

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL LIVELIHOOD TRACK
INDUSTRIAL ARTS – PLUMBING (NC I)

These are the list of specializations and their pre-requisites.

	Specialization	Number of Hours	Pre-requisite
1.	Animal Production (NC II)	480 hours	
2.	Aquaculture (NC II)	320 hours	
3.	Artificial Insemination (Ruminants) (NC II)	160 hours	Animal Production
4.	Artificial Insemination (Swine) (NC II)	160 hours	Animal Production
5.	Crop Production (NC I)	320 hours	
6.	Fish Nursery Operation (NC II)	160 hours	
7.	Fish or Shrimp Grow Out Operation (Non NC)	160 hours	Aquaculture
8.	Fish Wharf Operation (NC I)	160 hours	Fish or Shrimp Grow Out Operation
9.	Food (Fish) Processing (NC II)	640 hours	
10.	Horticulture (NC II)	640 hours	
11.	Landscape Installation and Maintenance (NC II)	320 hours	Crop Production
12.	Organic Agriculture (NC II)	320 hours	Crop Production
13.	Pest Management (NC II)	320 hours	Crop Production
14.	Rice Machinery Operation (NC II)	320 hours	Crop Production
15.	Slaughtering Operation (NC II)	160 hours	Animal Production
1.	Beauty/Nail Care (NC II)	160 hours	40 hours of the subject during exploratory Grade 7/8
2.	Attractions and Theme Parks (NC II)	160 hours	
3.	Bread and Pastry Production (NC II)	160 hours	
4.	Caregiving (NC II)	640 hours	40 hours of the subject during exploratory Grade 7/8
5.	Cookery (NC II)	320 hours	40 hours of the subject during exploratory Grade 7/8
6.	Dressmaking (NC II)	320 hours	
7.	Food and Beverage Services (NC II)	160 hours	
8.	Front Office Services (NC II)	160 hours	40 hours of the subject during exploratory Grade 7/8
9.	Hairdressing (NC II)	320 hours	
10.	Handicraft (Basketry, Macrame) (Non-NC)	160 hours	
11.	Handicraft (Fashion Accessories, Paper Craft) (Non-NC)	160 hours	
12.	Handicraft (Needlecraft) (Non-NC)	160 hours	
13.	Handicraft (Woodcraft, Leathercraft) (Non-NC)	160 hours	
14.	Household Services (NC II)	320 hours	40 hours of the subject during exploratory Grade 7/8
15.	Housekeeping (NC II)	160 hours	
16.	Tailoring (NC II)	320 hours	40 hours of the subject during exploratory Grade 7/8
17.	Tour Guiding Services (NC II)	160 hours	
18.	Tourism Promotion Services (NC II)	160 hours	
19.	Travel Services (NC II)	160 hours	
20.	Wellness Massage (NC II)	160 hours	

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		Specialization	Number of Hours	Pre-requisite
1.	ICT	Computer Hardware Servicing (NC II)	320 hours	
2.		Animation (NC II)	320 hours	
3.		Computer Programming (NC IV)	320 hours	
4.		Contact Center Services (NC II)	320 hours	
5.		Illustration (NC II)	320 hours	
6.		Medical Transcription (NC II)	320 hours	
7.		Technical Drafting (NC II)	320 hours	
1.	INDUSTRIAL ARTS	Automotive Servicing (NC I)	640 hours	
2.		Carpentry (NC II)	640 hours	
3.		Consumer Electronics Servicing (NC II)	640 hours	
4.		Electrical Installation and Maintenance (NC II)	640 hours	
5.		Masonry (NC II)	320 hours	
6.		Plumbing (NC I)	320 hours	
7.		Plumbing (NC II)	320 hours	Plumbing (NC I)
8.		Refrigeration and Airconditioning Servicing (NC II)	640 hours	
9.		Shielded Metal Arc Welding (NC I)	320 hours	
10.		Shielded Metal Arc Welding (NC II)	320 hours	Shielded Metal Arc Welding (NC I)
11.		Tile Setting (NC II)	320 hours	

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INDUSTRIAL ARTS – PLUMBING (NC I)
Grade 7/8 (Exploratory)

Course Description:

This is an exploratory and introductory course which leads to **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_PECS7/8-00-1

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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.	LO 1. Generate a business idea that relates with a career choice in plumbing 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_EM7/8-00-1
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.	LO 1. Prepare plumbing materials and tools for the task 1.1 Prepare a list of plumbing tools and materials for a specific job	TLE_IAPB7/8UT-0a-1
			LO 2. Request appropriate plumbing supplies, materials and tools applicable to a specific job 2.1 Use the appropriate form in requesting for plumbing tools, supplies and materials for a specific job	TLE_IAPB7/8UT-0a-2

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			LO 3. Receive and inspect electrical supplies, materials and tools 3.1 Check and control received items on the list	TLE_IAPB7/8UT-0b-3
LESSON 2: PERFORM MENSURATION AND CALCULATIONS (MC)				
1. Measurement 2. Proper handling of measuring instruments	The learner demonstrates an understanding of the concepts and underlying principles in performing measurements and calculations.	The learner independently performs accurate measurements and calculation based on given tasks.	LO 1. 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	TLE_IAPB7/8MC-0c-1
			LO 2. 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	TLE_IAPB7/8MC-0d-2

