

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

(160 hours)

These are the specializations and their pre-requisites. These lists should be used as reference for curriculum maps.

AGRI-FISHERY ARTS

	Specialization	Number of Hours	Pre-requisite
1.	Agricultural Crops Production (NC I)	320 hours	
2.	Agricultural Crops Production (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	640 hours	
3.	Agricultural Crops Production (NC III)	640 hours	Agricultural Crops Production (NC II)
4.	Animal Health Care Management (NC III)	320 hours	Animal Production (Poultry-Chicken) (NC II) or Animal Production (Ruminants) (NC II) or Animal Production (Swine) (NC II)
5.	Animal Production (Poultry-Chicken) (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
6.	Animal Production (Large Ruminants) (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
7.	Animal Production (Swine) (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
8.	Aquaculture (NC II)	640 hours	
9.	Artificial Insemination (Large Ruminants) (NC II)	160 hours	Animal Production (Large Ruminants) (NC II)
10.	Artificial Insemination (Swine) (NC II)	160 hours	Animal Production (Swine) (NC II)
11.	Fish Capture (NC II)	640 hours	
12.	Fishing Gear Repair and Maintenance (NC III)	320 hours	
13.	Fish-Products Packaging (NC II)	320 hours	
14.	Fish Wharf Operation (NC I)	160 hours	
15.	Food Processing (NC II)	640 hours	
16.	Horticulture (NC III)	640 hours	Agricultural Crops Production (NC II)
17.	Landscape Installation and Maintenance (NC II)	320 hours	
18.	Organic Agriculture (NC II)	320 hours	
19.	Pest Management (NC II)	320 hours	
20.	Rice Machinery Operations (NC II)	320 hours	
21.	Rubber Processing (NC II)	320 hours	
22.	Rubber Production (NC II)	320 hours	
23.	Slaughtering Operations (Hog/Swine/Pig) (NC II)	160 hours	

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HOME ECONOMICS

	Specialization	Number of Hours	Pre-requisite
1.	Attractions and Theme Parks Operations with Ecotourism (NC II)	160 hours	
2.	Barbering (NC II)	320 hours	
3.	Bartending (NC II)	320 hours	
4.	Beauty/Nail Care (NC II)	160 hours	
5.	Bread and Pastry Production (NC II)	160 hours	
6.	Caregiving (NC II)	640 hours	
7.	Commercial Cooking (NC III)	320 hours	Cookery (NC II)
8.	Cookery (NC II)	320 hours	
9.	Dressmaking (NC II)	320 hours	
10.	Events Management Services (NC III)	320 hours	
11.	Fashion Design (Apparel) (NC III)	640 hours	Dressmaking (NC II) or Tailoring (NC II)
12.	Food and Beverage Services (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	160 hours	
13.	Front Office Services (NC II)	160 hours	
14.	Hairdressing (NC II)	320 hours	
15.	Hairdressing (NC III)	640 hours	Hairdressing (NC II)
16.	Handicraft (Basketry, Macrame) (Non-NC)	160 hours	
17.	Handicraft (Fashion Accessories, Paper Craft) (Non-NC)	160 hours	
18.	Handicraft (Needlecraft) (Non-NC)	160 hours	
19.	Handicraft (Woodcraft, Leathercraft) (Non-NC)	160 hours	
20.	Housekeeping (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	160 hours	
21.	Local Guiding Services (NC II)	160 hours	
22.	Tailoring (NC II)	320 hours	
23.	Tourism Promotion Services (NC II)	160 hours	
24.	Travel Services (NC II)	160 hours	
25.	Wellness Massage (NC II)	160 hours	

