

**K to 12 BASIC EDUCATION CURRICULUM
TECHNOLOGY AND LIVELIHOOD EDUCATION
INDUSTRIAL ARTS – PLUMBING
Grade 7/8 (Exploratory)**

Course Description:

This is an exploratory and introductory course which leads to a **Plumbing** National Certificate Level II (NC II). It covers five common competencies that the **Grade 7/Grade 8** Technology and Livelihood Education (TLE) student ought to possess: (1) using tools, equipment and paraphernalia; (2) performing mensuration and calculation; (3) practicing Occupational Health and Safety (OHS) procedure; (4) maintaining tools, equipment and paraphernalia; and (5) interpreting technical drawing and plans.

The preliminaries of this exploratory course include the following: 1) discussion on the relevance of the course; 2) explanation of key concepts relative to the course and; 3) exploration on career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction 1. Basic concepts in plumbing 2. Relevance of the course 3. Career opportunities	The learner demonstrates an understanding of the basic concepts and underlying theories in plumbing.	The learner independently demonstrates common competencies in plumbing as prescribed by TESDA Training Regulations..	1. Explain basic concepts in plumbing 2. Discuss the relevance of the course 3. Explore career opportunities in plumbing	
PERSONAL ENTREPRENEURIAL COMPETENCIES (PeCS)				
1. Assessment of Personal Entrepreneurial Competencies and Skills (PeCS) vis-à-vis a practicing entrepreneur/employee 1.1 Characteristics 1.2 Attributes 1.3 Lifestyle 1.4 Skills 1.5 Traits 2. Analysis of one's PeCS	The learner demonstrates an understanding of one's Personal Entrepreneurial Competencies and Skills (PeCS).	The learner recognizes his/her Personal Entrepreneurial Competencies and Skills (PeCS) and prepares a list of PeCS of a practitioner/entrepreneur in plumbing.	LO 1. Recognize Personal Entrepreneurial Competencies and Skills (PeCS) needed in plumbing 1.1 Assess one's PeCS: characteristics, attributes, lifestyle, skills, traits 1.2 Assess practitioner's: characteristics, attributes, lifestyle, skills, traits 1.3 Compare one's PeCS with that of a practitioner /entrepreneur	TLE_PECS7/8-0k-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
ENVIRONMENT AND MARKET (EM)				
<ol style="list-style-type: none"> 1. Key concepts of Environment and Market 2. Products & services available in the market 3. Differentiation of products and services 4. Customers and their buying habits 5. Competition in the market 6. SWOT Analysis 	The learner demonstrates an understanding of the concepts environment and market that relate to a career choice in plumbing.	The learner independently generates a business idea based on the analysis of the environment and the market in plumbing.	<p>LO 1. Generate a business idea that relates with a career choice in plumbing</p> <ol style="list-style-type: none"> 1.1 Conduct SWOT analysis 1.2 Identify the different products/services available in the market 1.3 Compare different products/services in Plumbing business 1.4 Determine the profile potential customers 1.5 Determine the profile potential competitors 1.6 Generate potential business idea based on the SWOT analysis 	TLE_EM7/8-0k-1
LESSON 1: PREPARE PLUMBING MATERIALS AND TOOLS (UT)				
<ol style="list-style-type: none"> 1. Plumbing materials and tools 2. Requisition of materials and tools 3. Procedure in receiving materials and tools 	The learner demonstrates an understanding of concepts in the preparation of plumbing materials and tools using the different forms in electrical installation and maintenance.	The learner independently prepares appropriate plumbing materials and tools using the different forms in electrical installation and maintenance based on industry standards.	<p>LO1. PREPARE PLUMBING MATERIALS AND TOOLS FOR THE TASK</p> <ol style="list-style-type: none"> 1.1 Prepare a list of plumbing tools and materials for a specific job <p>LO2. REQUEST APPROPRIATE PLUMBING SUPPLIES MATERIALS AND TOOLS APPLICABLE TO A SPECIFIC JOB</p> <ol style="list-style-type: none"> 2.1 Use the appropriate form in requesting for plumbing tools, supplies and materials for a specific job 	<p>TLE_IAPB7/8UT-0a-1</p> <p>TLE_IAPB7/8UT-0a-2</p>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			<p>LO3. RECEIVE AND INSPECT ELECTRICAL SUPPLIES, MATERIALS AND TOOLS 3.1 Check and control received items on the list</p>	<p>TLE_IAPB7/8UT-0b-3</p>
LESSON 2: PERFORM MENSURATION AND CALCULATIONS (MC)				
<p>1. Measurement 2. Proper handling of measuring instruments</p>	<p>The learner demonstrates an understanding of the concepts and underlying principles in performing measurements and calculations.</p>	<p>The learner independently performs accurate measurements and calculation based on given tasks.</p>	<p>LO1. SELECT PLUMBING MEASURING TOOLS AND INSTRUMENTS 1.1 Identify object or component to be measured. 1.2 Choose measuring tools to be used for specific tasks 1.3 Identify alternative measuring tools without sacrificing cost and quality of work.</p> <p>LO2. CARRY OUT MEASUREMENTS AND CALCULATIONS 2.1 Use appropriate measuring devices for specific tasks 2.2 Compute for required data. 2.3 Convert data to its equivalent measure</p>	<p>TLE_IAPB7/8MC-0c-1</p> <p>TLE_IAPB7/8MC-0d-2</p>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
LESSON 3: INTERPRET TECHNICAL DRAWINGS AND PLANS (ID)				
1. Plumbing drawing signs and symbols 2. Technical plans and schematic diagrams	The learner demonstrates an understanding of the concepts and underlying principles in interpreting simple technical drawings and plans in plumbing installation and maintenance.	The learner independently reads and interprets specifications of simple technical drawings and plans.	LO1. ANALYZE SIGNS, PLUMBING SYMBOLS AND DATA 1.1 Read and interpret plumbing signs, symbols and data 1.2 Analyze plumbing components and materials based on electrical signs, symbols and data LO2. INTERPRET TECHNICAL DRAWINGS AND PLANS 2.1 Read blueprints of plumbing plans, diagrams and circuits 2.2 Identify necessary tools, materials and equipment according to blueprints of plumbing plans, diagrams and circuits	TLE_IAPB7/8ID-0e-1 TLE_IAPB7/8ID-0f-2
LESSON 4: MAINTAIN TOOLS AND EQUIPMENT (MT)				
1. Plumbing tools and equipment 2. Lubricants 3. Storage of plumbing tools	The learner demonstrates an understanding of the concepts and underlying principles in the maintenance of plumbing tools and equipment.	The learner independently performs proper maintenance of plumbing tools and equipment based on industry standards.	LO1. CHECK CONDITION OF TOOLS AND EQUIPMENT 1.1 Functional and non-functional tools are labeled LO2. PERFORM BASIC PREVENTIVE MAINTENANCE 2.1 Maintenance of tools is done regularly	TLE_IAPB7/8MT-0g-1 TLE_IAPB7/8MT-0g-2

