBING

RTQF LEVEL 1 CURRICULUM

Kigali, March 2013

ACRONYMS

CMM	Cross cutting modules
CDU	Curriculum Development Unit
CSTCA	Construction Carpentry
ICT	Information Communication Technology
ILO	International Labour Organisation
NTQF	National Technical Qualification Framework
PPE	Personal Protective Equipment
RTQF	Rwanda Technical Qualification Framework
TVET	Technical and Vocational Education and Training
WDA	Workforce Development Authority
VIH	the Human Immunodeficiency Various
AIDS	Acquired Immunodeficiency syndrom
STI	Sexual Transmission Infection
PDA	Personal Digital Assistance
CD	Compact Disc
DVD	Digital Video Disc
ROM	Read Only Memory

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SECTION1: GENERAL INTRODUCTION

The curriculum presents a coherent and significant set of competences to acquire in order to perform the occupation of Basic skilled plumber. The curriculum design approach has taken into account the training needs, the work situation, as well as the goals and the means to implement training.

The modules of the curriculum include a description of the expected results at the end of training. They have a direct link with the choice of the learning activities. The competences are the targets of the training upon which one will be expected to confidently enter the labour market, even though minimum supervision for complex tasks would still be required.

The curriculum is also the reference to carry out the assessment of learning. Assessment's tools can still be developed on the basis of this document, and at present only main guidelines are suggested.

The present curriculum consists of three sections. The first section is of general interest and shows the nature and goals of a program and the key concepts and definitions used in the document. The second section deals with the qualification the learner will achieve at the end of training. The last section is the actual training package containing all the modules of the qualification.

The pages describing the modules are the heart of a curriculum. They present the title of the module, the length of the training in terms of training hours and corresponding number of credits, the context in which the competence is performed, the prerequisite competences, the learning units as well as the performance criteria.

In each module, a course structure is provided. The course structure describes the learning outcomes (knowledge, skills and attitudes) and the learning contents related to each learning unit. Also, learning activities and resources for learning are suggested.

Finally, the assessment specifications and guidelines are included in each module.

CONCEPTS AND DEFINITIONS

Assessment: A process of gathering and judging evidence in order to decide whether a person has attained a standard of performance.

Competence: The ability or capacity acquired through leaning, exposure to the tasks and series of training allowing one to perform specific task autonomously.

Complementary competences: Set of knowledge, skills and attitudes which are not directly linked to a specific occupation or industry, but which are important for work, education and life in general, such as communication, mathematics, organizational aptitude, and computer literacy, interpersonal and analytical competence.

Core modules: Modules leading to competences' acquisition that an industry sector has agreed upon as essential for a person to be accepted as competent at a particular level. All modules may be core, but in many cases competency at a level will involve core modules plus optional or specialization modules. Core competencies are normally those central to work in a particular industry.

Credit: The acknowledgement that a person has satisfied the requirements of a module.

General competences: competences correspond to larger operations that go beyond the tasks, but generally contribute to their implementation. These activities require more fundamental learning and are generally common to several tasks and transferable to many work situations.

Generic modules: Modules leading to the attainment of complementary competences.

Internship: An opportunity for a learner to integrate career related experience by participating in planned, supervised work.

Learning activities: Suggested activities that can be developed during lesson planning and activity preparation. The choice of learning activities must be tailored according to group size, available material resources and communication tools.

Learning hours: Amount of hours required to acquire the competence, including the time allocated to evaluation, which is estimated between 5 and 10% of the total learning time of the competence.

Learning outcomes: Statements that indicate what learners will know or be able to do as a result of a learning activity. Learning outcomes are usually expressed as knowledge, skills, or attitudes.

Learning unit: Any of the basic building blocks of a module which describes the key activities or elements of the work covered by the module.

Module: A unit of training which corresponds to one competence and which can be completed on its own or linked to others.

Occupation: The principal business of one's life.

Performance criteria: Descriptions of the quality requirements of the result obtained in labor performance.

Specific competences: Competences that are directly related to the tasks of the occupation in the workplace context. They refer to concrete, practical, and focused aspects.

Module code: each module has its own code for identification purpose and in order to easy transferability of credits.

SECTION 2: QUALIFICATION

TITLE OF THE QUALIFICATION:	**TVET Foundation Level**
LEVEL:	**1**
CREDITS:	**1100**
SECTOR:	**CONSTRUCTION**
SUB-SECTOR:	**PLUMBING**
ISSUE DATE:	**March,2013**
REVIEW DATE:	

PURPOSE

This qualification provides the skills, knowledge and attitudes for a learner to be competent in limited range of skills required to carry out simple tasks. Work would be undertaken in various water resource enterprises where plumber making activities are carried out. Learners may work under close supervision in a structured context.

RATIONALE

Rwanda is striving to build a knowledge-based economy, with a particular emphasis on creating 200, 000 off-farm jobs a year. The focus is to reduce unemployment rate substantively, particularly in rural areas, and urban unemployment by providing relevant employability skills. To rationalize this, the government of Rwanda through WDA has put in place a benchmark tool, the TVET qualification framework, which comprises 7 levels that focus on job-oriented and transferable skills to increase productivity and employability. It is in this regard that this qualification –level one- emphases on active population, be it illiterate or literate in order to equip them with the necessary skills to meet labour demand in key economic sectors. TVET Foundation Level (RTQF LEVEL 1) constitutes a baseline for further learning in TVET, The individuals with this qualification can enter the TVET Basic Vocational Skills Level (RTQF LEVEL II) in order to be equipped with the necessary skills, knowledge and attitude to enable them to pursue the TVET Certificate I (RTQF LEVEL III).

Possible Job positions related to this qualification include:

- Sanitary appliances installer
- Pipe layer Installer
- Water pumps installer
- Water collector

ENTRY REQUIREMENTS TO THE QUALIFICATION

No entry requirements needed to this qualification as long as the person has the ability to acquire the competences. Only the consideration for age limitation, as the Rwandan labour law stipulates that nobody should be employed under 16 years old. (Direct Access)

EMPLOYABILITY AND LIFE SKILLS

Through the generic modules, individuals with this qualification have acquired the life skills and employability skills that are described in the table below.

Personal development	- Understand own personal values, strengths and areas of challenge or weakness and are able to effectively use or address them; - Develop, implement and evaluate progress toward personal goals; - Know own preferred way of learning, take initiative for learning new skills, and know how to monitor own learning progress.
Interpersonal communication	- Communicate and get along well with others, in a variety of settings and for a range of purposes; - Speak and listen actively and appropriately, one-on- one and in groups; - Cooperate and work effectively within a group; - Provide good customer service.
Health, hygiene and safety	- Know the standard health and safety practices and regulations in the workplace; - Maintain hygiene and personal grooming; - Identify unsafe situations; - Respond to emergencies and accidents at work; - Prevent HIV/AIDS and sexual violence.
Environment sustainability	- Know the environmental regulations in Rwanda; - Dispose of waste ; - Recycle waste ; - Report environmental hazards to appropriate person.
Integration of the workplace	- Know how to apply for and present themselves for employment; - Demonstrate good time management and show up for work on time; - Demonstrate behavior and attitudes that are appropriate for the workplace and understand that workplaces have policies and procedures that need to be followed; - Take initiative and responsibility for own work and know how to work under and respect supervision; - Know the rights and responsibilities of workers and employers and explore ways to exercise rights in the

	workplace.
Financial fitness	- Understand principles and tools behind personal and family money-management; - Understand the importance of saving and reducing expenses; - Organize and manage personal and household finances; - Create a personal budget and think strategically about their finances; - Evaluate their options for earning money and are familiar with ways to establish and maintain personal credit; - Be aware of the risks associated with credit.
Management of a small business	- Simulate income-generating activities with the basic cycles of business; - Plan for income-generating activity expenses and loan repayments; - Keep basic business financial records; - Evaluate the risks and opportunities of using credit in income generating contexts; - Distinguish between money to be used for investment into own income-generating activities, for family expenses, and for savings; - Know the different market actors.
Computer skills	- Operate a computer - Use word processing applications in the production of workplace or personal documents - Create and use spreadsheets and charts through the use of spreadsheet software - Design electronic presentations - Send, receive and manage electronic mail (email), as well as to collaborate online using chat rooms, intranets and instant messaging.
Language skills	- Communicate orally to simple discussion in English language in familiar context

MODULES AND QUALIFICATION RULES

To achieve the *TVET Foundation level in Construction: Plumbing*, 15 modules must be completed (1110 learning hours):

- 9 generic modules
- 6 cores modules
- 1 elective module

Elective module must be selected from elective modules listed below by learners or the training institution.

Modules are here coded as CP12 followed by two digits from 01 up to 21. The letters C and P stand respectively for Construction and Plumbing. The two first digits 1 and 2 refer to level 1 & 2 while the next two digits starting by 01 to 21 refer to the module number. Therefore, for example **CP1203** indicates the module **Pipe work drawing** in the list below.

Modules Code	Modules types and titles	Credit Value
Generic modules (Compulsory)		
CCM001	Occupation and the training process	2
CCM102	Safety, health, security and environment at workplace	3
CCM103	Workplace communication skills	3
CCM104	Basic computer applications	3
CCM105	Oral basic English Communication	3
CCM106	Basic workplace calculations	7
CCM107	Running micro business	4
CCM108	Cost estimation	5
CCM110	Internship	30

Core modules (Compulsory)		
CP1201	Use of plumbing tools and equipment	8
CP1206	Sanitary appliances	9
CP1203	Pipe laying	8
CP1207	Drainage systems	10
CP1208	Rain water harvesting	8
CP1215	Basic drawing	7
	Elective Modules (Not Compulsory)	
CP1204	Water supply	8
CP1202	Pipe work drawing	7
CP1205	Hot and cold water system	10
CP1209	Water pumps	8
CP1210	Solar water heaters	9
CP1211	Gas pipes	10
CCM109	Basic electricity	7
CCM111	Basic masonry	7
CCM112	Basic welding	7

SECTION 3: TRAINING PACKAGE

The training package includes the list of modules, the description of each module and the course structure.

COMPETENCES CHART

The competences chart is a table that presents an overview of the specific competences, the general competences, the work process and the time allocated to each competence. This table provides an overall view of the competences of the training programme and allows identifying the logical sequence of the learning of these competences.
The competences chart shows the relationship between general competences and specific competences that are particular to the occupation, as well as the key stages of the work process. It shows the links between the elements in the horizontally axis and those vertical axis. The symbol (○) marks a relationship between a general competence and specific competence. The symbol (∆) indicates a relationship between a specific competence and a step in the process of work. When the symbols are darkened, it indicates that the link is taken into account in the description of the specific competence.
The competences chart allows the trainer to consider the complexity of the competences in the organization of the progress of learning. Therefore, the vertical axis shows the specific competences in the order they should be acquired. This is the starting point of the presentation of the competences in the flowchart presented in the following pages.

A PLUMBER				PROCESS					GENERAL COMPETENCES											
SPECIFIC COMPETENCES		Level of complexity	Duration	Visit the site	Prepare the workplace	Carry out the work	Test the work done	Handover the work	Occupation to learning process	Maintain health, safety, and Security, and Sustain Environment in the workplace	Basic computer application	Communicate effectively on the workplace	Cost estimation	Apply basic drawing	Use plumbing tools and equipment	Apply oral basic English communication.	Create and manage a small business	Workplace Calculation		Total Duration
NUMBER	NUMBER			1	2	3	4	5	1	14	19	20		15	2	5	21			
	Level of complexity																			
	Duration								20	30	30	30	50	70	90	40	30	70		450
8	Install water drainage	2	100	▲	▲	▲	▲	▲	○	●	○	○	●	●	●	○	○	○		
9	Perform rain water harvesting	1	80	▲	▲	▲	▲	▲	○	●	○	○	●	●	●	○	○	○		
4	Apply pipes laying	2	80	▲	▲	▲	▲	▲	○	●	○	○	●	●	●	○	○	○		
7	Install sanitary appliances	3	90	▲	▲	▲	▲	▲	○	●	○	○	●	●	●	○	○	○		
13	Integrate the workplace	5	300	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	○	○	●		
Total Duration			650																	1100

Between the process and particular competences

▲: Functional link application

△: Functional link existence

between general and particular competences

●: Functional link application

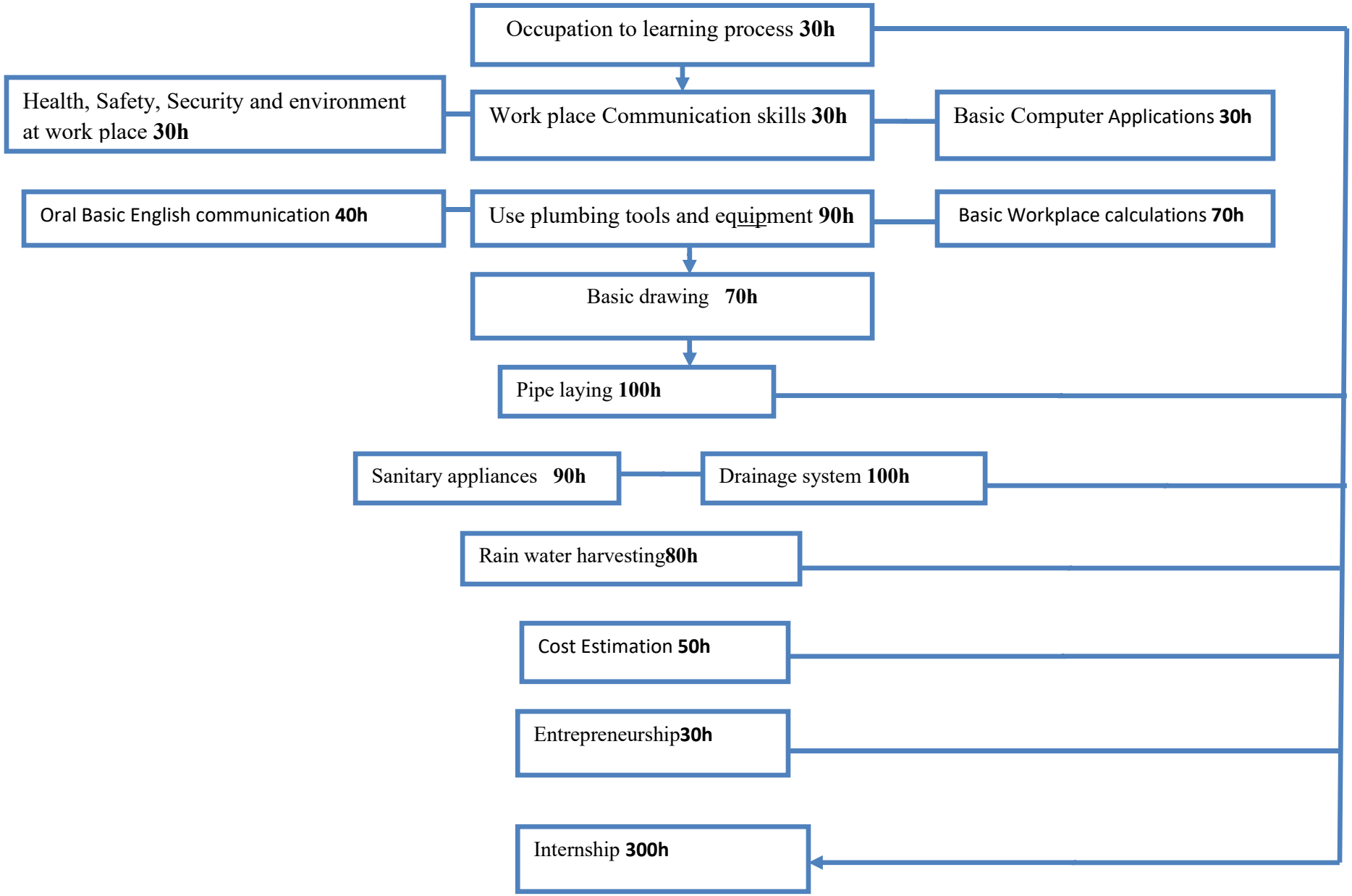
○: Functional link existence

FLOW CHART

The flowchart of sequencing for learning is a schematic representation of the order of acquisition of the competences. It provides an overall planning of the entire training program and shows the relationship between the modules. This type of planning is to ensure consistency and progression of learning.

For each module, the flowchart shows the prerequisite for the learning to take place, the sequence of modules' delivery indicating those which can be undertaken in parallel or in succession. The suggested sequence will have a decisive impact on all subsequent pedagogical choices.

The flowchart of the learning modules' sequence for the training program is presented on the following page


Occupation to learning process 30h
Health, Safety, Security and environment at work place 30h
Work place Communication skills 30h
Basic Computer Applications 30h
Oral Basic English communication 40h
Use plumbing tools and equipment 90h
Basic Workplace calculations 70h
Basic drawing 70h
Pipe laying 100h
Sanitary appliances 90h
Drainage system 100h
Rain water harvesting80h
Cost Estimation 50h
Entrepreneurship30h
Internship 300h

SECTION 4: ASSESSMENT PRINCIPLES

Competency-based training provides learners with the skills, knowledge and attitudes to demonstrate competency against standards and performance criteria in an applied context. The Rwanda national TVET system is competency-based, built on nationally recommended industry standards.

Competency-based assessment is the process of collecting evidence and making judgments about whether competency has been achieved. In this section you will find information that will help you design, conduct and validate competency-based assessments.

In order to demonstrate what a person can do in the workplace as a result of completing a program of training or based on workplace experience and learning, a candidate must prove that he/she is competent by providing the evidence needed either during formative assessment (a continuous assessment) or/and summative assessment (at the end of the module).

After Trainees have undergone competence based assessment (CBA), they are deemed either 'competent' or 'not yet competent'. If they are deemed not yet competent in any competence, they will be provided the chance to be reassessed till they are declared competent. Trainee will be declared competent after achieving all assessment indicators for any given competence

Therefore, there is a series of tools/methods suggested for collecting evidences:

i. **Portfolio:** A portfolio is a collection of student work representing student performance. It is a folder (or binder or even a digital collection) containing the student's work as well as the student's evaluation of the strengths and weaknesses of the work.

Portfolios reflect not only work produced (such as papers and assignments, direct demonstration, indirect demonstration, products, documents), but also it is a record of the activities undertaken over time as part of student learning. The portfolio is meant to show student growth, development, and achievements in the TVET system. It also shows that you have met specific learning goals and requirements. A portfolio is not a project; it is an ongoing process for the formative assessment. The portfolio output (formative assessment) will be considered only as enough for general modules/competences. Besides, it will serve as a verification tool for each candidate that he/she attended the whole training before he/she undergoes the summative assessment for specific modules.

ii. **Integrated situation:** is a scenario simulating a real workplace situation that puts the student in a likely problem situation in the workplace context. This is carried out at the end of each specific module/competence, in order to allow the student to mobilize all the knowledge, skills and attitudes acquired during the training, and at end of which he/she is recognized competent or not yet competent.

MODULES DESCRIPTION

The sequence of modules here is based on the above flowchart which rather considers the sequence of modules' delivery.

CCM001 OCUPATION AND LEARNING PROCESS		
Competence : Describe the occupation and training process		
RTQF LEVEL: 1&2	**CREDITS: 2**	**LEARNING HOURS : 20h**
SECTOR: Construction		**SUB-SECTOR: Plumbing**
ISSUE DATE: DECEMBER , 2013		**REVIEW DATE:**

PURPOSE STATEMENT

This core module describes the skills, knowledge and attitude to be acquired for the trainee's full immersion into the trade of plumbing. It is fundamental for a trainee to first understand the nature of the trade he/she is going to embrace through a constraint free decision. This module does not require specific prerequisite since it is a very first one from which one would decide whether he would take the next modules.

LEARNING UNITS AND PERFORMANCE CRITERIA

LEARMING UNITY	PERFOMANCE CRITERIA
1. Present plumbing trade.	1.1 Proper definition of plumbing trade. 1.2 Correct characteristics of plumbing trade 1.3 Proper importance of plumbing trade.
2. Understand rules and regulations of the trade.	2.1 Proper presentation of group members. 2.2 Adequate behaviors in the team work. 2.3 Precise Rules and requirements of the trade.
3. Learn about the plumbing trade	3.1 Proper understanding of the trade. 3.2 Accurate training of the trade. 3.3 Proper training organization.
4. Reflect upon facilitation techniques	4.1 Proper use of facilitation techniques 4.2 Appropriate assessment methods 4.3 Appropriate conclusion of the work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer

Learning Unit 1: Present plumbing trade **Learning hours: 4h**

Learning outcomes	Contents	Learning activities	Resources
1. Define plumbing trade	• Explanation on plumbing trade. • Application of plumbing skills. • Importance of plumbing trade	○ Group discussion on definition of plumbing. ○ Brainstorming application of plumbing skills.	- Reference document. - Sketch - Video aids - Pictures
2. Characterize plumbing trade.	• Hand skills • Easy to perform • Employment	○ Brainstorming on characteristics of plumbing trade. ○ Group discussion on employment of plumbing trade.	- Reference document. - Sketch - Video aids - Picture
3. Use of plumbing trade.	• Elevation of structures • Finishing works • Water supply	○ Brainstorming on use of plumbing trade. ○ Group discussion on use of plumbing trade	- Reference document. - Sketch - Video aids - Pictures

Learning Unit 2: Understand rules and regulations of the trade **learning hours: 8h**

Learning outcomes	Contents	Learning activities	Resources
2.1 Introduce each other in group work members.	• Presentation of group members. • Expectations about the training. • Categorize of group members.	○ Group discussion about expectations on the trade. ○ Brainstorming about categories of group members.	- Work place

2.2 Work as a team.	• Introduction to the team work. • Working as a team. • Provide confidence in the team work.	○ Group discussion about team work. ○ Brainstorming on working of the team.	- Work place - Reference documents - Video aids - Pictures
2.3 Set rules and Responsibilities.	• Rules of the work place. • Responsibilities of group member in work place. . • Respect rules and regulations of work place.	○ Group discussion about rules and regulations of the work place. ○ Brainstorming on responsibilities of each group member on work place	- Work place - Reference documents

Learning Unit 3: Learn about plumbing trade **learning hours: 8 h**

Learning outcomes	Contents	Learning activities	Resources
3.1 Understand the trade.	• Characteristics of the trade. • Working conditions. • Roles of the trade	○ Demonstration by video on the role of the trade. ○ Group discussion on working conditions. ○ Brain storming on plumbing trade	- Reference documents - Video aids
3.2 Acquire goals of the training.	• Introduction on goal of the training. • Content of the training program (modules) • Importance of the initial and continuous training.	○ Group discussion on goals of training. ○ Overview of the training ○ program	- Testimonies of people performing the trade. - Curriculum.
3.3 Understand the training organization.	• Introduction on training organization. • Presentation of the flowchart.	○ Demonstration of flowchart and workshops.	- Curriculum. - Workshops.

	• Presentation of the workshops.		- Reference documents.

Assessment guide lines

To pass this module, the student has to complete:

1. Self-assessment form
2. Tree drawing
3. List of 5 goals
4. Skills and qualities assessment
5. Steps to reach goals
6. Learning goals and steps
7. Business visit's form

Elements 1 to 6 are available in the Work Readiness Training Programme – Participant's Manual

Suggestion for the business visit's form:

1. What interested you during the visit?
2. What surprised you?
3. What did you like?
4. What are your expectations?
5. What is your opinion on:
   - The working conditions
   - The training duration
   - The economic opportunities motivation

CCM103- WORKPLACE COMMUNICATION SKILLS		
Competence : Communicate effectively in the workplace		
RTQF LEVEL: 1	**CREDITS: 3**	**LEARNING HOURS : 30**

SECTOR: All	SUB-SECTOR: All
ISSUE DATE: February 2013	REVIEW DATE:

PURPOSE STATEMENT

This module describes the skills and knowledge required to communicate and get along well with others, in a variety of settings and for a range of purposes. The module will allow the participant to speak and listen actively and appropriately, one-on-one and in groups, to cooperate and work effectively within a group, to lead a team, to provide good customer service and write simple reports.

LEARNING ASSUMED TO BE IN PLACE

Not applicable

LEARNING UNITS AND PERFORMANCE CRITETIA

Leaning units describe the essential outcome of a competence.

Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Elements of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1. Listen and speak effectively	1.1. Strategies for effective listening are applied. 1.2. Instructions are adequately interpreted and followed. 1.3. Clear and accurate information and instructions are provided to colleagues.
2. Cooperate and work as a team member	2.1 Team objectives are reached through effective cooperation. 2.2 Diversity of team members is respected. 2.3 Lead a team efficiently 2.4 Demonstrate problem solving and decision making skills

3. Apply customer care	1.1. Importance and principles of good customer service are understood. 1.2. Quality service is provided. 1.3. Clear verbal information is provided to customers face to face or on the telephone. 1.4. Conflicts with customers are handled politely and adequately.
4. Write and submit a report	4.1. A handover report containing any relevant information on complete and incomplete work is written 4.2. Reports are handed over to both colleague and supervisor.

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: listen and speak effectively **learning hours: 6**

Learning outcomes	Contents	Learning activities	Resources
1.1 Apply effective listen skills & strategies	• Effective listening skills & strategies • Assess one's listening skills • Model good listening skills	○ Role play ○ Observing role play ○ Feedback from observers ○ discussion	- Role play scenarios - List of effective listening skills & strategies - Effective Listening Observation Form
1.2 Give and receive instructions	• Importance of giving clear, concise instructions • Formulation of instructions • Strategies to ask questions for clarification	○ individual work ○ group discussion	
1.3 Identify non-verbal communication signs	• Importance of non-verbal communication • Impacts of non-verbal communication on	○ pair work ○ large group discussion	

and the impact on people's perceptions	how we give information and how we listen.		
1.4 Demonstrate effective speaking skills	• Effective speaking skills and strategies	○ small group work ○ practice presentations ○ large group discussion	- List of Effective Speaking Skills & Strategies - Speaking Scenarios for group work - Effective Speaking Observation Form

Learning unit 2: cooperate and work as a team member

Learning outcomes	Contents	Learning activities	Resources
2.1 Identify the different personalities	• Different personalities and approaches that individuals bring to a group	○ Self-assessment ○ large group activity (inner/outer circles) ○ Discussion	- Working in Groups Self Assessment - Cooperating with Others Roles - Elements of an Effective & Cooperative Team Member
2.2 Handle different personalities in a group	• Strategies on how to handle different personalities in a group		
2.3 Cooperate with others to reach the same objective	• Characteristics of an effective and cooperative team member	○ Large group activity ○ Large group discussion ○ Individual reflection/journal writing ○ Pair work	
2.4 Lead a team efficiently	• Qualities of an effective leader • Different leadership styles • Appropriate leadership style in a given context • Strategies to lead a team efficiently	○ large group discussion ○ small group work ○ role plays ○ small group activity	- Role play scenarios
2.5 Demonstrate problem solving and decision making skills	• challenges and dynamics amongst people during the problem solving process • steps of problem solving to work and community related problems • Communication as a tool for problem solving	○ Large group activity ○ pair sharing ○ small group work ○ large group discussion ○ Task leadership competition	- Scenarios for problem solving activity

Learning unit 3: apply customer care **learning hours: 10**

Learning outcomes	Contents	Learning activities	Resources
3.1 Understand the importance of good customer care	• Definition of customer service • Levels of customer service • Customer care principles • Importance of customer care	○ Experience sharing ○ Brainstorming Presentation by trainer	
3.2 Provide exceptional quality service	• Basic customer needs • Service to meet basic customer needs • Definition of customer's perception • Meeting and exceeding expectations • Getting feedback on the provided service	○ individual reflection ○ large group discussion ○ role play	
3.3 Communicate effectively with customers by telephone and face to face	• Telephone tips • Recording a telephone message	○ large group discussion ○ skit ○ pair role plays	- Role Play scenarios for Communicating with Customers
3.4 Handle conflict with difficult customers	• Definition of conflict, conflict resolution/management • Steps of conflict management with difficult customers	○ individual reflection ○ Brainstorming ○ large group discussion ○ role play	

Learning unit 4: write and submit a report **learning hours: 6**

Learning outcomes	Contents	Learning activities	Resources
4.1 Identify types of reports required	• Types of report used in the workplace	○ Documentation research ○ Brainstorming ○ Group discussion ○ Presentation	- Reference books - Different types of reports
4.2 Produce the relevant report	• Different sections of a report • Report writing tips	○ Observation ○ Presentation ○ Individual practice	- Different types of reports
4.3 Hand the report to the appropriate persons	• Transmission route • Transmission slip	○ Observation ○ Presentation ○ Individual practice	- Templates of routing slips

Assessment guide lines
To pass this module, the student has to:

Complete the portfolio, which includes:

Self-assessment form

Effective Listening Observation Form

Effective Speaking Observation Form

Session 1 Writing Space: listening and speaking strengths, weaknesses, ways to improve

Working in Groups Self Assessment

Session 2 Writing Space: ways to improve cooperating and working in a group

DEMONSTRATE COMMUNICATION SKILLS IN A SITUATION related to his/her future occupation or trade, AND OBTAIN a score equal or superior to the passing mark defined (recommended passing mark for this module: 70% or 15/20)

SUGGESTED SITUATION (HOSPITALITY)

You are a chef de cuisine at Beausejour hotel, and you received an order of spaghetti a la Napolitaine for 4 people from customers who are in a hurry. You oversee three people: the person in charge of the mise en place, the the cook and the dish washer.

As the chef, you give instructions to your team to prepare the food and supervise the work. The order should be ready within 30min.

Criteria	**Indicators**
Relevance	Time is respected The required covers are communicated The required order is communicated (type of meals/order are specified)

Quality of process	The information is received and well understood by the candidate Responsibilities are assigned The clarifications are given according to staff' learning style (reading, speaking, listening, doing) The follow up is well done (e.g. identification of the problem, activity tracking) The problem is solved
Quality of information	The information is given precisely The information is short and clear The technical terms are used accordingly The information is given directly The information is given timely/immediately

CCM104-COMPUTER APPLICATIONS		
Competence: Use basic computer applications		
RTQF LEVEL: 1	**CREDITS: 3**	**LEARNING HOURS : 30**
SECTOR: All	**SUB-SECTOR: All**	
ISSUE DATE: March 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This module describes the skills and knowledge required to operate a computer, to use word processing applications in the production of workplace documents, to create and use spreadsheets and charts through the use of spreadsheet software and to send, receive and manage electronic mail (email), as well as to collaborate online using chat rooms and instant messaging.

