

K to 12 BASIC EDUCATION CURRICULUM
JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
INDUSTRIAL ARTS –ELECTRICAL INSTALLATION AND MAINTENANCE (NC II)
(640 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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(640 hours)

Course Description:

This is an exploratory and introductory course which leads to an **Electrical Installation and Maintenance** 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) procedures, 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 of career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
Introduction 1. Basic concepts in Electrical Installation and Maintenance 2. Relevance of the course 3. Career opportunities	The learner demonstrates an understanding of the basic concepts and underlying theories in electrical installation and maintenance.	The learner independently demonstrates common competencies in electrical installation and maintenance as prescribed by TESDA Training Regulations.	1. Explain basic concepts in electrical installation and maintenance 2. Discuss the relevance of the course 3. Explore career opportunities in electrical installation and maintenance		
PERSONAL ENTREPRENEURIAL COMPETENCIES (PeCS)					
1. Assessment of Personal Entrepreneurial Competencies and Skills (PeCS) vis-à-vis those of a practicing entrepreneur/employee 1.1 Characteristics 1.2 Attributes 1.3 Lifestyle 1.4 Skills 1.5 Traits	The learner demonstrates an understanding of one's Personal Entrepreneurial Competencies and Skills (PeCS).	The learner recognizes his/her PeCS and prepares a list of PeCS of a practitioner/entrepreneur in electrical installation and maintenance.	LO 1. Recognize Personal Entrepreneurial Competencies and Skills (PeCS) needed in electrical installation and maintenance 1.1 Assess one's PeCS: characteristics, attributes, lifestyle, skills, traits 1.2 Assess practitioner's PeCS: characteristics,	TLE_PECS7/8-00-1	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
2. Analysis of one's PeCS			attributes, lifestyle, skills, traits 1.3 Compare one's PeCS with those of a practitioner /entrepreneur		
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 of environment and market and how they relate with a career choice in electrical installation and maintenance.	The learner independently generates a business idea based on the analysis of environment and market in electrical installation and maintenance	LO 1. Generate a business idea that relates with a career choice in electrical installation and maintenance 1.1 Conduct SWOT analysis 1.2 Identify the different products/services available in the market 1.3 Compare different products/services in the electrical installation and maintenance business 1.4 Determine the profile of potential customers 1.5 Determine the profile of potential competitors 1.6 Generate potential business ideas based on the SWOT analysis	TLE_EM7/8-00-1	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
LESSON 1: PREPARE ELECTRICAL MATERIALS AND TOOLS (UT)					
1. Electrical materials and tools 2. Different types of forms	The learner demonstrates an understanding of the concepts in the preparing electrical materials and tools using the different forms in electrical installation and maintenance.	The learner independently prepares appropriate electrical materials and tools using the different forms in electrical installation and maintenance based on industry standards.	LO 1. Prepare electrical materials and tools for the task 1.1 Prepare a list of electrical tools and materials for a specific job	TLE_IAEI7/8UT-0a-1	
			LO 2. Request appropriate electrical supplies materials and tools applicable to a specific job 2.1 Use the appropriate form in requesting for electrical tools, supplies and materials for a specific job	TLE_IAEI7/8UT-0a-2	
			LO 3. Receive and inspect electrical supplies, materials and tools 3.1 Check and control received items on the list	TLE_IAEI7/8MT-0b-3	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
LESSON 2: PERFORM MENSURATION AND CALCULATIONS (MC)					
1. Measurement 2. Ohm’s Law 3. Multitester	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 electrical measuring tools and instruments 1.1 Identify object or component to be measured 1.2 Choose test instruments to be used for specific tasks 1.3 Identify alternative measuring tools without sacrificing cost and quality of work	TLE_IAEI7/8MC-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 unit of measurement	TLE_IAEI7/8MC-0d-2	
LESSON 3: INTERPRET TECHNICAL DRAWINGS AND PLANS (ID)					
1. Basic technical drawing 2. Technical Plans and Schematic Diagram 3. Signs, Symbols and Abbreviations	The learner demonstrates an understanding of the concepts and underlying principles in interpreting simple technical drawings and plans in electrical installation and maintenance.	The learner independently reads and interprets specifications of simple technical drawings and plans.	LO 1. Analyze signs, electrical symbols and data 1.1 Read and interpret electrical signs, symbols and data 1.2 Analyze electrical components and	TLE_IAEI7/8ID-0e-1	1. CBLM I Electricity. 2008. pp. 35-36. 2. CBLM II Electronics. Module IV. 2008. pp. 5-7, 12-14.