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			<p>LO3. STORE TOOLS AND EQUIPMENT 3.1 Tools are stored safely in appropriate locations in accordance with manufacturer specifications or standard operating procedure</p>	<p>TLE_IAPB7/8MT-0h-3</p>
LESSON 5: PRACTICE OCCUPATIONAL HEALTH AND SAFETY PROCEDURE (OS)				
<p>1. Occupational health and safety procedures</p>	<p>The learner demonstrates an understanding of the concepts and underlying principles in occupational health and safety procedures</p>	<p>The learner independently identifies hazards correctly in accordance with occupational health and safety procedures.</p>	<p>1. IDENTIFY HAZARDS AND RISKS 1.1 Observing safety work habits in the work place 1.2 Preventing hazards in the workplace</p> <p>2. EVALUATE HAZARDS AND RISKS 2.1 Identify work hazards in the workplace 2.2 Make a plan of action for the identified hazards</p> <p>3. CONTROL HAZARDS AND RISKS 3.1 Demonstrate the use of PPEs in the workplace 3.2 Enumerate the benefits of observing safety procedure in the workplace</p>	<p>TLE_IAPB7/8OS-0i-1</p> <p>TLE_IAPB7/8OS-0i-2</p> <p>TLE_IAPB7/8OS-0j-3</p>