LEARNING ASSUMED TO BE IN PLACE

Not applicable

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.

Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning units By the end of the module, the trainee will be able to :	**Performance criteria**
1. Apply computer fundamentals	1.1. Adequate identification of Various connectors and ports 1.2. Proper use of different I/O devices 1.3. Proper use of Desktop's elements 1.4. Proper scanning of Viruses in the computer and Different Storages Devices
2. Use a current word processing package	2.1. Adequate text formatting 2.2. Proper table creation and editing 2.3. Proper text editing 2.4. Proper printing 2.5. Correct saving 2.6. Proper insertion of header, footer and footnotes

3. Use current spreadsheet package	3.1. Adequate use of basic excel tasks 3.2. Proper management of sheets in excel workbook 3.3. Adequate Formatting of cells and their contents 3.4. Correct use of functions and performance of mathematical operations 3.5. Proper Excel worksheet Printing
4. Use Internet/Intranet (Outlook)	4.1. Correct Definition and explanation a website 4.2. Adequate Interaction through instant messaging (Chatting) 4.3. Adequate use of search Engines (example Google) 4.4. Adequate Browsing of internet using the hyperlinks 4.5. Correct downloading and uploading of files using internet

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Apply computer fundamentals **learning hours: 10**

Learning outcomes	Contents	Learning activities	Resources
1.1. Apply Computer basics	• Computer Definition • Types of computers ✓ Laptops ✓ Desktops	○ Open a computer case and Observe different types of memory ○ Group Discussion on each type of memory	- Computer Lab - Computer Tool Kit - CD, DVDs, Diskettes - White Board

	✓ Palm tops ✓ PDA (Personal Digital Assistance) • Computer Hardware Memory • Definition • Role of Memory • Features ✓ Capacity ✓ Speed ✓ Non Volatility • Types of Memory ✓ ROM (Read only memory) ✓ RAM (Random access memory) ✓ External/Internal memories (Hard disk, diskette, CD, Flash disk, etc.)		- Markers
1.2. Identify Various connectors and ports	• Connectors and ports ✓ Definition • I/O (Input and Output) Ports and connectors ✓ Serial ports ✓ Parallel ports ✓ USB ✓ Keyboard, Mouse connectors ✓ VGA Connectors	○ Observe different connectors as well as input and output ports ○ Exercises on ports identifications	- Computer Lab - Computer Tool Kit - CD, DVDs, Diskettes - Different types of Cables, Different types Connectors - White Board - Markers

1.3. Use different I/O devices	• Peripherals ✓ Definition ✓ Categories I/O devices ✓ Input devices (mouse, Keyboard, scanner, CD/DVD-ROM and diskettes drivers, etc.) ✓ Output devices (Monitor, Diskette, CD/DVD-ROM Writer, Printer, etc.) ✓ Types of keyboards ➢ AZERTY ➢ QWERTY	○ Practical exercises on connecting the mouse, keyboard. Monitor to the CPU (Central processing unit)	- Computer Lab - Computer Tool Kit - CD, DVDs, Diskettes - Printer - Scanner - White Board
1.4. Use Desktop's elements	• Windows and its components: ✓ Desktop ✓ Task bar ✓ Start menu ✓ Minimize, Maximize, Close buttons ✓ My Computer	○ Brainstorming on Desktop's elements ○ -Use the desktop, the tasks bar and the start menu	- Computer Lab - Projector
1.5. Scan Viruses in the computer and Different Storages Devices (Flash disk, External Hard disk)	• Antivirus definition • Importance of antivirus • Functionality • Different Types of antivirus ✓ Norton ✓ Kaspersky ✓ Symantec • Storages to be scanned ✓ Flash disk ✓ External hard disk ✓ Memory card	○ Brainstorming the use of antivirus ○ Practical exercises on Scanning viruses ○ Compile activities reports	- Computer Lab - Flash disks - External Hard disk - CDs, DVDs - Antivirus - White Board - Markers

	✓ Computer hard disk		

Learning unit 2: Use a word processing package **learning hours: 5**

Learning outcomes	Contents	Learning activities	Resources
2.1 Format a text	• Style,Font,Size,Colour • Paragraph • Column • Tabulation • Paragraph spacing • Inserting symbols:Special characters,bullet and numbering • Borders and shading, header and footer.	○ Reproduce document already formatted ○ Various exercises to familiarize with formatting a text.	- Computer Lab With Current Word processing Package installed in each computer - Projector - White Board - Markers
2.2 Create and edit a table	• Inserting a table • Inserting a column • Inserting a row • Deleting table • Deleting row • Deleting column • Merging cells • Splitting cells • Drawing a table • Table auto format • Formula	○ Practical exercises on creating, editing and handling a table	- Computer Lab With Current Word processing Package installed in each computer - Projector - White Board
2.3 Edit document (Text)	• Search/Find-Replace • Deleting a range of text • The undo command	○ Brainstorming Editing text ○ Perform practical exercises on the various tips (options)	- Computer Lab With Current Word processing Package installed in each computer

	• Spelling and grammar • Synonyms	○ compile activities reports	- Projector - White Board - Markers
2.4 Print document	• Page setup • Print preview • Print dialog box • Selecting printer name • Printer options • Printing one or more copies • Printing in black/white or color • Print page ranges	○ Exercises on printing one or more copies of a colored document, in black and white ○ printing in landscape, portrait	- Computer Lab With Current Word processing Package installed in each computer - Printer - Projector
2.5 Save documents	• File management ✓ Creation of files ✓ Creation of Folders ✓ File Naming ✓ File Formats	○ Practical Exercises on creation of files, folders and file Saving ○ Compile activities reports	- Computer Lab With Current Word processing Package installed in each computer - Projector
2.6 Insert Header, Footer and footnotes	• Footnotes • Header and Footer ✓ Automatic page numbering ✓ Total number of pages ✓ Automatic date ✓ Automatic authors name	○ Exercises on footnotes ○ Create a document containing several pages ○ With elements such as the page number, date automation. ○ practical exercises.	- Computer Lab With Current Word processing Package installed in each computer - Projector

Learning unit 3: use spreadsheet package **learning hours: 9**

Learning outcomes	Contents	Learning activities	Resources
3.1. Use Some basic	• Basic excel tasks	○ Practical exercises on the use of	- Computer Lab With Current

excel tasks	✓ Open ✓ Close ✓ New document ✓ Undo ✓ Save, save as…. ✓ Sheet ✓ Selecting a cell ✓ Validating a cell ✓ Deleting cell contents ✓ Modifying cell contents ✓ Selecting group of cells ✓ Increase and reduce the cell size ✓ Delete row and column ✓ Duplicate cell	basic excel tasks o Compile activities reports	spreadsheet package installed in each computer - Projector
3.2. Manage Sheets in excel workbook	• Selecting a sheet • Renaming a sheet • Insert new sheets • Moving a sheet in a workbook • Deleting a sheet	o Practical exercises o On Managing sheets in excel workbook	- Computer Lab With Current spreadsheet package installed in each computer - Projector
3.3. Format cells and their contents	• Formatting text and cells ✓ Choosing font, size, colour ✓ Adjusting Cow height ✓ Alignment of cell ✓ Number format ✓ Inserting rows ✓ Merging cells ✓ Creating borders ✓ Patterns	o Practical exercises in groups and individual homework on formatting cells o Compile activities reports	- Computer Lab With Current spreadsheet package installed in each computer - Projector

3.4. Use some functions and perform mathematical operations	• Numbers and Mathematical calculations ✓ Addition ✓ Multiplication ✓ Division ✓ Subtraction ✓ AutoSum ✓ Function ➢ Average ➢ Minimum ➢ Maximum	○ Practical exercises in groups and individual homework on formatting cells ○ Compile activities reports	- Computer Lab With Current spreadsheet package installed in each computer - Projector
3.5. Print an excel worksheet	• Page setup • Print preview • Print dialogue box • Print options • Print one or more copies • Print in black/white or color • Print page ranges • Printing a selection	○ Print one or more copies of a worksheet ○ Print colour or white and black worksheet ○ practical exercises (individual and in group) ○ print horizontally/vertically	- Computer Lab With Current spreadsheet package installed in each computer - Projector - Printer

Learning unit 4: use internet/intranet (Outlook) **learning hours: 6**

Learning outcomes	Contents	Learning activities	Resources
4.1. Define and explain a website	• Introduction ✓ World wide web ✓ Web page ✓ Web site	○ Visit web sites and browse different pages. ○ Group discussion based on observation	- Internet Connection - Computer Lab - projector

4.2. Interact through instant messaging (Chatting)	• Definition • Steps to create a chat account • Chatting options ✓ Instant messaging with or no web cam ✓ Calling ✓ Sending files	○ Group Discussion on Interacting through instant messaging ○ Exercises on chatting in groups ○ Compile activities reports	- Internet Connection - Computer Lab - projector
4.3. Use search Engines (example Google)	• Search engines ✓ Definition ✓ Role ✓ Some Types of search engine ➢ www.google.com ➢ www.yahoo.com	○ Perform practical exercises on the use of search engines	- Internet Connection - Computer Lab - projector
4.4. Browse the internet using the hyperlinks	• Web Browser ✓ Browser buttons ✓ Address bar ✓ Status bar ✓ Scroll bar ✓ Home page ✓ Front/Back arrows ✓ Refresh button ✓ Start page	○ Open a web using the address bar ○ Browse different web pages ○ Practical exercises on browsing internet using hyperlink	- Internet Connection - Computer Lab - projector
4.5. Download and Upload files using internet	• Downloading • File attachment	○ Practical exercises on downloading and uploading files using internet	- Internet Connection - Computer Lab - projector

Assessment guide lines

Portfolio for formative assessment

Elements of competence	Assessment indicator	Checklist	Complete		Observation
			Yes	No	
Apply computer fundamentals	Various connectors and ports are identified	- Power ports and connectors			
		- Serial ports and connectors			
		- Parallel ports and connectors			
		- Audiovisual ports and connectors			
		- VGA ports and connectors			
		- USB ports and connectors			
	Different I/O devices are used	- Mouse			
		- Keyboard			
		- Scanner			
		- CD/DVD-ROM drivers			
		- Monitor			
		- CD/DVD-ROM writer			
		- Printer			
	Desktop's elements are used	- My Computer			
		- Start menu			
		- Task bar			
		- Desktop			
		- Minimize button			
		- Maxmize button			
		- Close button			
	Viruses in the computer and other storage media are scanned	- Hard Disc			
		- Flash Disc/ External Hard Disc			
Use current word processing package	Text formatting is done	New document creation			
		Open document			

		- Close document			
		- Style			
		- Font			
		- Size			
		- Colour			
		- Paragraph			
		- Column			
		- Tabulation			
		- Paragraph spacing			
		- Inserting Special characters			
		- Inserting bullets			
		- Numbering			
		- Borders and shading			
		- Header and footer			
	Table creation and editing are done	- Inserting a table			
		- Inserting a column			
		- Inserting a row			
		- Deleting table			
		- Deleting row			
		- Deleting column			
		- Merging cells			
		- Splitting cells			
		- Drawing a table			
		- Table auto format			
		- Formula usage			
	Text editing is done	- Search/Find-Replace application			
		- Deleting a range of text			
		- The undo and redo commands application			
		- Spelling and grammar application			
	Printing is done	- Page setup usage			

		- Print preview			
		- Print dialog box			
		- Selecting printer name			
		- Printer options			
		- Printing one or more copies			
		- Printing in black/white or color			
		- Print page ranges			
		- Printing a selection			
	Saving is done	- Creation of files			
		- Creation of Folders			
		- File Naming			
		- File Formats			
	Insertion of header, footer and footnotes is done	- Footnotes			
		- Header and Footer			
		- Automatic page numbering			
		- Total number of pages			
		- Automatic date			
		- Automatic authors name			
Use current spreadsheet package	Basic excel tasks are used	- Sheet			
		- Selecting a cell			
		- Validating a cell			
		- Deleting cell contents			
		- Modifying cell contents			
		- Selecting group of cells			
		- Increase and reduce the cell size			
		- Delete row and column			
		- Duplicate cell			
	Sheets management in excel workbook is done	- Selecting a sheet			
		- Renaming a sheet			
		- Insert new sheets			
		- Moving a sheet in a workbook			
		- Deleting a sheet			
	Formatting of cells and their contents is done	- Adjusting Cow height			
		- Alignment of cell			
		- Number format			

		- Inserting rows			
		- Merging cells			
		- Creating borders			
		- Patterns usage			
	Mathematical operations are performed	- Addition			
		- Multiplication			
		- Division			
		- Subtraction			
		- AutoSum			
		- Average			
		- Minimum			
		- Maximum			
Use Internet	Website is defined and explained	- World wide web			
		- Web page			
		- Web site			
	Interaction through instant messaging (Chatting) is done	- Steps to create a chat account			
		- Instant messaging with or no web cam			
		- Calling			
		- Sending files			
	Search Engines (example Google) are used	- Role			
		- www.google.com usage			
		- www.yahoo.com usage			
	Browsing internet using hyperlinks is done	- Browser buttons - Address bar			
		- Status bar			
		- Scroll bar			
		- Home page			
		- Front/Back arrows			
		- Refresh button			
		- Start page			
	Downloading and uploading files using internet are done	- Downloading			
		- File attachment			

CCM105- ORAL BASIC ENGLISH COMMUNICATION Competence: Communicate orally in basic English		
RTQF LEVEL: 1	**CREDITS: 3**	**LEARNING HOURS : 30**
SECTOR: All	**SUB-SECTOR: All**	
ISSUE DATE:	**REVIEW DATE:**	

PURPOSE STATEMENT

This module describes the skills and knowledge required to use English language in predictable routine communication in automotive workplaces. It covers the speaking and listening, reading and writing skills required to conduct some routine and non-routine tasks and provide accurate information and instructions; in order to fulfill common customer requests relevant to workplace in appropriate manner.

LEARNING ASSUMED TO BE IN PLACE

Not applicable

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.

Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Elements of competence By the end of the module, the trainee will be able to :	Performance criteria
1. Demonstrate abilities in oral communication	1.1 Clear pronunciation of words while communicating with customers and colleagues and authorities 1.2 Provision of relevant responses/feedback to the requests 1.3 Fluent expressions while speaking to customers or colleagues and authorities 1.4 Proper formulation of coherent ideas while talking 1.5 Appropriate utilization of relevant words and expressions while making argumentation 1.6 Use of appropriate words/expressions while giving and/or receiving instructions
2. Demonstrate abilities in written communication	2.1 Appropriate utilization of relevant words while elaborating and filling in of some administrative documents while using appropriately punctuation marks and spelling.(memos, handover reports, requisition forms, inventory forms, receipts and minutes) 2.2 Appropriate utilization of relevant words while elaborating specifications of some technical documents 2.3 Appropriate utilization of relevant words while preparing some business documents such as proposals, technical reports and submissions
3. Select and utilize a range of vocabulary related to professional context	3.1 Adequate identification of need and assistance from others with appropriate language skills in order to better communicate. 3.2 Relevant provision of information regarding products and services of his/her organization to customers 3.3 Seek of relevant clarification from customers and colleagues when required, using simple terms.

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Demonstrate abilities in oral communication **learning hours: 10**

Learning outcomes	Content	Learning activities	Resources
1.1. Speak correctly while conveying ideas	• Phonetics and phonology	○ Story telling ○ Dialogues ○ Role Play ○ Demonstrations ○ Writing Practice	- Short stories - Videos - Recordings - Role Play Scenarios - Reference books
1.2. Provide responses to client requests or inquiries	• Use of question =words and expressing different circumstances (cause, result, opposition, manner and goal) related to the occupation	○ Role Play ○ Dialogues ○ Demonstration ○ Practice Exercises	- Reference books - Videos - Role play scenarios
1.3. Speak fluently	• Tips for good presentation • Debate techniques	○ Dialogues ○ Role Play ○ Demonstrations	- Videos - Recordings - Role Play Scenarios - Reference books
1.4. Make a successful argumentation	• Techniques of oral communication • Linking or transition words	○ Brainstorming ○ Discussion ○ Demonstrations ○ Practice Exercises on argumentation ○ Role play	- Videos - Recordings - Role Play Scenarios - Reference books

Learning unit 2: demonstrate ability in written communication **learning hours: 10**

Learning outcomes	Content	Learning activities	Resources
2.1 Use writing techniques	• Types of texts ✓ Narrative ✓ Explicative ✓ Argumentative ✓ Descriptive • Punctuations and Spelling (dictation)	○ Writing compositions while respecting punctuation and spelling	- Reference books - Recordings

2.2 Use appropriate words in writing administrative and business documents	• English words used in business and administration documents ✓ Memos ✓ Handover report ✓ Letters ✓ Inventory and ✓ Minutes	○ Drafting business and administration documents ○ Filling in various forms related to the occupation	- Recordings - Different forms related to the occupation - Reference books

Learning unit 3: Select and utilize a range of vocabulary related to professional context learning hours: 10

Learning outcomes	Content	Learning activities	Resources
1.1. Use appropriate words while seeking for assistance	• Polite requests' expressions using modal auxiliaries • Other appropriate expressions while seeking for assistance • Do's and Don'ts expressions/words	○ Practical exercises on debating and group discussion ○ Role play ○ Dialogue	- Reference books - Recordings - Role play scenarios - Dialogues
1.2. Provide information regarding the services or products	• Specific terms regarding products and services provided by the enterprise • Tips on providing information	○ Demonstration ○ Practical exercises ○ Role play	- Recordings - Videos - Reference books

Assessment Guidelines

Formative assessment

Elements of competence	Assessment indicator	checklist	Score		Observation
			yes	No	
1. Initiate English communication	1.The simple and commonly- used	- Excuse me			
		- Forgive me			
		- Good morning			
		- Good afternoon			

	courtesy English expressions are used	- Good evening			
		- Hello			
		- How are you?			
		- I am fine, thank you			
		- I am sorry			
		- I am grateful			
		- No			
		- Please			
		- Thank you			
		- You're welcome			
		- Yes			
	2.Self-introduction with colleagues is done	- Offer a handshake			
		- Repeat the name of the person you meet			
		- Say your full name			
		- Give a one-sentence description of what you do			
		- Offer a thankful			
	3.Inquiries are made	- Offer an excuse			
		- Ask for a talk			
		- Say your full name			
		- Give a one-sentence description of what you do			
		- Ask for information			
		- Offer a thankful			
2. Maintain the flow of communication in English	1.Basic vocabularies are used	- Regular verbs			
		- Irregular verbs			
		- Articles			
		- Nouns			
		- Pronouns			
		- Adjective			
	2.Simple different types of sentences are	- Subject			
		- Verb			
		- Object			

	phrased	- Affirmative sentence			
		- Interrogative sentence			
		- Exclamatory sentence			
		- Negative sentence			
		- Coordinating conjunctions			
		- Subordinating conjunctions			
3. Communicate in English to support workplace activities	1.The vocabularies related to the numbers are used	- Ordinal numbers			
		- Cardinal numbers			
	2.The words related to the time are used	- Vocabulary related to the use of dates			
		- Vocabulary related to times of the day			
	3.English conventions to support communication are used	- Common body languages			
		- Common gestures			
		- Signs of expressing sincerity			
		- Signs of expressing sympathy			

CCM106- BASIC WORKPLACE CALCULATIONS		
Competence: Perform Basic Workplace Calculations		
RTQF LEVEL: 1	**CREDITS: 7**	**LEARNING HOURS : 70**
SECTOR: Technical Servicing	**SUB-SECTOR: Automotive**	
ISSUE DATE: March 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This general module describes the performance outcomes, skills, knowledge and attitude required to perform the basic workplace calculations such as the four fundamental operations applied on whole numbers and fractions and decimals as well. It is also very

core to every mechanic to be able to convert metric system into non-metric and vice versa. Drawing of different regular and irregular geometric figures is a must and calculates their dimensions are also of a paramount importance.

LEARNING ASSUMED TO BE IN PLACE

Not applicable

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit

Learning units By the end of the module, the trainee will be able to :	**Performance criteria**
1. Apply basic arithmetic operations	1.1. Proper application of four fundamental operations 1.2. Proper application of fractions and decimals 1.3. Proper determination of percentages and ratios
2. Apply metric system	2.1. Proper identification of measurements systems 2.2. Proper use of metric and non-metric measurements units 2.3. Correct conversion of units of measurements
3. Perform basic geometric forms	3.1. Proper drawing of regular and irregular geometrical forms 3.2. Adequate calculation of dimensions of regular geometrical forms 3.3. Adequate calculation of dimensions of irregular geometrical forms

Learning unit 1: apply basic arithmetic operations **learning hours: 20**

Learning outcomes	Contents	Learning activities	Resources
1.1. Apply fundamental operations	• Fundamental operations: ✓ Addition, ✓ Subtraction, ✓ Multiplication and ✓ Division	○ Group discussion on 4 fundamentals operations ○ Practical exercises on adding, subtracting, multiplying, and dividing	- Reference books - Pens
1.2. Apply fractions and decimals **1.3. Determine percentages and ratios**	• Fractions and decimals ✓ Addition of fractions ✓ Subtraction of fractions ✓ Multiplication of fractions ✓ Division of fractions ✓ Addition of decimals ✓ Subtraction of decimals ✓ Multiplication of decimals ✓ Division of decimals • Conversion of decimals to fractions and vice-versa • Simplification of fractions • Expressing percentages and ratios	○ Brainstorming on fractions and decimals ○ Group discussion on fractions and decimals ○ Practical exercises fractions and decimals, percentages and ratios	- Reference books - Pens

Learning unit 2: apply metric system **learning hours: 30**

Learning outcomes	Content	Learning activities	Resources
2.1. Use measurements systems	• Metric and non-metric measurements units ✓ Length ✓ Area ✓ Volume ✓ Mass ✓ Time	○ Brainstorming on Metric and non-metric measurement units ○ Group discussion on Metric and non-metric measurement unit ○ Practical exercises on Metric and non-metric measurement units	- Books - Handout - Calculator - Pens

	• Application of metric and non- metric measurement units.		
2.2. Convert units of measurements	• Relationship between metric and non-metric measurement units	○ Brainstorming on Relationship between metric and non-metric measurement units ○ Group discussion on Relationship between metric and non-metric measurement units ○ Practical exercises on Relationship between metric and non-metric measurement units	

Learning unit 3: perform basic geometric forms **learning hours: 20**

Learning outcomes	Contents	Learning activities	Resources
3.1. Draw regular and irregular geometrical forms	• Drawing instruments • Regular geometrical forms ✓ Square ✓ Rectangle ✓ Triangle ✓ Other polygons ✓ Circle ✓ Cone • Irregular geometrical forms ✓ Irregular polygons	○ Brainstorming on regular and irregular geometrical forms ○ Group discussion on regular and irregular geometrical forms ○ Practical exercises on drawing regular and irregular geometrical forms	- Books - Handout - Drawing set
3.2. Calculate dimensions of regular geometrical forms	• Basic formula for determining different dimensions of regular geometrical forms	○ Brainstorming in determining different dimensions of regular geometrical forms ○ Group discussion on determining different dimensions of regular geometrical forms ○ Practical exercises on	- Books - Handout - Drawing set - Calculator

		determining different dimensions of regular geometrical forms	
3.3. Calculate dimensions of irregular geometrical forms	• Basic formula for determining different dimensions of irregular geometrical forms	○ Brainstorming in determining different dimensions of irregular geometrical forms ○ Group discussion on determining different dimensions of irregular geometrical forms ○ Practical exercises on determining different dimensions of irregular geometrical forms	- Books - Handout - Drawing set - Calculator

Assessment Guidelines

Portfolio for formative assessment

Elements of competence	Assessment indicator	Checklist	Complete		Observation
			Yes	No	
Apply basic arithmetic operations	Four fundamental are applied	- Addition			
		- Subtraction			
		- Multiplication			
		- Division			
	Fractions and decimals are applied	- Addition of fractions			
		- Subtraction of fractions			
		- Multiplication of fractions			
		- Division of fractions			
		- Addition of decimals			

		- Subtraction of decimals			
		- Multiplication of decimals			
		- Division of decimals			
		- Simplification of fractions			
	Percentages and ratios are determined	- Percentages			
		- Ratios			
Apply metric system	Metric and non-metric measurements units are applied	- Length			
		- Area			
		- Volume			
		- Time			
		- Mass			
	Conversion of units of measurements is done	- Length			
		- Area			
		- Volume			
		- Time			
		- Mass			
Perform basic geometric forms	Drawing of regular and irregular geometrical forms are performed	- Square			
		- Rectangle			
		- Triangle			
		- Parallelogram			
		- Trapezium			
		- Rhombus			
		- Other Polygons			
		- Circle			

		- Cone			
		- Irregular polygons			
	Dimensions of regular geometrical forms are calculated	- Perimeter			
		- Area			
		- Volume			
	Dimensions of irregular geometrical forms are determined	- Perimeter			
		- Area			
		- Volume			

CCM108- COST ESTIMATION		
Competence: Estimate cost		
RTQF LEVEL: 1	**CREDITS: 5**	**LEARNING HOURS : 50**
SECTOR: All	**SUB-SECTOR: All**	
ISSUE DATE: March 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This module describes the skills and knowledge required to prepare a small budget. They can keep basic business financial records.

LEARNING ASSUMED TO BE IN PLACE

Not applicable

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.

Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Elements of competence By the end of the module, the trainee will be able to :	Performance criteria
1. Examine work	1.1. Proper determination of the work extent 1.2. Proper scrutiny of complexity of the work 1.3. Proper identification of the location where the work will be performed 1.4. Accurate determination of the work duration
2. Determine required resources	2.1. Proper identification of materials needed 2.2. Proper determination of quantities in terms of size and shape 2.3. Proper identification of quality of materials needed 2.4. Proper determination of human resource required
3. Calculate the cost estimation	3.1. Proper survey on actual prices of materials and human resources 3.2. Accurate determination of unit and total prices of each item 3.3. Precise calculation of the labor cost considering taxes, transport, equipment, benefit and other charges 3.4. Neat filling in the bill of quantities of layout 3.5. Accurate preparation of invoice

Learning unit 1: Examine the work **learning hours: 10**

Learning outcomes	Contents	Learning activities	Resources
1.1 Determine the work extent	• Determination of dimension: ✓ Length ✓ Width ✓ Thickness ✓ Accuracy ✓ Clearness	○ Brainstorming on dimension determination ○ Group discussion on analysis of the work ○ Physical demonstration of work analysis	- Books - Handout - Measuring tools - Calculator - Note book - Writing device

	✓ Completeness		
1.2 Scrutinize the complexity of the work	• Analysis of complexity of the work: ✓ Shape ✓ Accessories	○ Brainstorming on accurate work done ○ Group discussion on analysis of the work ○ Physical demonstration of work analysis	- Books - Handout - Measuring tools - Calculator - Note book - Writing device
1.3 Localize the working place	• Working location ✓ Indoor location ✓ Outdoor location	○ Brainstorming on factors to locate the working place ○ Group discussion on factors to locate the working place	- Handout - Places - Note book - Writing device
1.4 Determine the work duration	• Steps of work duration determination ✓ Time of each task ✓ Determination of concurrent tasks ✓ Total time	○ Brainstorming on time allocation of different tasks ○ Group discussion on time allocation of different tasks ○ Practical exercises on time allocation of different tasks	- Scenarios - Calculator - Note book - Writing device

Learning unit 2: Determine required resources **learning hours: 10**

Learning outcomes	Contents	Learning activities	Resources
2.1. Quantify materials	• Identification of materials ✓ Type of materials • Quantities of materials in terms of size and shape; ✓ Measurements ✓ Profiles	○ Brainstorming on materials quantities ○ Group discussion on bills of quantities	- Calculator - Note book - Writing device - Performa invoice
2.2. Identify the quality of materials	• Quality of material needed: ✓ Specification of material ✓ Description of material	○ Brainstorming on condition of the quality of materials ○ Group discussion on condition of the quality of materials ○ Practices of identification of materials	- Books - Handout - Measuring tools - Calculator - Note book - Writing device

2.3. Determine human resources	• Factors for human resource determination: ✓ Variety of tasks ✓ Extent of work ✓ Duration of work	○ Brainstorming on factors to determine human resource required ○ Group discussion on factors to determine human resource required ○ Practical exercises	- Calculator - Handout - Places - Note book - Writing device

Learning unit 3: calculate the cost estimation **learning hours: 30**

Learning outcomes	Contents	Learning activities	Resources
3.1. Actualize the prices	• Materials survey prices ✓ Window shopping ✓ Proforma invoice	○ Brainstorming on prices ○ Group discussion on factors to fix the cost. ○ Discussion on surveying the prices	- Books - Handout - Places - Note book - Writing device
3.2. Determine the units and total costs of materials	• Determination of units and total prices of each item: ✓ Cost per unit measures ✓ Total cost	○ Brainstorming in determining the units and total costs ○ Group discussion cost unit and total cost determination	- Calculator - Note book - Writing device - Pro forma invoice
3.3. Perform calculation of charges and benefits **3.4. Fill in bill of Quantities**	• Calculation of charges and benefits: ✓ The Labor Cost and Taxes ✓ Transport and Equipment, ✓ Transportation of materials ✓ Benefits and other Charges • Calculation of grand total cost • Layout for bill of quantities	○ Brainstorming on calculating the charges benefits and grand total ○ Group discussion on bills of quantities ○ Practices on calculations of charges and grand total.	- Calculator - Note book - Writing device - Pro forma invoice
3.5. Prepare invoice	• Types of invoice ✓ Performa and Service • Invoice elements ✓ Invoice number ✓ Item description ✓ Service description	○ Brainstorming on cost estimation ○ Demonstration of invoice preparation ○ Practical exercises on invoice preparation	- Books - Internet - Bills books - Invoice samples

	✓ Quantities and Unit prices ✓ Total prices		

Assessment Guidelines

Formative assessment

Elements of competence	Assessment indicator	Checklist	Complete		Observation
			Yes	No	
Examine work	Determination of the work extent is done	- Complexity level of the component shape			
		- Time for the work			
	Working place is identified	- Indoor location			
		- Outdoor location			
	Work duration is determined	- Time of each task			
		- Determination of concurrent tasks			
Determine required resources	Materials are quantified	- Type of materials			
		- size and shape			
	Quality of materials is identified	- Specification of material			
		- Prices			
	Human resources are determined	- Availability of labor			
		- Availability of funds			
Calculate the cost estimation	The prices are actualised	- Market prices			
		- Proforma invoice			
	Bill of quantities are calculated	- Labor Cost			
		- Taxes			
		- Transport			
		- Equipment			

		- Benefits			
		- Miscellaneous Charges			
	Invoice is prepared	- Invoice number			
		- Item description			
		- Service description			
		- Quantities			
		- Unit prices			
		- Total prices			

CP1201: PLUMBING TOOLS AND EQUIPMENTS		
Competence :Use plumbing tools and equipment		
TQF LEVEL: 1 & 2	**CREDITS: 8**	**LEARNING HOURS : 80 hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: December 2013	**REVIEW DATE:**	

PURPOSE STATEMENT
This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to use and maintain tool, materials and equipment for plumbing works at the construction site in respect to the standards.