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
			materials based on electrical signs, symbols and data LO 2. Interpret technical drawings and plans 2.1 Read blueprints of electrical plans, diagrams and circuits 2.2 Identify necessary tools, materials and equipment according to blueprints of electrical plans, diagrams and circuits	TLE_IAEI7/8ID-0e-2	1. T.H.E III Industrial Technology Electronics I. Module V. 1993.
LESSON 4: MAINTAIN TOOLS AND EQUIPMENT (MT)					
1. Electrical tools and equipment 2. Maintenance of tools and equipment	The learner demonstrates an understanding of the underlying principles in the maintenance of electrical tools and equipment.	The learner independently performs proper maintenance of electrical tools and equipment based on industry standards.	LO 1. Check condition of tools and equipment 1.1 Label functional and non-functional tools and equipment	TLE_IAEI7/8MT-0f-1	
			LO 2. Perform basic maintenance 2.1 Clean and lubricate tools 2.2 Observe periodic preventive and maintenance of electrical tools and equipment 2.2.1 Sharpening 2.2.2 Oiling 2.2.3 Insulating	TLE_IAEI7/8MT-0f-2	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
			LO 3. Store tools and equipment 3.1 Prepare inventory of tools and equipment 3.2 Store tools and equipment in their proper places	TLE_IAEI7/8MT-0g-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 of occupational health and safety procedures.	The learner independently simulates occupational health and safety procedures.	LO1. Identify hazards and risks 1.1 List down hazards and risks in the workplace	TLE_IAEI7/8OS-0h-1	
			LO2. Control hazards and risks 2.1 Determine effects of hazards and risks 2.2 Evaluate hazards and risks 2.3 Follow procedure for controlling hazards and risks in the workplace	TLE_IAEI7/8OS-0i-2	
			LO3. Practice OHSP	TLE_IAEI7/8OS-0j-3	

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(640 hours)

Course Description:

This is specialization course which leads to an **Electrical Installation and Maintenance** National Certificate Level II (NCII). It covers three core competencies that a high school student ought to possess: (1) preparing electric and hydraulic tools, (2) performing roughing-in and wiring activities for bus and under floor ducts, and (3) installing wiring devices for floor and ground fault current interrupting outlets.