**K to 12 BASIC EDUCATION CURRICULUM
TECHNOLOGY AND LIVELIHOOD EDUCATION
INDUSTRIAL ARTS – PLUMBING
GRADE 9 (Specialization)**

Course Description:

This is an exploratory and introductory course which leads to leads to a **Plumbing** National Certificate I (NCI) It focuses on the core **competencies** that the **Grade 9** Technology and Livelihood Education (TLE) student ought to possess: (1) preparing pipes, tools and equipment for installation; and (2) cutting and threading ferrous pipes.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<p>Introduction</p> <ol style="list-style-type: none"> 1. Basic procedure in plumbing 2. Relevance of the course 3. Career opportunities 	The learner demonstrates an understanding of the basic concepts and underlying theories in plumbing.	The learner independently demonstrates the core competencies in plumbing.	<ol style="list-style-type: none"> 1. Explain basic concepts in plumbing 2. Discuss the relevance of the course 3. Explore career opportunities in plumbing 	
PERSONAL ENTREPRENEURIAL COMPETENCIES (PECS)				
<ol style="list-style-type: none"> 1. Assessment of Personal Competencies and Skills (PeCS) vis-à-vis a practicing entrepreneur/ employee in locality/town. <ol style="list-style-type: none"> 1.1 Characteristics 1.2 Attributes 1.3 Lifestyle 1.4 Skills 1.5 Traits 2. Analysis of PeCS in relation to a practitioner 3. Align, strengthen and develop ones PeCS based on the results 	The learner demonstrates an understanding of one's Personal Competencies and Skills (PeCS) in plumbing.	The learner recognizes his/her Personal Entrepreneurial Competencies and Skills (PeCS) and prepares an activity plan that aligns with that of a practitioner/entrepreneur in plumbing	<p>LO 1. Recognize Personal Entrepreneurial Competencies and Skills (PeCS) needed in plumbing</p> <ol style="list-style-type: none"> 1.1 Assess one's PeCS: characteristics, attributes, lifestyle, skills, traits 1.2 Assess practitioner's: characteristics, attributes, lifestyle, skills, traits 1.3 Compare one's PECSS with that of a practitioner /entrepreneur 1.4 Align one's PECSS with that of a practitioner/entrepreneur 	TLE_PEC9-Ik-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
ENVIRONMENT AND MARKET (EM)				
Market (Town) 1. Key concepts of Environment and Market 2. Players in the Market (Competitors) 3. Products & services available in the market	The learner demonstrates an understanding of the concepts environment and market in the field of plumbing, particularly in one's town/municipality.	The learner independently creates a business vicinity map reflective of the potential plumbing market within the locality/town.	LO 1. Recognize and understand the market in Plumbing 1.1 Identify the players/ competitors within the town 1.2 Identify the different products/services available in the market	TLE_EM9-Ik-1
Market (Customer) 4. Key concepts in Identifying and Understanding the Consumer 5. Consumer Analysis through: 5.1 Observation 5.2 Interviews 5.3 Focus group discussion (FGD) 5.4 Survey			LO 2. Recognize the potential customer/market in Plumbing 2.1 Identify the profile of potential customers 2.2 Identify the customer's needs and wants through consumer analysis 2.3 Conduct consumer/market analysis	TLE_EM9-IIk-2
6. Generating Business Idea 1.1 Key concepts in Generating Business Ideas 1.2 Knowledge & Skills, Passions, Interests 1.3 New application 1.4 Irritants 1.5 Striking ideas (new concept) 1.6 Serendipity Walk			LO 3. Create new business ideas in Plumbing. business by using various techniques 3.1 Explore ways of generating business idea from ones' own characteristics/attributes 3.2 Generate business ideas using product innovation from irritants, trends and emerging needs 3.3 Generate business ideas using Serendipity Walk	TLE_EM9-IIIk-IVk-3