PRERQUISITE MODULES
CP12201 Introduction to plumbing trade
CP1 214 Safety and health
CP1219 computer literacy
CP1220 communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to:	**Performance criteria**
1. **Use tools**	1.1 Proper handling of tools 1.2 Appropriate selection of tools in respect to the task requirements 1.3 Correct use of tools
2. Use Equipment	2.1 Proper handling of Equipment 2.2 Appropriate selection of equipment in respect to the task requirements 2.3 Correct use of Equipment
3. Check conditions of tools and equipment	3.1 Appropriate storage of Tools and Equipment 3.2 Appropriate safety requirements of tools and equipment before, during and after use 3.3 Proper interpretation of use manual
4. Perform elementary maintenance of tools and equipment	4.1 Proper tightening of loosened part 1.2 Proper maintenance of tools and equipment 1.3 Appropriate replacement of damaged parts

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Use tools **Learning hours: 20 hours**

Learning outcomes	Content	Learning activities	Resources
1.1 Handle tools	• Introduction on handling tools. • Techniques of lifting and handling tools. • Safety in the workplace	○ Brainstorming on handling of tools ○ Group discussion on handling of tools. ○ Demonstration on handling of tools	- Workshop - PPE - Textbooks - Internet
1.2 Select and use tools	• Identify plumbing tools • Use hand and machine tools • Use power hand machine	○ Brainstorming on selection and use tools. ○ Group discussion on selection and use tools. ○ Demonstration on selection and use tools. ○ Practical exercises on use of plumbing tools.	- Workshop - PPE - Internet - Steel square - Steel ruler - Hoes - Hand drilling machine - Chisel - Tape measure - Split level - Spanners, - Blow lamp - Pipe cutter - Hammers - Hark saw - Spanners - Pipe wrenches - Dies stock - Pipe vice - Screwdrivers - Pliers - Vernier caliper - Scriber - Centre punch - Files

Learning unit 2: use equipment **Learning hours: 30 hours**

Learning outcomes	Content	Learning activities	Resources
2.1 Handle equipment	• Introduction on handling equipment • Techniques of lifting and handling equipment • Safety in the workplace	○ Brainstorming on handling plumbing equipment ○ Group discussion on handling plumbing equipment ○ Demonstration on handling plumbing equipment. ○ Practical exercises on handling plumbing equipment	- Text books - PPE - Power machines - Internet - Workshop
2.2 Select and use equipment	• Identify plumbing equipment • Use power machine	○ Brainstorming on selection and use of plumbing equipment ○ Group discussion on selection and use of plumbing equipment. ○ Demonstration on selection and use of plumbing equipment. ○ Practical exercises on use of plumbing equipment.	- PPE - Bending machine - Power threading machine - Drilling machine - High speed cutting machine - Oxy-acetylene gas welding - Arc welding machine - Shearing machine

Learning unit 3: Check conditions of tools and equipment **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
3.1 Store Tools and Equipment	• Introduction on storing tools and equipment • Condition of storing tools and equipment	○ Group discussion on storing tools and equipment ○ Practical exercises on storing tools and equipment.	- Workshop - PPE - Textbooks - Internet

			- Steel square - Steel ruler - Hoes - Hand drilling machine - Chisel - Tape measure - Split level - Spanners, - Blow lamp - Pipe cutter - Hammers - Hark saw - Spanners - Pipe wrenches - Dies stock - Pipe vice - Screwdrivers - Pliers - Vernier caliper - Scriber - Centre punch - Files - Arc welding machine - Bending machine
3.2. Apply safety requirements of tools and equipment	• Checking of actual conditions of tools and equipment. • Safety precautions of the workplace	○ Group discussion on safety Checking of actual conditions of tools and equipment ○ Practical exercises on Checking of actual conditions of tools and equipment	- Over all - Helmet - Gloves - Goggles - Safety shoes - Dust mask - Ear protectors - Workplace
3.3 Interpret manual	• Introduction on manual • Using manual	○ Group discussion on using of manuals ○ Practical exercises on using of	- Manuals - Tools - Equipment

		manuals ○ Brainstorming on use of manuals	-

Learning unit 4: Perform elementary maintenance of tools and equipment **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
4.1 Tight loosened part	• Different parts of tools and equipment ✓ Removable parts ✓ Fixed parts	○ Practical exercises	- Spanners - Screw driver - Pliers - Textbooks
4.2 Maintain Tools and Equipment	• Types of maintenance ✓ Cleaning ✓ Repair ✓ replace	○ Practical exercises on maintenance of tools and equipment. ○ Brainstorming on maintenance of tools and equipment ○ Group discussion on selection on maintenance of tools and equipment ○ Demonstration on maintenance of tools and equipment	- Spanners - Screw driver - Pliers - Textbooks - Oil - Grease - Soap - Cloth rugs

Assessment guide lines

.**Portfolio for formative assessment**

Element of competence	Performance criteria	Checklist	Score		Observation
			Yes	No	
1. Use tools	1. Handling of tools is done	- Type of tools			

		- Quality of tools			
		- Size of tools			
	2.Selection of tools in respect to the task requirements is done	- Type of tools			
		- Quality			
		- Size			
	3.Use of tools is done	- Product			
		- Condition of tools			
2.Use Equipment	1.Handling of Equipment is done	- Type			
		- Quality			
		- Size			
	2.Selection of equipment in respect to the task requirements is done	- Type			
		- Quality			
		- Size			
	3.Use of equipment is done	- Product			
		- Condition of tools			
3. Check conditions of tools and equipment	1.Storage of Tools and Equipment is done	- Storage Tools and Equipment			
		- Arrangement Tools and Equipment			

	2.Safety requirements of tools and equipment before, during and after use is done	- PPE			
		- Function			
		- Position			
	3.Interpretation of use manual is done	- Specification			
		- Symbols			
4. Perform elementary maintenance of tools and equipment	1.Tightening of loosened part is done	- Fixing			
		- Tightening			
		- Sealing			
	2.Maintenance of Tools and Equipment is done	- Cleaning			
		- Greasing			
		- Repairing			
		- Replacing			
	3.Replacement of damaged parts is done	- replacing			

Summative assessment

Integrated situation

MANUMETAL LTD has given a tender to the Saint Joseph vocation training center for the maintenance tool of electrical threading machine. As a plumber you are requested to handling this task in 3 hours.

Rogiers' criteria	Performance criteria=assessment criteria	Evidence/ indicator/checklist per performance criterion	Score		Observation
			Yes	No	
1. Quality of process	1. Handling of tools is done	- Quality of tools			
		- Size of tools			
	2. Selection of tools in respect to the task requirements is done	- Wire brush			
		- Soap solution			
		- Solvents			
		- Pliers			
		- Screwdrivers			
		- Venire caliper			
		- Files			
		- Bench vice			
		- Adjustable Spanners			
		- Oil cane			
		- Spanners,			
		- Hammers			
		- Overall			
		- Gloves			
		- Safety boots			

		- Helmet			
		- Lamp tester			
		- Multimeter			
		- Overall			`
Quality of product	1.Use of tools is done	- Product			
	2. Handling of Equipment is done	- Condition of equipment			
		- Size of Equipment			
		- Type of Equipment			
		- Quality of Equipment			
	3.Selection of equipment in respect to the task requirements is done	- PPE			
		- Power threading machine			
		- Multimeter			
	4.Use of equipment is done	- Product			
		- Condition of tools			
3.Relevance	1.Time is respected	- 3 hours			
	2.Storage of Tools and Equipment is done	- Storage of Tools and Equipment			
		- Arrangement Tools and Equipment			
	4.Tightening of loosened part is done	- Fixing			

		- Tightening			
	5.Maintenance of Tools and Equipment is done	- Sealing			
		- Cleaning equipment			
		- Greasing of motion parts			
		- Repairing of damaged parts			
	6.Replacement of damaged parts is done	- Replacing of damaged parts			
4. Safety	1.Safety requirements of tools and equipment before, during and after use is done	- PPE			
		- Function			
	2.Working environment is prepared	- Cleanness of working area			

CP1202: PIPE WORK DRAWING		
Competence : Apply pipe work drawing		
RTQF LEVEL: 1 & 2	**CREDITS: 7**	**LEARNING HOURS : 70hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to apply pipe work drawing for plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES
CP12201 Introduction to plumbing trade
CP1 214 Safety and health
CP1219 computer literacy
CP1220 communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Element of competence /learning units By the end of the module, the trainee will be able to :	**Performance criteria**
1. Prepare the workplace	1.1 Proper preparation of the workplace 1.2 Proper selection of drawing instruments 1.3 Correct identification of drawing sheets
2. Use hand draft drawing	2.1 Appropriate sketching of plumbing symbols 2.2 Appropriate sketching of plumbing views 2.3 Appropriate sketching of plumbing sections
3. Perform scale drawing	3.1 Appropriate design of plumbing symbols 3.2 Appropriate interpretation of pipes laying 3.3 Appropriate interpretation of drainage system 3.4 Correct estimation and costing of plumbing work 3.5 Correct interpretation of CAD 3.6 Proper application of basic geometric figure
4. Handover the work	4.1 Proper cleaning of drawing instruments and equipment 4.2 Proper storage of drawing instruments and equipment 4.3 Proper cleaning of the workplace

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Prepare the workplace **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
1.1. Select Tools and Equipment	• Drawing tools ✓ Pencil ✓ Ruler ✓ Rubber ✓ Curved rulers ✓ Ink pens ✓ Square ✓ Angle measurement • Equipment ✓ Drawing table	○ Brainstorming on materials choice ○ Group discussion on material choice ○ Demonstration on material choice ○ Further research on internet	- Pencil - Ruler - Rubber - Curved rulers - Ink pens - Ink bottle - Square - Angle measurement
1.2. Identify drawing sheets	• Drawing papers : ✓ A8, A7, A6, A5, A4, A3, A2, A1 and A0 • Types of drawing sheets: ✓ Tracing paper ✓ Bristol board ✓ Normal sheets	○ Brainstorming on materials choice ○ Group discussion on material choice ○ Demonstration on material choice ○ Further research on internet	- Books - Internet connection - Tracing paper - Bristol board - Normal sheets

Learning unit 2: Use hand draft drawing **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
2.1. Sketch plumbing symbols	• Types of plumbing symbols ✓ Basic symbols ✓ General symbols	○ Practical exercises on sketching symbols	- Books - Internet connection - Pencils - Rubbers - Papers
2.2. Sketch fittings and sections	• Different types of fittings ✓ Elbow ✓ Union joint ✓ Reducer ✓ Nipple ✓ Socket ✓ 2D ✓ 3D • Different types of sections ✓ Longitudinal section ✓ Transversal section (cross section)	○ Practical exercises on fittings ○ Group discussion	- Books - Internet connection - Papers/tracing papers - Pencils - Fittings

Learning unit 3: Perform scale drawing **Learning hours: 30hours**

Learning outcomes	Content	Learning activities	Resources
3.1. Apply basic geometric figure	• Geometric figures ✓ Polygons ✓ Square ✓ Triangle ✓ Rectangular ✓ Circle	○ Interpretation of plumbing features ○ Practical exercises on geometric figures.	- Books - Internet connection - Pencils - Rubbers - Papers - Books

3.2. Draw plumbing symbols	• Types of scales • Some abbreviations: SC: Sample Connection PO: Pump Out SO: Steam Out WC: Water Closet • Drawing of different types of plumbing symbols on scale • Basic symbols ✓ Pipes ✓ Ducts ✓ Control valves • General symbols ✓ Branching pipes ✓ Flexible pipes ✓ Tracer heater pipes ✓ Direction of flow	○ Interpretation of plumbing symbols. ○ Practical exercises on interpretation of plumbing symbols.	- Internet connection - Archives of project done - Pipes - Ducts - Control valves Branching pipes - Flexible pipes - Drawing instruments
3.3. interpret pipe laying and drainage system	• Elements for installing drinking water distribution in a building ✓ Main duct ✓ Water meter ✓ Horizontal distribution pipe ✓ Risers and hot water circuit ✓ Connecting devices • Connecting thin filters • Installation overpressure • Protection against water returns • Connecting the water heater	○ Practical exercises on interpretation of pipe laying and drainage system.	- Main duct - Water meter - Horizontal distribution pipe - Connecting devices - Books - Internet
3.4. Prepare Bills of Quantities (BQs) of plumbing work	• Example of determination of the diameters of the pipes ✓ Typical installation for a family home ✓ Typical installation for a rental building • Example of determination of an estimate cost for plumbing system	○ Practical exercises on determination of the diameters of the pipes ▪ Typical installation for a family home ▪ Typical installation for a	- Papers - Pens - Computer - Calculator

	✓ Typical installation for a family home • Typical installation for a rental building	rental building ○ Practical exercises on determination of an estimate cost for plumbing system ▪ Typical installation for a family home ○ Typical installation for a rental building	

Learning unit 4: Handover the work **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
4.1. Clean drawing instruments and equipment	• Types of cleaning: ✓ Air pressure ✓ Cleaning with cloth rugs	○ Brainstorming on Cleaning of drawing instruments and equipment ○ Group discussion on Cleaning of drawing instruments and equipment ○ Practical exercises on Cleaning of drawing instruments and equipment	- Books - Hand out notes - Workshop - Cloth rugs - Air pressure - Aspirator
4.2. Storage drawing instruments and equipment	• Rearrange drawing instruments and equipment: ✓ Pencil ✓ Pencil ✓ Ruler ✓ Rubber ✓ Curved rulers ✓ Ink pens ✓ Square ✓ Angle measurement ✓ Tracing paper	○ Brainstorming Storing drawing instruments and equipment ○ Group discussion on Storing drawing instruments and equipment	- Books - Hand out notes - Workshop - Cloth rugs

	✓ Bristol board ✓ Normal sheets ✓ Tracing paper ✓ Bristol board ✓ Normal sheets		
4.3. Cleaning the workplace	• Remove the remains, papers chips and dust from the working place	○ Brainstorming on Cleaning of the workplace ○ Group discussion on Cleaning of the workplace ○ Practical exercises on Cleaning of the workplace	• Books • Hand out notes • Workshop • Cloth rugs

Assessment guide lines

Portfolio for formative assessment

Element of competence	**Performance criteria**	**Checklist**	**Score**		**Observation**
			Yes	No	
1. Prepare the workplace	1. Preparation of the workplace is done.	- Lightness			
		- Equipment			
		- Instrument			
		- Workplace is clean			
	2.Selection of drawing instruments is done	- Quality			
		- Size			
		- Types			
	3. Identification of drawing sheets is done	- Format			
		- Quality			
2. Use hand	1. Sketching of plumbing symbols is done.	- neatness			

draft drawing.		- Symbols Standard			
	2. Sketching of plumbing views is done.	- Types of views			
		- Dimensioning			
		- Scales			
		- Neatness			
		- Type of lines			
	3. Sketching of plumbing sections is done.	- Types of views			
		- Dimensioning			
		- Scales			
		- Neatness			
		- Type of lines			
3. Perform scale drawing	1. Design of plumbing symbols is done	- Basic symbols			
		- Dimensioning			
		- Type of lines			
		- Scales			
		- Neatness			
	2.Estimation and costing of plumbing work is done	- Unit price			
		- Quantity			
		- Total cost			
	1. interpretation of CAD is done	- title block			
	2. application of basic geometric figure is done	- Clear			
		- Dimensions			

4. Handover the work	1. cleaning of drawing instruments and equipment is done	- Instrument and Equipment conditions			
	2. storage of drawing instruments and equipment is done	- Storage of instrument and equipment			
		- Arrangement			
	3. cleaning of the workplace is done	- Workplace is clear			

Summative assessment
Integrated situation

MASAKA Hospital located in KICUKIRO district want to draw drainage system installation plan in room of VIH bloc with 5mx4m (this room contain W.C, bidet, basin). Distance between the room and septic tank is 12m and the distance between the room and soak pit is 14m. As a plumber you are requested to draw that system: sections of septic tank with $5m^3$ soak pit with $15m^3$ and floor plan of drainage system by using CAD. The drawing scale is 1/50 by using A_1drawing sheet within 3 hours.

Rogiers' criteria	**Performance criteria=assessment criteria**	**Evidence/ indicator/checklist per performance criterion**	**Score**		**Observation**
			Yes	No	
1.Quality of process	1. Preparation of the workplace is done.	- Lightness of working area			
		- Equipment			
		- Instrument			
		- Workplace is clean			
	2. selection of drawing instruments is done	- Pencil			
		- Paper			

		- Rubber			
		- Sharpener			
		- Ruler			
		- Curved rulers			
		- Ink pens			
		- Square			
		- Angle measurement			
		- Drawing table			
		- Computer			
	3. Identification of drawing sheets is done	- A1 format			
	4. cleaning of drawing instruments and equipment is done	- Cleanness drawing instruments and equipment			
	5. storage of drawing instruments and equipment is done	- Storage of instrument and equipment			
		- Arrangement			
	6. cleaning of the workplace is done	- cleanness of Workplace			
2.Quality of product	1. design of plumbing symbols is done	- Basic symbols			
		- Dimensioning			
		- Type of lines			
		- Neatness			
	2. Estimation and costing of plumbing work is done	- Unit price			
		- Quantity			
		- Total cost			
	3. interpretation of CAD is done	- Title block			
	4. Sketching of plumbing symbols is done.	- Symbols			
	5 Sketching of plumbing views is done.	- Types of views			
		- Dimensioning			
		- Scales			
		- Neatness			
		- Type of lines			

		- First angle projection			
	6. Sketching of plumbing sections is done	- Types of views			
		- Dimensioning			
		- Scales			
		- Neatness			
		- Type of lines			
		- First angle projection			
3.Relerevance	1. Time is respected	- 3 hours			
	2.measurement is respected	- Volume of septic tank :5m3			
	3.Scale is respected	- Volume of soak pit :15m3			
		- scale:1/50			
4. Safety	1.Tools, equipment and materials are used	- Status of Tools, equipment and materials			
	2.Working environment is prepared	- Lightness of working area			
		- Cleanliness			

CP1203: PIPE LAYING		
Competence : Apply pipes laying		
RTQF LEVEL: 1 & 2	**CREDITS: 8**	**LEARNING HOURS : 80hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to aapply pipes laying for plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES

CP1201 Introduction to plumbing trade
CP1214 Safety and health
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1. Prepare the workplace/ site	1.1 Proper identification of tools and materials 1.2 Correct setting of slope 1.3 Proper excavation of trenches 1.4 Appropriate sketching of the installation. 1.5 Proper selection of pipes and their accessories
2. Install distribution and drainage pipes	2.1 Correct techniques of joining drainage pipes 2.2 Correct techniques of joining distribution pipes 2.3 Appropriate installation of pipes to appliances 2.4 Proper checking of installation work
3.Test pipe work installation	3.1 Proper pressure testing(Atmospheric air) 3.2 Proper leakage testing (water, smoke, …) 3.3 Proper checking of gradient

4. Handover the work	4.1 Proper cleaning of the workplace 4.2 Appropriate cleaning and storage of tools and equipment 4.3 Relevant report of the work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Prepare the workplace/ site **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
1.1. Identify tools and materials	• Materials ✓ Terms used in Plumbing (light, medium, heavy) ✓ Types of pipes: ✓ Galvanized mild steel ✓ Copper pipes ✓ PVC pipes ✓ Cast iron pipes ✓ Concrete pipes ✓ Ductile iron pipes ✓ Steel pipes • Tools ✓ Screw drivers ✓ Pipe wrench ✓ Adjustable spanners ✓ Hack saw ✓ Pliers	○ Observe color codes on pipes ○ Trainees make report ○ Practical exercise on identification of pipes ○ Read books on plumbing	- Books on plumbing - Different types of pipes used in plumbing: - Galvanized mild steel - Copper pipes - PVC pipes - Cast iron pipes - Concrete pipes - Ductile iron pipes - Steel pipes - Screw drivers - Pipe wrench - Adjustable spanners - Hack saw - Pliers
1.2. Excavate trenches and set slope	• Setting out the trench and pegging: ✓ Tip measure ✓ Nails	○ Practical exercises on Setting out the trench ○ Group discussion on excavation of trenches and setting of slope	- Book - Hoe - Tip measure - Nails

	✓ Pegs ✓ Hammer • Digging of trenches and Remove the soil ✓ Hoe ✓ Sped		- Pegs - Hammer
1.3. Sketch the installation	• Symbols ✓ Pipes ✓ fittings • dimension ✓ diameter ✓ length	○ Practical exercises on sketching installation. symbols, dimension	- Drawing instruments - Textbooks - Internet
1.4. Select pipes and their accessories	• Galvanized pipes • Plastic pipes • Flexible pipes • fittings	○ Practical exercises on selection of pipes and their accessories. ○ Group discussion on selection of pipes and their accessories.	- Galvanized pipes - Plastic pipes - Flexible pipes - Fittings - Textbooks - Internet

Learning unit 2: Install distribution and drainage pipes. **Learning hours: 40hours**

Learning outcomes	Content	Learning activities	Resources
2.1. Apply joining techniques of drainage and distribution pipes	• Techniques of joining drainage pipes ✓ Compression ✓ Pipe socket ✓ Centric reduction ✓ Threaded joint • Techniques of joining distribution pipes ✓ Screwed connection union ✓ Flanged connection ✓ Stop flange ✓ Eccentric reduction (above)	○ Practical exercises on application of joining techniques of drainage and distribution pipes ○ Brainstorming on application of joining techniques of drainage and distribution pipes ○ Group discussion on application of joining techniques of drainage and	- Textbooks - Internet - Joining materials, tools and equipment - Pipes - handout notes

	✓ Eccentric reduction (below)	distribution pipes	
2.2. Install pipes to appliances	• Fixing of sanitary appliances: ✓ Water Closet (W.C.) ✓ urinals ✓ hand wash basin ✓ bath ✓ shower ✓ water heater ✓ bidet	○ Brainstorming on Fixing of sanitary appliances ○ Group discussion on installation of pipes to appliances. ○ Practical exercises on installation of pipes to appliances.	- Water Closet (W.C.) - Urinals - Hand wash basin - Bath - Shower - Water heater - Bidet - Book
2.3. Check the installation work	• Introduction on checking of installation work. • method of checking: ✓ Smoke ✓ Water pressure ✓ Air compressor	○ Brainstorming on checking of installation work. ○ Group discussion on checking of installation work. ○ Practical exercises on checking installation work.	- Compressor - Smoke - Book - Internet - Water

Learning unit 3: Test pipe work installation **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
3.1 Apply pressure testing	• Checking pressure with manometers or pressure gauges • Checking pressure with pumping water	○ Brainstorming on application of pressure testing. ○ Group discussion on application of pressure testing. ○ Practical exercises on application of pressure testing.	- Compressor - Book - Internet - Water - Pump
3.2 **Test leakage**	• Introduction on leakage • Checking discharge from the outlet	○ Brainstorming on leakage testing. ○ Group discussion on testing of leakage. ○ Practical exercises on testing leakage.	- Smoke - Book - Internet - Water

3.3 **Check gradient**	• Introduction on gradient • check gradient by using the water	○ Brainstorming on gradient testing. ○ Group discussion gradient testing. ○ Practical exercises on checking of gradient.	- Book - Internet - Water

Learning unit 4: Handover the work **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
4.1. Clean the workplace	• Types of cleaning: ✓ Air pressure ✓ Cleaning with cloth rugs ✓ Soap ✓ mappers	• Brainstorming on cleaning the workplace. • Group discussion on cleaning the workplace. • Practical exercises on cleaning the workplace.	- Books - Hand out notes - Workshop - Cloth rugs - Air pressure
4.2. Clean and store tools and equipment	• Cleaning with ✓ Water ✓ Rugs ✓ Oil ✓ Brushes ✓ Cotton waste • Rearrange tools and equipment	• Brainstorming on cleaning and storing tools and equipment. • Group discussion on cleaning and storing tools and equipment • Practical exercises on cleaning and storing tools and equipment.	- Books - Hand out notes - Workshop - Cloth rugs - Oil - Brushes - Cotton waste
4.3. Relevant report of the work	• Remove the remains, metals chips and dust from the working place • Report writing of the final work.	• Brainstorming on reporting of the final work. • Group discussion on reporting of the final work.	- Books - Hand out notes - Computer - Pens - Papers - Cloth rugs

Assessment guide lines

Portfolio for formative assessment

Element of competence	Performance criteria/ assessment indicators	Checklist	Score		Observation
			Yes	No	
1. Prepare the workplace	1. Identification of tools and materials is done.	- Type			
		- Quality			
		- Size			
		- Quantity of materials			
	2. setting of slope is done	- Height			
		- Gradient			
		- Width			
	3. Excavation of trenches is done	- Slope/gradient			
		- Height			
		- Width			
		- Length			
	4. Sketching of the installation is done	- Dimensioning			
		- Symbols			
		- Scale			
		- Type of lines			
	5. Selection of pipes and their accessories is done.	- Type			
		- Quality			
		- Size			
		- Quantity			
2. Install distribution and	1. Techniques of joining drainage pipes	- Joint			
		- Method			

drainage pipes.	is done.	- Fixing			
		- Fittings position			
	2. Techniques of joining distribution pipes are done.	- Fittings Position			
		- Joint			
		- Method			
		- Fixing			
	3. Installation of pipes to appliances is done.	- Method			
		- Fittings position			
		- Fixing			
		- Dimension of pipes			
		- Fittings position			
3.Test pipe work installation	1. pressure testing is done	- Leakage			
		- Pressure			
	2.checking of gradient is done	- Discharge			
4.Handover the work	1. cleaning of the workplace is done	- Workplace is clear			
	2. cleaning and storage of tools and equipment is done	- Cleanness of tools and equipment			
	3. report of the work done is done	- Communicate the finished work			
		- Equipment conditions			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			

Summative assessment
Integrated situation

COGEbank branch Nyabugogo wants to add one urinal in the urinals room because of many customers. The measurement of room is 3 x 4 m. Mr. GAKWANDI won the bid (market) of adding this urinal. GAKWANDI wants you as a plumber to carry out pipe work installation of one urinal within 2 hours. Other related information is shown on the given plan of the building.