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INDUSTRIAL ARTS

	Specialization	Number of Hours	Pre-requisite
1.	Automotive Servicing (NC I) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	640 hours	
2.	Automotive Servicing (NC II)	640 hours	Automotive Servicing (NC I)
3.	Carpentry (NC II)	640 hours	
4.	Carpentry (NC III)	320 hours	Carpentry (NC II)
5.	Construction Painting (NC II)	160 hours	
6.	Domestic Refrigeration and Air-conditioning (DOMRAC) Servicing (NC II)	640 hours	
7.	Driving (NC II)	160 hours	
8.	Electrical Installation and Maintenance (NC II)	640 hours	
9.	Electric Power Distribution Line Construction (NC II)	320 hours	Electrical Installation and Maintenance (NC II)
10.	Electronic Products Assembly and Servicing (NC II) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	640 hours	
11.	Furniture Making (Finishing) (NC II)	640 hours	
12.	Instrumentation and Control Servicing (NC II)	320 hours	Electronic Products Assembly and Servicing (EPAS) (NC II)
13.	Gas Metal Arc Welding (GMAW) (NC II)	320 hours	Shielded Metal Arc Welding (SMAW) (NC II)
14.	Gas Tungsten Arc Welding (GTAW) (NC II)	320 hours	Shielded Metal Arc Welding (GMAW) (NC II)
15.	Machining (NC I)	640 hours	
16.	Machining (NC II)	640 hours	Machining (NC I)
17.	Masonry (NC II)	320 hours	
18.	Mechatronics Servicing (NC II)	320 hours	Electronic Products Assembly and Servicing (EPAS) (NC II)
19.	Motorcycle/Small Engine Servicing (NC II)	320 hours	
20.	Plumbing (NC I)	320 hours	
21.	Plumbing (NC II)	320 hours	Plumbing (NC I)
22.	Refrigeration and Air-Conditioning (Packaged Air-Conditioning Unit [PACU]/Commercial Refrigeration Equipment [CRE]) Servicing (NC III)	640 hours	Domestic Refrigeration and Air-conditioning (DOMRAC) Servicing (NC II)
23.	Shielded Metal Arc Welding (NC I)	320 hours	
24.	Shielded Metal Arc Welding (NC II)	320 hours	Shielded Metal Arc Welding (NC I)
25.	Tile Setting (NC II)	320 hours	
26.	Transmission Line Installation and Maintenance (NC II)	640 hours	Electrical Installation and Maintenance (NC II)

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INFORMATION, COMMUNICATIONS AND TECHNOLOGY (ICT)

	Specialization	Number of Hours	Pre-requisite
1.	Animation (NC II)	320 hours	
2.	Broadband Installation (Fixed Wireless Systems) (NC II)	160 hours	Computer Systems Servicing (NC II)
3.	Computer Programming (.Net Technology) (NC III) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
4.	Computer Programming (Java) (NC III) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
5.	Computer Programming (Oracle Database) (NC III) <i>updated based on TESDA Training Regulations published December 28, 2013</i>	320 hours	
6.	Computer Systems Servicing (NC II) <i>updated based on TESDA Training Regulations published December 28, 2007</i>	640 hours	
7.	Contact Center Services (NC II)	320 hours	
8.	Illustration (NC II)	320 hours	
9.	Medical Transcription (NC II)	320 hours	
10.	Technical Drafting (NC II)	320 hours	
11.	Telecom OSP and Subscriber Line Installation (Copper Cable/POTS and DSL) (NC II)	320 hours	Computer Systems Servicing (NC II)
12.	Telecom OSP Installation (Fiber Optic Cable) (NC II)	160 hours	Computer Systems Servicing (NC II)

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

Course Description:

Prerequisite: Plumbing NC I

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 a high school 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)				
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_IAPB9-12PI-Ia-j-1
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_IAPB9-12PI-IIa-j-2

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
<p>7. Installation of drainage/sewer/vent piping system</p> <p>8. Proper use of tools and equipment</p> <p>9. Proper use of PPE</p>			<p>2.2 Align drainage, sewer, and vent piping systems in the required locations as prescribed in the approved work plan</p> <p>2.3 Use tools and equipment according to the job requirements</p> <p>2.4 Use appropriate Personal Protective Equipment (PPE)</p>	
<p>10. Procedure in cutting cast iron pipe</p> <p>11. Procedure in caulking cast iron pipes</p> <p>12. Tables for amount of lead and oakum in caulking CI pipes</p>			<p>LO 3. INSTALL HOT AND COLD WATER SUPPLY</p> <p>3.1 Use pipes and fittings in accordance with the job specifications</p> <p>3.2 Install hot and cold water supply according to the approved work plan and specifications</p> <p>3.3 Install water pipes free of leak and contamination</p> <p>3.4 Align water pipes with the drainage, vents, and waste piping</p>	TLE_IAPB9-12PI-IIIa-j-3
<p>13. Procedures in setting-up plumbing fixtures</p> <p>14. Plumbing code provisions</p> <p>15. Plumpness of plumbing fixtures</p> <p>16. Proper housekeeping (5S)</p>			<p>LO 4. INSTALL AND ASSEMBLE PLUMBING FIXTURES</p> <p>4.1 Use pipes and fittings in accordance with the work plan</p> <p>4.2 Install plumbing fixtures according to the rough-in specifications</p> <p>4.3 Use tools, materials, and equipment in accordance with the job specifications</p> <p>4.4 Use appropriate Personal Protective Equipment (PPE)</p> <p>4.5 Perform proper housekeeping (5S)</p>	TLE_IAPB9-12PI-IVa-j-4

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(160 hours)

Course Description:

This is a Training Regulation-based TLE course which leads to **Plumbing NC II**. It focuses on the **Core Competencies** that a high school 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)				
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_IAPB9-12PR-Ia-e-1