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
PREPARING PIPES, TOOLS AND EQUIPMENT FOR INSTALLATION (PI)				
<p>CONTENTS:</p> <ol style="list-style-type: none"> 1. Plumbing signs and symbols 2. Types of measuring tools in plumbing 	<p>The learner demonstrates an understanding of the basic concepts and underlying theories in plumbing materials tools and equipment.</p>	<p>The learner independently demonstrates competency in the preparation of tools and equipment and pipes needed for installation.</p>	<p>LO1. LAY OUT WORK AREA FOR PIPES INSTALLATION.</p> <ol style="list-style-type: none"> 1.1 Read plans and details in accordance with job requirement 1.2 Interpret plans and details in accordance with job requirement 1.3 Layout and mark dimensions 1.4 Use appropriate measuring tools for laying out 1.5 Determine face to face distance according to the allowed engagement length 	TLE_IAPB9PI-Ia-j-1
<p>CONTENTS:</p> <ol style="list-style-type: none"> 3. Different pipe sizes and materials 4. Different cutting tools and equipment 5. Procedure in cutting pipes 6. Safety standards 			<p>LO 2. CUT PIPE ACCORDING TO THE REQUIRED LENGTH OF JOB REQUIREMENTS.</p> <ol style="list-style-type: none"> 2.1 Cut pipes accurately with tolerance based on the job requirements 2.2 Ream cut pipes as per standard procedure. 2.3 Observe correct use of cutting tools and equipment 2.4 Use Personal Protective Equipment (PPE) according to the job requirement 2.5 Perform proper housekeeping (5S) 	TLE_IAPB9PI-IIa-j-2

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<p>CONTENTS:</p> <ul style="list-style-type: none"> 7. Different threading tools 8. Standard procedures for pipe threading 9. Proper housekeeping (5S) in housekeeping 			<p>LO 3. THREAD PIPES IN ACCORDANCE WITH THE STANDARD THREAD ENGAGEMENT.</p> <ul style="list-style-type: none"> 3.1 Use threading tools and equipment 3.2 Perform pipe threading in accordance with the standard procedure 3.3 Use Personal Protective Equipment 3.4 Perform proper housekeeping 	<p>TLE_IAPB9PI-IIa-j-3</p>
MAKE PIPING JOINTS AND CONNECTION (MP)				
<p>CONTENTS:</p> <ul style="list-style-type: none"> 1. Blueprint 2. Levelness alignment 3. Personal Protective Equipment (PPE)/safety precaution 4. Proper housekeeping (5S) implementation 5. Procedure in fitting PVC pipes 6. Proper use of hand tools 7. Types and uses of pipe joints and fittings 			<p>LO 1. FIT UP JOINT AND FITTING FOR POLYVINYL CHLORIDE (PVC) PIPE.</p> <ul style="list-style-type: none"> 1.1 Check measurements according to plan 1.2 Select joints and fittings based on the job requirement 1.3 Perform pipe fitting based on job specification 1.4 Use Personal Protective Equipment 1.5 Perform proper housekeeping 	<p>TLE_IAPB9MP-IIIa-e-1</p>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<p>CONTENTS: 8. Blueprint reading 9. Materials use and specifications 10. Proper use of hand tools 11. Procedure in fitting threaded pipe 12. Types of piping connection</p>			<p>LO 2. PERFORM PIPE THREADING OF JOINTS AND CONNECTION. 2.1 Prepare piping layout based on blueprint 2.2 Perform threaded connections in accordance with the piping table of specifications and the approved standard procedure 2.3 Seal all joints with Teflon tape as per job specification 2.4 Use PPE 2.5 Perform proper housekeeping</p>	<p>TLE_IAPB9MP-III-f-j-2</p>
<p>CONTENTS: 13. Caulking procedures 14. Types of caulking tools and materials 15. Proper use of plumbing hand tools 16. Economic use of materials 17. Proper housekeeping (5S) implementation</p>			<p>LO 3. CAULK JOINTS. 3.1 Pack joints firmly in accordance with the job requirement 3.2 Caulk lead or epoxy inside and outside the edge of the joint 3.3 Caulk pipe joints according to the specified procedure 3.4 Join hub and pipes according to the caulking procedure 3.5 Use PPE 3.6 Perform proper housekeeping</p>	<p>TLE_IAPB9MP-IV-a-j-3</p>