Rogers' criteria	Performance /criteria=assessment criteria	Evidence/ indicator/checklist per performance criterion	Score		Observation
			Yes	No	
1.Quality of process	1.identification of tools and materials is done	- Urinal			
		- Galvanized mild steel pipe			
		- PVC pipes			
		- Screw drivers			
		- Pipe wrench			
		- Adjustable spanners			
		- Hack saw			
		- Pliers			
	2. setting of slope is done	- Gradient of trench			
	3. excavation of trenches is done	- Height of trench			
		- Length of trench			
		- Width of slope			
	4. Sketching of the installation is done.	- Dimensioning			
		- symbols			
	5.selection of pipes and their accessories is done	- Galvanized pipes and their accessories			
		- PVC pipe and their accessories			
2. Quality of	1. techniques of joining drainage pipes is	- Joints in drainage pipe			

product	done	- Leakage			
	2. techniques of joining distribution pipes is done	- Joints in galvanized pipe			
		- leakage			
	3. installation of pipes to appliances is done	- Leveling			
		- Standard height			
		- Leakage			
	4 checking of installation work is done.	- Leakage			
		- Position of pipes			
	5. pressure testing is done	- Leakage			
	6. checking of gradient is done	- Slope of drainage pipe			
3.Relerevance	1. cleaning of the workplace is done	- Cleanness of working area			
	2.Time is respected	- 2 hrs			
	3.Measurement is respected	- Room (2x4)			
	4. cleaning and storage of tools and equipment is done	- Arrangement of tools and equipment			
		- Storage of tools and equipment			
		- Cleanness of tools and equipment			
	4. report of the work done	- communicate the finished work			
		- cleanness of tools and equipment			
		- storage of tools and equipment			
4.safety	1. PPE are used	- Over all			
		- Gloves			
		- Safety shoes			
		- Helmet			
		- goggles			
	2. Tools and equipment are checked before and during work	- Tools and equipment condition			
	3. Working environment is prepared	- Clearness of working area			

CP1204: WATER SUPPLY		
Competence :Perform water supply		
RTQF LEVEL: 1 & 2	**CREDITS: 8**	**LEARNING HOURS : 80 hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee toPerform water supply for plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES

CP1201 Introduction to plumbing trade
CP1214 Safety and health
CP1215 Basic drawing
CP1217 Basic masonry
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1. Prepare the work place	1.1 Precise location of water source 1.2 Correct location of delivery point 1.3 Appropriate sketching of water supply system 1.4 Proper selection of tools, materials and equipment
2. Collect and supply water	2.1. Proper collection of water in the area 2.2 Proper storage of water 2.3 Proper filtration of water 2.4 Proper installation of inspection chamber 2.5 Proper connection of pipe line to the delivery point 2.6 Relevant protection of the water source
3. Test work done	3.1 Appropriate delivery pressure of water 3.2 Appropriate delivery discharge of water 3.3 Proper checking of leakages 3.4 Correct report of the work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Prepare the work place **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
1.1. Locate water source and delivery point	• Quantity of the water source • Distance from water source to the storage • Distance from water storage to the inspection chambers	○ Practical exercises on Locating of water source and delivery point ○ Brainstorming on Locating of water source and delivery point ○ Group discussion on Locating of	- Tape measure - Books - Internet

		water source and delivery point ○ Demonstration on Locating of water source and delivery point	
1.2. Sketch water supply system	• Drawing tools ✓ Pencil ✓ Paper ✓ Rubber ✓ Sharpener	○ Practical exercises on Sketching of water supply system. ○ Brainstorming on Sketching of water supply system. ○ Group discussion on Sketching of water supply system. ○ Demonstration on Sketching of water supply system.	- Book - Internet - Pipes handout notes - Pencil - Paper - Rubber - Sharpener
1.3. Select tools, materials and equipment	• **Tools and equipment** - Pipe wrench - Spanners - Hack saw - Pliers - Hummer - Tape measure - Pipe - Pipe cutter - Trowel - Pipe vise - Oil can - Threading machine • **Materials** ✓ Pipes ✓ Teflon ✓ Fittings ✓ Soil solvent ✓ Water tank ✓ Cement	○ Brainstorming on selection of tools, materials and equipment ○ Group discussion on selection of tools, materials and equipment ○ Practical exercises on selection of tools, materials and equipment	- Pipe wrench - Spanners - Hack saw - Pliers - Hummer - Tape measure - Ppe - Pipe vise - Oil can - Lamp torch - Threading machine - Pipe cutter - Trowel - Pipes - Teflon - Fittings - Soil solvent - Water tank - Cement - Mastic

Learning unit 2: Collect and supply water **Learning hours: 50hours**

Learning outcomes	Content	Learning activities	Resources
2.1. Collect, store and filtrate water in the area	• Type of source : ✓ Surface source ✓ Underground source • Method of filtration : ✓ Simple water intake structure ✓ Float intake ✓ Slotted water septum • Types of storage ✓ Above ground storage tank ✓ Underground storage tank	○ Brainstorming on Collecting, storing and filtrating water in the area ○ Group discussion on Collecting, storing and filtrating water in the area ○ Practical exercises on Collecting, storing and filtrating water in the area	- Pipes - Sand - Gravel - Charcot - Stones - Tanks - Lime
2.2. Install inspection chamber	• Definition • Different parts of inspection chamber • The function	○ Brainstorming on installing of inspection chamber ○ Group discussion on installing of inspection chamber ○ Practical exercises on installing of inspection chamber	- Books - Internet - Work place
2.3. Connect pipe line to the delivery point	• Introduction on connection of pipes. • Method of joining : ✓ Compression ✓ Threading ✓ Flanges	○ Brainstorming on connecting of pipeline to the delivery point. ○ Group discussion on connecting of pipeline to the delivery point ○ Practical exercises on connecting of pipeline to the delivery point	- Books - Internet - Work place
2.4. Protect water source	• Different materials used: ✓ Metals ✓ Tree ✓ Grass	○ Brainstorming on Protecting of water source. ○ Group discussion on protecting of water source. ○ Practical exercises on protecting of water source.	- Books - Internet - Work place

Learning unit 3: Test work done **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
3.1. Check water pressure on delivery point	• Checking pressure with manometers or pressure gauges	○ Practical exercises on testing by using of pressure gauges.	- Manometers - Books - Internet
3.2. Check water discharge on delivery point	• Checking discharge from the outlet	○ Practical exercises on testing by using of pump and compressor	- Books - Internet
3.3. Check leakages	• Types of tests: • Smoke • Water pressure • Air compressor	○ Practical exercises on testing by using of pump and compressor	- Electrical/manual pump - Compressor - Water - Smoke
3.4. Work report	• Writing the work done report	○ Learners are given samples of written reports ○ Practical exercise on writing reports.	- Books - Computers - Pens

Assessment guide lines

Portfolio for formative assessment

Element of competence	Performance criteria	Checklist	Score		Observation
			Yes	No	
1. Prepare the work place	1. Location of water source is done	- Quantity of water source			
		- Type of water source			
	2. Location of delivery point is done	- Distance			
		- Materials			
	3. Sketching of water supply system is done	- Dimensioning			
		- Symbols			

		- Types of lines			
		- Scale			
	4. Selection of tools, materials and equipment is done	- Size			
		- Quantity of materials			
		- Quality			
		- Types			
2. Collect and supply water	1.Collection of water in the area is done	- Quantity of water			
		- Quality of water			
	2.Storage of water is done	- Type of storage			
		- Quantity of water			
		- Flow rate			
	3. Filtration of water is done	- Method of filtration			
		- Quantity of water			
		- Materials			
	4.Installation of inspection chamber is done	- Number of chambers			
		- Length			
		- Width			
		- Height			
	5.Connection of pipe line to the delivery point is done	- Joints			
		- Fittings position			
		- Distance			
	6. Protection of the water source is done	- Type of materials			
		- Methods			
3. Test work done	1. Delivery pressure of water is done	- Pump			
		- Distance			
	2. Delivery discharge of water is	- Quantity of water			

	done	- Distance			
	3. Checking of leakages is done	- leakage			

Summative assessment
Integrated situation

The Headmaster of Group Scolaire du Mont Kigali in Kabusunzu sector, Nyarugenge district has a lack of water. He request to the Director of EWSA to supply water to the above ground tank. The distance between the school and water main is 100m. The Director request you as a plumber to perform this work within 3 hours

Rogers' criteria	**Performance criteria=assessment criteria**	**Evidence/ indicator/checklist per performance criterion**	**Score**		**Observation**
			Yes	No	
1.Quality of process	1. Location of water source is done	- Main water pipe			
	2. Location of delivery point is done	- The distance between the school and water main is 100m.			
	3. Sketching of water supply system is done	- Dimensioning			
		- Symbols			
	4. Selection of tools, materials and equipment is done	- Pipe wrench			
		- Spanners			
		- Hack saw			
		- Pliers			
		- Hummer			
		- Tape measure			
		- Pipe			
		- Pipe cutter			
		- Trowel			
		- Pipe vice			
		- Oil can			

		- Threading machine			
		- Pipes			
		- Teflon			
		- Fittings			
		- Soil solvent			
		- Water tank			
		- Cement			
2. Quality of product	5.Collection of water in the area is done	- Quantity of water			
		- Quality of water			
	6. Storage of water is done	- Type of storage			
		- Quantity of water			
		- Flow rate			
	7.Filtration of water is done	- Method of filtration			
		- Quantity of water			
		- Materials			
	8 .Installation of inspection chamber is done	- Number of chambers			
		- Length of chamber			
		- Width of chamber			
		- Height of chamber			
	9. Connection of pipe line to the delivery point is done	- Joints of pipe			
		- Fittings position			
		- Distance from water main to the delivery point is 100m			
	10. Protection of the water source is done	- Type of materials			
		- Methods of protection			
	11. Delivery pressure of water is done	- Water pressure			
	12. Delivery discharge of water is done	- Outlet discharge			
	13. Checking of leakages is done	- Leakage			

3.Relerevance	14. Protection of the water source is done	- Appearance of protection			
	15.Report of the work done is done	- Communicate the finished work			
		- Equipment conditions			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			
	16.Measurement is respected	- The distance between the school and water main is 100m			
	17.Time is respected	- 3hours			
4. Safety	18.PPE are used	- Overall			
		- Gloves			
		- Goggles			
		- Helmet			
		- Safety shoes			
	19.Tools and equipment are checked before being used	- Tools and equipment condition			
	20.Working environment is prepared	- Cleanness of working area			

CP1205: HOT AND COLD WATER SYSTEM		
Competence : Install hot and cold water system		
RTQF LEVEL: 1 & 2	**CREDITS: 10**	**LEARNING HOURS : 100hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT
This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to install hot and cold water system for plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES
CP1201 Introduction to plumbing trade
CP1214 Safety and health
CP1215 Basic drawing
CP1216 Basic electricity
CP1217 Basic masonry
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1. Prepare the workplace/ site	1.1 Proper identification of tools, materials and equipment 1.2 Proper sketching of the work 1.3 Appropriate excavation of trenches 1.4 Appropriate drilling of holes

2. Install direct and indirect cold water supply	2.1 Proper construction of a tank stand 2.2 Proper installation of a water tank 2.3 Proper connection of communication pipe to the main 2.4 Proper connection of service pipe to the tank 2.5 Proper connection of distribution pipe to appliances
3. Mount electrical heaters	3.1 Appropriate selection of water heaters 3.2 Proper fixing of hooks 3.3 Correct mounting of water heaters
4.Perform water heater connections	4.1 Proper connection of cold water pipe 4.2 Proper connection of hot water pipe 4.3 Appropriate testing of the system
5. Test water system	5.1 Appropriate test using pressure pump 5.2 Appropriate test using water from the tank 5.3 Correct Testing of the flushing system 5.4 Proper checking of leakage to the system 5.5 Proper Checking of hot water supply to appliances
6.Handover the work	6.1 Proper cleaning of the workplace 6.2 Appropriate cleaning and storage of tools and equipment 6.3 Relevant report of the work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Prepare the workplace/site **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
1.1. Identify tools materials and equipment	• Types of pipes • Different use of types of pipe • Material used in excavation ✓ Hook ✓ Hoes • Material used in drilling ✓ Drill machine ✓ Chisel ✓ Hummer • Measuring tools ✓ Tape measure ✓ Split level	○ Brainstorming on materials choice ○ Group discussion on material choice ○ Demonstration on material choice ○ Further research on internet	- Book - Internet - Pipes handout notes - Hook - Hoes - Drill machine - Chisel - Hummer - Tape measure - Split level
1.2. Sketch plumbing system	• Drawing tools ✓ Pencil ✓ Paper ✓ Rubber ✓ Sharpener	○ Exercises on sketching	- Book - Internet - Pipes handout notes - Pencil - Paper - Rubber - Sharpener
1.3. Excavate trenches and drill of holes	• Setting out the trench and pegging: ✓ Tape measure ✓ Nails ✓ Pegs ✓ Hammer • Digging of trenches and Remove the soil ✓ Hoe ✓ Sped • Drilling the holes by using ✓ Mechanical drill ✓ Power hand drill	○ Practical exercises on Setting out the trench ○ Group discussion	- Book - Hoe - Tip measure - Nails - Pegs - Hammer - Mechanical drill - Power hand l drill - Chisel

	✓ Chisel ✓ Hammer		

Learning unit 2: Install direct and indirect cold water supply. **Learning hours: 40hours**

Learning outcomes	Content	Learning activities	Resources
2.1. Construct tank stand and install water tank	• Making a tank stand • Installing a water tank	○ Practical exercises: ▪ Determine the location and the height of the tank ▪ Determine the capacity of the tank ▪ Prepare material to be used ▪ Install a tank stand using concrete mixture ○ Practical exercises: ▪ Connect a raising main to the tank ▪ Fix a stop cock to the raising main ▪ Fix a ball valve ▪ Fix an over flow pipe to the water tank ▪ Connect the cold distribution pipe to the fittings ▪ Connect a cold supply from service pipe to the kitchen sink	- Cement, aggregate, water and sand - Angle bars - Hollow sections (pipes) - Welding plant - Spades and hoes - Water tank - Tank stand - Pipes spanners - Pipes and fittings - Valves

2.2. Connect communication pipe to the main	• Use of tools ✓ Hack saw ✓ Pipe wrench ✓ Adjustable spanner • Material used ✓ Nipple ✓ Valves ✓ Non return valve ✓ Reducer ✓ Elbow ✓ Galvanized pipe ✓ Pressure reducer	○ Observation for existing system ○ Practical exercises: ▪ Connect a raising main to the tank ▪ Fix a stop cock to the raising main ▪ Fix a ball valve	- Book - Internet - Pipes handout notes - Hack saw - Pipe wrench - Adjustable spanners - Nipple - Valves - Non return valve - Reducers - Elbow - Galvanized pipe - Pressure reducer
2.3. Connect service pipe to the tank	• Use of tools ✓ Hack saw ✓ Pipe wrench ✓ Adjustable spanner • Material used ✓ Nipple ✓ Valves ✓ Non return valve ✓ Reducer ✓ Elbow ✓ Galvanized pipe ✓ Pressure reducer	○ Practical exercises: ▪ Fix an over flow pipe to the water tank ▪ Connect the cold distribution pipe to the fittings ▪ Connect a cold supply from service pipe to the kitchen sink	- Book - Internet - Pipes handout notes - Hack saw - Pipe wrench - Adjustable spanners - Nipple - Valves - Non return valve - Reducers - Elbow - Galvanized pipe - Pressure reducer
2.4. Connect distribution pipe to appliances	• Different methods of joining pipes ✓ Pipe socket ✓ Flanged connection ✓ Stop flange ✓ Screwed connection union ✓ Threaded joint	○ Observations for existing system ○ Practical Exercises	- Book - Internet - Pipes handout notes

Learning unit 3: Mount electrical heaters. **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
3.1. Select water heaters	• Types of water heaters: ✓ Ordinary electrical water heater ✓ Kitchen heater ✓ Instant water heater • Use of different types of water heater.	○ Demonstration of types of water heater. ○ Brainstorming on types of water heater ○ Group discussion on use of water heater.	- Ordinary electrical water heater, - Instant water heater - Kitchen heater
3.2. Fix hooks	• Different types of hooks • Types of wall plugs •	○ Demonstration of types of hooks ○ Practical exercises on: ▪ Locate the position of the hooks ▪ Fix the hooks	- Brackets/Hooks - Hand drill machine - Chisel - Wall plugs - Hammer - Nails
3.3. Mount water heaters	• Drilling techniques using drill • Leveling and positioning of water heater	○ Practical exercises ▪ Fix the water heater ▪ Connect supply pipe from the water tank ▪ Connect distribution pipe to the fittings ▪ Connect the vent pipe ▪ Connect the power to the heater	- Ordinary electrical water heater, - Instant water heater - Kitchen heater - Ladders - Spirit level - Ropes

Learning unit 4: Perform water heater connections. **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
3.4 Connect cold water pipe	• Cold water supply to the solar water heater	○ Practical exercises: ▪ Connect cold water from the tank to the inlet of the solar water heater	- Die stock - Pipe wrench - Adjustable spanner - Thread tape - Tape measure - Fittings

			- Pipes
3.5 Connect hot water pipes	• Hot water supply to the building	○ Practical exercises: ▪ Locate the position of the storage vessel. ▪ Fix the solar water heater. ▪ Connect supply pipe from the distribution pipe. ▪ Fix safety valve to the inlet pipe ▪ Connect the mixture tap. ○ Connect the power to the lamp signal	- Kitchen Water heater - Pipes, fittings and Thread tapes - Safety valves - Tools (Spanners, Hack saws)
3.6 **Test the system**	• Types of tests: ✓ Smoke ✓ Water pressure ✓ Air compressor	○ Practical exercises on testing using the pump and compressor	- Electrical/manual pump - Compressor - Water - Smoke

Learning unit 5: Test water system **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
5.1. Check water pressure	• Checking pressure with manometers	○ Practical exercises on testing using manometer	- Manometers - Books - Internet
5.2. Test using water from the tank	• Checking by Gravity	○ Practical exercises on Gravitational force ○ Group discussion	- Water - Tank - Books

			- internet
5.3. Test flushing system	• Checking by using valves • Checking by using flushing pipes	○ Practical exercises by using valves ○ Group discussion	- Valve - Pipes - Water - Books - Internet - Sanitary appliances
5.4. Check leakage to the system	• Types of tests: ✓ Smoke ✓ Water pressure ✓ Air compressor	○ Practical exercises on testing using the pump and compressor ○ Group discussion	- Electrical/manual pump - Compressor - Water - Smoke
5.5. Check hot water supply to appliances	• Check temperature by thermometer • Check temperature by touching	○ Practical exercises on reading temperature ○ Group discussion	- Thermometer - Hot water - Books - Internet - Water heater - Waste Sanitary appliances

Learning unit 6: Handover the work **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
6.1. Clean the workplace	• Method of cleaning: ✓ Air pressure ✓ Cleaning with cloth rugs ✓ Soap ✓ mappers	○ Brainstorming on hygiene ○ Group discussion	- Books - Hand out notes - Workshop - Cloth rugs - Air pressure

6.2. Clean and store tools and equipment	• Cleaning with ✓ Water ✓ Rugs ✓ Oil ✓ Brushes ✓ Cotton waste • Rearrange • Remove the remains, metals chips and dust from the working place	○ Brainstorming on clean and store tools and equipment ○ Group discussion on clean and store	- Books - Hand out notes - Workshop - Cloth rugs - Oil - Brushes - Cotton waste
6.3. Relevant report of the work	• Writing the correct report ✓ Usable materials ✓ Remain materials	○ Brainstorming on work report ○ Group discussion on report	- Books - Hand out notes - Computer - Pens - Papers - Cloth rugs

Assessment guide line

Portfolio for formative assessment

Element of competence	Performance criteria	Checklist	Score		Observation
			Yes	No	
1. Prepare the workplace	1. Identification of tools, materials and equipment is done.	- Type			
		- Quality			
		- Size			
		- Quantity of materials			
	2. Sketching of the work is done	- Dimension			
		- Symbols			
	3. Excavation of trenches is done	- Slope/gradient			
		- Height			
		- Width			
		- Length			
	4. Drilling of holes is done.	- Diameter			

		- Width			
		- Height			
2. Install direct and indirect cold water supply.	1. Construction of a tank stand is done.	- Joint			
		- Quality			
		- Height			
		- Length			
		- Type of materials			
	2. Installation of water tank is done.	- Position			
		- Fixing			
	3. Connection of communication pipe to the main is done.	- Joint			
		- Leakage			
		- Fittings position			
	4. Connection of service pipe to the tank is done.	- Sealing			
		- Leakage			
		- Fittings position			
	5. Connection of distribution pipe to appliances	- Joint			
		- Leakage			
		- Fitting position			
		- Water pressure			
3. Mount electrical heaters	1. selection of water heaters is done	- Type			
		- Quality			
		- Size			
		- Quantity of water			
	2. fixing of hooks is done	- fixing			
		- Tightening			
	3. mounting of water heaters is done	- Position			
		- Fixing			
		- Distance			
4.Perform water heater connections	1. connection of cold water pipe is done	- Joint			
		- Leakage			
		- Fittings position			
	2. connection of hot water pipe is done	- Joint			
		- Leakage			
		- Fittings position			
	3.Testing of the system is done	- Temperature			

		- discharge			
5. Test water system	1. Test using pressure pump	- pressure			
	2. Test using water from the tank	- leakage			
	3. Testing of the flushing system	- discharge			
	4. Checking of leakage to the system	- leakage			
	5. Checking of hot water supply to appliances	- temperature			
6.Handover the work	1.cleaning of the workplace	- Neatness			
	2. cleaning and storage of tools and equipment	- Storage			
	3. report of the work done	- Communicate the finished work			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			
		- Equipment conditions			

Summative assessment
Integrated situation

Miss MUKESHIMANA has a house in kitabi and wants you as a plumber to carry out plumbing work which involves connection from tank to the appliances within 3 hours. Measurement of the room is 4x3.50 m. Other related information is shown on the given plan.

Rogiers' criteria	**Performance criteria=assessment criteria**	**Evidence/ indicator/checklist per performance criterion**	**Score**		**Observation**
			Yes	No	
1.Quality of process	1. Identification of tools, materials and equipment	- Galvanized pipes			
		- Hook			
		- Hoes			
		- Wrenches			
		- Tape measure			
		- Blow lamp			
		- Split level			

		- Hammer			
		- String			
		- Hoe			
		- Spade			
		- Pick axe			
		- Hark saw			
		- Plastic pipes			
		- Solvents			
		- Mastic			
		- Cement			
		- Pencil			
		- Paper			
		- Rubber			
		- Pens			
		- Size			
		- Overall			
		- Gloves			
		- Safety boots			
		- Helmet			
		- Googles			
	2. sketching of the work is done	- Dimensioning			
		- Symbols			
	3. .excavation of trenches	- Size of trench			
		- Size of pipe			
	4. drilling of holes	- Diameter			
		- Width			
		- Height			
2. Quality of product	1. Construction of a tank stand is done.	- tank stand			
		- water tank			
		- Joint pipe to the tank			

		- Height of stand			
		- Length of stand			
		- Width of stand			
	2. Installation of water tank is done.	- Position of tank			
		- Fixing of tank			
	3. Communication pipe to the main is done.	- Sealing of pipe			
		- Leakage			
		- Fittings position			
	4. Connection of service pipe to the tank is done.	- Sealing of pipe			
		- Leakage			
		- Fittings position			
	5. Connection of distribution pipe to appliances	- Joint of pipe to the appliances			
		- Leakage			
		- Fittings position			
		- Water pressure to appliances			
	6. selection of water heaters is done	- Type of water heater			
		- Quality of water heater			
		- Size of water heater			
		- Quantity of water			
3.Relerevance	7. Fixing of hooks is done	- Fixing of hooks			
		- Tightening of hooks			
	5. Time is respected	- 3 hours			
	6.Mounting of water heaters is done	- Position of water heaters			
		- Fixing of water heaters			
		- Distance from of water heaters to appliances			
4. Safety	1. PPE is used (Tools status are checked before starting the work	- Overall			
		- Gloves			
		- Safety boots			
		- Helmet			
		- Googles			

		- Face mask			
	2. Tools, equipment and materials are used	- Status of Tools, equipment and material			
	3. Ladder is positioned	- Angle of ladder			
		- Status of ladder			
	4. Working environment is prepared	- First aid kit			
		- Cleanliness			

CP1207: SANITARY APPLIANCES		
Competence :Install sanitary appliances		
RTQF LEVEL: 1 & 2	**CREDITS: 9**	**LEARNING HOURS : 90hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to Install sanitary appliances for plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES

CP1201 Introduction to plumbing trade

CP1202 Use of plumbing tools and equipment
CP1214 Safety and health
CP1215 Basic drawing
CP1216 Basic electricity
CP1217 Basic masonry
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1. Prepare the workplace	1.1 Proper preparation of working area 1.2 Proper selection of tools and equipment 1.3 Proper selection of materials 1.4 Proper selection of sanitary appliances
2. Perform drilling space for sanitary appliances	2.1 Accurate measurements of spaces 2.2 Proper application of metric systems 2.3 Proper expansion drill holes to the solid materials 3.4 Appropriate fixation of plugs
3. Perform sanitary mounting	3.1 Proper posing of sanitary appliances 3.2 Appropriate fixing of screws 3.3 Proper sealing of silicon 3.4 Appropriate mounting of cistern 3.5 Appropriate connection of inlet and outlet for appliances 3.6 Appropriate flashing of waste water

4. Handover the work	4.1 Proper cleaning tools and equipment 4.2 Proper storing tools, equipment and materials 4.3 Proper report of work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Prepare the workplace **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
1.1 Prepare the working area	• **Prepare locations for sanitary appliances** ✓ Rules and regulations for the installation of sanitary appliances ✓ Types of appliances (waste and soil) ✓ Types of fittings	○ Brainstorming on preparation of working area ○ Group discussion preparation of working area. ○ Practical exercise preparation of working area.	- Books - Different types of appliances - Different types of fittings
1.2 Select tools and equipment	• **Different types of tools and equipment** - Screw drivers - Pipe wrench - Spanners - Hack saw - Pliers - Power hand drill - Hummer - Tape measure - PPE - Pipe cutter	○ Brainstorming on selection of tools and equipment ○ Group discussion on selection of tools and equipment ○ Practical exercise on selection of tools and equipment	- Screw drivers - Pipe wrench - Spanners - Hack saw - Pliers - Power hand drill - Hummer - Tape measure - PPE - Pipe cutter - Internet
1.3 Select materials	• **Types of materials used** ✓ Flexible pipe ✓ Pipes	○ Brainstorming on materials choice ○ Group discussion on	- Flexible pipe - Pipes - Teflon

	✓ Teflon ✓ Fittings ✓ Soil solvent ✓ Screws	material choice ○ Demonstration on material choice	- Fittings - Soil solvent - Screws - Internet
1.4 Select sanitary appliances	• **Waste appliances** ✓ W.H. basins ✓ Kitchen sink ✓ Bidet ✓ Shower tray ✓ Bath tubs • **Soil appliances** ✓ W.C. pans ✓ Urinals	○ Brainstorming on sanitary appliances ○ Group discussion on sanitary appliances ○ Demonstration on sanitary appliances ○ Further research on internet	- W.H. basins - kitchen sink - Bidet - Shower tray - Bath tubs - W.C. pans - Urinals - Books - Internet

Learning unit 2: Perform drilling space for sanitary appliances. **Learning hours: 40hours**

Learning outcomes	Content	Learning activities	Resources
2.3 Measure spaces and apply metric systems	• **Standard unit used in plumbing:** ✓ Metric system unit ✓ Imperial system unit • **Measures the space**: ✓ Height ✓ Length ✓ Width ✓ Deep • **Different measuring tools:** ✓ Rulers ✓ Tape measure ✓ Try Squares ✓ Foot steel tape ✓ Vernier caliper • **Different alignment tools** ✓ Split level ✓ Plumb bomb	○ Brainstorming on measuring space and application of metric systems. ○ Group discussion on measuring space and application of metric systems. ○ Demonstration on measuring space and application of metric systems.	- Rulers - Tape measure - Try Squares - Foot steel tape - Vernier caliper - Split level - Plumb bomb - Books - Internet
2.4 Expand drill holes to the	• Different types of drill bit : ✓ Masonry drill bit	○ Practical exercise on drilling holes to the solid materials.	- Drill bits - Drilling

solid materials	✓ Twist drill bit ✓ Wood drill bit • Different types of hand drilling machine ✓ Mechanical hand drilling machine ✓ Power hand drilling machine ✓ Battery hand drilling machine	○ Brainstorming on drilling holes to the solid materials. ○ Group on drilling holes to the solid materials. ○ Demonstration on drilling holes to the solid materials.	machines - Books - Internet - Videos aids
2.3 Fix plugs	• Different types of plugs ✓ Plastic plugs ✓ Metallic plugs ✓ Wood plugs	○ Practical exercise on fixing plugs. ○ Brainstorming on fixing plugs. ○ Group discussion on fixing plugs. ○ Demonstration on fixing plugs.	- Plastic plugs - Metallic plugs - Wood plugs - Books - Internet

Learning unit 3: Perform sanitary mounting **Learning hours: 30hours**

Learning outcomes	Content	Learning activities	Resources
3.1. Pose sanitary appliances	• Materials used : ✓ Screws ✓ Plugs ✓ Split level ✓ Plumber bomb ✓ Tape measure • Marking tools ✓ Pencil ✓ Pieces of chalk ✓ Marker	○ Practical exercise on posing sanitary appliances. ○ Brainstorming on posing sanitary appliances. ○ Group discussion on posing sanitary appliances. ○ Demonstration on posing sanitary appliances.	- Silicon - Cement - Screws - Plugs - Soil solvent - Mastic - Books - Internet - Pencil - Pieces of chalk
3.2. Fixe and seal sanitary appliances	• different types of fastening • different types of fixing • Materials used for sealing ✓ Soil solvent ✓ Mastic	○ Practical exercise on fixing seal sanitary appliances. ○ Practical exercise on fixing and sealing sanitary appliances.	- Soil solvent - Mastic - Cement - Silicon - Books

	✓ Cement ✓ Silicon	○ Brainstorming on fixing and sealing sanitary appliances. ○ Group discussion on fixing and sealing sanitary appliances. ○ Demonstration on fixing and sealing sanitary appliances.	- internet
3.3 Mount cistern	• Materials used : ✓ Screws ✓ Plugs ✓ Split level ✓ Plumber bomb ✓ Tape measure	○ Practical exercise on mounting cistern ○ Practical exercise on mounting cistern ○ Brainstorming on mounting cistern ○ Group discussion on mounting cistern ○ Demonstration on mounting cistern	- Screws - Plugs - Split level - Plumber bomb - Tape measure - internet
3.4 Connect inlet and outlet for appliances	• Connect the stop valve • Connect flexible pipe to the cistern • Connect outlet pipe	• Brainstorming on connecting inlet and outlet for appliances. • Group discussion on connecting inlet and outlet for appliances. • Practical exercise on connecting inlet and outlet for appliances.	- Pipe - Flexibles - Valves - Sanitary appliances - Internet

Learning unit 4: Handover the work. **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
1.1. Clean the workplace	• Method of cleaning: ✓ Air pressure ✓ Cleaning with cloth rugs ✓ Soap	• Brainstorming on cleaning the workplace • Group discussion on cleaning the workplace • Brainstorming on cleaning	- Books - Hand out notes - Workshop - Cloth rugs - Air pressure

		the workplace • Group discussion on cleaning the workplace	
1.2. Clean and store tools and equipment	• Cleaning with ✓ Water ✓ Rugs ✓ Oil ✓ Brushes ✓ Cotton waste • Rearrange • Remove the remains, metals chips and dust from the working place	• Brainstorming on storing tools and equipment. • Group discussion on storing tools and equipment • Practical exercise on cleaning and storing tools and equipment	- Books - Hand out notes - Workshop - Cloth rugs - Oil - Brushes - Cotton waste
1.3. Relevant report of the work	• Writing the correct report ✓ Usable materials ✓ Remain materials	• Brainstorming on work report writing • Group discussion on report	- Books - Hand out notes - Computer - Pens - Papers - Cloth rugs

Assessment guide lines

Portfolio for formative assessment

Element of competence	**Performance criteria**	**Checklist**	**Score**		**Observation**
			Yes	**No**	
1. Prepare the workplace	1. Preparation of working area is done.	- Workplace is clear			
	2. selection of tools and equipment is done	- Type			
		- Quality			
		- Size			

		- Quantity			
	3. Selection of materials is done	- Type			
		- Quality			
		- Size			
		- Quantity of material			
	4. Selection of sanitary appliances is done.	- Type			
		- Quality			
		- Size			
2. Perform drilling space for sanitary appliances	1. measurements of spaces is done.	- Diameter			
		- Width			
		- Height			
	2. Application of metric systems is done.	- Clear			
		- neatness			
	3. Expansion drill holes to the solid materials are done.	- Diameter			
		- Width			
		- Height			
	4. Fixation of plugs is done.	- Fixing			
		- Tightening			
3. Perform sanitary mounting	1. posing of sanitary appliances is done	- Position			
		- Standard measurement			
	2. Fixing of screws is done	- Tightening			
		- Fixing			
	3. sealing of silicon is done	- Leakage			
	4. mounting of cistern is done	- Position			
		- Standard measurement			

		- Fixing			
		- Tightening			
	4. connection of inlet and outlet for appliances is done	- Joint			
		- Leakage			
		- Fittings position			
		- Water pressure			
	5. flashing of waste water is done	- Water pressure			
4. Handover the work	1.cleaning tools and equipment is done	- Neatness			
	2. Storage of tools, equipment and material is done	- Storage			
	3. report of work done	- Communicate the finished work Use of work			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			
		- Equipment conditions			

Summative assessment
Integrated situation

Mr. Gakwandi from Kigali has an apartment house in Nyarugenge district and wants to add one basin outside off the main house, the distance to the soak pit is 15 m. he wants you as a plumber to carry out this tusk within 2 hours.