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 of career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
Introduction 1. Basic concepts in electrical installation and maintenance 2. Relevance of the course 3. Career opportunities	The learner demonstrates an understanding of the basic concepts and underlying theories of electrical installation and maintenance.	The learner independently demonstrates common competencies in electrical installation and maintenance as prescribed by TESDA Training Regulations.	1. Explain basic concepts in electrical installation and maintenance 2. Discuss the relevance of the course 3. Explore career opportunities in electrical installation and maintenance		
PERSONAL ENTREPRENEURIAL COMPETENCIES (PeCS)					
1. Assessment of Personal Competencies and Skills (PeCS) vis-à-vis PeCS of a practicing entrepreneur/ employee in locality/town. 1.1 Characteristics 1.2 Attributes 1.3 Lifestyle 1.4 Skills	The learner demonstrates an understanding of one's Personal Competencies and Skills (PeCS) in electrical installation and maintenance.	The learner recognizes his/her PeCS and prepares an activity plan that aligns with the PeCS of a practitioner/entrepreneur in electrical installation and maintenance.	LO 1. Recognize Personal Entrepreneurial Competencies and Skills (PeCS) needed in electrical installation and maintenance 1.1 Assess one's PeCS: characteristics, attributes, lifestyle, skills, traits 1.4 Assess practitioner's PeCS: characteristics,	TLE_PECS9-12-I0-1	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
1.5 Traits 2. Analysis of PeCS compared to PeCS of a practitioner 3. Align, strengthen and develop one's PeCS based on the results			attributes, lifestyle, skills, traits 1.5 Compare one's PeCS with those of a practitioner/entrepreneur 1.6 Align one's PeCS with those of a practitioner/entrepreneur		
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 of environment and market and how they relate to the field of electrical installation and maintenance, particularly in one's town/municipality.	The learner independently creates a business vicinity map reflective of the potential electrical installation and maintenance market within the locality/town.	LO 1. Recognize and understand the market in electrical installation and maintenance 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 5.4 Survey			LO 2. Recognize the potential customer/market in electrical installation and maintenance 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	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
<p>6. Generating Business Ideas</p> <p>6.1 Key concepts in Generating Business Ideas</p> <p>6.2 Knowledge & Skills, Passions, Interests</p> <p>6.3 New application</p> <p>6.4 Irritants</p> <p>6.5 Striking ideas (new concept)</p> <p>6.6 Serendipity Walk</p>			<p>LO 3. Create new business ideas for the electrical installation and maintenance business by using various techniques</p> <p>3.1 Explore ways of generating business ideas from ones' own characteristics/attributes</p> <p>3.2 Generate business ideas using product innovation from irritants, trends and emerging needs</p> <p>3.3 Generate business ideas using Serendipity Walk</p>	TLE_EM9-12-III0-IV0-3	
LESSON 1: PREPARE ELECTRIC AND HYDRAULIC TOOLS (ET)					
<p>1. Standard application of electric and hydraulic tools</p> <p>2. Types of electrical tools, instruments, materials and their specifications</p> <p>3. Hand tools</p> <p>4. Proper maintenance of electric and hydraulic tools</p>	The learner demonstrates an understanding of the principles in the preparation of electric and hydraulic tools.	The learner independently prepares electric and hydraulic tools for the task.	<p>LO 1. Select electric and hydraulic tools</p> <p>1.1 Request tools, equipment and materials</p> <p>1.2 Identify electric and hydraulic tools for the task</p> <p>1.3 Inspect tools and equipment for damage prior to its use</p> <p>1.4 Report damaged tools</p>	TLE_IAEI9-12ET-Ia-e-1	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
5. Specification of electric and hydraulic tools 6. Electric and hydraulic tools safety practices 7. Electrical symbols used in electrical plan			LO 2. Maintain electric and hydraulic tools 2.1 Check the conditions of electric and hydraulic tools 2.2 Lubricate electric tools in line with manufacturer’s specification 2.3 Replace auxiliary part of electric and hydraulic tools according to manufacturer’s specifications 2.4 Store electric and hydraulic tools	TLE_IAEI9-12ET-If-j-2	
LESSON 2: PERFORM ROUGHING-IN ACTIVITIES FOR COMMUNICATION AND DISTRIBUTION SYSTEM (RC)					
1. PEC provisions on electrical metallic conduits 2. Bending electrical metallic conduit 3. Procedure in installing electrical metallic conduit 4. Safety procedure in installing electrical metallic conduits	The learner demonstrates an understanding of the principles in performing roughing-in activities.	The learner independently performs roughing-in activities based on the Philippine Electrical Code (PEC) and National Electrical Code (NEC).	LO 1. Install electrical metallic tubing 1.1 Prepare tools/equipment and materials needed for the installation of electrical metallic tubing in line with job requirements 1.2 Install electrical metallic tubing according to the job requirements following PEC and NEC 1.3 Observe safety procedure in installing electrical metallic tubing 1.4 According to OHS guidelines and procedures	TLE_IAEI9-12RC-IIa-j-1	1. CBLM IV Electricity, Module II, 2008. pp. 3-46.