**K to 12 BASIC EDUCATION CURRICULUM
TECHNOLOGY AND LIVELIHOOD EDUCATION
INDUSTRIAL ARTS – PLUMBING
GRADE 10 (Specialization)**

Course Description:

Prerequisite: Grade 9 Plumbing

This is an exploratory and introductory course which leads to a **Plumbing** National Certificate I (NCI) It focuses on the core competencies that the **Grade 10** Technology and Livelihood Education (TLE) student ought to possess: (1) performing minor construction works, and (2) making piping joints and connections.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<p>Introduction</p> <ol style="list-style-type: none"> 1. Basic procedure in plumbing 2. Relevance of the course 3. Career opportunities 	<p>The learner demonstrates an understanding of the basic concepts and underlying theories in plumbing.</p>	<p>The learner independently demonstrates the core competencies in plumbing.</p>	<ol style="list-style-type: none"> 1. Explain basic concepts in plumbing 2. Discuss the relevance of the course 3. Explore career opportunities in plumbing 	
PERSONAL ENTREPRENEURIAL COMPETENCIES (PeCS)				
<ol style="list-style-type: none"> 1. Assessment of Personal Competencies and Skills (PeCS) vis-à-vis a practicing entrepreneur/employee in a province. <ol style="list-style-type: none"> 1.1 Characteristics 1.2 Attributes 1.3 Lifestyle 1.4 Skills 1.5 Traits 2. Analysis of PeCS in relation to a practitioner 3. Strengthening and further development of ones PeCS 	<p>The learner demonstrates an understanding of one’s Personal Competencies and Skills (PeCS) in plumbing.</p>	<p>The learner independently creates a plan of action that strengthens/ further develops one’s PeCS in plumbing.</p>	<p>LO 1. Develop and strengthen personal competencies and skills (PeCS) needed plumbing</p> <ol style="list-style-type: none"> 1.1 Identify areas for improvement, development and growth 1.2 Align one’s PeCS according to his/her business/career choice 1.3 Create a plan of action that ensures success of his/her business/career choice 	<p>TLE_PECS10-Ik-8</p>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
ENVIRONMENT AND MARKET (EM)				
1. Product Development 2. Key concepts in developing a product 3. Finding Value 4. Innovation 4.1 Unique Selling 4.2 Proposition (USP)	The learner demonstrates an understanding of the concepts <i>environment</i> and <i>market</i> in the field of plumbing, particularly in one's town/municipality.	The learner independently creates a business vicinity map reflective of the potential Plumbing market within the locality/town.	LO 1. Develop a product/ service in Plumbing 1.1 Identify what is of "Value" to the customer 1.2 Identify the customer 1.3 Explain what makes a product unique and competitive 1.4 Apply creativity and Innovative techniques to develop marketable product 1.5 Employ a Unique Selling Proposition (USP) to the product/service	TLE_EM10-Ik-IIk-1
5. Selecting a Business Idea 6. Key concepts in Selecting a Business Idea a. Criteria b. Techniques			LO 2. Select a business idea based on the criteria and techniques set 2.1 Enumerate various criteria and steps in selecting a business idea 2.2 Apply the criteria/steps in selecting a viable business idea 2.3 Determine a business idea based on the criteria/techniques set	TLE_EM10-IIIk-2
7. Branding			LO 3. Develop a brand for the product 3.1 Identify the benefits of having a good brand 3.2 Enumerate recognizable brands in the town/province 3.3 Enumerate the criteria for developing a brand 3.4 Generate a clear appealing product brand	TLE_EM10-IVk-3