Rogers' criteria	**Performance criteria=assessment criteria**	**Evidence/ indicator/checklist per performance criterion**	**Score**		**Observation**
			Yes	No	
1.Quality of	1 preparation of working area is done	Cleanness of the work place			

process	2. selection of tools and equipment is done	- Screw drivers			
		- Pipe wrench			
		- Spanners			
		- Hack saw			
		- Pliers			
		- Power hand drill			
		- Hummer			
		- Tape measure			
		- PPE			
		- Pipe cutter			
		- Screw drivers			
		- Pens			
	3. selection of materials is done	- Flexible pipe			
		- Pipes			
		- Teflon			
		- Fittings			
		- Soil solvent			
		- Screws			
		- Basin			
	4. selection of sanitary appliances is done	- W.H. basins			
2. Quality of product	1. measurements of spaces is done	- 20 meters from the soak pit			
	2. expansion drill holes to the solid materials is done	- Diameter			
		- Deep			
	3. fixation of plugs is done	- Fixing of plugs			
		- Tightening of plugs			
	4. posing of sanitary appliances is done	- Leveling			
		- Standard height			
	5. fixing of screws is done	- Tightening of screw			
		- Fixing of screw			
	6. sealing of silicon is done	- Leakage			
		- Appearance of silicon			
	7. connection of inlet and outlet for	- Position of fittings			

	appliances is done	- Leakage			
3.Relerevance	1. cleaning tools and equipment is done	- Cleanness of tools and equipment			
	14.Measurement is respected	- Distance from the building to the septic tank is 15m			
	15.Time is respected	- 4hours			
	1.cleaning of the workplace	- Clearness			
	2. cleaning and storage of tools and equipment	- Storage of tools and equipment			
	3. report of the work done	- Communicate the finished work			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			
		- Equipment conditions			
4. Safety	16.PPE are used	- Overall			
		- Gloves			
		- Goggles			
		- Helmet			
		- Safety shoes			
	17.Tools and equipment are checked before being used	- Tools and equipment condition			
	18.Working environment is prepared	- Cleanness of working area			

CP1208: DRAINAGE SYSTEM		
Competence :Install water drainage system		
RTQF LEVEL: 1 & 2	**CREDITS: 10**	**LEARNING HOURS : 100hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to install water drainage system for plumbing works at the construction site in respect to the standards.

PRERQUISITE MODULES

CP1201 Introduction to plumbing trade
CP1202 Use of plumbing tools and equipment
CP1214 Safety and health
CP1215 Basic drawing
CP1216 Basic electricity
CP1217 Basic masonry
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1. Prepare the site /workplace	1.1 Appropriate site investigation 1.2 Proper identification of tools, materials and equipment 1.3 Appropriate sketching of the system 1.4 Proper selection of drainage pipes
2. Install above ground drainage system	2.1 Proper application methods of pipes laying 2.2 Appropriate connection of pipes to sanitary appliances 2.3 Appropriate connection of pipes to the manholes 2.4 Neat fastening of pipes
3. Lay underground drainage system	3.1 Accurate digging trenches of underground pipes 3.2 Proper connection of underground pipes 3.3 Proper connection of pipes from manholes to the septic tank and soak pit 3.4 Appropriate sealing of above and underground the systems
4. Handover the work	4.1 Proper cleaning tools and equipment 4.2 Proper storing tools, equipment and materials 4.3 Proper report of work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Prepare the site /workplace **learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
1.1. Investigate site	• Getting the information • Collecting the data	○ Visit the site	- Pens - Paper
1.2.Select tools, materials and equipment	• Different tools and equipment ✓ Blow lamp ✓ Split level ✓ Tape measure ✓ Hammer ✓ String ✓ Hoe ✓ Spade ✓ Pick axe ✓ Hark saw • Different materials ✓ Plastic pipes ✓ Solvents ✓ Mastic ✓ Cement	○ Observe fittings ○ Check for size ○ Check for quality Observe waste appliances ○ Observe soil appliances	- Wrenches - Tape measure - Blow lamp - Split level - Tape measure - Hammer - String - Hoe - Spade - Pick axe - Hark saw - Plastic pipes - Solvents - Mastic - Cement
1.3.Sketch the system	• Free hand drawing, • Plumbing symbols. • Sanitary appliances location	○ Different exercises of sketching drainage installation	- Pencil - Paper - Rubber - Book
1.4.Select drainage pipes	• select the pipes according to: ✓ Durability ✓ Size ✓ Smoothness ✓ Cost	○ Brainstorming on pipe selection ○ Group discussion	- Pipes - Books - Internet

Learning unit 2: Install above ground drainage system **Learning hours: 50hours**

Learning outcomes	Content	Learning activities	Resources
2.1 Apply methods of pipes laying	• One pipe system • Two pipe system • Single stack system • Ventilation	○ Observation ○ Practical exercises on application methods of pipes laying.	- Read books - Internet
2.2 Apply techniques of connecting pipes to appliances	• Use of ✓ Rubber connector ✓ Putty and hemp outlet joint • Different methods of joining PVC pipes: ✓ Ring joint ✓ Use solvent ✓ Use fusion	○ Practical exercises on joining PVC pipes ○ Clean pipes ○ Apply solvent cement on spigot and socket pipes ○ Use ring joint Practical exercises to ▪ Connect the basin ▪ Connect the urinals ▪ Connect washer ▪ Connect the water closet ▪ Connect bath ▪ Connect sink	- Solvent cement, Sand paper - Hack saw, spanners - Flexible tubes - PVC pipes, PVC glues - PVC sealants, PVC fittings - Rubber connector - Putty and hemp outlet joint
2.3 Connect pipes to the manholes and fasten pipes	• Basic principles of fixing ✓ Direct fixing ✓ Expansion in a drilled holes in brick ✓ Use of adhesives • Embedding bolts in concrete • Holes in brick ✓ Use of adhesives ✓ Embedding bolts in concrete	○ practical exercise on: ▪ Install brackets ▪ Fix plugs ○ Brain storming on: ▪ Install brackets ▪ Fix plugs ○ Group discussion on: ▪ Install brackets ▪ Fix plugs	- Nails - Bolts - Screws - Cement - Plugs - Grout - Book - Internet

Learning unit 3: Lay underground drainage system **Learning hours: 30hours**

Learning outcomes	Content	Learning activities	Resources
3.1 Dig trenches of underground pipes	• Separate drainage system • Combined drainage system • Partially separate drainage system • Trench gradient • Trench sizes	• Site visit • Practical exercises on digging of trenches of underground pipes • Practical exercises on Digging of trenches with proper slope and size ○ Brain storming on digging trenches of underground pipes • Group discussion on digging of trenches of underground pipes	• Books • Google search • Spilt level • Building line • Pegs • Tape measure • Hoes • Picks • Spades
3.2 Connect and seal pipes from manholes to the septic tank	• Definition • functions • principal parts of ✓ Manholes ✓ Septic tank ✓ Soak pit • Sizes	○ Practical exercises on joining PVC pipes ○ Practical exercises on Connecting the pipes to manholes ○ Practical exercises on selection of water pumps on joining PVC pipes ○ Practical exercises application of solvent cement on spigot and socket pipes ○ Practical exercises on Connecting the pipes to Septic tank ○ Brain storming on Connecting and seal pipes from manholes to the septic tank ○ Group discussion on Connecting and seal pipes	• Solvent cement, Sand paper • Hack saw, spanners • PVC pipes, PVC glues • PVC sealants, PVC fittings • Solvent cement , Sand paper • Hack saw, spanners • PVC pipes, PVC glues

		from manholes to the septic tank	
3.3 Connect and seal the pipes to soak pit	• Definition • functions • sizes	○ Observation ○ Connect the pipes to soak pit	• Solvent cement • Sand paper • Hack saw • Spanners • PVC pipes • PVC glues

Learning unit 4: Handover the work **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
4.1. Clean the workplace	• Method of cleaning: ✓ Air pressure ✓ Cleaning with cloth rugs ✓ Soap	○ Brainstorming on cleaning work place. ○ Group discussion on cleaning work place	- Books - Hand out notes - Workshop - Cloth rugs - Air pressure
4.2. Clean and store tools and equipment	• Cleaning with ✓ Water ✓ Rugs ✓ Oil ✓ Brushes ✓ Cotton waste • Rearrange • Remove the remains, metals chips and dust from the working place	○ Brainstorming on clean and store tools and equipment ○ Group discussion on cleaning and storing tool and equipment.	- Books - Hand out notes - Workshop - Cloth rugs - Oil - Brushes - Cotton waste
4.3. Relevant report of the work	• Writing the correct report ✓ Usable materials ✓ Remain materials	○ Brainstorming on report writing. ○ Group discussion on report writing.	- Books - Hand out notes - Computer - Pens - papers - Cloth rugs

Assessment guide line

Portfolio for formative assessment

Element of competence	Performance criteria	Checklist	Score		Observation
			Yes	No	
1. Prepare the site /workplace	1. Site investigation is done	- Sketching the system			
		- Price of materials			
		- Climate condition			
	2. Identification of tools, materials and equipment is done	- Type			
		- Quality			
		- Size			
		- Quantity of materials			
	3. Sketching of the system is done	- Dimensioning			
		- Symbols			
		- Scale			
		- Type of lines			
	4. Selection of drainage pipes is done	- Size			
		- Quantity			
		- Quality			
		- Types			
2. Install above ground drainage system	1. Application methods of pipes laying is done	- Joint			
		- Methods			
		- Fixing			
		- Fittings position			
	2. Connection of pipes to sanitary appliances is done	- Leakage			
		- Sealing			
		- Fittings position			
	3. Connection of pipes to the manholes is done	- Sealing			
		- Leakage			

	4. Fastening of pipes is done	- Fixing			
		- Appearance			
3. Lay underground drainage system	1. Digging trenches of underground pipes is done	- Gradient			
		- Width			
		- Height			
		- Length			
	2. Connection of underground pipes is done	- Sealing			
		- Leakage			
		- Size			
		- Fittings position			
		- Type			
	3. Connection of pipes from manholes to the septic tank and soak pit is done	- Type			
		- Sealing			
		- Leakage			
		- Size			
		- Fittings position			
	4. Sealing of above and underground systems is done	- Leakage			
		- Fixing			

Summative assessment

Integrated situation

Mr. RUBANGURA wants to install above and underground drainage system for two storeys in the winter season, each storey has 3m height and the distance from the building is 15m to the septic tank. At the third storey contains siphonic closet with single stack system. As a plumber you are requested to drain the waste through underground discharge pipe to the septic tank within 4 hours. Other related information is shown on the given plan

Rogers' criteria	**Performance criteria=assessment criteria**	**Evidence/ indicator/checklist per performance criterion**	**Score**		**Observation**
			Yes	No	

1.Quality of process	1. Site investigation is done.	- Sketch			
		- Price of materials			
		- Winter			
	2.Identification of tools, materials and equipment is done	- Wrenches			
		- Tape measure			
		- Blow lamp			
		- Split level			
		- Hammer			
		- String			
		- Hoe			
		- Spade			
		- Pick axe			
		- Hark saw			
		- Plastic pipes			
		- Solvents			
		- Mastic			
		- Cement			
		- Pencil			
		- Sharpener			
		- Paper			
		- Rubber			
		- Pens			
	3.Selection of drainage pipes is done	- Plastic pipes			
2. Quality of product	4.Sketching of the system is done	- Dimensioning			
		- Symbols			
	5. Application methods of pipes laying is done	- Single stack system			
	6. Connection of pipes to sanitary appliances is done	- Joint connection of pipe to appliances			
		- Methods of connection			
		- Fixing of pipes			
	7. Connection of pipes to the manholes is done	- Sealing of pipes to the manholes			
		- Leakage			
	9. Digging trenches of underground pipes is	- Gradient of trenches			

	done	- Width of trenches			
		- Height of trenches			
		- Length of trenches			
	10. Connection of underground pipe is done	- Sealing of underground pipe			
		- Leakage			
		- Size of underground pipe			
		- Fittings position			
		- Type of pipe connection			
	11.Connection of pipes from manholes to the septic tank and soak pit is done	- Type of pipe connection			
		- Sealing of pipe			
		- Leakage			
		- Size of pipe			
		- Fittings position			
	12.Sealing of above and underground systems is done	- Leakage			
		- Fixing of pipe			
3.Relerevance	13.Fastening of pipes is done	- Fixing of pipe			
	14.Measurement is respected	- Distance from the building to the septic tank is 15m			
	15.Time is respected	- 4hours			
	1.cleaning of the workplace	- Neatness			
	2. cleaning and storage of tools and equipment	- Storage			
	3. report of the work done	- Communicate the finished work			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			
		- Equipment conditions			
4. Safety	16.PPE are used	- Overall			
		- Gloves			
		- Goggles			
		- Helmet			
		- Safety shoes			
	17.Tools and equipment are checked before being used	- Tools and equipment condition			

	18.Working environment is prepared	- Cleanness of working area			

CP1209: RAIN WATER HARVESTING		
Competence :Perform rain water harvesting		
RTQF LEVEL: 1 & 2	**CREDITS: 8**	**LEARNING HOURS : 80hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to perform rain water harvesting for plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES

CP1201 Introduction to plumbing trade
CP1202 Use of plumbing tools and equipment
CP1214 Safety and health
CP1215 Basic drawing
CP1216 Basic electricity
CP1217 Basic masonry
CP1218 Basic welding
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.

Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1. Prepare the site	1.1 Appropriate site investigation 1.2 Proper identification of tools, materials and equipment 1.3 Appropriate sketching of the system
2. Connect pipes/eaves gutters and Distribute water	2.1 Correct setting of gradients 2.2 Correct installation of eave gutters 2.3 Proper installation of rain water pipes 2.4 Proper connection of rain water pipes to the tank
3. Handover the work	3.1Proper cleaning tools and equipment 3.2 Proper storing tools, equipment and materials 3.3 Proper report of work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Prepare the site **learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
1.1. Investigate site	• Getting the information • Collecting the data	○ Visit the site	- Pens - Paper - Tape measure
1.2. Identify tools, materials and equipment	• **Tools and equipment** - Screw drivers - Pipe wrench - Spanners - Hack saw - Pliers - Power hand drill - Hummer - Tape measure - PPE - Pipe cutter - Trowel • **Materials** ✓ Flexible pipe ✓ Pipes ✓ Teflon ✓ Fittings ✓ Soil solvent ✓ Screws ✓ Water tank ✓ Gutters ✓ Fasteners ✓ Cement ✓ Mastic	○ Brainstorming on materials choice ○ Group discussion on material choice ○ Demonstration on material choice ○ Further research on internet	- Screw drivers - Pipe wrench - Spanners - Hack saw - Pliers - Power hand drill - Hummer - Tape measure - Pipe - Pipe cutter - Trowel - Flexible pipe - Pipes - Teflon - Fittings - Soil solvent - Screws - Water tank - Gutters - Fasteners - Cement - Mastic
1.3. Sketch the system	• Drawing tools ✓ Pencil ✓ Paper ✓ Rubber ✓ Sharpener	○ Exercises on sketching	- Book - Internet - Pipes handout notes - Pencil - Paper

			- Rubber - Sharpener

Learning unit 2: Connect pipes/eave gutters and Distribute water **learning hours: 40hours**

Learning outcomes	Content	Learning activities	Resources
2.1. Set gradients	• Setting slop : ✓ Method of fixing ✓ Types of gutters ✓ Length of loaf	○ Practical exercises on set gradients	- Split level - Tape measure - Eave gutters - Books
2.2. Install eave gutters	• Introduction to eaves and gutters • Types of gutters ✓ Plastic gutters ✓ Metal gutters • Installation of eave gutters	○ Practical exercises on: ▪ Checking the gradient of gutters ▪ Measuring lengths of pipes/gutters ▪ Fixing gutter box ▪ Fixing the outlet piece pipe ▪ Fixing brackets or welding gutters	- Metallic and plastic gutters - Welding plant - Brackets - Screw drivers - Hack saws - Hammers - Tape measures Sprit levels
2.3. Install and Connect rain water pipes to the tank	• Introduction to rain water. • Installation of rain water pipes	○ Practical exercises on: ▪ Marking the position for the rain water pipe ▪ Fixing clips ▪ Joining pipes ▪ Connecting pipes to gutters ▪ Connecting the rain water pipe to the reservoir /storage tank ▪ Fixing a draw off tap	- Pipes - Clips - Screws - Hammers - Screw drivers - Hack saws - Drills - Tape measures - Solvent cement - Taps - Tanks

Learning unit 3: Handover the work **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
3.1 Clean tools and equipment	• Method of cleaning: ✓ Air pressure ✓ Cleaning with cloth rugs ✓ Soap	• Brainstorming on hygiene • Brainstorming on cleaning and storing tools and equipment • Group discussion on cleaning tools and equipment.	- Books - Hand out notes - Workshop - Cloth rugs - Air pressure
3.2 Store tools, equipment and materials	• Rearrange • Remove the remains, metals chips and dust from the working place	• Brainstorming on storing tools, equipment and materials • Group discussion on storing tools, equipment and materials	- Books - Hand out notes - Workshop
3.3 Work report	• Writing the correct report ✓ Usable materials ✓ Remain materials	• Brainstorming on report writing • Group discussion on report writing.	- Books - Hand out notes - Computer - Pens - papers

Assessment guide lines

Portfolio for formative assessment

Element of competence	Performance criteria	Checklist	Score		Observation
			Yes	**No**	
1. Prepare the site	1. Site investigation is done.	- Sketching the system			
		- Price of materials			
		- Climate condition			
	2. identification of tools,	- Type			

	materials and equipment is done	- Quality			
		- Size			
		- Quantity of materials			
	3. Appropriate sketching of the system	- Dimensioning			
		- Symbols			
		- Scale			
		- Type of lines			
2.Connect pipes/eaves gutters and Distribute water	1. setting of gradients is done	- Flow rate			
		- Gradient/ slope			
	2. Installation of eave gutters is done**.**	- Leakage			
		- Tightening			
		- Fixing			
	3**.** Installation of rain water pipes is done.	- Diameter			
		- Joint			
		- Fixing			
		- Appearance			
		- Fittings Position			
		- Leakage			
	4. Connection of rain water pipes to the tank is done.	- Joint			
		- Leakage			
		- Fittings position			
3. Handover the work	1**.** cleaning tools and equipment	- Neatness			
	2. Proper storing tools, equipment and materials	- Storage			
		- Equipment conditions			

Summative assessment
Integrated situation

Mr MUHINDE built 2 houses in Ruyenzi in Kamonyi district, want to receive water from those houses by using plastic gutters .As a plumber you are requested to harvest rain water to the tank.

The measurement for houses:

1st house 7X11m, and 2.8 m height with slope of 25%.

2nd house 10x14m and 4 m height with slope of 37%.

The work request within 5 hours.

Rogiers' criteria	Performance criteria=assessment criteria	Evidence/ indicator/checklist per performance criterion	Score		Observation
			Yes	No	
1.Quality of process	1. Site investigation is done.	- Sketch			
		- Price of materials			
		- Winter			
	2. Identification of tools, materials and equipment	- Screw drivers			
		- Pipe wrench			
		- Spanners			
		- Hack saw			
		- Pliers			
		- Power hand drill			
		- Hummer			
		- Tape measure			
		- PPE			
		- Pipe cutter			
		- Trowel			
		- Flexible pipe			
		- Pipes			

		- Teflon			
		- Fittings			
		- Soil solvent			
		- Screws			
		- Water tank			
		- Gutters			
		- Fasteners			
		- Cement			
		- Mastic			
		- Screw drivers			
	2. sketching of the work	- Dimensioning			
		- Symbols			
2. Quality of product	1. setting of gradients is done	- 25% of slope			
		- 37% of slope			
	2. Installation of eave gutters is done.	- Plastic gutters			
		- Tank			
	3. Installation of rain water pipes is done.	- Diameter of pipe			
		- Joint of eaves gutters			
		- Fixing of eaves gutters and pipes			
		- Fittings Position			
	4. Connection of rain water pipes to the tank is done	- Diameter rain water pipe			
		- Joint eaves gutters and pipes			
		- Fixing eave gutters and rain water pipes			
		- Fittings Position			
3.Relerevance	1. Time is respected	- 5 hours			
	2.measurement is respected	- 1st house 7X11m			
		- Height of 2.8 m			
		- Slope of 25%.			
		- 2nd house 10x14m			
		- Height of 4 m			
		- Slope of 37%.			
	3. cleaning tools and equipment	- Clearness of tools and equipment			

	4. Proper report of work done	- Communicate the finished work			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			
4. Safety	1. PPE is used (Tools status are checked before starting the work	- Overall			
		- Gloves			
		- Safety boots			
		- Helmet			
		- Face mask			
		- Air muffler			
	2. Tools, equipment and materials are used	- Status of Tools, equipment and materials			
	3. Working environment is prepared	- First aid kit			
		- Cleanliness of working area			

CP1210: WATER PUMPS		
Competence :Install water pump		
RTQF LEVEL: 1 & 2	**CREDITS: 8**	**LEARNING HOURS : 80hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to perform rain water harvesting for plumbing works at the construction site in respect to the standards

PREREQUISITE MODULES

CP1201 Introduction to plumbing trade
CP1202 Use of plumbing tools and equipment
CP1214 Safety and health
CP1215 Basic drawing
CP1216 Basic electricity
CP1217 Basic masonry
CP1218 Basic welding
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1. Prepare the work place	1.1 Correct location of water source 1.2 Correct location of delivery point 1.3 Appropriate sketching 1.4 Proper selection of tools, materials and equipment 1.5 Proper selection of the pump
2. Perform pump connections	2.1 Proper fixing of the water pump on the basement 2.2 Appropriate power connection of pump 2.3 Proper connection of pump to the suction pipe 2.4 Proper connection of pump to the delivery pipe
3. Test pump installation	3.1 Appropriate delivery pressure of water

	3.2 Appropriate delivery discharge of water 3.3 Proper checking of leakages 3.4 Correct report of the work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Prepare the work place **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
1.1 Select tools, materials and equipment	• Tools and materials : ✓ Pipe cutter ✓ Pipes ✓ Tubes ✓ Accessories ✓ Bench ✓ Vices ✓ Bending machine ✓ Spanners • Different types of pumps: ✓ Centrifugal pump ✓ Reciprocating pump ✓ Rotary pump ✓ Semi-rotary pump.	○ Visit different plumbing sites ○ Observe different tools, materials and equipment of a plumber ○ Choose tools, materials and equipment ○ Check for damaged tools, materials and equipment	- Pipe cutter - Pipes - Tubes - Accessories - Bench - Vice - Bending machine - Spanners - Centrifugal pump - Reciprocating pump - Rotary pump - Semi-rotary pump. - Books - Internet
1.2 Sketch system	• Drawing tools ✓ Pencil ✓ Paper	○ Exercises on sketching	- Book - Internet - Pipes handout notes

	✓ Rubber ✓ Sharpener		- Pencil - Paper - Rubber - Sharpener
1.3 Locate water source and delivery point	• Pressure of the water main • Distance from water main to the delivery point	○ Practical exercise on Locating of water source and delivery point ○ Brainstorming on Locating of water source and delivery point ○ Group discussion on Locating of water source and delivery point	- Valves - Tape measure
1.4 Select water pumps	• Identify water source • Identify delivery point. • Pump operation: ✓ Pump with piston ✓ Pump with impellers	○ Practical exercise on selection of water pumps ○ Brainstorming on selection of water pumps ○ Group discussion on selection of water pumps	- Books - Internet - Pump with piston - Pump with impellers

Learning unit 2: Perform pump connections **learning hours: 50hours**

Learning outcomes	Content	Learning activities	Resources
2.1.Fix the water pump on the basement	• Making a flame basement for the pump • Different types of bolt and nuts: (10, 12, 13, 14, 17,19, 21, 24, 27)	○ Visit different plumbing sites ○ Observe different tools ,materials and equipment of a plumber ○ Choose tools, materials and equipment ○ Practical exercises of fixing pumps.	- Angle line - Spanners - Welding machine, electrode - bench - Engineering vice - Tape measure. - Different types of bolts and nuts: (10, 12, 13,14, 17, 19, 21, 24, 27)

2.2. Connect electrical power on the water pump	• Type of electrical connections: ✓ Pump with single phase motor. ✓ Pump with three phases motor	○ Visit different plumbing sites ○ Observe different tools ,materials and equipment of a plumber ○ Choose tools, materials and equipment ○ Check for damaged tools, materials and equipment	- Books - Internet - Wires - Socket break - pump
2.3. Connect suction and delivery pipes	• Types fittings : ✓ Non-return valve • Connection of suction and delivery pipes	○ Observe fittings ○ Check for size ○ Check for quality of materials ○ Practical exercises on connecting suction and delivery pipes	- Books on plumbing - Galvanized mild steel pipe - Copper pipes - PVC pipes - Ductile iron pipes - Non-return valves

Learning unit 3: Test pump installation **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
3.1. Check water pressure on delivery point	• Checking pressure with manometers or pressure gauges	○ Practical exercises on testing using the pressure gauges.	- Manometers - Books - Internet
3.2. Check water discharge on delivery point	• Checking discharge from the outlet	○ Practical exercises on testing using the pump	- Books - Internet
3.3.Check leakages	• Types of tests: ✓ Water pressure ✓ Air compressor	○ Practical exercises on testing using the pump and compressor	- Electrical/manual pump - Compressor - Water

3.4.Work report	• Schedule the pump maintenance ✓ Oiling and greasing of motion party ✓ Checking air chamber ✓ Checking the non-return ✓ Check electrical current • Writing the work done report	○ Learners are given samples of written reports ○ Practical exercise on writing reports.	- Books - Computers - Pens

Assessment guide lines

Portfolio for formative assessment

Element of competence	**Performance criteria**	**Checklist**	**Score**		**Observation**
			Yes	No	
1. Prepare the workplace	1. Location of water source is done.	- Volume of the tank			
		- Distance			
		- type of water source			
	2. location of delivery point is done	- Distance			
		- Materials			
		- Type of pump			
	3. sketching is done	- Symbols			
		- Type of lines			
		- Scale			
		- Dimensioning			
	4. Selection of tools, materials and equipment is done.	- Quality			
		- Quantity of materials			
		- Size			
		- Type			
2. Perform pump connections.	1. Fixing of the water pump on the basement is done.	- Position			
		- Tightening			

		- Fixing			
	2. Power connection of pump is done.	- Connection			
		- Protection			
	3. Connection of pump to the suction pipe is done.	- Leakage			
		- Position of safety valve			
		- Fixing			
	4. Selection of pipes and their accessories is done.	- Type			
		- Quality			
		- Size			
		- Quantity			
	5. selection of the pump	- Type			
		- Quality			
		- Function			
3. Test pump installation	1. delivery pressure of water is done	- Leakage			
		- Pressure			
	2. delivery discharge of water is done	- Discharge			
		- Leakage			
	3.checking of leakages is done	- Leakage			
	4.report of the work done is done	- Communicate the finished work			
		- Equipment conditions			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			

Summative assessment
Integrated situation

Green hills academy located in Nyarutarama sector ,Gasabo district has a problem of low pressure in water distribution in administration block .The underground water tank is 60m away from the administration block. As a plumber you are requested to install water pump in order to solve that problem within 2 hours.