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
5. PEC/NEC provisions on wire ways and cable trays 6. Procedure in installing wire ways and cable trays 7. Safety procedure in installing wire ways and cable trays			LO 2. Install wireways and cable trays 2.1 Prepare tools/equipment and materials needed for the installation of wire ways and cable trays in line with job requirements 2.2 Install wire ways and cable trays according to the job requirements following PEC and NEC 2.3 Observe safety procedure in installing wire ways and cable trays according to OHS guidelines and procedures	TLE_IAEI9-12RC-IIIa-j-2	1. CBLM IV Electricity Module I 2008. pp. 11-19.
8. PEC/NEC provisions on telephone terminal cabinet 9. Procedure in installing telephone terminal cabinet trays 10. Safety procedure in installing telephone terminal cabinet			LO 3. Install telephone terminal cabinet 3.1 Prepare tools/equipment and materials needed for the installation of telephone terminal cabinet in line with job requirement. 3.2 Install telephone terminal cabinet according to the job requirements following PEC and NEC 3.3 Observe safety procedure in installing telephone terminal cabinet according to OHS guidelines and procedures.	TLE_IAEI9-12RC-IVa-e-3	1. CBLM IV Electricity Module I 2008. pp. 3-10.

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
11. PEC provisions on cable bridge 12. Procedure in installing cable bridge 13. Safety procedure in installing cable bridge			LO 4. Install cable bridge 4.1 Prepare tools/equipment and materials needed for the installation of cable bridge in line with job requirements 4.2 Install cable bridge according to the job requirements following PEC and NEC 4.3 Observe safety procedure in installing cable bridge according to OHS guidelines and procedures	TLE_IAEI9-12RC-IVf-j-4	1. CBLM IV Electricity. Module II. 2008. pp. 20-28.

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JUNIOR HIGH SCHOOL TECHNOLOGY AND LIVELIHOOD EDUCATION AND SENIOR HIGH SCHOOL TECHNICAL-VOCATIONAL-LIVELIHOOD TRACK
INDUSTRIAL ARTS –ELECTRICAL INSTALLATION AND MAINTENANCE (NC II)
(640 hours)

Course Description:

This is specialization course which leads to an **Electrical Installation and Maintenance** National Certificate Level II (NCII). It covers the core competency that a high school student ought to possess—namely, installing wiring devices for floor and ground fault current interrupting outlets.

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 of career opportunities.

CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
Introduction 1. Basic concepts in electrical installation and maintenance 2. Relevance of the course 3. Career opportunities	The learner demonstrates an understanding of the basic concepts and underlying theories in electrical installation and maintenance.	The learner independently demonstrates an common competencies in electrical installation and maintenance as prescribed by TESDA Training Regulations.	1. Explain basic concepts in electrical installation and maintenance 2. Discuss the relevance of the course 3. Explore career opportunities in electrical installation and maintenance		
PERSONAL ENTREPRENEURIAL COMPETENCIES (PeCS)					
1. Assessment of learner’s Personal Competencies and Skills (PeCS) vis-à-vis those of 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 learner’s PeCS compared to those of 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 electrical installation and maintenance.	The learner independently creates a plan of action that strengthens/ further develops one’s PeCS in electrical installation and maintenance.	LO 1. Develop and strengthen personal competencies and skills (PeCS) needed in Electrical Installation and Maintenance 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_PECS10-I0-1	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
ENVIRONMENT AND MARKET (EM)					
1. Product Development 2. Key concepts in developing a product 3. Finding Value 4. Innovation 4.1 Unique Selling Proposition (USP)	The learner demonstrates an understanding of the concepts environment and market in the electrical installation and maintenance field, particularly in one’s town/municipality.	The learner independently creates a business vicinity map reflective of the potential electrical installation and maintenance within the locality/town.	LO 1. Develop a product/ service in electrical installation and maintenance 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 creative and innovative techniques to develop marketable product 1.5 Employ a Unique Selling Proposition (USP) to the product/service	TLE_EM10-I0-II0-1	
5. Selecting a Business Idea 6. Key concepts in Selecting a Business Idea 6.1 Criteria 6.2 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-III0-2	