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INDUSTRIAL ARTS – PLUMBING**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
PERFORMING MINOR CONSTRUCTION WORKS (CW)				
<p>CONTENTS:</p> <ol style="list-style-type: none"> 1. Mensuration and blue print reading 2. Roughing-in procedures 3. Steps in performing minor installation 4. Use and specification of materials 5. Tools and equipment for roughing-in 6. Masonry work and procedures 			<p>LO1. PERFORM PIPING LAYOUTS</p> <ol style="list-style-type: none"> 1.1 Interpret work instruction according to the job requirements 1.2 Select materials, tools, and equipment according to the job requirements 1.3 3.Perform laying out in accordance with roughing-in procedure 1.4 Check dimension and alignment of pipes based on the job specifications 	TLE_IAPB10CW-Ia-IIj-1
<p>CONTENTS:</p> <ol style="list-style-type: none"> 7. Types of tools for cutting G.I. pipes 8. Procedure in cutting pipes through walls and floors 9. Safety regulations 			<p>LO2. CUT PIPES THRU WALLS AND FLOORS</p> <ol style="list-style-type: none"> 2.1 Cut thru walls in accordance with the job requirement 2.2 Use correct tools according to the job requirement 2.3 Restore cut wall and floor surface to their original condition 2.4 Use Personal Protective Equipment 2.5 Perform proper housekeeping 	TLE_IAPB10CW-IIIa-IVj-2

**K to 12 BASIC EDUCATION CURRICULUM
TECHNOLOGY AND LIVELIHOOD EDUCATION
INDUSTRIAL ARTS – PLUMBING
GRADE 11 (Specialization)**

Course Description:

This is a Training Regulation-based TLE course which leads to a Plumbing **National Certificate II (NC II)**. It focuses on the core competencies that the **Grade 11** Technology and Livelihood Education (TLE) student ought to possess. The course is designed to enhance the knowledge, skills, positive attitude and work values in accordance with workplace standards. The core competencies are (1) performing single unit plumbing installation and assemblies, and (2) performing plumbing repair works.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction 1. Observe procedure, specifications and manuals of instructions 2. Relevance of the course 3. Career opportunities	The learner demonstrates an understanding of the basic concepts and underlying theories in plumbing.	The learner independently demonstrates an understanding of the core competencies in plumbing as prescribed by TESDA Training Regulations.	1. Interpret manuals. 2. Discuss the relevance of the course 3. Explore on opportunities for plumbing as a career	
PERFORM SINGLE UNIT PLUMBING INSTALLATION AND ASSEMBLIES (PI)				
CONTENTS: 1. Interpreting isometric drawing 2. Blueprint reading 3. Plumbing tools, piping materials, and their uses 4. Types of PPE			LO 1. PREPARE FOR PLUMBING WORKS. 1.1. Interpret work plans and isometric drawings in accordance with the job specifications 1.2. Prepare materials, tools, and equipment according to the job requirements 1.3. 3. Select appropriate Personal Protective Equipment (PPE)	TLE_IAPB11PI-Ia-j-1
CONTENTS: 5. Revised National Plumbing Code of the Philippines (RNPCP) 6. Elements of plumbing system			LO 2. INSTALL PIPES AND FITTINGS. 2.1 Install pipes and fittings for branches based on job specifications following the Revised National Plumbing Code of the Philippines (RNPCP) and venting requirements and procedures.	TLE_IAPB11PI-IIa-j-2