Rogiers' criteria	Performance criteria=assessment criteria	Evidence/ indicator/checklist per performance criterion	Score		Observation
			Yes	No	
1.Quality of process	1. Selection of tools, materials and equipment is done.	- pipes			
		- water pump			
		- Hook			
		- Hoes			
		- Wrenches			
		- Tape measure			
		- Blow lamp			
		- Split level			
		- Hammer			
		- String			
		- Hoe			
		- Spade			
		- Pick axe			
		- Hark saw			
		- Plastic pipes			
		- Solvents			
		- Mastic			
		- Cement			
		- Pencil			

		- Paper			
		- Rubber			
		- Pens			
		- Size			
	2. sketching of the work	- Dimensioning			
		- Symbols			
	4. Location of water source is done.	- 60m from the administration block to the underground tank			
		- Volume of underground tank			
		- underground water source			
	4. location of delivery point is done	- Distance between water pump and delivery point			
	5. selection of the pump is done	- Quality of pump			
		- Type of pump			
		- Capacity of pump			
2.Quality of product	1. Fixing of the water pump on the basement is done.	- Position of water pump to the basement			
		- Tightening of bolts			
		- Fixing of bolt			
	2. Power connection of pump is done.	- Connection of electric current			
		- Protection of circuit by using circuit breaker			
	3. Connection of pump to the suction pipe is done.	- Leakage at the suction pipe			
		- Position of safety valve			
		- Fixing of pipe			
	4. Connection of pump to the delivery pipe is done	- Leakage at delivery pipe			
		- Position of safety valve			
		- Fixing of delivery pipe			
3.Relerevance	1. delivery pressure of water is done	- Leakage			
		- water Pressure to the outlet			

	2. delivery discharge of water is done	- Discharge to the outlet			
		- Leakage			
	3.Time is respected	- 2 hours			
	4. checking of leakages is done	- Leakage			
	5. report of the work done is done	- Communicate the finished work			
		- Equipment conditions			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			
4. Safety	1.PPE is used (Tools status are checked before starting the work	- Overall			
		- Gloves			
		- Safety boots			
		- Helmet			
		- Goggles			
		- Face mask			
	2.Tools, equipment and materials are used	- Status of Tools, equipment and materials			
	3.Working environment is prepared	- First aid kit			
		- Cleanliness			

CP1211: SOLAR WATER HEATERS		
Competence :Install solar water heater		
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
RTQF LEVEL: 1 & 2	**CREDITS: 9**	**LEARNING HOURS : 90 hours**
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee toinstall solar water heaterfor plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES
CP1201 Introduction to plumbing trade
CP1202 Use of plumbing tools and equipment
CP1214 Safety and health
CP1215 Basic drawing
CP1216 Basic electricity
CP1218 Basic welding
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1. Prepare the work place	1.1 Correct location of water source. 1.2 Correct location of delivery point. 1.3 Appropriate sketching of the system 1.4 Proper selection of tools, materials and equipment 1.5 Proper selection of solar water heater
2. Perform solar water heater fixing and connections	2.1 Proper mounting of the solar water heater to the stand 2.2 Proper connection of electrical power 2.3 Proper connection of solar water heater inlet 2.3 Proper connection of solar water heater outlet
3. Test solar water	3.1 Correct hot storage vessel connections 3.2 Proper water boiling of solar water heater 3.3 Proper Checking of solar water heater leakages. 3.4 Correct Checking of the temperature of solar water heater to appliances

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Prepare the work place **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
1.1 Locate water source and delivery point	• Types of pipes: ✓ Galvanized mild steel ✓ Copper pipes ✓ PVC pipes ✓ Cast iron pipes ✓ Ductile iron pipes ✓ Steel pipes PPR pipes • Sizes of the pipes and fitings: (1/2'', 3/4'', 1'', $1^{1/2''}$.....)	○ Observe fittings ○ Check for size ○ Practical exercises on locating water source and delivery point.	- Books on plumbing - Galvanized mild steel - Copper pipes - PVC pipes - Cast iron pipes - Ductile iron pipes - PPR pipes - Internet
1.2. Sketch water supply system	• Drawing tools ✓ Pencil ✓ Paper ✓ Rubber ✓ Sharpener ✓	○ Exercises on sketching	- Book - Internet - Pipes handout notes - Pencil - Paper - Rubber - Sharpener
1.3. Select tools, materials and equipment	• Materials • Galvanized mild steel pipes • Copper pipes	○ Visit different plumbing sites and factories ○ Observe different tools,	- Pliers, - Screw drivers - Multimeter

	• PVC pipes • Solar water heaters • Tools ✓ Hummer ✓ Pipe wrenches ✓ Hack saw ✓ Pipe cutter ✓ Adjustable spanner ✓ Dies ✓ Pipe vice ✓ Tape measure ✓ Radder ✓ String ✓ Drilling machines ✓ bolts	materials and equipment of a plumber ○ Choose tools, materials and equipment ○ Check for damaged tools and equipment	- Solar water heater - Wires - Cables - Clips - Hummer - Drilling machine - Extension - Pipe wrenches - Hack saw - Thread tape - Pipes - Fittings - Pipe cutter - Adjustable spanner - Dies - Pipe vice - Hydraulic press binder - Ladder - Tape measure
1.4.Select solar water heaters	• Types of solar water heaters: ✓ Direct and indirect system ✓ Mixing 2 systems, Direct and Indirect. ✓ Passive direct system. ✓ Flat plate collector ✓ Passive and active system. ✓ Active indirect systems: drain back and antifreeze.	○ Observe types of solar water heaters	- Books - Internet - Solar water heater

Learning unit 2: Perform solar water heater fixing and connections. **Learning hours: 50hours**

Learning outcomes	Contents	Learning activities	Resources

2.1 Connect electrical power	• Electrical connection to the vessel	○ Visit different plumbing sites ○ Observe different tools ,materials and equipment of a plumber ○ Choose tools, materials and equipment ○ Check for damaged tools, materials and equipment	- Books - Internet - Wires - Socket break - Solar water heater - Vessel
2.2 Connect cold water	• Cold water supply to the solar water heater	○ Practical exercises: ▪ Connect cold water from the tank to the inlet of the solar water heater	- Die stock - Pipe wrench - Adjustable spanner - Thread tape - Tape measure - Fittings - Pipes
2.3 Connect hot water	• Hot water supply to the building	○ Practical exercises: ○ Locate the position of the storage vessel. ○ Fix the solar water heater. ○ Connect supply pipe from the distribution pipe ○ Fix safety valve to the inlet pipe ○ Connect the mixture tap ○ Connect electrical power to the lamp signal.	- Kitchen Water heater - Pipes, fittings and Thread tapes - Safety valves - Tools (Spanners, Hack saws)
2.4 mount the solar water heater to the stand	• Solar water heater stand • Different types of bolts and nuts: 10, 12, 13, 14, 17, 19 , 21, 22, 24, 27	○ Practical exercises on determining the height of the solar water stand ○ Practical exercises on assembling, fixing of the solar water stand	- Drilling machine - Grinding machine - Welding machine - Electrical cutting - Hack saw - Electrodes - Bench

			- Vice - spanners

Learning unit 3: Test solar water heater **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
3.1.1storage vessel connections	• Carry out test ✓ Connection of inlet pipe ✓ Connection of outlet pipe ✓ Connection of electrical power	○ Practical exercises on testing	- Spanners - Multimeter - Lamp test
3.2. Check water boiling on solar water heater and temperature of water to appliances	• Method of checking the water temperature ✓ Sensible by hand ✓ Temperature gauge	○ Practical exercises on water checking ○ Brainstorming on boiling water.	- Thermometer - Books - internet
3.3. Check solar water heater leakages.	• Types of tests: ✓ Water pressure ✓ Air compressor	○ Practical exercises on testing using the compressor ○ Group discussion	- Electrical/manual pump - Compressor - Water

Assessment guide lines

Portfolio for formative assessment

Element of competence	Performance criteria	Checklist	Score	Observation

			Yes	No	
1. Prepare the workplace	1. Location of water is done	- Distance			
	2. Location of delivery point is done	- Position			
		- Distance			
	3. Selection of tools, materials and equipment is done	- Type			
		- Quality			
		- Size			
		- Quantity of material			
	4. Sketching of the system is done	- Dimensioning			
		- Symbols			
	5.Selection of solar water heater is done	- Type			
		- Quality			
		- Size			
		- Quantity of water content			
2. Perform solar water heater fixing and connections.	1. Mounting of the solar water heater to the stand is done	- Fixing			
		- Tightening			
	2. Connection of electrical power is done.	- Protection			
		- Connection			
	3. Connection of solar water heater inlet is done.	- Joint			
		- Leakage			
		- Fittings position			
	4. Connection of solar water heater outlet is done.	- Joint			
		- Leakage			
		- Fittings position			
3. Test solar water	1.Hot storage vessel connections are done	- Joint			
		- Leakage			
		- Fittings position			
		- Tightening			

	2.Water boiling of solar water heater is done	- Temperature			
	3. Checking of solar water heater leakages are done.	- leakage			
	4.Checking of the temperature of solar water heater to appliances are done	- Temperature			

Summative assessment
Integrated situation

The Manager of centre pastoral incuti located in Rusizi district has an apartment house of accommodation. He wants to install the solar water heaters as follows by using the Galvanized mild steel pipes and by using combination of direct and indirect systems. The addition information will find on the plan. He requests the Rwameco Ltd to solve the above mentioned work. The technical directors of the company request you as a plumber to perform the work within 4hours.

Rogiers' criteria	Performance criteria=assessment criteria	Evidence/ indicator/checklist per performance criterion	Score		Observation
			Yes	No	
1.Quality of process	1. Location of water source. is done	- Quantity of water			
		- Distance from water source to solar water heater			
	2. Location of delivery point is done	- Distance from solar water heater to the sanitary appliances			
		- Position solar water heater			
	3.sketching of the system is done	- Dimensioning			
		- Symbols			
	4.selection of tools, materials and equipment is done	- Pliers			
		- Screw drivers			

		- Millimeter			
		- Solar water heater			
		- Wires			
		- Cables			
		- Clips			
		- Hummer			
		- Drilling machine			
		- Extension			
		- Pipe wrenches			
		- Hack saw			
		- Thread tape			
		- Pipes			
		- Heater			
		- Connection of electrical cable			
		- Circuit t breaker			
		- Wire			
	5. selection of solar water heater is done	- Type of solar water heater			
		- Quality of solar water heater			
		- Size of solar water heater			
		- Quantity of water content			
2.Quality of product	1. mounting of the solar water heater to the stand is done	- Position of the solar water heater to the stand.			
		- Fixing of the solar water heater to the stand.			
		- Tightening of the solar water heater to the stand.			
	2. connection of electrical power is done	- Protection of electric current			
		- Connection of electric current			
	3. connection of solar water heater inlet is done	- Joint of the solar water heater to the pipe inlet			
		- Leakage			
		- Fittings position			

	4. connection of solar water heater outlet	- Joint of pipe outlet to the solar water heater			
		- Leakage			
		- Fittings position			
	5.Hot storage vessel connections is done	- Joint of the solar water heater to the Hot storage vessel			
		- Leakage			
		- Fittings position			
		- Tightening of Hot storage vessel			
3.Relerevance	1. Water boiling of solar water heater is done	- Temperature of water			
	2 .Checking of solar water heater leakages is done	- Leakage			
	3 .Checking temperature of solar water heater to appliances	- Temperature of water			
	4.Time is respected	- 4 hours			
4.Safety	1.PPE is used (Tools status are checked before starting the work	- Overall			
		- Gloves			
		- Safety boots			
		- Helmet			
	2.Tools and equipment are checked before being used	- Tools and equipment condition			
	3.Working environment is prepared	- Cleanness of working area			

CP1212: GAS PIPES		
Competence :Install gas pipes		
RTQF LEVEL: 1 & 2	**CREDITS: 10**	**LEARNING HOURS : 100 hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to install gas pipes for plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES

CP1201 Introduction to plumbing trade
CP1202 Use of plumbing tools and equipment
CP1214 Safety and health
CP1215 Basic drawing
CP1218 Basic welding
CP1219 computer literacy
CP1220 communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1.Identify materials	1.1 Proper identification of pipes according to their color code (light, medium, heavy) 1.2 Appropriate selection of gas pipes (according to the type of work) 1.3 Proper identification of fittings used in gas pipes 1.4 Proper selection of tools, materials and equipment for gas pipes
2. Joint gas pipes	2.1 Correct cutting and threading of gas pipes 2.2 Proper application methods of joining gas pipes 2.3 Proper methods of bending gas pipes 2.4 Proper application methods of joining copper pipes, cast and ductile iron pipes and stainless steel tubes
3.Test the work done	3.1 Proper checking of leakages 3.2 Proper storage of materials 3.3 Correct report of the work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Identify materials. **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
1.1. Identify pipes	• Different pipe according the weight and their color code : ✓ Light ✓ Medium ✓ Heavy • Different pipe according to their color code ✓ Brown ✓ Blue or Yellow ✓ Red or Green	○ Practical exercise on identification of pipes ○ Group discussion on identification of pipes ○ Brainstorming on pipe identification.	- Books - Pipes - internet
1.2.Select gas pipes	• Select gas pipes according to ✓ Size ✓ Pressure ✓ function	○ Practical exercise on selection of gas pipes ○ Group discussion on selection of gas pipes ○ Brainstorming on pipe selection. ○ Demonstration of the gas pipe	- Books - Internet - Gas pipes
1.3.Identify fittings used in gas pipes	• Different types of fittings ✓ Coupling ✓ Cap ✓ Elbows ✓ Reducer ✓ Nipple ✓ Tee-joint ✓ Double Tee(cross) ✓ Union ✓ Socket ✓ Valves ✓ Blow gun ✓ Plug	○ Group discussion on identification of fittings used in gas pipes. ○ Brainstorming on identification of fittings used in gas pipes. ○ Demonstration on identification of fittings used in gas pipes.	- Coupling - Cap - Elbows - Reducer - Nipple - Tee-joint - Double Tee(cross) - Union - Socket - Valves - Blow gun - Plug

1.4.Select tools, materials and equipment for gas pipes	• Tools and equipment ✓ Hummer ✓ Pipe wrenches ✓ Hack saw ✓ Pipe cutter ✓ Adjustable spanner ✓ Dies ✓ Pipe vice ✓ Tape measure • Materials ✓ Coupling ✓ Cap ✓ Elbows ✓ Reducer ✓ Nipple ✓ Tee-joint ✓ Double tee(cross) ✓ Union ✓ Socket ✓ Valves ✓ Blow gun ✓ Plug ✓ Gas pipes	○ Practical exercise on selection of tools, materials and equipment for gas pipes ○ Group discussion on selection of tools, materials and equipment for gas pipes ○ Brainstorming on tools, materials and equipment selection. ○ Demonstration on tools, materials and equipment selection.	- Hummer - Pipe wrenches - Hack saw - Pipe cutter - Adjustable spanner - Dies - Pipe vice - Tape measure - Coupling - Cap - Elbows - Reducer - Nipple - Tee-joint - Double tee(cross) - Union - Socket - Valves - Blow gun - Plug - Books - Internet - Gas pipes

Learning unit 2: Joint gas pipes **Learning hours: 60hours**

Learning outcomes	Content	Learning activities	Resources
2.1Cut and thread gas pipes	• Cutting ✓ Pipe cutter ✓ Hark saw ✓ File ✓ Angle grinder machine • Threading ✓ Dies ✓ Power threading machine	○ Practical exercises on cutting and threading gas pipes ○ Brainstorming on cutting and threading gas pipes	- Pipe cutter - Hark saw - File - Angle grinder machine - Dies - Power threading machine - Books

			- Internet
2.2.Apply methods of joining gas pipes	• Different methods of joining copper pipes: ✓ Compression joints ✓ Capillary joints ✓ Brazing joints	○ Practical exercises on: ▪ Application of compression joints ▪ Application of capillary joints ▪ Application of brazing joints ○ Brainstorming on: ▪ Application of compression joints ▪ Application of capillary joints ▪ Application of brazing joints ○ Group discussion on: ▪ Application of compression joints ▪ Application of capillary joints ▪ Application of brazing joints	- Spanners - Blow lamp - Tube cutter - Oxyacetylene gas - Hammer - Solder and flux
2.3.Bend gas pipes	• Different method of bending by using: ✓ Heat ✓ Spring ✓ Bending machine		- Spring - Bending machine - Blow lamp - Books - Internet
2.4.Apply methods of joining copper pipes, cast ductile iron pipes and stainless steel tubes	• Different methods of joining copper pipes: ✓ Compression joints ✓ Capillary joints ✓ Brazing joints • Methods of joining cast ductile iron : ✓ Flange joints in above ground ✓ O ring push-on (Socket and spigot) ✓ Caulked joint • Methods of joining stainless steel : ✓ Coupling joint ✓ Arc Welding	○ Practical exercises on joining cast and ductile iron pipes: ▪ Apply flange joints in above ground ▪ Apply O ring push-on (Socket and spigot) ▪ Apply caulked joint ○ Practical exercises on joining steel pipes: ▪ Apply coupling joint ▪ Apply welding (on big diameter ○ Practical exercise on Different methods of joining copper pipes: ▪ Application on compression joints ▪ Application on capillary joints ▪ Application on brazing joints	- Spanners, - Blow lamp - Tube cutter - Flare tool - Bending springs - Oxyacetylene gas - Hammer - Solder and flux - Cast - Ductile iron pipes - Flanges - Wheel cutter - Welding machine - Welding rods - Extension wires - Spanners

Learning unit 3: Test the work done. **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
3.1. Check leakages	• Types of tests: - Water pressure - Air compressor	○ Practical exercises on testing using the pump and compressor	- Pump - Compressor - Water - Smoke
3.2. Store materials	• Rearrange • Remove the remains, metals chips and dust from the working place	○ Brainstorming on storing of materials ○ Group discussion on storing of materials. ○ Practical exercises on storing of materials	- Books - Hand out notes - Workshop
3.3. Work report	• Writing the work done report	○ Learners are given samples of written reports ○ Practical exercise on writing reports.	- Books - Computers - Pens

Assessment guide lines

Portfolio for formative assessment

Element of competence	Performance criteria	Checklist	Score		Observation
			Yes	No	
1. Identify materials	1. Identification of pipes according to their color code is done.	- Type			
		- Quality			
		- Size			

		- Quantity of materials			
	2. selection of gas pipes is done	- Type			
		- Function			
		- Size			
	3. Identification of fittings used in gas pipes is done	- Type			
		- Quality			
		- Size			
		- Quantity			
	6. selection of tools, materials and equipment for gas pipes is done	- Type			
		- Quality			
		- Size			
		- Function			
		- Quality			
2. Joint gas pipes	1. Cutting and threading of gas pipes is done.	- Length of Thread			
		- Length of Pipe			
		- Appearance of thread			
	2. Application methods of joining gas pipes are done.	- Joint			
		- Method			
		- Fixing			
		- Fittings position			
	3. Methods of bending gas pipes is done.	- Angles			
		- Method			
	4. Application methods of joining copper pipes, cast and ductile iron pipes and stainless steel tubes are done.	- Joining method			
		- Measurement			
3.Test the work done	1. checking of leakages is done	- Leakage			

	2. storage of materials is done	- Storage			
		- Arrangement			
	3.report of the work done is done	- communicate the finished work			
		- Cleanness of tools and equipment			
		- Equipment conditions			
		- Storage of tools and equipment			

Summative assessment
Integrated situation

Nyabisindu milk dairy factory located at Nyanza district wants to add another boiled steam pipes installation in order to increase their products .The distance from the boiler to the pasteuralization chamber is 20m. The chef maintenance of the factory wants you as a plumber to carry out gas pipe work installation within 3 hours.

Rogers' criteria	**Performance criteria=assessment criteria**	**Evidence/ indicator/checklist per performance criterion**	**Score**		**Observation**
			Yes	No	
1.Quality of process	1. Identification of pipes according to their color code is done.	- Type of gas pipe			
		- Quality of gas pipe			
		- Size of gas pipe			
		- Quantity of gas pipe			
	2. selection of gas pipes is done	- Type of gas pipe			
		- Function of gas pipe			
		- Size of gas pipe			
	3. Identification of fittings is done	- Type of gas pipe			

		- Quality of gas pipe			
		- Size of gas pipe			
		- Quantity of gas pipe			
	4. Selection of tools, materials and equipment is done	- Pipe wrench			
		- Spanners			
		- Hack saw			
		- Pliers			
		- Hummer			
		- Tape measure			
		- Pipe			
		- Pipe cutter			
		- Trowel			
		- Pipe vice			
		- Oil can			
		- Threading machine			
2. Quality of product	1. Cutting and threading of gas pipes is done	- Length of Thread			
		- Length of Pipe			
		- Appearance of thread			
	2. Application methods of joining gas pipes is done	- Joint of gas pipe			
		- Method of Joining gas pipe			
		- Fixing of gas pipe			
		- Fittings position of gas pipe			
	3. Methods of bending gas pipes is done	- Angles of bend			
		- Method bending			
	4. Application methods of joining copper pipes, cast and ductile iron pipes and stainless steel tubes are used	- Joining method			
		- Measurement			
3.Relerevance	1. Checking of leakages is done	- Leakage			

	2.Time is respected	- 3 hours			
	3.measuraments are respected	- Distance between boiler and pastrezation chamber is 20m			
	4. Storage of materials is done	- Storage of materials			
		- Arrangement of materials			
	5. Report of the work is done	- communicate the finished work			
		- cleanness of tools and equipment			
		- storage of tools and equipment			
		- Equipment positions			
4. safety	1.PPE is used (Tools status are checked before starting the work	- Overall			
		- Gloves			
		- Safety boots			
		- Helmet			
	2.Tools and equipment are checked before being used	- Tools and equipment condition			
	3.Working environment is prepared	- Cleanness of working area			

CP1215: BASIC DRAWING		
Competence :Apply basic drawing		
RTQF LEVEL: 1 & 2	**CREDITS: 7**	**LEARNING HOURS : 70 hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to apply basic drawing for plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES

CP1201 Introduction to plumbing trade
CP1202 Use of plumbing tools and equipment
CP1214 Safety and health
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA
Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1.Identify materials for basic drawing	1.1 Proper identification of instruments 1.2 Proper identification of equipment 1.3 Proper identification of drawing sheet
2. Perform hand draft drawing	2.1 Proper sketching of different symbols 2.2 Proper sketching of different views 2.3 Proper sketching of different sections
3.Perform hand scale drawing	3.1 Proper drawing of different symbols 3.2 Proper drawing of different views 3.3 Proper drawing of different sections 3.4 Proper Introduction of mathematics for plumbing

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer

Learning unit 1: Identify materials for basic drawing **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
1.1. Identify instruments and equipment	• Drawing instruments ✓ Pencil ✓ Ruler ✓ Rubber ✓ Curved rulers ✓ Ink pens ✓ Square ✓ Angle measurement • Equipment ✓ Drawing table	○ Brainstorming on materials choice ○ Group discussion on material choice ○ Demonstration on material choice ○ Further research on internet	- Pencil - Ruler - Rubber - Curved rulers - Ink pens - Ink bottle - Square - Angle measurement
1.2. Identify drawing sheet	• Drawing papers : A8, A7, A6, A5, A4, A3, A2, A1 and A0 • Types of drawing sheets: ✓ Tracing paper ✓ Bristol board ✓ Normal sheets	○ Brainstorming on materials choice ○ Group discussion on material choice ○ Demonstration on material choice ○ Further research on internet	- Books - Internet - Tracing paper - Bristol board - Normal sheets

Learning unit 2: Perform hand draft drawing **learning hours: 30hours**

Learning outcomes	Content	Learning activities	Resources
1.1Sketch different symbols	• Types of symbols ✓ Basic symbols • Different types of line ✓ Continuous lines ✓ Dashed lines ✓ Chain lines • Type of dimensioning ✓ Size dimensions ✓ Location dimensioning • Application of lines	○ Practical exercises on sketching symbols ○ Practical exercises on sketching different lines	- Books - Internet - Pencils - Rubbers - Papers
1.2.Sketch different views	• Different types of views ✓ Font view ✓ Top view ✓ Right and light view ✓ Bottom view ✓ Back view	○ Practical exercises on sketching different views	- Books - Internet - Pencils - Rubbers - Papers
1.3.Sketch different sections	• Definition • Presentation of section views ✓ Orthographic ✓ Pictorial	○ Practical exercises on sketching different sections	- Books - Internet - Pencils - Rubbers - Papers

Learning unit 3: Perform hand scale drawing **learning hours: 30hours**

Learning outcomes	Content	Learning activities	Resources
1.1 Draw different symbols	• Draw Basic symbols with scale • Use different line with scale ✓ Continuous lines ✓ Dashed lines ✓ Chain lines • Draw type of dimensioning with scale ✓ Size Dimensions ✓ Location dimensioning Application of lines	○ Practical exercises on different symbols	- Books - computer - Pencils - Rubbers - Papers
1.2. Drawing different views	• Draw different types of views with scale ✓ Font view ✓ Top view ✓ Right and light view ✓ Bottom view ✓ Back view	○ Practical exercises on drawing different views ○ Group discussion on drawing different views	- Books - computer - Pencils - Rubbers - Papers
1.3. Draw different sections	• Types of section : ✓ Full section ✓ Half section • Presentation of section views with scale ✓ Orthographic ✓ Pictorial	○ Practical exercises on drawing different sections with scale ○ Group discussion on drawing different sections with scale	- Books - computer - Pencils - Rubbers - Papers
1.4. Introduce mathematics for plumbing	• Apply arithmetic calculation ✓ Addition ✓ Subtraction ✓ Multiplication ✓ Division • Unit convection: ✓ Metric system ✓ Imperial system	○ Practical exercises arithmetic calculation	- Books - Calculator - Computer - Pen - Papers

Assessment guide line

Portfolio for formative assessment

Element of competence	Performance criteria	Checklist	Score		Observation
			Yes	No	
1.Identify materials for basic drawing	1.Identification of instruments is done	- Type of drawing instruments			
		- Sizes			
		- Quality			
	2.Identification of equipment is done	- Type of drawing equipment			
		- Sizes			
		- Quality			
	3.Identification of drawing sheet is done	- Type of drawing sheets			
		- Sizes			
2. Perform hand draft drawing	1.Sketching of different symbols is done	- Type of symbols			
		- Type of lines			
		- Neatness			
	2.Sketching of different views is done	- Types of views			
		- Dimensioning			
		- Scales			
		- Neatness			
		- Type of lines			
	3. Sketching of different sections is done	- Types of section views			
		- Scales			
		- Dimensioning			
		- Neatness			
		- Type of lines			

3.Perform hand scale drawing	1.Drawing of different symbols is done	- Basic symbols			
		- Dimensioning			
		- Type of lines			
		- Scales			
		- Neatness			
	2. Drawing of different views is done	- Types of views			
		- Dimensioning			
		- Angle projections			
		- Type of lines			
		- Scales			
		- Neatness			
	3. Drawing of different sections is done	- Types of section views			
		- Type of lines			
		- Dimensioning			
		- Scales			
		- Neatness			
		- Angle projections			
	4.Introduction of mathematics for plumbing is done	- arithmetic calculation			
		- Unit convection			

Summative assessment
Integrated situation

The manager of DIAMOND House requests the head of plumbing workshop at IPRC Kigali to draw DIAMOND House name out of 20 mm x 20mm of letters and 297 mmx210 mm of drawing sheet with a scale of 1/2. You as a plumber you requested to perform the work on A1 drawing paper within 3hours.

Rogers' criteria	Performance criteria=assessment criteria	Evidence/ indicator/checklist per performance criterion	Score		Observation
			Yes	No	
1.Quality of process	1.Identification of instruments is done	- Pencil			
		- Ruler			
		- Rubber			
		- Curved rulers			
		- Ink pens			
		- Square			
		- Angle measurement			
	2. Identification of equipment is done	- Drawing table			
	3. Identification of drawing sheet is done	- A1 format			
2. Quality of product	4. Sketching of different symbols is done	- Symbols			
		- Dimensioning			
	5. Sketching of different views is done	- Types of views			
		- Dimensioning			
		- Scales			
		- Neatness			
		- Type of lines			
		- First angle projection			
	6. Sketching of different sections is done	- Types of section			
		- Dimensioning			
		- Scales			
		- Neatness			
		- Type of lines			
		- First angle projection			
	7. Drawing of different symbols is done	- dimensioning			
		- symbols			
	8. Drawing of different views is done	- Types of views			
		- Dimensioning			

		- Scales			
		- Neatness			
		- Type of lines			
		- First angle projection			
	9. Drawing of different sections is done	- Types of section			
		- Dimensioning			
		- Scales			
		- Neatness			
		- Type of lines			
		- First angle projection			
3.Relerevance	1.Measurement is respected	- 20 mm x 20mm of letters and 297 mmx210 mm			
	2.Time is respected	- 3hours.			
	3.Scale is respected	- 1/2			
4. Safety	1. Tools, equipment and materials are used	- Status of Tools, equipment and materials			
	2. Instruments and equipment are checked before being used	- Instruments and equipment condition			
	3.Working environment is prepared	- Cleanness of working place			

CP1216: BASIC ELECTRICITY		
Competence :Apply basic electricity		
RTQF LEVEL: 1 & 2	**CREDITS: 7**	**LEARNING HOURS : 70hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to apply basic electricity for plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES
CP1201 Introduction to plumbing trade
CP1202 Use of plumbing tools and equipment
CP1214 Safety and health
CP1215 Basic drawing
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of competence.

Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1. Prepare the workplace/ site	1.1 Proper identification of tools, materials and equipment 1.2 Proper sketching of the work 1.3 Proper disposition of tools, materials and equipment
2. Perform various electrical circuits	2.1 Proper working out of simple circuit 2.2 Proper working out of series circuits 2.3 Proper working out of parallel circuits 2.4 Proper working out of series-parallel circuits
3.Perform measuring of circuits	3.1 Proper use of different testing instruments 3.2 Accurate reading and interpretation of measuring results 3.3 Proper testing of electrical circuits
4. Handover the work	4.1 Proper cleaning of the workplace 4.2 Appropriate cleaning and storage of tools and equipment 4.3 Relevant report of the work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Prepare the workplace/ site **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
1.**1 Identify tools, materials and equipment**	• Tools and equipment - spanners - pliers - tape measure - PPE - Multimeter - Lamp tester • Materials ✓ Wires ✓ Cables ✓ Clip connecters ✓ Scotch ✓ Fastener ✓ Fixing ✓ Circuit breaker ✓ Lamps ✓ Socket ✓ Switches ✓ connection boxes ✓ head torch	○ Practical exercise on identification of tools, material and equipment ○ Group discussion identification of tools, material and equipment ○ Brainstorming on identification of tools, material and equipment	- Spanners - Pliers - Tape measure - PPE - Multimeter - Lamp tester - Wires - Cables - Clip connecters - Scotch - Fastener - Fixing - Circuit breaker - Lamps - Socket - Switches - connection boxes
1.2.Sketch the work	• Drawing tools ✓ Pencil ✓ Paper ✓ Rubber ✓ Sharpener	○ Practical Exercises on sketching of the circuit ○ Group discussion on sketching of the circuit ○ Brainstorming on on sketching of the circuit	- Book - Internet - Pipes handout notes - Pencil - Paper - Rubber

			- Sharpener
1.3.Dispose tools, materials and equipment	• Arrange tools ,materials and equipment in appropriate space	○ Practical exercises disposing of tools, materials and equipment ○ Group discussion on disposing of tools, materials and equipment ○ Brainstorming on on disposing of tools, materials and equipment	- spanners - pliers - tape measure - PPE - Multimeter - Lamp tester - Wires - Cables - Clip connecters - Scotch - Fastener - Fixing - Lamps - Socket - Circuit breaker

Learning unit 2: Perform various electrical circuits **learning hours: 30hours**

Learning outcomes	Content	Learning activities	Resources
2.1. Work out the simple circuit	• Terminology used in electricity • Perform simple circuit	○ Practical exercise on working out the simple circuit ○ Group discussion on working out the simple circuit ○ Brainstorming on working out the simple circuit	- Pliers - Tape measure - PPE - Multimeter - Lamp tester - Wires - Clip connecters - Scotch - Fastener - Fixing - Sacket breaker - Lamp - Socket - Switch

			- connection box
2.2. Work out the series circuits	• Identification of wire ✓ Colour ✓ Size ✓ Types • Type of switches • Identification of sockets • Type of lamps • Different capacity of Circuit breaker	○ Practical exercise on working out the series circuits ○ Group discussion on working out the series circuits ○ Brainstorming on on working out the series circuits	- Pliers - Tape measure - PPE - Multimeter - Lamp tester - Wires - Clip connecters - Scotch - Fastener - Fixing - Sacket breaker - Lamp - Socket - Switch - connection boxe
2.3.Work out the parallel circuits	• Identification of wire ✓ Colour ✓ Size ✓ Types • Type of switches • Identification of sockets • Type of lamps • Different capacity of Circuit breaker	○ Practical exercise on working out of the parallel circuits ○ Group discussion on working out of the parallel circuits ○ Brainstorming on parallel circuits on working out of the parallel circuits	- Pliers - Tape measure - Pipe - Multimeter - Lamp tester - Wires - Clip connecters - Scotch - Fastener - Fixing - Sacket breaker - Lamp - Socket - Switch - Connection box
2.4.Workout the series-parallel circuits	• Identification of wire ✓ Colour ✓ Size ✓ Types • Type of switches • Identification of sockets	○ Practical exercise on working out of the series-parallel circuits ○ Group discussion on working out of the series-parallel circuits	- Pliers - Tape measure - Pipe - Multimeter - Lamp tester - Wires

	• Type of lamps • Different capacity of Circuit breaker	○ Brainstorming on working out of the series-parallel circuits	- Clip connecters - Scotch - Fastener - Fixing - Sachet breaker - Lamp - Socket - Switch - Connection box

Learning unit 3: Perform measuring of circuits. **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
3.1. Use of different testing instruments	• Identification of electrical instruments : ✓ Ohmmeter ✓ Voltmeter ✓ Wattmeter ✓ Ammeter • Different connection of electrical instruments ✓ Range selection ✓ Series ✓ Parallel	○ Practical exercise on using of different testing instrument ○ Group discussion on using of different testing instrument ○ Brainstorming on using of different testing instrument	- Ohmmeter - Voltmeter - Wattmeter - Ammeter
3.2. Read and interpret measuring results	• Data interpretation	○ Practical exercise on read and interpret ○ Group discussion ○ Brainstorming on series-read and interpret	- Ohmmeter - Voltmeter - Wattmeter - Ammeter
3.3. Test the electrical circuits	• Test by using: ✓ Multimeter ✓ Lamp tester	○ Practical exercise on electrical test ○ Group discussion ○ Brainstorming on electrical test	- Multimeter - Lamp tester - Books - internet

Learning unit 4: Handover the work **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
4.1.Clean the workplace	• Method of cleaning: • Air pressure • Cleaning with cloth rugs • Soap	• Brainstorming on hygiene • Brainstorming on clean and store tools and equipment • Group discussion on cleaning	- Books - Hand out notes - Workshop - Cloth rugs - Air pressure
4.2.Clean and Store tools and equipment	• Rearrange • Remove the remains, metals chips and dust from the working place	• Brainstorming on store tools, equipment and materials • Group discussion on store tools, equipment and materials	- Books - Hand out notes - Workshop
4.3.Work report	• Writing the correct report ✓ Usable materials ✓ Remain materials	• Brainstorming on work report • Group discussion on report	- Books - Hand out notes - Computer - Pens - Papers

Assessment guide lines

Portfolio for formative assessment

Element of competence	Performance criteria	Checklist	Score		Observation
			Yes	No	
1. Prepare the	1. Identification of tools, materials	- Type			

workplace	and equipment	- Quality			
		- Size			
		- Quantity of material			
	2. Sketching of the work is done	- Dimensioning			
		- Symbols			
	3. Disposition of tools, materials and equipment is done	- Arrangement			
2. Perform various electrical circuits.	1. Working out of simple circuit is done	- Colour code			
		- Size			
		- Types			
	2.Working out of series circuits is done	- Colour code			
		- Size or cross section			
		- Types			
		- Capacity of circuit breaker			
	3. Working out of parallel circuits is done	- Colour code			
		- Size or cross section			
		- Types			
		- Capacity of circuit breaker			
	3.Working out of series-parallel circuits is done	- Colour code			
		- Size or cross section			
		- Types			
		- Capacity of circuit breaker			
		- Fittings position			
3. Perform measuring of circuits	1. Use of different testing instruments is done	- Voltmeter			
		- Ammeter			
		- Lamp tester			
	2. Reading and interpretation of measuring results is done	- Data interpretation			
	3. testing of electrical circuits is done	- Multimeter			
		- Lamp tester			
4. Handover the work	1.cleaning of the workplace	- Clearness			
	2. cleaning and storage of tools and	- Storage			

	equipment				
	3. report of the work done	- Communicate the finished work			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			
		- Equipment conditions			

Summative assessment
Integrated situation

UWINEZA the trainer at Nyamata TSS requests to the trainee to realize series- parallel circuit on the electrical panel in plumbing workshop, He requests you as plumber to perform the work within 3 hours.

Rogers' criteria	**Performance criteria=assessment criteria**	**Evidence/ indicator/checklist per performance criterion**	**Score**		**Observation**
			Yes	No	
1.Quality of process	1. Identification of tools, materials and equipment is done	- Type of material and component			
		- Quality of material and component			
		- Size of wires			
		- Quantity of materials and components			
		- Capacity circuit breaker			
	2. Sketching of the work is done	- Dimensioning			
		- Symbols			
	3. Disposition of tools, materials and equipment are done	- Arrangement of tools, materials and equipment.			
Quality of product	1. working out of simple circuit is done	- Colour code of the wires			
		- Size of the wires			

		- Types wire and components			
	2. working out of series circuits is done	- Colour code of the wires			
		- Size of the wires			
		- Types wire and components			
		- Capacity of circuit breaker			
	3. working out of parallel circuits is done.	- Colour code of the wires			
		- Size of the wires			
		- Types wire and components			
		- Capacity of circuit breaker			
	4.Working out of series-parallel circuits is done	- Colour code of the wires			
		- Size of the wires			
		- Types wire and components			
		- Capacity of circuit breaker			
	5. use of different testing instruments is done	- Range selection in circuit			
		- Series circuit			
		- Parallel circuit			
	3. Reading and interpretation of measuring results are done	- Data interpretation of measuring instrument			
	4. Testing of electrical circuits are done	- Multimeter setting			
		- Lamp tester connection			
3.Relerevance	Time is respected	- 3 hours			
	1.cleaning of the workplace is done	- Neatness			
	2. cleaning and storage of tools and equipment are done	- Storage tools and equipment.			
	3. report of the work done	- Communicate the finished work			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			
		- Equipment conditions			
4.Safety	1.PPE is used (Tools status are checked before starting the work	- Overall			
		- Gloves			
		- Safety boots			

	1. Tools, equipment and materials are used	- Status of Tools, equipment and materials			
	2. Instruments and equipment are checked before being used	- Instruments and equipment condition			
	3..Working environment is prepared	- Cleanness of working area			

CP1217: BASIC MASONRY		
Competence :Apply basic masonry		
RTQF LEVEL: 1 & 2	**CREDITS: 7**	**LEARNING HOURS : 70 hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT

This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to basic masonry for plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES
CP1201 Introduction to plumbing trade
CP1202 Use of plumbing tools and equipment
CP1214 Safety and health
CP1215 Basic drawing
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning unit / Element of competence By the end of the module, the trainee will be able to:	**Performance criteria**
1. Use tools, materials and equipment	1.1 Appropriate selection of PPE 1.2 Proper use of PPE 1.3 Appropriate selection and use of tools and equipment for specific work 1.4 Appropriate selection of materials for specific work
2.Apply basic plastering skills	2.1 Proper selection and batching of ingredients 2.2 Adequate mixing of ingredients 2.3 Adequate application of plastering techniques
3.Apply basic pavement skills	3.1Correct identification of types of pavement 3.2 Proper screw ding of pavement 3.3 Relevant knowledge of tiles works
4.Apply basic joinery skills	4.1 Proper application of cross cutting and ripping techniques 4.2 Appropriate application of joint techniques 4.3 Appropriate sanding of the surface
5.Handover the work	5.1 Proper cleaning of the workplace 5.2 Appropriate cleaning and storage of tools and equipment 5.3 Relevant report of the work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Use tools, materials and equipment **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
1.1.Use PPE for basic construction	• Introduction to PPE used for plastering,	○ Brainstorming / or group	- Books - Hand notes

works	joinery and pavement • Types of PPE for plastering, joinery and pavement ✓ Helmet ✓ Gloves ✓ Goggles ✓ Dust mask ✓ Overall ✓ Safety shoes • Usage and Maintenance of PPE for plastering, joinery and pavement.	discussion on how to use PPE ○ Demonstration of different types of PPE used for plastering, joinery and pavement (physical or by video) ○ Practical exercise on how to use PPE	- Internet - Helmet - Gloves - Goggles - Dust mask - Overall - Safety shoes - Video aid
1.2. Operate tools and equipment for plastering, joinery and pavement	• Classification of tools and equipment for plastering, joinery and pavement ✓ Setting out tools ✓ Cutting tools ✓ Mixing tools ✓ Cleaning tools/equipment • Usage and maintenance of tools and equipment for plastering, joinery and pavement	○ Brainstorming / or group discussion on how to select and use tools and equipment according to the work ○ Demonstration on how to select and use tools and equipment ○ Practical exercise on how to select and use tools and equipment. ○ Video on how to select and use materials	- Books - Hand notes - Internet - Spades - Trowel - Spirit level - Squares - Hammer - Building line - Tape measure - Cutting machine - Wheelbarrow - Pincers - Jointer - Pan - Wooden and steel float - Video aid
1.3. Use materials for construction	• Types of materials for plastering, joinery and pavement works	○ Brainstorming / or group discussion on construction	- Portland Cement - Pozzollana

works	✓ Sand ✓ Cement ✓ Water ✓ Filler ✓ Timber • Properties of Materials ✓ Physical ✓ Chemical ✓ Mechanical • Specifications of materials.	materials ○ Demonstration on how to use materials ○ Practical exercise on how to use materials ○ Video on how to use materials	cement - Sand - Water - White cement - Filler - Timber - Video aid

Learning unit 2: Apply basic plastering skills **learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
2.1. Prepare materials for plastering	• Different types of ingredients ✓ Cement ✓ Sand ✓ Gypsum compound ✓ Stucco putty ✓ Silicon tube • Mixing of ingredients ✓ Using proper material (sand, stucco, cement, water) for plastering works. ✓ Mixing ratio for plastering works.	○ Brainstorming / or group discussion on how to prepare materials for plastering. ○ Demonstration on how to prepare materials for plastering. ○ Practical exercise on how to batch ingredients for repairing plaster	- Books - Hand notes - Internet - Spades - Trowel - Spirit level - Squares - Hammer - Building line - Tape measure - Wheelbarrow - Pincers - Jointer - Pan - Compressor - Brush

			- Silicon gun
2.2. Apply plastering techniques	• Preparation of the area ✓ Demolition in case of repair ✓ Spray water on the surface ✓ Use of levelling mark • Steps of applying plaster mortar ✓ Fill in the space between the levelled marks ✓ Screeding the cement mortar ✓ Smooth the surface	○ Brainstorming / or group discussion on how to plaster ○ Demonstration on how to plaster ○ Practical exercise on how to plaster and	- Books - Hand notes - Internet - Spades - Trowel - Spirit level - Squares - Hammer - Building line - Tape measure - wheelbarrow - Pincers - Jointer - Pan - Compressor - Brush - Silicon gun - Sand paper - Straight edge

Learning unit 3: .Apply basic pavement skills **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
3.1. Prepare materials for pavements	• Different types of pavements ✓ Pure cement Pavement ✓ Concrete Pavement ✓ Paved pavement • Mixing of ingredients for pavement	○ Brainstorming / or group discussion on how to assess the area for pavement. ○ Demonstration on how to assess the area for Pavement	- Books - Hand notes - Internet - Spades - Trowel - Spirit level - Squares

	✓ Using proper material (sand, gravel, cement, water) for pavement works. ✓ Mixing ratio for pavement works.	○ Practical exercise on how to apply the materials for pavement	- Hammer - Building line - Tape measure - Wheelbarrow - Pincers - Jointer - Pan - Compressor - Brush - Silicon gun - Straight edge
3.2. Proper screeding of pavement	• Preparation of the area ✓ Demolition ✓ Spray water on the surface ✓ Use of levelling mark • Steps of applying cement mortar or concrete ✓ Fill the space between the levelled marks ✓ Screeding the cement mortar ✓ Smooth the surface	○ Brainstorming / or group discussion on how to assess the area for pavement. ○ Demonstration on how to assess the area for pavement. ○ Practical exercise on how to apply the materials for pavement.	- Books - Hand notes - Internet - Spades - Trowel - Spirit level - Squares - Hammer - Building line - Tape measure - Wheelbarrow - Pincers - Jointer - Pan - Compressor - Brush - Silicon gun - Sand paper - Straight edge

Learning unit 4: Apply basic joinery skills **learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
4.1 Repair and	• Prepare pieces for repair and	○ Brainstorming / or group	- Books

maintain pieces	maintenance ✓ Taking measurement ✓ Cutting pieces for replacement • Assembling of the pieces ✓ Materials use for assembling. ✓ Tools and equipment to be used. ✓ Type of joint of woods, gypsum, metallic and aluminium materials ✓ Adjustment and fixing of pieces	discussion on how to assess defect and resolution ○ Demonstration on how to assess defects ○ Practical exercise on how to repair and maintain	- Hand notes - Internet - Spades - Trowel - Spirit level - Squares - Hammer - Building line - Tape measure - Wheelbarrow - Pincers - Jointer - Pan - Compressor - Brush - Silicon gun - Sand paper - Straight edge - Cutting tools
4.2 Apply finishing skills	• Defect on structure ✓ Type of materials ✓ Type of defect according to type of materials. • Remedy of defect • Materials used to remove defect • Cleaning the surface area	○ Brainstorming / or group discussion on how to perform finishing works after repair ○ Demonstration on how to perform finishing works after repair ○ Practical exercise on how to perform finishing works after repair	- Books - Hand notes - Internet - Spades - Trowel - Spirit level - Squares - Hammer - Building line - Tape measure - Wheelbarrow - Pincers - Jointer - Pan - Compressor - Brush - Silicon gun - Sand paper

			- Straight edge

Learning unit 5: Handover the work **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
5.1. Clean the workplace	• Method of cleaning: • Air pressure • Cleaning with cloth rugs • Soap	• Brainstorming on hygiene • Brainstorming on clean and store tools and equipment • Group discussion on cleaning • Practical exercise on cleaning of the workplace	- Books - Hand out notes - Workshop - Cloth rugs - Air pressure
5.2. Clean and Store tools and equipment	• Rearrange • Remove the remains, metals chips and dust from the working place	• Brainstorming on store tools, equipment and materials ○ Group discussion on store tools, equipment and mat ○ Practical exercise on cleaning and storing tools and equipment	- Books - Hand out notes - Workshop
5.3. Work report	• Writing the correct report ✓ Usable materials ✓ Remain materials	• Brainstorming on work report ○ Group discussion on report writing ○ Practical exercise on report writing	- Books - Hand out notes - Computer - Pens - papers

Assessment guide lines

Portfolio for formative assessment

Element of competence	Performance criteria	Checklist	Score		Observation
			Yes	No	
1. Use tools, materials and equipment	1.Selection of PPE is done	- Quality			
		- Quantity of materials			
	2. Use of PPE is done	- Function			
	3. selection and use of tools and equipment for specific work is done	- Type			
		- Quality			
		- Size			
	4. selection of materials for specific work is done	- Type			
		- Quality			
		- Quantity			
2.Apply basic plastering skills	1. selection and batching of ingredients is done	- Type			
		- Quality			
		- Quantity			
	2. mixing of ingredients is done	- Ratio			
		- Type of ingredient			
		- Quantity			
	3. Application of plastering techniques is done	- Techniques of plastering			
		- leveling			
		- Number of Coats			
3.Apply basic pavement skills	1. identification of types of pavement is done	- Type			
	2. screw ding of pavement is done	- Leveling			
		- Cracks			
	3. knowledge of tiles works is done	- Size			
		- Color			
		- Quality			

		- Type			
4.Apply basic joinery skills	1. Application of cross cutting and ripping techniques is done	- Techniques of ripping			
		- leveling			
		- Clearness			
	2. Application of joint techniques is done	- Techniques of jointing			
		- leveling			
		- Clearness			
	3. Sanding of the surface is done	- Smoothness			
		- Clearness			
5.Handover the work	1. cleaning of the workplace is done	- Clearness			
	2 cleaning and storage of tools and equipment is done	- Storage			
		- Clearness			
		- Arrangement			
	3. report of the work done is done	- Communicate the finished work			
		- Equipment conditions			
		- Cleanness of tools and equipment			

Summative assessment
Integrated situation

ECOMEM LTD enterprise has a tender of construction of two Manholes at NYARUBUYE hospital the one of Manhole have40cm x40cm the thickness is 20cm. As a mason, you are requested to make it and respecting the rules listed above within 4hours.

Rogiers' criteria	**Performance criteria=assessment criteria**	**Evidence/ indicator/checklist per performance criterion**	**Score**		**Observation**
			Yes	No	
1.quality of process	1.Selection of PPE is done	- Gloves			
		- Goggles			
		- Dust mask			

		- Overall			
		- Safety shoes			
	2. selection of materials for specific work is done	- Type of materials			
		- Quality of materials			
		- Quantity of materials			
Quality of product	1.Use PPE is done	- Function of PPE			
	2. selection and use of tools and equipment for specific work is done	- Type of tools and equipment			
		- Quality of tools and equipment			
		- Size of tools and equipment			
	3. selection and batching of ingredients is done	- Type of batching ingredients			
		- Quality of batching ingredients			
		- Quantity of batching ingredients			
	4. mixing of ingredients is done	- Mixing Ratio			
		- Type of ingredient			
		- Quantity of ingredient			
	5. Application of plastering techniques is done	- Techniques of plastering			
		- Levelling of plastering techniques			
		- Number of Coats			
	1.Identification of types of pavement is done	- Type of pavement			
	2. screw ding of pavement is done	- Cracks of pavement			
		- Levelling of pavement			
	3 knowledge of tiles works is done	- Size of tiles			
		- Type of tiles			
		- Colour of tiles			
		- Quality of tiles			
	4. Application of cross cutting and ripping techniques	- Techniques of ripping			
		- Levelling of ripping			
		- Clearness			
	5. Application of joint techniques	- Techniques of jointing			
		- Levelling			
		- Clearness			
	6. Sanding of the surface is done	- Smoothness			

		- Clearness			
		- Smoothness			
3.Relerevance	1.Time is respected	- 4 hours			
	2.measurament are respected	- 40x40x20 cm			
	4..Cleaning of the workplace is done 5.Cleaning and storage of tools and equipment	- Cleanness of working area			
		- Storage of tools and equipment			
		- Cleanness of tools and equipment			
	6.Report of the work done	- Communicate the finished work			
		- Cleanness of tools and equipment			
		- Storage of tools and equipment			
4.safety	1. Tools, equipment and materials are used	- Status of Tools, equipment and materials			
	2. Instruments and equipment are checked before being used	- Instruments and equipment condition			
	3.Working environment is prepared	- Cleanness of working area			

CP1218: BASIC WELDING		
Competence :Apply basic welding		
RTQF LEVEL: 1 & 2	**CREDITS: 7**	**LEARNING HOURS : 70 hours**
SECTOR: CONSTRUCTION	**SUB-SECTOR: PLUMBING**	
ISSUE DATE: MARCH 2014	**REVIEW DATE:**	

PURPOSE STATEMENT
This is core module which describes the skills, knowledge and attitude to be acquired by a trainee to apply basic welding for plumbing works at the construction site in respect to the standards

PRERQUISITE MODULES
CP1201 Introduction to plumbing trade
CP1202 Use of plumbing tools and equipment
CP1214 Safety and health
CP1215 Basic drawing
CP1216 Basic electricity
CP1219 Computer literacy
CP1220 Communication on the workplace

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning units By the end of the module, the trainee will be able to:	**Performance criteria**
1. Prepare the site/workplace	1.1 Proper identification of materials, tools and equipment 1.2 Proper disposition of tools, materials and equipment 1.3 Appropriate sketching of welding work.
2. Perform arc welding	2.1 Correct use of measuring, marking and cutting tools 2.2 Correct edge preparations 2.3 Correct application of arc welding techniques in all positions
3. Perform oxy-acetylene gas welding	3.1 Correct use of measuring and marking tools 3.2 Correct edge preparations 3.3 Correct application of oxy-acetylene welding techniques in all positions

4. Check the work done	4.1 Accurate measurement of the work done 4.2 Neat appearance of the welded pieces 4.3 Appropriate Physical testing of the welded parts.
5. Handover the work	5.1 Proper cleaning of the workplace 5.2 Appropriate cleaning and storage of tools and equipment 5.3 Relevant report of the work done

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Prepare the site/workplace **Learning hours: 10hours**

Learning outcomes	Content	Learning activities	Resources
1.1 Identify materials, tools and equipment	Classify materials, tools and equipment : • Metals differentiation - Colors - Mass - Soundness - Chip removal • Tools : - Slot pencil - Drawing copy, - Ruler, - Rubber, - Scriber - Center punch - Compasses,	○ Brainstorming on classification of metals ○ Group discussion on ferrous- metals and non-ferrous –metals ○ Group discussion on drawing. ○ Learners will observe and practice on material selection.	- Books - Internet connection - Handout notes - Slot pencil - Drawing copy, - Ruler, - Rubber, - Scriber - Center punch - Compasses, - T-square, - Drawing board. - Bench - Vice - Hacksaw

	- T-square, - Drawing board. - Bench - Vice - Hacksaw - Wire brush - Chipping hummer • Materials: - Ferrous-metals - Non-Ferrous metals - Electrodes • Equipment: - Welding machine, - Drilling machine, - Grinding machine , - PPE (safety goggles, welding shield, overall, apron, gloves, safety shoes).		- Wire brush - Chipping hummer - Ferrous-metals - Non-Ferrous metals - Electrodes - Welding machine, - Drilling machine, - Grinding machine , - PPE (safety goggles, welding shield, overall, apron, gloves, safety shoes).
1.2. Dispose tools, materials and equipment	• Arrange tools ,materials and equipment in appropriate space	○ Practical exercise on arrangement of tools, materials and equipment ○ Group discussion on arrangement of tools, materials and equipment ○ Group discussion on drawing arrangement of tools, materials and equipment	
1.3. Sketch welding work	• Drawing tools ✓ Pencil ✓ Paper ✓ Rubber ✓ Sharpener	○ Exercises on sketching the welding work ○ Group discussion on sketching the welding work Group discussion on sketching the welding work	- Book - Internet - Pipes handout notes - Pencil - Paper - Rubber - Sharpener

Learning unit 2: Perform arc welding **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
2.1. Perform measurements, cutting and marking for ferrous metals	• Ferrous metal - Cast iron - mild steel - stainless steel	○ Learners will research on equipments types measuring, marking and cutting. ○ Learners will demonstrate and practice in group on measuring cutting and marking of ferrous metal.	- Books. - Internet connection - Tape measure - Steel ruler - Scriber, center punch - Hark saw ,electrical cutting machine, chisel - Bending machine - PPE
2.2. Prepare welding edges	• Type of edges : - X - U - K - V - Y	○ Brainstorming on welding edges preparation ○ Group discussion on welding edges preparation ○ Group discussion on welding edges preparation ○ Practical exercise on preparation of welding edge	- Books - Internet - Cutting machine - Files - Hark saw - Angle Grinding machine
2.3. Apply proper welding techniques.	• Welding techniques : - Vertical position - Horizontal position - Overhead position - Flat position • Various types of joints : - T-Joint - Lap joint - Butt joint - Bead	○ Visit active welding workshops ○ Learners will research on welding position. ○ Learners will demonstrate and practice in group. ○ Practical exercise on application of proper welding techniques	- Books. - Internet connection - Tape measure - Steel ruler - Scriber, - Center punch - Hark saw - Electrical cutting machine, - Chisel - Bending machine

			- PPE

Learning unit 3: Perform oxy-acetylene gas welding **Learning hours: 20hours**

Learning outcomes	Content	Learning activities	Resources
3.1. Use measuring and marking tools	• Tools used : ✓ Marking tools ✓ Measuring tools ✓ Cutting tools ✓ Clumping tools	○ Visit active welding workshops ○ Group discussion on using of measuring and marking tools ○ Demonstration on measuring and marking ○ Practical exercise on using of measuring and marking tools	- Books. - Internet - Tape measure - Steel ruler - Scriber, - Center pinch - Hark saw, - Electrical cutting machine, - Chisel
3.2. Prepare welding edges	• Type of edges : - X - U - K - V - Y	○ Brainstorming on welding edges preparation ○ Group discussion on welding edges preparation ○ Group discussion on welding edges preparation ○ Practical exercise on preparation of welding edges.	- Books - Internet - Cutting machine - Files - Hark saw - Angle Grinding machine - Oxy-acetylene gas welding
3.3. Apply oxy-acetylene gas welding	• Oxy-acetylene equipment : - Acetylene cylinder. - Oxygen cylinder - Nozzle - Torch - Oxygen Horse - Oxygen Horse - Regulator (manifold) - Adjustable spanner - Filer metal - Flux • Welding techniques : - Vertical position - Horizontal position	○ Brainstorming on Oxy-acetylene gas welding ○ Group discussion on oxy-acetylene gas welding ○ Group discussion on Oxy-acetylene gas welding ○ Practical exercise on application of oxy-acetylene gas welding	- Books. - Internet - Acetylene cylinder. - Oxygen cylinder - Nozzle - Torch - Oxygen Horse - Oxygen Horse - Regulator (manifold) - Adjustable spanner - Filer metal - Flux

	- Overhead position - Flat position • Various types of joints : - T-Joint - Lap joint - Butt joint - Bead		

Learning unit 4: Check the work done. Learning hours: 10hours

Learning outcomes	Content	Learning activities	Resources
6.4. Measure the work done	• The tools for measurement: - Tap measure - T-scale - Ruler • Physical inspection - Eyes - hands	○ Work in Group and individually to take measurement on final product ○ Work in Group and individually to physical inspection on final product ○ Practical exercise on measuring of the work done	- Books - Internet - Tap measure - T-scale - Hummer - Ruler - Hands - Eyes
6.5. Apply physical testing of welded pieces	• Hammering • Testing machine (hydraulic press)	○ Work in Group and individually to make hammering on final product ○ Work in Group and individually on using testing machine ○ Practical exercise on application of physical testing of welded pieces	- Internet - Books - Hummer - Hydraulic press

Learning unit 5: Handover the work Learning hours: 10hours

Learning outcomes	Content	Learning activities	Resources
5.1. Clean the workplace	• Method of cleaning: • Air pressure • Cleaning with cloth rugs • Soap	• Brainstorming on hygiene • Brainstorming on clean and store tools and equipment • Group discussion on cleaning • Practical exercise on Cleaning of the workplace	- Books - Hand out notes - Workshop - Cloth rugs - Air pressure
5.2. Clean and Store tools and equipment	• Rearrange • Remove the remains, metals chips and dust from the working place	• Brainstorming on store tools, equipment and materials • Group discussion on store tools, equipment and materials • Practical exercise on Cleaning and Storing of tools and equipment	- Books - Hand out notes - Workshop
5.3. Report	• Writing the correct report ✓ Usable materials ✓ Remain materials	• Brainstorming on work report • Group discussion on report Practical exercise on report writing	- Books - Hand out notes - Computer - Pens - papers

Assessment guide lines

Portfolio for formative assessment

Element of competence	Performance criteria	Checklist/evidence	Score		Observation
			Yes	No	
1. **Prepare the**	1. Identification of materials, tools and	- Type			

workplace/ site	equipment is done	- Quality			
		- Size			
		- Quantity of materials			
	2. Disposition of tools, materials and equipment is done	- Arrangement of tools, materials and equipment in appropriate space			
	3.Sketching of welding work is done	- Dimensioning			
		- Symbols			
2.Perform arc welding	1. Measuring, marking and cutting tools for arc welding are used	- Width			
		- Length			
		- Height			
	2.Edge preparations is done	- Angles			
		- Dimensions			
		- Appearance			
		- Shape			
	3.Application of arc welding techniques in all positions is done	- Joints			
		- Positions			
3. Perform oxy-acetylene gas welding	1.Measuring and marking tools oxy-acetylene gas welding are used	- Width			
		- Length			
		- Height			
	2.Edge preparations	- Angles			
		- Dimensions			
		- Appearance			
		- Shapes			
	3.Application of oxy-acetylene welding techniques in all positions is done	- Joints			
		- Positions			
4.Check the work done	1.Measurement of the work is done	- Width			
		- Length			
		- Height			

	2.The welded pieces is done	- Angles			
		- Measurement			
		- Appearance			
		- Shape			
	3.Physical testing of the welded parts	- Defects			
		- Strength			
5.Handover the work	1.Cleaning of the workplace is done	- Cleanness of working area			
	2.Cleaning and storage of tools and equipment	- Storage of tools and equipment			
		- Cleaning of tools and equipment			
	3.Report of the work done	- communicate the finished work			
		- cleanness of tools and equipment			
		- storage of tools and equipment			
		- equipment positions			

Summative assessment
Integrated situation

Mr. MUHIZI requests the head of plumbing workshop in IPRC Kigali vocation training center to weld one tank stand of 1.5x2x2m made in mild steel tubes of 40x40 mm because he wants to install rain water harvesting from his house. The head of plumbing workshop requests you as a plumber to perform the work within 4hours.