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
7. Branding			LO 3. Develop a brand for the product 7.1 Identify the benefits of having a good brand 7.2 Enumerate recognizable brands in the town/province 7.3 Enumerate the criteria for developing a brand 7.4 Generate a clear appealing product brand	TLE_EM10-IV0-3	
INSTALLING WIRING DEVICES FOR FLOOR AND GROUND FAULT CURRENT INTERRUPTING OUTLETS (WD)					
1. Standard application of tools, materials and equipment in accordance with PEC (Philippine Electrical Code) /NEMA 2. (National Electrical Manufacturers Association) 3. Safety procedure for handling electrical materials and devices 4. Specifications of electrical supplies and materials	The learner demonstrates an understanding of the underlying principles in installing wiring devices.	The learner independently installs wiring devices for floor and ground fault current interrupter.	LO 1. Select the wiring devices used for floor and ground fault current interrupter 1.1 Interpret plan/drawings for the selection of wiring devices based on the job requirement 1.2 Identify the correct quantity of wiring materials and devices to be used based on job requirement 1.3 Select tools and equipment to be used based on job requirement 1.4 Select appropriate Personal Protection Equipment (PPE)	TLE_IAEI10WD-Ia-IIj-1	1. CBLM III Electronics. Module V. 2008. pp. 33-38.

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CONTENT	CONTENT STANDARD	PERFORMANCE STANDARD	LEARNING COMPETENCIES	CODE	LEARNING MATERIALS
<p>5. Standard application of tools, materials and equipment in accordance with PEC/NEMA</p> <p>6. Basic methods and requirements for the installation</p> <p>7. Specifications of electrical supplies and materials</p>			<p>LO 2. Install the wiring devices for floor and ground fault current interrupter based on PEC standards</p> <p>2.1 Interpret plan/drawings based on the job requirement</p> <p>2.2 Install the wiring devices for floor and ground fault current interrupter in accordance with PEC</p> <p>2.3 Observe safety procedure in installing the wiring devices for floor and ground fault current interrupter in accordance with OHS procedures</p>	<p>TLE_IAEI10WD-IIIa-IVj-2</p>	

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Code Book Legend
Sample: TLE_IAEI9-12RC-IVf-j-4

LEGEND		SAMPLE	
First Entry	Learning Area and Strand/ Subject or Specialization	Technology and Livelihood Education_Industrial Arts Electrical Installation and Maintenance	TLE_IA EI 9-12
	Grade Level	Grade 9/10/11/12	
Uppercase Letter/s	Domain/Content/ Component/ Topic	Perform Roughing-in Activities for Communication and Distribution	RC
			-
Roman Numeral <i>*Zero if no specific quarter</i>	Quarter	Fourth Quarter	IV
Lowercase Letter/s <i>*Put a hyphen (-) in between letters to indicate more than a specific week</i>	Week	Week Six to Ten	f-j
			-
Arabic Number	Competency	Install cable bridge	4

DOMAIN/ COMPONENT	CODE
Personal Entrepreneurial Competencies	PECS
Environment and Marketing	EM
Prepare Electrical Materials and Tools	UT
Perform Mensuration and Calculations	MC
Interpret Technical Drawings and Plans	ID
Maintain Tools and Equipment	MT
Practice Occupational Health and Safety Procedure	OS
Prepare Electric and Hydraulic Tools	ET
Perform Roughing-in Activities for Communication and Distribution	RC
Installing Wiring Devices for Floor and Ground Fault Current Interrupting Outlets	WD

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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(640 hours)

SAMPLE INDUSTRIAL ARTS CURRICULUM MAP** (as of May 2016)

GRADE 7/8 (EXPLORATORY)		GRADES 9-12				
EXPLORATORY			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	
			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
			Furniture Making (Finishing) (NC II)		8 sems	
		Masonry (NC II)	4 sems	Tile Setting (NC II)	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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(640 hours)

Reference:

Technical Education and Skills Development Authority (TESDA). *Electrical Installation and Maintenance NCII*. Compiled by the Skills Standards and Certification Office. Series 2011. Taguig City: Philippines. TESDA, 2011.