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
7. Installation of drainage/sewer/vent piping system 8. Proper use of tools and equipment Proper use of PPE			2.2 Align drainage, sewer, and vent piping systems in the required locations as prescribed in the approved work plan. 2.3 Use tools and equipment according to the job requirements. 2.4 Use appropriate Personal Protective Equipment (PPE)	
CONTENTS: 9. Procedure in cutting cast iron pipe 10. Procedure in caulking cast iron pipes 11. Tables for amount of lead and oakum in caulking CI pipes			LO 3. INSTALL HOT AND COLD WATER SUPPLY. 3.1 Use pipes and fittings in accordance with the job specifications. 3.2 Install hot and cold water supply according to the approved work plan and specifications. 3.3 Install water pipes free of leak and contamination. 3.4 Align water pipes with the drainage, vents, and waste piping.	TLE_IAPB11PI-IIIa-j-3
CONTENTS: 13. Procedures in setting-up plumbing fixtures 14. Plumbing code provisions 15. Plumpness of plumbing fixtures 16. Proper housekeeping (5S)			LO 4. INSTALL AND ASSEMBLE PLUMBING FIXTURES. 4.1 Use pipes and fittings in accordance with the work plan 4.2 Install plumbing fixtures according to the rough-in specifications. 4.3 Use tools, materials, and equipment in accordance with the job specifications. 4.4 Use appropriate Personal Protective Equipment (PPE) 4.5 Perform proper housekeeping (5S)	TLE_IAPB11PI-IVa-j-4

**K to 12 BASIC EDUCATION CURRICULUM
TECHNOLOGY AND LIVELIHOOD EDUCATION
INDUSTRIAL ARTS – PLUMBING
GRADE 12 (Specialization)**

Course Description:

This is a Training Regulation-based TLE course which leads to **Plumbing NC II**. It focuses on the **Core Competencies** that a **Grade 12** Technology and Livelihood Education (TLE) student ought to possess. The course is designed to enhance the knowledge, skills, positive attitude and work values in accordance with workplace standards. It covers 1) performing plumbing maintenance works and; 2) performing pipe leak testing.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction 1. Observe Procedure, Specifications and Manuals of Instructions 2. Relevance of the course 3. Career opportunities	The learner demonstrates an understanding of basic concepts and underlying theories in plumbing.	The learner independently demonstrates an understanding of the core competencies in plumbing as prescribed by TESDA Training Regulations.	1. Interpret manuals. 2. Discuss the relevance of the course 3. Explore on opportunities for plumbing as a career	
PERFORM PLUMBING REPAIR AND MAINTENANCE WORKS (PR)				
CONTENTS: 1. Mensuration 2. Materials use and specification 3. Procedures in maintaining and repairing pipes and fittings 4. Safety precautions			LO 1. REPAIR DEFECTIVE PIPES AND FITTINGS. 1.1 Identify pipes and fitting defects 1.2 Repair defective pipes and fittings according to the job requirements 1.3 Use correct tools and equipment in accordance with the job requirements. 1.4 Check replaced pipes and/or fittings in accordance with the standard specifications. 1.5 Restore or repair damaged areas in line with the job requirements. 1.6 Use appropriate Personal Protective Equipment (PPE)	TLE_IAPB1PR-Ia-e-1