Rogers' criteria	**Performance criteria=assessment criteria**	**Evidence/ indicator/checklist per performance criterion**	**Score**		**Observation**
			Yes	No	
1.Quality of	1.Identification of materials, tools	- Slot pencil			

process	and equipment is done	- Drawing copy,			
		- Ruler,			
		- Rubber,			
		- Scriber			
		- Center punch			
		- Compasses,			
		- T-square,			
		- Drawing board.			
		- Bench			
		- Vice			
		- Hacksaw			
		- Wire brush			
		- Chipping hummer			
		- Ferrous-metals			
		- Non-Ferrous metals			
		- Electrodes			
		- Welding machine,			
		- Drilling machine,			
		- Grinding machine ,			
		- PPE (safety goggles, welding shield, overall, apron, gloves, safety shoes			
		- Nozzle			
		- Acetylene cylinder.			
		- Oxygen cylinder			
		- Torch			
		- Oxygen Horse			
		- Oxygen Horse			
		- Regulator (manifold)			
		- Adjustable spanner			
		- Filer metal			
		- Flux			

	2. Disposition of tools, materials and equipment is done	- Arrangement of tools, materials and equipment in appropriate space			
	3.Sketching of welding work is done	- Dimensioning of tank stand			
		- Symbols			
2. Quality of product	1.Measuring, marking and cutting tools for arc welding are used	- Width of tank stand			
		- Length of tank stand			
		- Height of tank stand			
	2.Edge preparations is done	- Angles of edge preparations			
		- Dimension edge preparations			
		- Appearance edge preparations			
		- Shapes edge preparations			
		- Angles edge preparations			
	3.Application of arc welding techniques in all positions is done	- Joints			
		- Positions			
	4.Measuring and marking tools oxy-acetylene gas welding are used	- Width of tank stand			
		- Length of tank stand			
		- Height of tank stand			
	5.Application of oxy-acetylene welding techniques in all positions is done	- Joints			
		- Positions			
	6.Physical testing of the welded parts is done	- Defects weld joints			
		- Strength of welded parts			

3.Relerevance	1.Measurement of the work is respected	- Mild steel tubes of 40x40 mm			
		- Tank stand of 1.5x2x2m			
	2.Time is respected	- 4hours			
	3.The welded pieces is done	- Angles of welded pieces			
		- Measurement of welded pieces			
		- Appearance of welded pieces			
		- Shape of welded pieces			
	4..Cleaning of the workplace is done	- Cleanness of working area			
	5.Cleaning and storage of tools and equipment	- Storage of tools and equipment			
		- Cleanness of tools and equipment			
	6.Report of the work done	- communicate the finished work			
		- cleanness of tools and equipment			
		- storage of tools and equipment			
		- equipment positions			
4. Safety	1.PPE are used	- Overall			
		- Gloves			
		- Goggles			
		- Helmet			
		- Safety shoes			
		- Apron			
	2.Tools and equipment are checked before being used	- Tools and equipment condition			

	3.Working environment is prepared	- Cleanness of working area			

CM302 -HEALTH, SAFETY AND ENVIRONMENT AT WORKPLACE		
Competence: Maintain health , safety and sustain environment at workplace		
RTQF level: 3	**Credits:** 3	**Learning hours :** 30
Issue date: March, 2014		
Review date:		

PURPOSE STATEMENT

This module describes the skills and knowledge required to follow health, safety and security procedures, identify hazards, assess the associated safety risks and take measures to eliminate or control and minimize the risk

It is an obligation for each employee to participate in the management of their own health and safety and that of their colleagues and anyone else in the workplace. They have a duty to cooperate with their employer's initiatives to ensure safety at work

LEARNING ASSUMED TO BE IN PLACE

Not applicable

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.

Performance criteria describe the required performance needed to demonstrate achievement of the learning unit

Learning unit/Element of competence By the end of the module, the trainee will be able to :	**Performance criteria**
1. Maintain personal health and hygiene	1.1 Hygiene of the entire body and dressing code according to the standards are respected. 1.2 Clean materials and clothes are used and hygienic practices are respected to ensure that no cross-contamination of other items occurs. 1.3 The proper work clothing or Personal Protective Equipment is worn to perform work.
2. Prevent HIV/AIDS and sexual violence	2.1 Reproductive health is understood 2.2 Transmission, prevention and treatment of HIV/AIDS and other STI's are understood. 2.3 Sexual violence is understood and can be avoided.
3. Address unsafe situations on the job	3.1 Appropriate methods are used to identify actual or foreseeable hazards that have the potential to harm the health, safety and security of workers or anyone else in the workplace. 3.2 The work area is free from hazards. 3.3 Control measures are implemented according to individual level of responsibility or appropriate personnel is referred to for permission or further action
4. Respond appropriately to emergencies at work	4.1 Emergency and potential emergency situations are recognised promptly and required actions are determined or taken within the scope of individual responsibility. 4.2 Appropriately response to emergencies is provided. 4.3 Assistance from colleagues or other authorities is sought promptly and when appropriate.
5. Sustain environment	5.1 National and enterprise environmental regulations are understood. 5.2 Procedures to ensure compliance are followed. 5.3 Identify and report workplace environmental hazards to appropriate personnel.

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The learning activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer

Learning Unit 1: Maintain personal hygiene			**Learning hours: 10**
Leaning Outcome	**Content**	**Learning Activities**	**Resources**
1.1 Maintain good health	• Importance of maintaining good health • How to maintain good health: - Balance diet - Enough sleep - Periodical medical checkup - Sports	○ Brainstorming ○ Group discussion	- Flipcharts - Markers - Flipcharts stand - Training room
1.2 Maintain hygiene	• Importance of Body Cleanliness • Body Cleaning Products and equipment • Body cleanliness practices	○ Brainstorming ○ Documentary research and group discussion ○ Individual practice	- Water - Soaps - hand wash Basin - Hand towels - Equipped wash room
1.3 Wear work clothing or Personal Protective Equipment	• Composition of work clothing or Personal Protective Equipment • Proper Maintainance of work clothing	○ Individual practice	- work clothing or Personal Protective Equipment

Learning unit 2: Prevent HIV/AIDS and sexual violence			Learning hours: 5
Learning outcomes	**Content**	**Learning activities**	**Resources**
2.1 Understand reproductive health	• Puberty and body change • Female reproduction • Male reproduction • Consequences of early pregnancy	○ Small group discussions ○ Pair discussion	
2.2 Be sensitized to HIV /AIDS	• Definition • Transmission • Prevention (ABC) • Treatment • Other STI's • Stigma and VCT	○ HIV game ○ Questions and answers ○ True or false ○ Group work ○ Demonstration (condom use) ○ Role play (condom negotiation)	- Scenarios for HIV game - True and false statements
2.3 Be sensitized to sexual violence	• Definition of sexual violence • Definition of rape • Consequences of sexual violence	○ Story telling ○ Group discussion ○ Large group discussion	

Learning unit 3: Address unsafe situations on the job			Learning hours: 5
Learning outcomes	**Contents**	**Learning activities**	**Resources**
3.1 Identify the primary hazards found in workplaces	• Types of hazards in the workplace (safety, chemical, biological, other health hazards)	○ Brainstorming ○ Group work ○ Discussion	Pictures
3.2 Understand why the situation or substance is hazardous	• Hazardous situations • Dangerous substances		
3.3 Identify the best ways to address specific problem situations	• Control methods (remove hazard, work policies and procedures, protective equipment)	○ Brainstorming ○ Discussion	Stories and pictures

Learning unit 4: Respond appropriately to emergencies at work			Learning hours: 5
Learning outcomes	**Contents**	**Learning activities**	**Resources**
4.1 Identify emergencies	• Definition of emergency • Types of emergencies in a workplace	○ Presentation by the trainer ○ Experience sharing	
4.2 Handle emergencies	• Possible responses to emergencies in the workplace	○ Disaster Blaster Game ○ Role play	- Disaster Blaster Game board, paper, marker, dice, game cards
4.3 Manage safety equipment	• Safety equipment identification - Fire extinguisher - Fire Horse - Fire Blanket - First aid kit - Fire triangle - Water fire extinguisher • Safety equipment usage	○ Brainstorming on safety equipment ○ Demonstration on safety equipment usage ○ Organize safety drills ○ Compile activities reports	- Fire extinguisher - Fire Horse - Fire Blanket - First aid kit - Fire triangle - Water fire extinguisher

Learning unit 5: Sustain environment			Learning hours: 5
Learning outcomes	**Contents**	**Learning activities**	**Resources**
5.1 Understand the importance of environment sustainability	• Natural process that takes place in the environment • Awareness of the interdependence of all species • Attitude towards enjoying the benefits of nature without encroaching upon the rights of others.	○ Brainstorming ○ Group work ○ Role play	- Reference books - Role play scenario
5.2 Identify environmental regulations in Rwanda	• Law determining the modalities of protection, conservation and promotion of Environment in Rwanda. • Law relating to the prohibition	○ Group work ○ Plenary discussion	- Environmental regulations

	of manufacturing, importation, use and sale of polythene bags in Rwanda		
5.3 Identify types of waste	• Non-hazardous waste • Hazardous waste	○ Group work ○ Research ○ Visit of an enterprise	- Reference books - Pictures - Videos
5.4 Follow procedures to sustain environment	• Waste reduction • Reuse of waste • waste recycling • reporting hazards to appropriate person	○ Brainstorming ○ Group discussion ○ role play	- sustain environment manual and procedures

Assessment guide lines
To pass this module, the student has to complete:

1. The following elements of the portfolio:

1. Self assessment
2. Writing Space: Putting Safety Tips into Practice
3. Session 2 Writing Space: Dealing with Emergencies
4. Show What You Know Observation Form (filled out by trainer for each team)
5. Habits for Good Health

Those documents are found in the Module 5, Safety and Health at work, of the **Work Readiness Training Programme – Participant's Manual, Akazi Kanoze – Youth Livelihoods Project**

2. An integration-situation related to his/her future occupation or trade, with a score equal or superior to the passing mark defined (recommended passing mark for this module: 70% or 15/20)

SUGGESTIONS OF SITUATIONS:

ICT

1. A director of an Enterprise of computer lab would like to protect lab users and is coming to you with pictures of his computer lab, which show various safety and health related problems. Identify the relevant problems that are portrayed by the shown pictures.

2. Write a 1 page set of general instructions related to health (at least 10 instructions), safety (at least 3) and security (at least 2) in a computer lab.

Resources:

- Drawing, pictures or video of a computer lab showing at least 4 safety and health related problems.
- Paper
- Pen

CCM107-RUNNING MICROBUSINESS		
Competence : Run micro business		
RTQF LEVEL: All	**CREDITS: 4**	**LEARNING HOURS : 40**
SECTOR: All	**SUB-SECTOR: All**	
ISSUE DATE: January, 2013	**REVIEW DATE:**	

PURPOSE STATEMENT

This module describes the skills and knowledge required to prepare a business plan for a small business and operate a small business. At the end of this module, the participants understand the principles and tools behind personal and family money-management. They are able to understand the importance of saving and reducing expenses. They are able to organize and manage personal and household finances. They can create a personal budget and think strategically about their finances. They can evaluate their options for earning money and are familiar with ways to establish and maintain personal credit. They are aware of the risks associated with credit. The participants simulate income-generating activities after which they are familiar with the basic cycles of business. They can plan for income-generating activity expenses and loan repayments. They can keep basic business financial records. They are able to evaluate

the risks and opportunities of using credit in income generating contexts. They are able to distinguish between money to be used for investment into their income-generating activities, for their family expenses, and for savings. They learn about different market actors

LEARNING TO BE ASSUMED IN PLACE

Not applicable

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence
Performance criteria describe the required performance needed to demonstrate achievement of the learning unit

Elements of competence By the end of the module, the trainee will be able to :	**Performance criteria**	
1. Develop entrepreneurial mindset	1.1 1.2 1.3 1.4	Proper identification of livelihood activities and business in the community Proper description of characteristics of an entrepreneur and their role in the society Adequate identification and examination of risks related to a certain business as per its nature and size and responding to them accordingly Accurate identification of a business idea and selection of a good-profitable- ones among many
2. Manage finance	2.1 2.2 2.3 2.4 2.5 2.6 2.7	Proper identification of personal and business financial needs in different life situations. Proper mobilization of the required amount of money for different needs. Effective management of business money as per procedures in a way to avoid waste of money. Appropriate saving of money in a recognized financial institution. Effective management of business debts. Adequate execution of basic record-keeping as per standards Effective development of a financial plan over a defined period of time
3. Manage a small business	3.1 3.2	Proper description of basic business cycle in terms of buying, adding value and selling for profit Correct identification of credit risks and unexpected costs and dealt with

	3.3	accordingly Adequate development of record-keeping sheet as per standards and on time
4. Develop a business plan for a micro business	4.1 4.2 4.3	Realistic formulation of objectives of the small business, and are clearly stated and measurable Appropriate filling out of the business plan template as per standards. The simulated small business has brought benefits

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Develop entrepreneurial mindset			**Learning hours: 5**
Learning outcomes	**Content**	**Learning activities**	**Resources**
1.1 Identify income generating activities	• Categorization of income generation activities • Characteristics of livelihood business activities in the community	○ Small group discussion ○ brainstorming ○ large group discussion ○ Presentation	- Flipchart - Pen - Notebooks - Projector
1.2 **Describe an entrepreneur**	• Characteristics of an entrepreneur (mindset) • Role of entrepreneur in community	○ small group discussion ○ brainstorming ○ large group discussion ○ presentation ○ case studies ○ Site visit ○ guest speakers	- Flipchart - Pen - Notebooks - Projector - Videos
1.3 Examine business risks	• Types of business risks and their impact on business	○ exercise ○ role-play ○ large group discussion	- Role play scenarios - Videos

	• Strategies to overcome business risks	○ case studies ○ guest speakers ○ Practical exercises on evaluation of business risks	
1.4 **Select a business idea**	• Characteristics of a promising business idea	○ Brainstorming ○ large group discussion ○ Practical exercises on selection of a business idea ○ Visit a nearby business settings	- Flipchart - Pen - Notebooks - Projector

Learning unit 2: Manage finance			**learning hours: 10**
Learning outcomes	**Contents**	**Learning activities**	**Resources**
2.1 Examine business financial needs	• Identification of money needs in daily life ✓ Personal needs ✓ Business needs • Identification of how the things they need money for change as their life situations change	○ small group discussion ○ brainstorming ○ large group discussion ○ Presentation	- Flipchart - Pen - Notebooks - Projector
2.2 Raise fund (money)	• Planning of getting money • Sources of funds for a business ✓ Borrowing (financial institution of friends/family) ✓ Saving ✓ Working to earn money)	○ small group discussion ○ brainstorming ○ prioritizing ○ role-play ○ large group discussion ○ presentation ○ Case studies	- Role play scenarios - Flipchart - Pen - Notebooks - Projector
2.3 Manage money effectively	• Good ways to manage money • Ways of wasting money • Ways to cut costs through ✓ Reducing ✓ Recycling ✓ Repairing	○ exercise ○ role-play ○ large group discussion ○ Case studies	- Role play scenarios

	✓ Reusing		
2.4 Save money	• Definition of the concept of saving • Recognize that not only rich people can save • Reasons for saving (unexpected events and specific needs) • Savings goals • Saving possibilities and institutions	○ Brainstorming ○ large group discussion ○ role-play ○ individual goal setting ○ guest speakers	- Flipchart - Pen - Notebooks Projector
2.5 Manage debts	• Definition of the concept of debt • Risks of getting into debt • Strategies to avoid debt • Strategies to get out of debt	○ large group discussion ○ group work ○ prioritizing ○ case studies	- Role play scenarios

Learning unit 3: Perform record keeping and budgeting			**Learning hours:5**
Learning outcomes	**Contents**	**Learning activities**	**Resources**
3.1 Keep basic personal financial records	• Income • Expenses • Balance calculations	○ group work ○ case study	
3.2 Perform basic budgeting	• Definition of budget • Definition of the concept of budgeting • Principle of budgeting	○ group work ○ case study ○ Practical individual budgeting respecting principles	
3.3 Develop a financial strategic plan	• structure of a financial plan • the importance of a financial plan	○ Brainstorming ○ large group discussion ○ demonstration on developing a financial plan ○ Practical individual work on developing a financial plan ○ Case studies	- Financial fitness plan - Template of a financial plan - Flipchart - Pen - Notebooks - Projector

Learning unit 4: Manage a small business			Learning hours:15
Learning outcomes	**Contents**	**Learning activities**	**Resources**
4.1 Describe the business cycle	• Basic cycle of business: buying, adding value, selling for profit • Allocation of income between the business, personal expenses and savings • Importance of maintaining positive cash flow	○ Simulation game ○ large group discussion	- Entrepreneurs' profiles - Entrepreneur's Cycle Chart
4.2 Plan for unexpected costs	• Possible unexpected expenses or financial events • Strategies of planning and dealing with, unexpected financial events	○ simulation game ○ large group discussion ○ Case studies	- Life cards for simulation game
4.3 Identify the risks of credits	• Risks and potential benefits of selling to customers on credit • Financial risks involved with extending credit to friends and family members	○ simulation game ○ large group discussion	- Life cards for simulation game
4.4 Fill in a record-keeping sheet	• Value of keeping records • Sections of a record-keeping sheet	○ simulation game, ○ large group discussion ○ Demonstration on filling up a record keeping sheet ○ Practical individual work on filling up a record keeping sheet	- Record-keeping template
Learning unit 5: Prepare a business plan for a micro business			**learning Hours: 5**
Learning outcomes	**Contents**	**Learning activities**	**Resources**
5.1 **Describe the value of a business plan**	• Value of a business plan • Flexibility of a business plan • Importance of realistic goals • Sections of a business plan	○ simulation game ○ large group discussion ○ Demonstration on preparing a business plan ○ Practical individual work on preparing a	- Entrepreneur's Cycle Chart - Record-keeping template - Business plan template

		business plan	

Assessment guide lines

Portfolio for formative assessment

Elements of competence	Assessment indicator	Checklist	Score		Observation
			Yes	No	
Develop entrepreneurial mindset	Livelihood activities and business in the community are identified	Non-farm' natural resource based livelihood activities			
		Farm-based livelihood activities and Processing of products			
	Characteristics of an entrepreneur and their role in the society are described	Opportunity seeking			
		Initiative taking			
		Ownership of a development			
		Commitment to see things through			
		Personal locus of control (autonomy)			
		Intuitive decision making with limited information			
		Networking capacity			
		Strategic thinking			
		Negotiation capacity			
		Selling/persuasive capacity			
		Achievement orientation			
		Incremental risk taking			
		Living with uncertainty and complexity			
		Having to do everything under pressure (financial and time)			
		Coping with loneliness			
		Building know how and trust relationships			
		Learning by doing, copying, making things up, problem solving			
		Managing interdependencies			
		Working long hours and unsocial hours			

		Belief that rewards come with your own effort			
		Belief that you can make things happen			
		Belief in individual and the community			
		Motivation to succeed			
		Motivation to make a difference			
		Ability to cope with doing something different to others			
		Ability to see problems as opportunities			
		Job creator Social corporate responsibility			
		Creating market to local products and services			
	Risks related to a certain business are identified and examined as per their nature and size and are responding to them accordingly.	Human factors (talent management, strikes),			
		Technological factors (emerging technologies),			
		Physical factors (failure of machines, fire or theft) Operational factors (access to credit, cost cutting, advertisement)			
		Economic factors (market risks, pricing pressure)			
		Natural factors (floods, earthquakes)			
		Political factors (compliance and regulations of government)			
		Risk Acceptance strategy			
		Risk Avoidance strategy			
		Risk Limitation strategy			
		Risk Transference strategy			
	A business idea is accurately identified and a good-profitable-ones among many is selected.	Fulfills a customer need – a problem is solved			
		Innovative			
		Unique			
		Clear focus			
		Profitable in the long term			
Manage finance	Personal and business financial needs are identified in different life situations.	Mortgage or rent			
		Food and groceries			
		Property taxes			
		Insurance costs			

		Savings and investment contributions			
		Home maintenance costs			
		Heating and air conditioning expenses			
		Utilities, such as electricity, water, sewer, trash pick up			
		Medical expenses, such as medical bills, prescriptions			
		Child care and child support expenses			
		Vehicle expenses			
		Loans			
		Credit cards			
		Clothing			
		Memberships			
		Personal care			
		Entertainment, recreation and hobby expenses			
		Rent and lease payments.			
		Loan repayments			
		Phone and utilities			
		Maintenance and repair of premises, equipment, and vehicles			
		Office supplies and stationary			
		Operating stock/ suppliers bills			
		Advertising and promotion			
		Delivery and shipping costs			
		Personal drawings and employee wages			
		Insurance premiums			
		Taxes			
		Membership fees and subscriptions			
		Investment			
	The required amount of money for different needs is mobilized.	Savings			
		Borrowing from friends and family			
		Lease			
		Warrants			
		Banks loan			

		Government Programs			
		Bonds			
	Business money is effectively managed as per procedures in a way to avoid waste of money	Assessing and budgeting for your current financial situation			
		Developing a financial plan			
		Managing			
		Recognizing signs of financial trouble			
		Handling financial emergencies			
		Dealing with unmanageable debt			
	Money is saved in a recognized financial institution.	Banks			
		Credit Unions			
		Savings and Loans			
	Business debts are managed.	Cut unnecessary costs and free up cash			
		Revisit the budget			
		Prioritize debt payments			
		Speak with creditors			
		Consolidate your loans			
	Basic record-keeping is executed as per standards.	Importance of figuring out how money flows through your business and why			
		Need to keep good records			
		The main records you may need to keep			
		Keep basic paper records			
		Complete a cash payments book and a cash receipts book.			
Manage a small business	Basic business cycle is described in terms of buying, adding value and selling for profit.	Commodity prices			
		Freight rates			
	Credit risks and unexpected costs are identified and dealt with accordingly.	Qualifications of loan review personnel			
		Independence of loan review personnel			
		Frequency of reviews			
		Scope of reviews			
		Depth of reviews			

		Review of findings and follow-up			
		Work paper and report distribution.			
	Record-keeping sheet is developed as per standards and on time.	Total exposure and segment exposures, including subordinated debt and equity			
		Risk rating distribution and migration data			
		Noncompliance with covenants,			
		Performing assets			
		Impaired loans			
		Compliance with internal procedures			
		The aggregate level of exceptions to policy and underwriting standards.			
Develop a business plan for a micro business	Realistic formulations of objectives of the small business are clearly stated and measurable.	Desired sales or profit levels			
		Rates of growth			
		Increased turnover			
		Value of the business or dividends paid to shareholders			
	The business plan template is filled out as per standards.	Executive summary			
		General company description			
		Products and services			
		Marketing plan			
		Operational plan			
		Management and organization			
		Personal financial statement			
		Startup expenses and capitalization			
		Financial plan			
		Appendices			
		Refining the plan			
	The simulated small business has brought benefits.	Planning activities and resources			
		Staffing			
		Organizing resources			
		Coordinating business activities			
		Controlling for achievements			

CCM110-INTERNSHIP		
Competence : Integrate the workplace		
RTQF LEVEL: All	**CREDITS: 30**	**LEARNING HOURS : 300**
SECTOR: All	**SUB-SECTOR: Automotive**	
ISSUE DATE: January, 2013	**REVIEW DATE:**	

PURPOSE STATEMENT

This module describes the skills and knowledge required to integrate the workplace for an internship or employment. At the end of this module, participants know how to apply for and present themselves for employment. They demonstrate good time management and show up for work on time. They demonstrate behaviour and attitudes that are appropriate for the workplace and understand that workplaces have policies and procedures that need to be followed. They take initiative and responsibility for their own work and know how to work under and respect supervision. Participants are familiar with the rights and responsibilities of workers and employers and have explored ways to exercise rights in the workplace.

LEARNING ASSUMED TO BE IN PLACE

- CCM001: Occupation and training process
- CCM102: Health, safety, security and environment at workplace
- CCM103: Workplace communication skills
- CCM104-Basic computer applications
- CCM105-Oral basic English communication
- CCM106-Basic workplace calculations
- CCM107-Running microbusiness
- CCM108-Cost estimation
- CCM109-Basics of electricity

- TSBSAM101-Car body fixing
- TSBSAM102-Engines repairing
- TSBSAM103-Starting system repairing
- TSBSAM104-Cooling system repairing
- TSBSAM105-Fuel supply system repairing
- TSBSAM106-Ignition system repairing
- TSBSAM107-Transmission line system repairing
- TSBSAM108-Brake system repairing
- TSBSAM109-Suspension/steering system (s) repairing
- TSBSAM110-Lighting system repairing
- TSBSAM111-Car maintenance

LEARNING UNITS AND PERFORMANCE CRITERIA

Learning units describe the essential outcomes of a competence.

Performance criteria describe the required performance needed to demonstrate achievement of the learning unit.

Learning units By the end of the module, the trainee will be able to :	**Performance criteria**
1. Apply for internship / employment	1.1. Appropriate resources in the community or nationwide are used to find employment information. 1.2. A basic CV that is accurate and neat is written. 1.3. Application letters that target specific jobs or types of jobs are written. 1.4. Effective interviewing skills are demonstrated.

2. Demonstrate appropriate workplace behaviour and attitudes	2.1. Appropriate workplace habits and attitudes are observed. 2.2. Strategies to manage time effectively are implemented. 2.3. Personal and work lives are managed efficiently.
3. Have a good understanding of worker's and employer's rights and responsibilities	3.1. Worker's and employer's obligations according to the Rwandan Labour code are understood. 3.2. The worker's responsibilities are performed on the workplace. 3.3. Exercise rights on the workplace.
4. Organise and evaluate one's internship	4.1. The internship agreement is concluded with the enterprise. 4.2. The internship report contains all the required elements as well as one's own findings and experience. 4.3. Active participation in the assessment of one's internship.
5. Develop one's competences on the workplace	5.1. The tasks assigned according the agreement with the enterprise are performed adequately. 5.2. Positive response and active participation in meetings with the "maître de stage" 5.3. Adequate work behaviour and attitudes are demonstrated

COURSE STRUCTURE

The course structure describes the learning outcomes for each learning unit. These learning outcomes are the essential skills and knowledge to be acquired. The contents to be covered for each learning outcome are prescriptive. The Learning Activities contain a series of suggestions, usually with several options, that will guide the learner and the trainer.

Learning unit 1: Apply for internship/employment **learning hours: 9**

Learning outcomes	Contents	Learning activities	Resources
1.1 Identify and use resources to find a job	• Resources to find employment in the community and at national level • Identify contact persons	○ Small group work ○ Panel discussion ○ Large group discussion	- Job announcements and information: newspaper advertisements; information from recruitment

		○ Speakers	agencies, youth organizations such as YES Rwanda and government agencies such as the RDB, WDA; sample advertisements posted on business walls or bulletin boards, internet websites, through cooperatives…
1.2 Write a Curriculum Vitae (CV) and an application letter	• Differences between a CV and an application letter • Types of application letters • Elements of a well written CV • Elements of an application letter	○ large group discussion ○ individual work ○ pair work	- Sample CVs and application letters - Format of an application letter
1.3 Take part in an interview	• Main parts of an interview • Interviewing tips : what to do before, during and after the interview • Typical questions asked during an interview	○ small group work ○ interview role plays ○ large group discussion	- Interview observation tool

Learning unit 2: demonstrate appropriate workplace behavior and attitude **learning hours: 6**

Learning outcomes	Contents	Learning activities	Resources
2.1 Identify appropriate workplace behaviours and attitudes	• Appropriate workplace behaviours and attitudes (dress code, time management, respect, honesty, integrity, work as a team member) • Work habits (cooperation, initiative, courtesy, constructive criticism, supervision, accuracy, pace of work, time usage, adaptability, personal appearance, attendance, punctuality)	○ Small group work ○ Large group discussion ○ Brainstorming	- Workplace behaviour scenarios - Work habits inventory
2.2 Manage time	• Importance of task planning and managing time • Strategies to better manage time	○ Large group discussion ○ Small group activity (tower building) ○ Reflection ○ Pair sharing	
2.3 Balance work and personal life	• Common situations that make it challenging to balance work & personal life • Tips to manage personal and work lives	○ Large group discussion ○ Individual work ○ Self-assessment	- Scenarios: “Did S/he Do the Right Thing?”

		○ Pair sharing	

Learning unit 3: Have a good understanding of work's **learning hours:9**

Learning outcomes	Contents	Learning activities	Resources
3.1 Be familiar with the universal human rights	• Definition of "right" and "human right" • Universal Declaration of Human Rights	○ small group work ○ large group discussion	- Universal Declaration of Human Rights – plain language version
3.2 Explore one's personal rights and responsibilities	• Definition of "responsibility" • Relationship between rights and responsibilities	○ individual work ○ pair share ○ large group brainstorming and discussion	
3.3 Identify one's rights and responsibilities at work	• 'rights' (what you can expect your employer to provide) • 'responsibilities' (what your employer can expect that you will do)	○ large group discussion ○ small group work ○ skits	- Worksheet on Rights and Responsibilities at Work.
3.4 Become familiar with some of the provisions of the Rwandan Labour Law	• legal obligations of employers • legal obligations of workers	○ large group activity ○ discussion ○ small group work ○ observation	- Statements and Answers for Agree/Disagree Game on Rwandan Labour Law - Articles 47 and 48 of the Labour Code
3.5 React appropriately when the Labour Code is broken	• Possible solutions or responses in case the Labour Code is broken	○ small group work ○ scenario analysis ○ large group discussion	- Labour Code Scenarios - Labour Code Excerpts

Learning unit 4: organize and evaluate one's internship **learning hours: 10**

Learning outcomes	Contents	Learning activities	Resources
4.1 Conclude an internship agreement	• Definition of the concept "internship" • Objectives of the internship • Presentation of internship agreement	○ Brainstorming ○ Group discussion ○ Presentation by the trainer	- Sample internship agreement

4.2 Outline one's findings and experience	• Presentation of the logbook • Tips to fill in the logbook	○ Presentation by the trainer	- Logbook
4.3 Write and present the report of the internship	• Contents of the internship report • Presentation techniques	○ Group discussion ○ Role play	- Sample internship report
4.4 Participate actively to the assessment of one's internship	• Internship assessment and self-assessment guidelines	○ Group discussion ○ Presentation by the trainer	

Learning unit 5: Develop one's competence on the workplace **learning hours: 270**

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