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
5. Procedures in repairing and replacing plumbing fixtures 6. Replacement of fittings for plumbing fixtures 7. PPE 8. Proper housekeeping (5S)			LO 2. REPAIR DEFECTIVE PLUMBING FIXTURES AND ACCESSORIES 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)	TLE_IAPB9-12PR-IIf-j-2
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)			LO 3. CLEAR CLOGGED PIPES 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	TLE_IAPB9-12PR-IIa-e-3
13. Procedures in clearing the plumbing fixtures 14. Materials and tools in clearing fixtures			LO 4. CLEAR CLOGGED FIXTURES 4.1 Identify clogged fixtures 4.2 Use appropriate materials and tools needed for unclogging fixtures	TLE_IAPB9-12PR-IIIf-j-4

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE
15. Personal Protective Equipment (PPE)/ Proper housekeeping (5S)			4.3 Clear clogged fixtures according to the job requirements 4.4 Observe safety measures in clearing clogged fixtures	
PERFORMING PIPE LEAK TESTING (LT)				
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.	LO 1. PREPARE MATERIALS FOR PIPE LEAK TESTING 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_IAPB9-12LT-IIIa-j-1
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			LO 2. PERFORM PIPE LEAK TESTING 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_IAPB9-12LT-IVa-j-2

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Code Book Legend

Sample: TLE_IAPB9-12PI-Ia-j-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 9-12	Personal Entrepreneurial Skills	PECS
	Grade Level	Grade 9/10/11/12		Environment and Marketing	EM
Uppercase Letter/s	Domain/Content/ Component/ Topic	Preparing Pipes, Tools and Equipment for Installation	PI	Preparing Pipes, Tools and Equipment for Installation	PI
				Make Piping Joints and Connection	MP
			-	Performing Minor Construction Works	CW
Roman Numeral <i>*Zero if no specific quarter</i>	Quarter	First Quarter	I	Perform Single Unit Plumbing Installation and Assemblies	PI
Lowercase Letter/s <i>*Put a hyphen (-) in between letters to indicate more than a specific week</i>	Week	Week One to Ten	a-j	Perform Plumbing Repair and Maintenance Works	PR
			-	Performing Pipe Leak Testing	LT
Arabic Number	Competency	Prepare for Plumbing Works	1		

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** (as of May 2016)

GRADE 7/8 (EXPLORATORY)			GRADES 9-12		
				Automotive Servicing (NC I)* <small>updated based on TESDA Training Regulations published December</small>	8 sems
				*Automotive Servicing (NC II)	8 sems
			Motorcycle/Small Engine Servicing (NC II) 4 sems	Driving (NC II) 2 sems	8 sems
				Electronic Products Assembly and Servicing (NC II)* <small>updated based on TESDA Training Regulations published December 28, 2013</small>	8 sems
				*Mechatronics Servicing (NC II)	4 sems
				*Instrumentation Control and Servicing (NC II)	4 sems
				Electrical Installation and Maintenance (NC II)	8 sems
				*Electrical Power Line Distribution Line Construction (NC II)	4 sems
				*Transmission Line Installation and Maintenance (NC II)	8 sems
				Machining (NC I)	8 sems
				*Machining (NC II)	8 sems
			Plumbing (NC I) 4 sems	*Plumbing (NC II)	4 sems
				Domestic Refrigeration and Air-conditioning Servicing (NC II)	8 sems
				*Refrigeration and Air-conditioning Servicing (PACU/CRE) (NC III)	8 sems
			Shielded Metal Arc Welding (NC I) 4 sems	*Shielded Metal Arc Welding (NC II)	4 sems
				*Gas Metal Arc Welding (GMAW) (NC II)	4 sems
				*Gas Tungsten Arc Welding (GTAW) (NC II)	4 sems
				Carpentry (NC II)	8 sems
			*Carpentry (NC III) 4 sems	Construction Painting (NC II) 2 sems	8 sems
				Furniture Making (Finishing) (NC II)	8 sems
			Masonry (NC II) 4 sems	Tile Setting (NC II)	4 sems

EXPLORATORY

4
sems

* Please note that these subjects have pre-requisites mentioned in the CG.

+ CG updated based on new Training Regulations of TESDA.

Other specializations with no prerequisites may be taken up during these semesters.

Pre-requisites of the subjects to the right should be taken up during these semesters.

**This is just a sample. Schools make their own curriculum maps considering the specializations to be offered. Subjects may be taken up at any point during Grades 9-12.

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Reference:

Technical Education and Skills Development Authority (TESDA). *Plumbing NCI & II*. Compiled by the Skills Standards and Certification Office. Series 2011. Taguig City: Philippines. TESDA, 2011.