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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.	LO 1. 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	TLE_IAPB7/8ID-0e-1
			LO 2. 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-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.	LO 1. Check condition of tools and equipment 1.1 Functional and non-functional tools are labeled	TLE_IAPB7/8MT-0g-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			LO 2. Perform basic preventive maintenance 2.1 Maintenance of tools is done regularly	TLE_IAPB7/8MT-0g-2
			LO 3. Store tools and equipment 3.1 Tools are stored safely in appropriate locations in accordance with manufacturer specifications or standard operating procedure	TLE_IAPB7/8MT-0h-3
LESSON 5: PRACTICE OCCUPATIONAL HEALTH AND SAFETY PROCEDURE (OS)				
1. Occupational health and safety procedures	The learner demonstrates an understanding of the concepts and underlying principles in occupational health and safety procedures	The learner independently identifies hazards correctly in accordance with occupational health and safety procedures.	LO 1. Identify hazards and risks 1.1 Observing safety work habits in the work place 1.2 Preventing hazards in the workplace	TLE_IAPB7/8OS-0i-1
			LO 2. Evaluate hazards and risks 2.1 Identify work hazards in the workplace 2.2 Make a plan of action for the identified hazards	TLE_IAPB7/8OS-0i-2

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
			<p>LO 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-0j-3</p>

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INDUSTRIAL ARTS – PLUMBING (NC I)
(160 hours)

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 a high school 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
Introduction 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.	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 Competencies and Skills (PeCS) vis-à-vis a practicing entrepreneur/employee in locality/town. 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.	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 PECSS with that of a practitioner /entrepreneur 1.4 Align one's PECSS with that of a practitioner/entrepreneur	TLE_PECS9-12-IO-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_EM9-12-IO-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_EM9-12-II0-2
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_EM9-12-III0-IV0-3

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
PREPARING PIPES, TOOLS AND EQUIPMENT FOR INSTALLATION (PI)				
1. Plumbing signs and symbols 2. Types of measuring tools in plumbing	The learner demonstrates an understanding of the basic concepts and underlying theories in plumbing materials tools and equipment.	The learner independently demonstrates competency in the preparation of tools and equipment and pipes needed for installation.	LO 1. Lay out work area for pipes installation 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_IAPB9-12PI-Ia-j-1
3. Different pipe sizes and materials 4. Different cutting tools and equipment 5. Procedure in cutting pipes 6. Safety standards			LO 2. Cut pipe according to the required length of job requirements 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_IAPB9-12PI-IIa-j-2

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
7. Different threading tools 8. Standard procedures for pipe threading 9. Proper housekeeping (5S) in housekeeping			LO 3. Thread pipes in accordance with the standard thread engagement 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	TLE_IAPB9-12PI-IIa-j-3
MAKE PIPING JOINTS AND CONNECTION (MP)				
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			LO 1. Fit up joint and fitting for Polyvinyl Chloride (PVC) pipe 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	TLE_IAPB9-12MP-IIIa-e-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
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			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	TLE_IAPB9-12MP-IIIIf-j-2
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			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	TLE_IAPB9MP-IVa-j-3

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INDUSTRIAL ARTS – PLUMBING (NC I)
(160 hours)

Course Description:

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

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
Introduction 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.	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 Competencies and Skills (PeCS) vis-à-vis a practicing entrepreneur/employee in a province. 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 one's PeCS	The learner demonstrates an understanding of one's Personal Competencies and Skills (PeCS) in plumbing.	The learner independently creates a plan of action that strengthens/ further develops one's PeCS in plumbing.	LO 1. Develop and strengthen personal competencies and skills (PeCS) needed plumbing 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	TLE_PECS9-12-IO-1

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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_EM9-12-IO-II0-1
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_EM9-12-III0-2
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_EM9-12-IV0-3

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
PERFORMING MINOR CONSTRUCTION WORKS (CW)				
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			LO 1. Perform piping layouts 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_IAPB9-12CW-Ia-IIj-1
7. Types of tools for cutting G.I. pipes 8. Procedure in cutting pipes through walls and floors 9. Safety regulations			LO 2. Cut pipes thru walls and floors 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_IAPB9-12CW-IIIa-IVj-2

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GLOSSARY**

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INDUSTRIAL ARTS – PLUMBING (NC I)
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 Mensuration and Calculations	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 Occupational 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

Technology-Livelihood Education and Technical-Vocational Track specializations may be taken between Grades 9 to 12.

Schools may offer specializations from the four strands as long as the minimum number of hours for each specialization is met.

Please refer to the sample Curriculum Map on the next page for the number of semesters per Industrial Arts specialization and those that have pre-requisites. Curriculum Maps may be modified according to specializations offered by a school.

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 SAMPLE INDUSTRIAL ARTS CURRICULUM MAP**

No.	Grade 7/8	Grade 9	Grade 10	Grade 11	Grade 12	
1			*Automotive Servicing (NC I)		8 sems	
2			*Carpentry (NC II)		8 sems	
3			*Consumer Electronics Servicing (NC II)		8 sems	
4		*Electrical Installation and Maintenance (NC II)			8 sems	
5	EXPLORATORY	**Plumbing (NC I)		**Plumbing (NC II)		
6			4 sems		4 sems	
7		*Refrigeration and Airconditioning (NC II)			8 sems	
8		**Shielded Metal Arc Welding (NC I)		**Shielded Metal Arc Welding (NC II)		
9			4 sems		4 sems	
10		**Masonry (NC II)		**Tile Setting (NC II)		
11		4 sems		4 sems		4 sems

* Students must complete four years to take the NC Exam.

** Students must complete two years to take the NC Exam.