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TECHNOLOGY AND LIVELIHOOD EDUCATION
INDUSTRIAL ARTS – PLUMBING**

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<p>CONTENTS:</p> <ul style="list-style-type: none"> 5. Procedures in repairing and replacing plumbing fixtures 6. Replacement of fittings for plumbing fixtures 7. PPE 8. Proper housekeeping (5S) 			<p>LO 2. REPAIR DEFECTIVE PLUMBING FIXTURES AND ACCESSORIES.</p> <ul style="list-style-type: none"> 2.1 Identify materials, tools, and equipment for repairing plumbing fixtures and accessories 2.2 Repair defective plumbing fixtures in accordance with the job requirements 2.3 Check replacement of plumbing fixtures in accordance with standard specifications. 2.4 Restore or repair damaged areas in line with the job requirement. 2.5 Use appropriate Personal Protective Equipment (PPE) 	<p>TLE_IAPB1PR-If-j-2</p>
<p>CONTENTS:</p> <ul style="list-style-type: none"> 9. Procedure in unclogging pipes 10. Causes and remedies of pipe clogs 11. Materials and tools for unclogging pipes 12. Personal Protective Equipment (PPE)/ Proper housekeeping (5S) 			<p>LO 3. CLEAR CLOGGED PIPES.</p> <ul style="list-style-type: none"> 3.1 Identify clogged pipes 3.2 Use appropriate materials and tools needed for unclogging pipes 3.3 Clear clogged pipes according to the job requirements. 3.4 Observe safety measures in clearing clogged pipes 	<p>TLE_IAPB1PR-IIa-e-3</p>
<p>CONTENTS:</p> <ul style="list-style-type: none"> 13. Procedures in clearing the plumbing fixtures 14. Materials and tools in clearing fixtures 15. Personal Protective Equipment (PPE)/ Proper housekeeping 			<p>LO 4. CLEAR CLOGGED FIXTURES.</p> <ul style="list-style-type: none"> 4.1 Identify clogged fixtures 4.2 Use appropriate materials and tools needed for unclogging fixtures 4.3 Clear clogged fixtures according to the job requirements. 4.4 Observe safety measures in clearing 	<p>TLE_IAPB1PR-IIf-j-4</p>

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
(5S)			clogged fixtures	
PERFORMING PIPE LEAK TESTING (LT)				
<p>CONTENTS:</p> <ol style="list-style-type: none"> 1. Materials, tools, and equipment used for pipe-leak testing 2. Specification of materials, tools, and equipments used 	The learner demonstrates an understanding of the basic concepts and underlying theories in performing the pipe leak test.	The learner independently demonstrates competency in pipe leak testing.	<p>LO1. PREPARE MATERIALS FOR PIPE LEAK TESTING</p> <ol style="list-style-type: none"> 1.1 Select materials, tools and equipment according to job requirements. 1.2 Identify materials, tools and equipments used for pipe leak testing based on specifications 	TLE_IAPB1LT-IIIa-j-1
<p>CONTENTS:</p> <ol style="list-style-type: none"> 3. Mensuration 4. Blueprint reading 5. Leak testing procedure/methods 6. Materials use and their specifications 7. Different types of tools and equipment used in plumbing 8. Safety precautions and Proper housekeeping (5S) implementation 			<p>LO2. PERFORM PIPE LEAK TESTING</p> <ol style="list-style-type: none"> 2.1 Perform pipe leak testing in accordance with the job requirement 2.2 Use correct tools and equipment in accordance with the job requirements. 2.3 Use appropriate Personal Protective Equipment (PPE) 2.4 Perform proper housekeeping (5S) 	TLE_IAPB1LT-IVa-j-2

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GLOSSARY

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Code Book Legend

Sample: TLE_IAPB7/8OS-0i-1

LEGEND		SAMPLE		DOMAIN/ COMPONENT	CODE
First Entry	Learning Area and Strand/ Subject or Specialization	Technology and Livelihood Education_Industrial Arts Plumbing	TLE_IA PB 7/8	Personal Entrepreneurial Skills	PECS
	Grade Level	Grade 7/8		Environment and Marketing	EM
Uppercase Letter/s	Domain/Content/ Component/ Topic	Practice Health and Safety Procedure	OS	Prepare Plumbing Materials and Tools	UT
				Perform Estimation and Basic Calculation	MC
			-	Interpret Technical Drawings and Plans	ID
Roman Numeral <i>*Zero if no specific quarter</i>	Quarter	No Specific Quarter	0	Maintain Tools and Equipment	MT
Lowercase Letter/s <i>*Put a hyphen (-) in between letters to indicate more than a specific week</i>	Week	Week Nine	i	Practice Health and Safety Procedure	OS
			-	Preparing Pipes, Tools and Equipment for Installation	PI
Arabic Number	Competency	Identify Hazards and Risks	1	Make Piping Joints and Connection	MP
			-	Performing Minor Construction Works	CW
			-	Perform Single Unit Plumbing Installation and Assemblies	PI
			-	Perform Plumbing Repair and Maintenance Works	PR
			-	Performing Pipe Leak Testing	LT